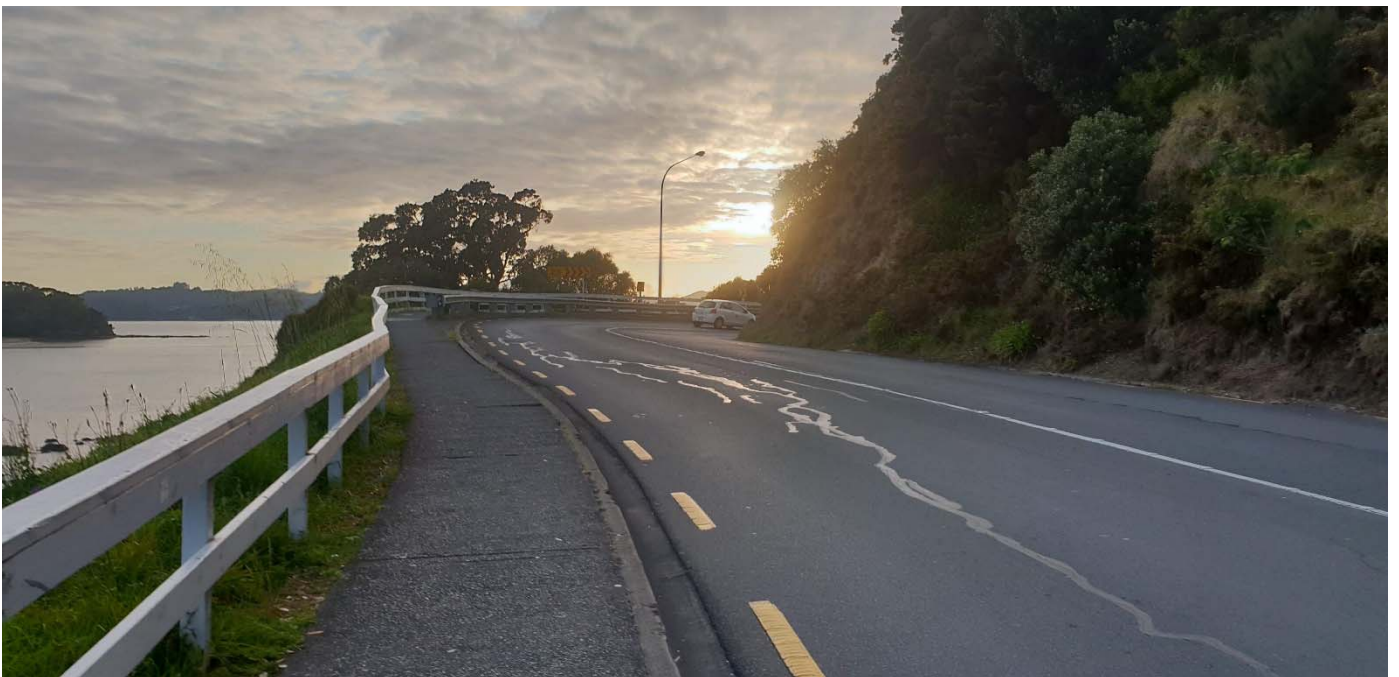


Twin Coast Discovery Route State Highway 11 Single Stage Business Case

Aurecon

24 September 2019

VERSION 4



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Twin Coast Discovery

New Zealand Government



Twin Coast Discovery Route

State Highway 11 - Single Stage Business Case

NZ Transport Agency

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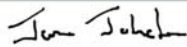

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Foreword

This SH11 Single-stage Business Case (SSBC) has been prepared using a modified SSBC approach. For readers of this document it is important to be aware of the following departures from the NZ Transport Agency's standard SSBC methodology.

This business case has been developed using a risk-based approach. In the interest of streamlining the identification of a shortlist and recommended option, targeted technical field assessments have been undertaken to develop the investment case. The focus of these assessments was to identify potential risks to inform the pre-implementation phases of those projects identified as 'early deliverables'.

Project risks have been classified as identified or unidentified, cognisant that for a small number of projects substantial prework has been undertaken such as detailed designs, ground investigations and archaeology assessments. It is important for the reader to note that residual risk remains for each project within the recommended programme and that this is reflected in the cost ranges provided.

With 26 projects making up the recommended option, technical assessments and concept design effort was concentrated on those projects which were of highest importance to investment and project partners, which were then recommended as short- and medium-term deliverables. Due to the complexity and timeframe, targeted optioneering has been undertaken for some projects only. This is because a number of the large investments such as improving Access to Waitangi and redeveloping the Paihia Town Centre warrant their own detailed business case to address the sheer number of options associated with each project. This business case will act as the "strategic driver" for these projects and potential applications for funding via the development of detailed business cases. Environmental screens and consenting strategies have been developed for the early improvements' projects.

The SH11 recommended investment programme makes up just one of the seven Twin Coast Discovery Route business cases. At time of writing the Wayfinding Signage Implementation Plan and Northland Integrated Cycling Implementation Plan, had been completed thus far. The relationship and interface with the programming of related projects (e.g. the Opuia to Paihia cycle connection) has not been taken into account at this stage. Therefore, the investment programme recommended tells a story of relative prioritisation and programming of projects on SH11 against each other and should be read in this context.

The seven TCDR business cases have been developed separately however it is expected that the activities recommended in the business cases will be implemented concurrently. Due to the complexities of multiple owners and a wide variety of activities, a single programme wide financial, commercial and management case will be developed for the overall TCDR programme. This SH11 business case therefore identifies activity owners, potential funding streams for activities and financial risks to be considered as inputs for the programme wide case.



Contents

Part A – The Strategic Case

- Executive Summary** i
- 1 Introduction**..... 1
 - 1.1 Background 1
 - 1.2 Report purpose..... 1
 - 1.3 Project description 1
 - 1.4 Investment and project partners 1
- 2 Strategic context** 3
 - 2.1 Geographic context 3
 - 2.2 Cultural context..... 4
 - 2.2.1 History 4
 - 2.2.2 Ngāpuhi and the Treaty of Waitangi..... 4
 - 2.2.3 Ngāti Hine Health Trust 5
 - 2.3 Demographic context 6
 - 2.3.1 Population..... 6
 - 2.3.2 Deprivation 7
 - 2.3.3 Ethnicity 9
 - 2.3.4 Age 9
 - 2.3.5 Vehicle ownership 12
 - 2.4 Economic context 12
 - 2.4.1 Kawakawa vs. Kerikeri 13
 - 2.4.2 Employment by industry 13
 - 2.4.3 Tai Tokerau industry..... 14
 - 2.4.4 Tourism..... 18
 - 2.5 Customer context 19
 - 2.5.1 International tourists 19
 - 2.5.2 Domestic tourists..... 20
 - 2.5.3 Commuters 20
 - 2.5.4 School run 20
 - 2.5.5 Freight 20
 - 2.5.6 Cruise ship passengers 20
 - 2.5.7 Cyclists 20
 - 2.6 Transport context..... 21
 - 2.6.1 Planned Developments 21
 - 2.6.2 Traffic volume 21
 - 2.6.3 Public transport..... 23
 - 2.6.4 Walking and cycling network 24
 - 2.7 Environmental context..... 25
 - 2.7.1 Land Use 26
 - 2.7.2 Natural Features..... 26
 - 2.7.3 Built heritage, archaeology and cultural 27
 - 2.7.4 Social and recreational 27
 - 2.8 Summary 27
- 3 Defining the problems and benefits** 29
 - 3.1 Investment logic map 29
 - 3.2 Problem statements 31
 - 3.2.1 Problem statement 1 31



3.2.2	Problem statement 2	35
3.2.3	Problem statement 3	38
3.3	Benefits.....	39
3.4	Opportunities	40
3.5	Investment Objectives	40
3.6	Alignment to existing strategies and goals.....	41
3.6.1	Alignment to existing strategies.....	41
3.7	Recent and planned developments.....	42
3.8	Issues, constraints and dependencies	43
3.8.1	Issues	43
3.8.2	Constraints	44
3.8.3	Dependencies and interfaces.....	45
3.9	Stakeholder engagement	45
3.9.1	Activities outcomes.....	46
3.10	Summary	47
4	Recommended Option Identification and Development	49
4.1	Overview.....	49
4.2	Recommended Option Selection.....	50
4.3	Recommended Option Development	51
4.4	Alignment with other SSBCs in the Twin Coast Discovery Route Programme.....	52
5	Recommended Option	54
5.1	Short-term Projects (0-2 years).....	56
5.1.1	Map of short-term projects	57
5.1.2	Project Descriptions.....	58
5.1.3	Benefits and Outcomes.....	67
5.1.4	Investment Objective Alignment and Benefit-Cost Ratio	68
5.2	Medium-term Projects (3-5 years).....	69
5.2.1	Medium-term Projects Map	70
5.2.2	Project Descriptions.....	71
5.2.3	Benefits and Outcomes.....	83
5.2.4	Investment Objective Alignment and Benefit-Cost Ratio	84
5.3	Long-term Projects (5 years+).....	85
5.3.1	Map of long-term projects.....	86
5.3.2	Project Descriptions.....	87
5.3.3	Benefits and Outcomes.....	100
5.3.4	Investment Objective Alignment and Benefit-Cost Ratio	101
	SH11 in 2030.....	102
6	Recommended Investment Programme.....	103
	Project Snapshot - Paihia.....	105
	Project Snapshot – Access to Waitangi	106
	Cycling on the SH11 corridor	107
7	Programme Risks	108
7.1	Reputational risk associated with non-delivery	108
7.2	Resourcing risk associated with technical projects	108
7.3	Complexities associated with possible Treaty of Waitangi settlements	108
7.4	Appearance of over-investment in Paihia	108
7.5	Underappreciation of non-quantifiable programme benefits	108
7.6	Project funding in the event of cost overruns	109



7.7	Negative user experience associated with programme delivery	109
7.8	Project Cost Escalation	109
8	Economic Evaluation	110
8.1	Summary	110
8.2	Wider Economic Benefits	110
8.3	Cost Estimation	111
8.4	Key Assumptions	111
8.5	Projects Assessed	112
8.6	Project Level Summary	113
8.7	Sensitivity	114
8.8	Beyond the EEM.....	115
8.8.1	Treasury Living Standards Framework	115
8.8.2	Natural Capital.....	117
8.8.3	Social Capital.....	117
8.8.4	Human Capital.....	117
8.8.5	Physical/Financial Capital	117
8.8.6	Resilience	118
8.9	A Project Level View.....	118
8.9.1	Paihia Town Centre Improvements.....	118
8.9.2	Te Karuwā Parade Upgrades.....	118
8.9.3	Access to Waitangi Bridge	118
8.9.4	Te Haumi Flats Improvements	119
8.9.5	Stormwater Upgrades	119
8.10	Peer Reviews	119
8.11	Assessment Profile.....	119
8.12	Summary of Outcomes of Recommended Investment Programme	121
9	Next Steps	123

Appendices

Appendices

- A Alignment to Existing Strategies**
- B Dependencies and Interfaces**
- C Overview of Environment, Planning and Social Context of the Corridor**
- D Options Assessment**
- E Recommended Investment Programme**
- F Cost Estimate**
- G Economic Evaluation**
- H Peer Review**
- I SH1 SH11 - Kawakawa Roundabout**
- J Shared Use Path Extension and Slip Repair at Haruru**
- K Corridor wide Safety Improvements**
- L Kaipātiki Bridge Upgrades**
- M Te Haumi Flats Safety and Beautification Improvements**
- N Improve Bus Connections in Tai Tokerau**
- O Te Karuwā Parade / Paihia Town Centre**
- P Tirohanga Stream Bridge Replacement**
- Q SH11/SH10 – Puketona Roundabout**
- R Resilience Improvements (Paihia to Kawakawa)**
- S Preliminary Design Philosophy Statement**

Figures

Figure 0-1	Cycling and bridges projects on SH11	iii
Figure 0-2	Paihia Town Centre Improvements (Aurecon, 2019)	iv
Figure 0-3	Te Haumi Flats Improvements (Te Pēwhairangi Charitable Trust, 2012)	iv
Figure 2-1	SH11 corridor	3
Figure 2-2	Twin Coast Discovery Route (NZ Transport Agency Website)	4
Figure 2-3	Ngāti Hine Health Trust (http://nhht.co.nz/)	5
Figure 2-4	Key population figures in the Far North and Tai Tokerau	7
Figure 2-5	Deprivation in Tai Tokerau as at March 2013 (University of Auckland)	8
Figure 2-6	Self-identified ethnicity* in the Far North, Tai Tokerau and NZ as at March 2013 (Stats NZ)	9
Figure 2-7	Key age demographics in Tai Tokerau	10
Figure 2-8	Working-age population (15-64 years) by region as at June 2018 (Stats NZ)	11
Figure 2-9	NZ districts in terms of working-age population (Tai Tokerau districts highlighted) as at June 2018 (Stats NZ)	11
Figure 2-10	Vehicle ownership and public transport alternatives in Tai Tokerau	12
Figure 2-11	Demographics in Kawakawa and Kerikeri	13
Figure 2-12	Employment, education and GDP per capita in Tai Tokerau	15
Figure 2-13	Top 5 industry contributors to Tai Tokerau GDP as at June 2018 (Infometrics)	16
Figure 2-14	Top 5 industry contributors to Far North district GDP as at June 2018 (Infometrics)	17
Figure 2-15	Top contributors to Regional Gross Domestic Product in Tai Tokerau and the Far North	18
Figure 2-16	NZ Transport Agency traffic count sites	21
Figure 2-17	Annual average daily traffic volume at SH11 sites as at May 2018	22
Figure 2-18	Bus Route 2	23
Figure 2-19	Bus Route 3	24
Figure 2-20	Pou Herenga Tai Twin Coast Cycle Trail (twincoastcycletrail.kiwi.nz)	25
Figure 2-21	ESR Screen Key Points	26
Figure 3-1	TCDR PBC investment logic map (NZ Transport Agency)	29
Figure 3-2	SH11 Investment Logic Map (ILM)	30
Figure 3-3	SH11 KiwiRAP risk ratings 2018 (KiwiRAP)	31
Figure 3-4	SH11 serious and fatal crashes 2008 to 2017 (NZ Transport Agency CAS Data)	33
Figure 3-5	SH11 all injury crashes 2013 to 2018, with two minor crash clusters circled (NZ Transport Agency CAS Data)	34
Figure 3-6	Factors involved in crashes on SH11	35
Figure 3-7	Hotels in the Bay of Islands listed on Trivago	36
Figure 3-8	Tourism Seasonality in Tai Tokerau and Rotorua (Stats NZ)	39
Figure 3-9	Alignment to Existing Strategies	42
Figure 3-10	Dependencies and Interfaces	45
Figure 4-1	Total benefits derived from SH11 improvements over time	52
Figure 5-1	Project summary format	55
Figure 8-1	Sensitivity Testing	115

Tables

Table 0-1	Key Activities	ii
Table 1-1	SH11 SSBC Investment and Project Partners	2
Table 2-1	Employment by industry as at June 2018 (Infometrics)	14
Table 2-2	5-day and 7-day AADT for each count site in “summer” and “winter”	22
Table 3-1	SH11 risk ratings 2013 to 2017	32



Table 3-2	Recent and Planned Developments	43
Table 3-3	Issues and uncertainties	44
Table 3-4	Constraints	45
Table 3-5	Engagement activity outcomes	47
Table 4-1	Feasibility criteria	50
Table 6-1	Recommended Investment Programme.....	104
Table 8-1	Project Assessments	113
Table 8-2	Project PV Benefits, Costs and BCRs.....	114
Table 8-3	Total benefits broken down by type.....	114
Table 8-4	Costs and benefits for Paihia projects.....	114
Table 8-5	SH11 Projects against the Treasury Living Standards Framework.....	116

Glossary of Abbreviations

Abbreviation	Term
AADT	Annual Average Daily Traffic
BCR	Benefit-cost Ratio
CAS	Crash Analysis System
DBC	Detailed Business Case
DSI	Death or Serious Injury
EEM	Economic Evaluation Manual
ESR	Environment and Social Responsibility
FNDC	Far North District Council
FNHL	Far North Holdings Limited
GDP	Gross Domestic Product
GPS	Government Policy Statement on Land Transport
GRP	Gross Regional Product
ILM	Investment Logic Map
IMD	Index of Multiple Deprivation
IO	Investment Objective
IRI	International Roughness Index
MBIE	Ministry of Business, Innovation and Employment
MCA	Multi-criteria Analysis
NHHT	Ngāti Hine Health Trust
NRC	Northland Regional Council
NTA	Northland Transportation Alliance
NZ	New Zealand
Transport Agency	NZ Transport Agency
PBC	Programme Business Case
PDU	Provincial Development Unit
PGF	Provincial Growth Fund
PV	Present Value
Q1	Least deprived quintile
Q5	Most deprived quintile
RCA	Road Controlling Authority
SH1	State Highway 1
SH10	State Highway 10
SH11	State Highway 11
SSBC	Single-stage Business Case
SUP	Shared use path
TBC	To be confirmed
TCCT	Twin Coast Cycle Trail
TCDR	Twin Coast Discovery Route
TTC	Travel Time Costs
VOC	Vehicle Operating Costs
WEBS	Wider Economic Benefits



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SH11 Single Stage Business Case

Volume 1



*Bringing ideas
to life*



Executive Summary

This Single-stage Business Case (SSBC) defines and progresses one of the Twin Coast Discovery Route (TCDR) Programme's key recommendations – improvements to State Highway 11 (SH11).

Using comprehensive analysis of problem trends in the study area, coupled with an options analysis process examining over 120 possible interventions, this business case recommends a ten-year programme of 26 activities, at an expected cost of \$146m¹ (discounted) and an overall assessed BCR of 0.9. The undiscounted cost of these projects is \$180m.

A Programme Business Case (PBC) was developed to support improvements to the TCDR, an 800km circuit which runs through Tai Tokerau, New Zealand's northernmost region. Tai Tokerau has historically ranked as one of the poorest and most deprived regions in the country. However, the PBC highlighted its excellent potential for tourism growth which, if supported by appropriate infrastructure investment, could drive a major shift in the region's economic strength. SH11 is a critical enabler for this growth as the access road to the Bay of Islands, a destination which accounts for a large proportion of the total visitors to Tai Tokerau. Delivering the activities recommended by the SH11 SSBC will solidify the region's position as a centre for tourism, thereby laying the groundwork for economic uplift for the residents of Tai Tokerau.

As well as supporting the investment objectives identified in the PBC, the recommended option also addresses several key problems specific to SH11 itself. Sections of the route are unsafe, parts of its infrastructure have poor connectivity, and it is vulnerable to closure as a result of low resilience – notably, the road was closed for 107 days in 2018 following two slips at Lemon's Hill. All of these factors create a route which limits social and economic opportunities for its users.

A poorly-functioning transport system endangers lives, restricts access to work and social opportunities, and discourages tourism, a key source of economic growth in Tai Tokerau.

To resolve these issues, this business case recommends a programme of investment which will improve the level of service of SH11, both for local residents living along the corridor and for visitors from further afield. All activities have been selected through rigorous multi-criteria analysis. Special attention has been paid to the outcomes sought by the Government Policy Statement on Land Transport 2018 (GPS) and Provincial Growth Fund (PGF). Consideration of these goals, together with extensive stakeholder engagement and demographic analysis, has yielded the following investment objectives:

Investment Objective 1

We will improve safety on SH11 for locals and visitors by addressing the most problematic risk factors and sections of the route.

Investment Objective 2

We will enhance access within the SH11 corridor, for all locals and visitors, by improving transport infrastructure connectivity and resilience.

Investment Objective 3

We will facilitate increased social and economic opportunity for communities within the SH11 corridor.

The activities in the recommended option were selected for their ability to deliver against these three objectives, as well as a set of feasibility criteria.

Ten years is the expected timeframe for delivery of all recommended activities. All activities have been programmed over the short-, medium- and long-term in line with all the business cases in the TCDR programme.

Recommended Investment Programme

With a diverse range of problems to be solved over a 30km route, the SH11 corridor is not well-suited to a "one size fits all" solution. As such, the activities within the programme address different aspects of the

¹ Total cost is for 24 projects only, as the costs for two activities in the recommended option are not part of the SH11 SSBC. These are the 'Wayfinding and signage upgrades' and 'Mobile driver licensing facility' projects.



problem statements to varying degrees. Many of the 26 recommended activities interface with each other both geographically and in delivery of the desired outcomes, and have been programmed effectively to ensure that works aren't being undertaken in the same place twice. For example, stormwater treatment in Paihia will be delivered alongside transformative upgrades to the town centre, and safety signage and pou will be erected at Te Haumi flats as the area is converted into a scenic rest stop. Meanwhile, new shared use paths, sealed roads and roadside public amenities will deliver a high-quality, well-integrated local cycling network. In this way, the discrete elements of the recommended option will work together to achieve the identified benefits of investment on SH11.

Table 0-1 below lists selected key activities from the recommended option. "Safety", "Access and Connectivity" and "Social and Economic Opportunity" are the identified investment objectives, and the blue ticks indicate which investment objective each activity primarily supports.

Key Activities	Safety	Access and Connectivity	Social and Economic Opportunity
SH1/SH11 - Kawakawa Roundabout (including new pedestrian connection)		✓	
Shared Use Path Extension and Slip Repair at Haruru	✓	✓	
Wayfinding and Signage Upgrades			✓
Corridor wide Safety Improvements	✓		
Tirohanga Stream Bridge Replacement	✓	✓	
Paihia to Waitangi Shared Use Path	✓	✓	
Paihia Town Centre Upgrades			✓
Access to Waitangi Treaty Grounds		✓	✓
Resilience Improvements (Paihia to Kawakawa)		✓	

Table 0-1 Key Activities

The investment programme has a **BCR of 0.9** (excluding wider economic benefits) and has been assessed using the latest Transport Agency 2018–21 NLTP Investment Assessment Framework (IAF) as having **High results alignment** and **5 prioritisation for public transport, walking and cycling and regional, local and state highway improvements activities**.

The project has been rated as High for results alignment because it:

- Addresses safety issues presenting a high crash risk, affecting communities subject to high safety risk (pedestrians, cyclists and motorists)
- Enables a significant regional economic development opportunity in approved RED programme
- Addresses significant impediment to access to nationally important social and economic connections (Waitangi Treaty Grounds, Paihia urban area etc)
- Makes best use of key corridors that prioritise national freight (SH1 through Kawakawa Roundabout Project) and tourism (SH11)
- Addresses significant resilience risk to continued operation of SH11 and SH1 corridors
- Addresses significant reductions in harm to the environment and people, from land transport-related air pollution, water quality and biodiversity.



The recommended option will lead to a reduction in deaths and serious injuries (DSIs) on SH11.

The recommended option recognises that transport system is operated by people, mistakes are inevitable and therefore targets the most significant risks. Several activities are specifically dedicated to provide Safe System treatments, while others incorporate safety improvements into their design while delivering other benefits. The average DSI will be less severe, with a 5.8% reduction in the ratio of deaths to serious injuries.

In an area with historically high reliance on private vehicle trips, the recommended option will significantly improve access and connectivity on the SH11 corridor. 25km of new or improved shared use paths are recommended to be delivered, which are expected to generate 500 new pedestrians and 40 new cyclists per day. Together with activities dedicated to improving the appeal and availability of public transport, this new infrastructure will provide greater levels of access and travel choice in a region with some of the lowest rates of vehicle ownership in the country.

There is 22km of newly-sealed road recommended, which will seal two alternate routes to SH11, thereby increasing the resilience of the State Highway network. A new alternate route will also be created in Paihia to bypass the bustling waterfront, and three bridges along the corridor will be either upgraded or replaced, as shown in Figure 0-1.

Connectivity and resilience improvements will generate \$95.6m in travel cost savings.

This will boost the domestic and international tourism reputation of the Bay of Islands as an attractive destination with “headache-free” transport infrastructure.

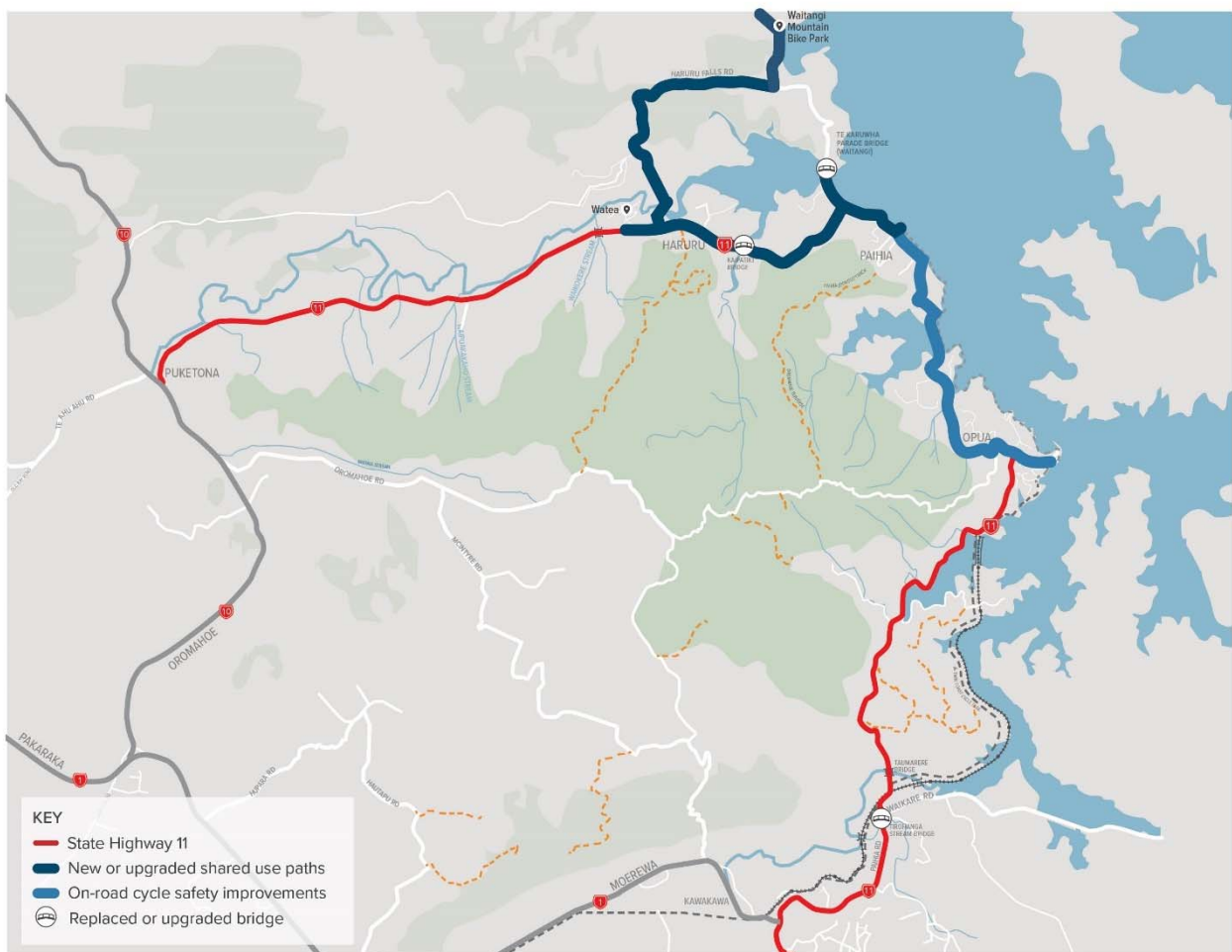


Figure 0-1 Cycling and bridges projects on SH11

A key element of the recommended option is to facilitate an increase in social and economic opportunities in the area. The Far North District has high rates of deprivation, and there is strong support for local transport infrastructure to enable economic development. As such, and in keeping with the objectives of the PBC, the recommended option has a focus on increasing tourism in the area. New spending opportunities for visitors



will be created in Paihia and at Te Haumi flats, access to key attractions like Waitangi will be improved, and strong investment in cycling infrastructure will allow the Bay of Islands to capitalise on the recent wave of cycle tourism in Tai Tokerau. With more visitors drawn in, the recommended option's connectivity projects will encourage the spread of spend along the corridor, ensuring that the benefits are spread as widely as possible amongst local communities.



Figure 0-2 Paihia Town Centre Improvements (Aurecon, 2019)

Finally, the recommended option will deliver elevated recognition of the historical and cultural significance of the Bay of Islands.

This area has played host to many of the most important events in New Zealand's history.

Greater recognition of this context within the design of the local transport network is required. 62% of the recommended activities will incorporate design elements which will increase cultural exposition along the corridor, which will not only strengthen the relationship with Māori culture and traditions but will also support a key economic benefit in boosting the Bay of Islands as a centre for cultural tourism.



Figure 0-3 Te Haumi Flats Improvements (Te Pēwhairangi Charitable Trust, 2012)



Early Improvements

As part of a new approach aimed at streamlining the Transport Agency's business case process, a risk-based methodology has been used to programme the recommended option. In lieu of conducting detailed investigations and design of the entire programme prior to commencement, the focus has been on these early improvements. These activities have been brought forward for implementation in years one and two because they effectively deliver on the investment objectives, are of top priority to stakeholders and considered lower-risk. Delivery of these activities would amount to a package of 'early improvements' to enhance stakeholder confidence in the SH11 project and the wider TCDR programme, and to deliver an early array of benefits.

Significant work has been undertaken on these activities previously, and as part of this business case. These activities are as follows:

- **SH1/SH11 - Kawakawa Roundabout (including new pedestrian connection).** This project will leverage an existing detailed design to deliver more efficient traffic flows on SH1 and better access to and for services in Kawakawa township.
- **Shared Use Path Extension and Slip Repair at Haruru.** This project will complete a shared use path between two key tourist destinations (Waitangi and Haruru) and will provide a safe walking and cycling connection for Watea residents.
- **Wayfinding and Signage Upgrades.** This project will deliver the recommendations from the Wayfinding Signage Implementation Plan along the corridor (not costed as part of this SSBC).
- **Undertake Parking Strategy.** This project will involve the development of an overall parking management strategy to provide locals and visitors with better awareness of parking availability, assess parking demand and supply and investigate alternative parking solutions.
- **Te Haumi Flats Safety and Beautification Improvements.** This project will improve safety and deliver urban design treatments to the Te Haumi Flats rest area.
- **Bus Stop Improvements.** This project includes measures to facilitate safer stopping on the existing bus route and provision of new bus stop infrastructure.
- **Corridor wide Safety Improvements.** This project delivers improvements to signage, linemarking and safety barriers, to address common crash factors and high risk locations.

Next steps

The full recommended investment programme can be found overleaf. All activities will require funding to be made available to progress with subsequent stages of investigation, design and implementation. Funding of the SH11 investment package is still to be determined but is likely to include the National Land Transport Fund, the Provincial Growth Fund and contributions from local government and private sector. All activities should also be put forward for inclusion in the next Regional Land Transport Plan update.

Five activities are relatively large-scale and require significant optioneering to assess options and alternatives, which was not undertaken as part of this business case. These activities will each require a detailed business case (DBC) to further develop and assess the options for them. In some instances, the recommended DBC incorporates assessment of two or more activities from the recommended option with a similar geographic location or which are proposing to achieve related outcomes. These activities are:

- Access to Waitangi DBC
- Paihia Town Centre Improvements DBC
- Tirohanga Stream Bridge Replacement DBC
- Ruapekapeka Road Improvements DBC



- Flood Resilience DBC

The next steps will be driven largely by the finalised outputs of the TCDR Programme level review of all seven business cases. Which, although unlikely to change the order of activities, may recommend some activity prioritisation or aligned implementation between the business cases.



SH11 SSBC Recommended Investment Programme

Key: Investigation Detailed Design Construction

Indicative cost estimate

Projects	Short-Term (0-2yrs)		Medium Term (3-5yrs)			Long-Term (5yrs+)					Total Indicative Cost	
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10		
SH1/SH11 - Kawakawa Roundabout (including new pedestrian connection)												\$ 4,180,000
Shared Use Path Extension and Slip Repair at Haruru												\$ 1,500,000
Wayfinding and Signage Upgrades												\$ -
Undertake Parking Strategy												\$ 200,000
Te Haumi Flats Safety and Beautification Improvements												\$ 1,500,000
Bus Stop Improvements												\$ 250,000
Corridor wide Safety Improvements												\$ 13,500,000
Kaipātiki Bridge Upgrades												\$ 2,156,000
Crossing Improvements at Taumārere												\$ 660,000
Improve Bus Connections in Tai Tokerau												\$ 700,000
Mobile Facility for Driver Licensing, Registration and WoFs												\$ -
Te Karuwhā Parade Upgrades												
Paihia Town Centre Upgrades												\$ 19,417,000
New Paihia to Waitangi Shared Use Path												
Tirohanga Stream Bridge Replacement												\$ 25,000,000
Implement Carpooling and Rideshare Services												\$ 600,000
Stormwater Upgrades												\$ 10,000,000
Ruapekapeka Road Improvements												\$ 11,000,000
SH11/10 – Puketona Roundabout												\$ 7,000,000
Cycle Safety Measures												\$ 2,000,000
Town Centre Surface Treatments												\$ 100,000
Improve Destination Facilities for Cyclists												\$ 400,000
Resilience Improvements (Paihia to Kawakawa)												\$ 40,000,000
Improve Access to Waitangi Treaty Grounds												\$ 30,000,000
Haruru Falls Road Improvements												\$ 9,000,000
Seal Bayly Road												\$ 500,000
Total												\$179,663,000



Part A

The Strategic Case



1 Introduction

1.1 Background

The NZ Transport Agency (Transport Agency) is seeking to investigate a wide range of options to confirm the recommended option which will improve State Highway 11 (SH11). This work will form part of the wider Provincial Growth Funded (PGF) funded Twin Coast Discovery Route (TCDR) Programme, which will identify potential upgrades and improvements to the 800km TCDR, to accommodate the increasing numbers of people visiting Tai Tokerau, and to encourage others to do the same.

The TCDR Programme Business Case (PBC) identified a programme of investment in the area that included improvements to SH11. This Single-stage Business Case (SSBC) identifies the recommended activities on sections of SH11 required to deliver the required outcomes identified in the PBC, as well as investment objectives and benefits tailored specifically to the study area.

1.2 Report purpose

The purpose of this report is to:

- Describe the key contextual factors which require consideration during the course of the SSBC
- Identify the transport-related needs and problems of current and future SH11 users, the benefits that can be derived from a programme of works, and a set of investment objectives which will accurately capture the need for investment
- Explore and assess a range of alternatives, options and activities which address the most urgent problems, provide value for money, meet investment partners' aims and can be delivered in the short timeframe required
- Evaluate and define a recommended option for investment that will best achieve the defined outcomes
- Outline the next steps for implementation of the projects within the recommended option
- Support applications for funding to deliver the projects within the recommended option. For some projects, this report contains sufficient detail and analysis to fully inform a funding application, while others will require further investigations or a dedicated Detailed Business Case.

1.3 Project description

The Transport Agency is looking to improve the TCDR with a view to increasing safety, resilience and benefits accrued from the tourist industry across Tai Tokerau. The PBC identifies a number of sections of the route which are particularly suitable for early investment.

SH11 is described in the PBC as a key route for the tourist economy in Tai Tokerau. It provides access to the Bay of Islands, where much of the region's tourism is concentrated, and is therefore an important lifeline for the regional economy as a whole. As well as emphasising its broad importance, the PBC identifies several specific resilience and safety issues on SH11 which require attention.

This SSBC takes the objectives and recommendations of the PBC and adapts them to the specific needs and contextual realities of the SH11 corridor.

1.4 Investment and project partners

Investment partners (detailed in Table 1-1) are organisations with intersecting roles and responsibilities, including influencing, managing or co-funding elements of the land transport system in Tai Tokerau. Project partners are entities with a strong interest in the outcomes of the business case whose input and feedback have been actively sought.

Investment Partner	Roles and Responsibilities
NZ Transport Agency	The Transport Agency is the road controlling authority (RCA) for SH11 along its entire length, from the southern junction at Kawakawa to its junction with SH10 at Puketona.



Project Partner	Roles and Responsibilities
Hapū	Hapū are recognised as Treaty Partners by the Transport Agency, under the Treaty of Waitangi 1840/Te Tiriti o Waitangi. They are an important decision-making partner when identifying priorities for transport investment for their communities. Ngāti Rahiri (including representatives from Te Tii marae), Ngāti Hine and Ngāti Rehia have been involved in the development of the SSBC.
Far North District Council	The Far North District Council (FNDC) is responsible for establishing policies and strategies on behalf of communities in the Far North District. They're responsible for the non-state highway public road corridors as the RCA for the Far North area.
Far North Holdings Limited	<p>Far North Holdings Limited (FNHL) is the commercial trading and asset management arm of FNDC and are responsible for a number of transport and maritime assets including the wharves at Paihia an Opuā.</p> <p>FNHL also acts as the Port Authority for the purposes of cruise ships visits to the Bay of Islands and administer land based transport services and tours for cruise ship passengers.</p>
Northland Regional Council	Northland Regional Council (NRC) is responsible for public transport and mobility services and strategic planning for the future land transport needs of the region.

Table 1-1 SH11 SSBC Investment and Project Partners

2 Strategic context

2.1 Geographic context

The study area covers the locations expected to be primarily influenced by improvements to State Highway 11 (SH11). This includes the highway itself and the towns, settlements and sites along the route as illustrated in Figure 2-1.

SH11 is 30km long and is located on the east coast of Tai Tokerau, the uppermost region of New Zealand's North Island. The road stretches from its northernmost point at the junction with SH10 at Puketona to its southern end at the junction with SH1 just outside Kawakawa. There are six settlements on the route, as indicated in Figure 2-1:



Figure 2-1 SH11 corridor

SH11 also has connections to several locations of local and national importance. The largest settlements near the SH11 corridor are:

- Whangārei (55km south of Kawakawa and the only city in Tai Tokerau)
- Kerikeri (10km north of Puketona and the second-largest settlement in Tai Tokerau)
- Kaikohe (30km west of Kawakawa and the fifth-largest settlement in Tai Tokerau)

Work at these locations is outside the scope of the SSBC, but their relationship to the SH11 corridor is an important consideration.

The Waitangi Treaty Grounds, a historical and cultural site where the 1840 Treaty of Waitangi was signed, lie just off SH11 across a historic one-way bridge to the north-west of Paihia. Okiato, New Zealand's first



capital, is a short ferry ride across the southern arm of the Bay from Opuia, and can also be accessed overland via the Waikare Road.

SH11 provides access to the Bay of Islands, which is consistently ranked as one of New Zealand’s top tourist destinations by organisations including Lonely Planet, Trip Advisor and others. It attracts large numbers of tourists each year, drawn by its dramatic natural beauty and historical significance. The corridor is part of a larger, 800km road loop, the Twin Coast Discovery Route (TCDR) (see Figure 2-2).

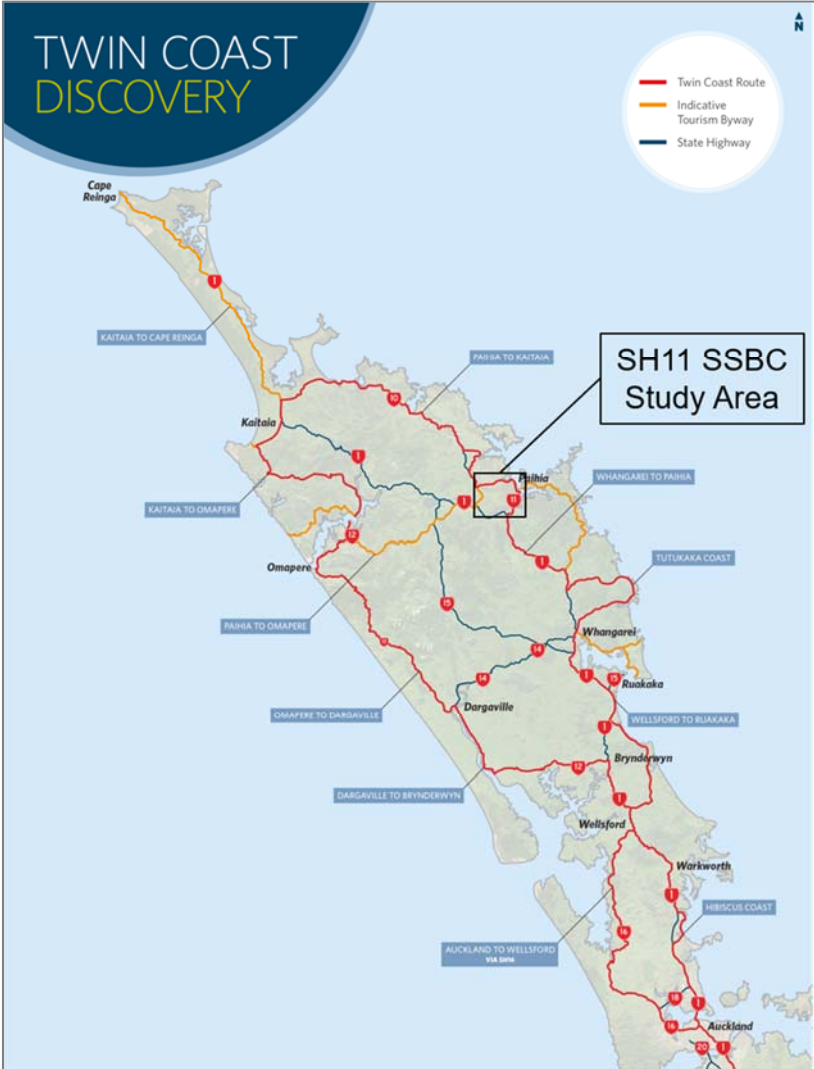


Figure 2-2 Twin Coast Discovery Route (NZ Transport Agency Website)

2.2 Cultural context

2.2.1 History

The area around SH11 has played an important role in New Zealand’s history. It is thought that the Polynesians who first settled New Zealand in the 13th Century, and whose descendants eventually became known as Māori, arrived in the Bay of Islands. Around 500 years later, the Bay of Islands was the first area in New Zealand to be settled by Europeans, and the town then known as Russell (today called Okiato or Old Russell) was the first to be designated as the country’s capital. In 1840, the Bay was the site of the Treaty of Waitangi (the Treaty), a landmark event which produced the founding document of New Zealand.

2.2.2 Ngāpuhi and the Treaty of Waitangi

The ramifications of the Treaty continue to be felt in Tai Tokerau, and in the rest of New Zealand, to this day. Since 1990, around 70 iwi in New Zealand have finalised Treaty settlements with the Crown. Settlements typically consist of an acknowledgement of, and apology for, historical actions by the Crown against the iwi in question, as well as a package of financial and commercial redress.



In 2014 Ngāpuhi, the largest Tai Tokerau iwi and the largest in New Zealand by affiliation, had their mandate recognised and are currently in settlement negotiations with the Crown. These are still ongoing at the time of writing.

Iwi generally use the settlement funds to develop their investment portfolio for their community, and often with significant success. A December 2017 report² from TDB Advisory analysed the investment strategies and performance of eight of the largest iwi, and found that all eight generated consistently positive returns from their investments.

Ngāpuhi currently has 72% of its assets in a combination of cash and term deposits, fisheries settlement quota and Moana New Zealand income shares, indicating a passive historical investment strategy. However, 2017 saw a shift towards a more active, diversified approach, when Ngāpuhi rebalanced its investment profile towards managed funds with higher weightings in capital growth stocks. This may indicate an increased willingness to invest in growth sectors with the possibility of higher returns.

Given the importance of tourism in Tai Tokerau (see Section 2.4 Economic Context), Ngāpuhi could invest in promoting the industry. This would reflect a broader iwi trend across the country of diversifying portfolios away from primary industry. For example, Ngai Tahu have seen very strong returns on tourism investments, which were funded using their \$170m settlement.

It is expected that Ngāpuhi will receive the largest Treaty settlement sum to date. This represents a unique opportunity for economic development within Tai Tokerau. A boost to the local economy could mean more jobs, more social opportunities and a greater range of destinations for visitors. All of these things will require access to help optimise their benefits - resilient, safe local road infrastructure will therefore be critical to maximising returns on future Ngāpuhi investment.

2.2.3 Ngāti Hine Health Trust

As part of stakeholder engagement for the SSBC, the Project team participated in Kawakawa's Hikoi for Wellness as the community spent a day marking Mental Health Week. On the day of arrival, new statistics revealing poor mental health outcomes in Tai Tokerau were front-page news in the NZ Herald³.

The Ngāti Hine Health Trust (NHHT) is one of the primary organisations addressing problems like poor mental health faced by those living in Tai Tokerau. Based in Kawakawa, its work addresses a wide range of issues, including:

- Maternal and early childhood health
- Mental health
- Addiction
- Disabilities support
- Clinical work
- Health education.

The organisation is also dedicated to promoting Māori interests.

NHHT owns and manages affordable housing for the elderly, and is an active member of the Te Tai Tokerau Whānau Ora Collective, which encourages and supports whānau to plan and then achieve their aspirations for the future.

At the Hikoi for Wellness, NHHT leaders explained that a person's wellbeing is closely linked to their ability to find paid work, access healthcare and continue education. However, all three factors have been criticised in



Figure 2-3

Ngāti Hine Health Trust
(<http://nhht.co.nz/>)

² TDB Advisory. Iwi Investment Report 2017.; 2017.

³ Laird L. Rural mental health and Māori statistics grim in Northland. NZ Herald.

https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12139060. Published 2018. Accessed December 18, 2018.



Tai Tokerau for many years. One kaumatua explained that many young Northlanders leave to find work in Auckland or Australia, and 'the ones who've stayed are the tough ones or the rough ones'. These accounts paint an insightful picture of the socio-economic situation in Tai Tokerau.

Roads are seen as a particularly critical lifeline for Northlanders, enabling access to jobs, healthcare and a range of other public amenities. NHHT is a major user of SH11, operating a fleet of over 100 vehicles. NHHT workers on the road drive an average of 200km per day to conduct outreach initiatives within the community aimed towards improving welfare within Tai Tokerau. As such, NHHT and its workers are closely aligned with the Project. Investment in the local road network will enable organisations like NHHT to continue their outreach, strengthen community access to work, education and healthcare and improve the local economy.

2.3 Demographic context

The most up-to-date information has been used to inform this section. In some instances, data from the 2013 census was used since results of the 2018 census are not expected until September 2019.

There is significantly more information available for the Tai Tokerau region than for the Far North district, where SH11 is located, so in order to present a full and informative representation of the study area, statistics from Tai Tokerau have generally been used.

2.3.1 Population

Tai Tokerau has a population of 179,100, according to the June 2018 estimate by Statistics New Zealand (see Figure 2-4). This represents a growth of 2.1% from the previous year, placing Tai Tokerau as the third-fastest-growing region in the country, behind Auckland and Otago. This growth rate is significantly greater than that of previous years – Between 2013 and 2017, Tai Tokerau experienced annual population growth of 1.6%, placing it seventh among New Zealand's 16 regions. Population growth in Tai Tokerau is increasing each year, placing a corresponding strain on the region's infrastructure.

The Far North District's estimated population in June 2018 was 64,400, or approximately 36% of the total population in Tai Tokerau. This represented annual population growth for the district of 1.1% between 2013 and 2017, well below the rate in Tai Tokerau of 1.6% - most of the region's population growth during this period was driven by the Whangarei and Kaipara districts, which experienced annual growth of 1.8% and 2.4% respectively.

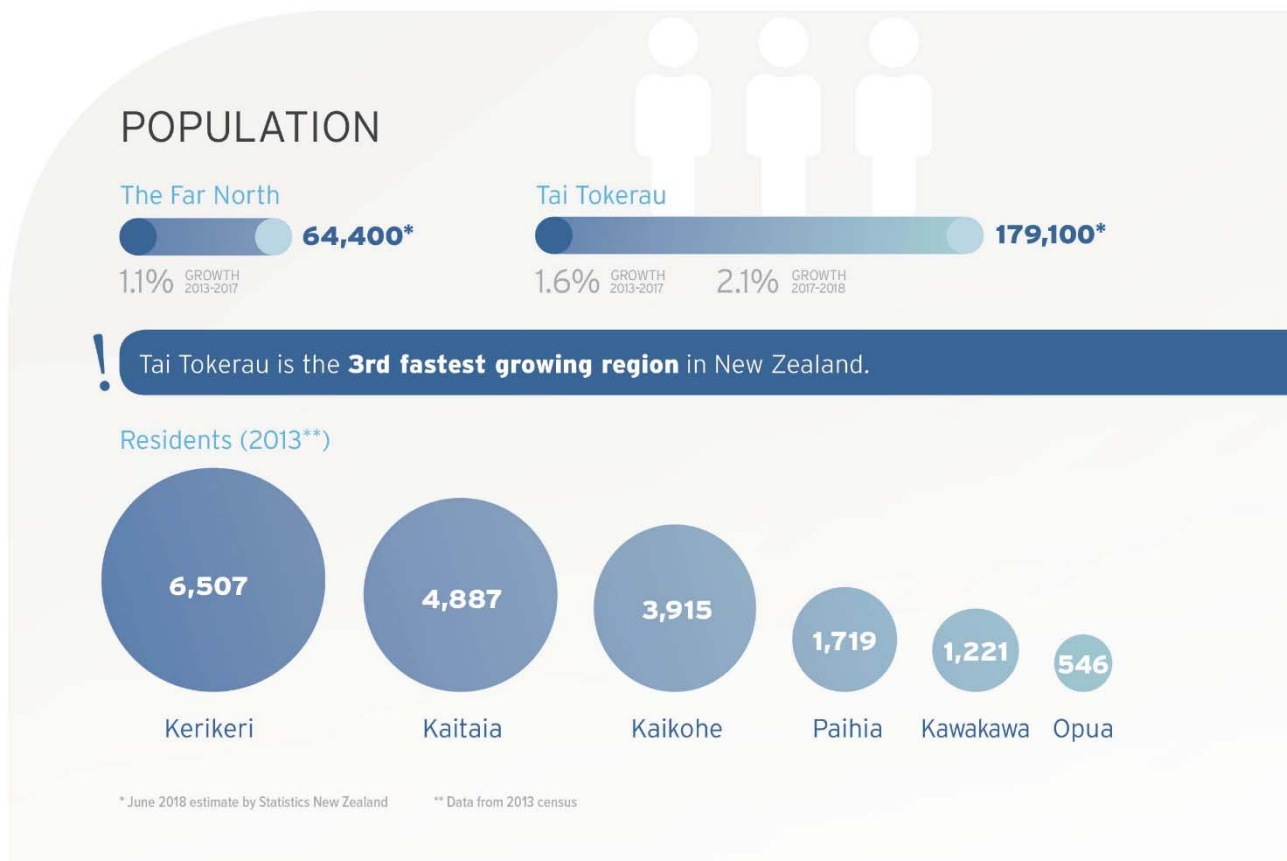


Figure 2-4 Key population figures in the Far North and Tai Tokerau

2.3.2 Deprivation

Deprivation is the most significant demographic trend in Tai Tokerau. The New Zealand Index of Multiple Deprivation (IMD)⁴ uses seven demographic domains to define and measure deprivation, as detailed below. These domains are combined and weighted to provide an overall deprivation rating:

- Employment (28% weighting)
- Income (28%)
- Health (14%)
- Education (14%)
- Housing (9%)
- Crime (5%)
- Access (2%).

The IMD divides New Zealand into 5,958 neighbourhood-sized data zones with a mean population of 712 people each. Each data zone is scored on the seven domains above, and the scores are then weighted and combined to produce an overall deprivation score for each data zone. Every data zone in New Zealand is then ranked according to its overall deprivation score. This full ranking is then split into five equally-sized quintiles, from most deprived (Q5) to least deprived (Q1).

⁴ Young R, Browne M, Zhao J et al. *A Deprivation And Demographic Profile Of The Northland DHB*. University of Auckland; 2017.



Tai Tokerau contains 225 IMD data zones. 40% of them fall into New Zealand’s most deprived quintile, meaning that the incidence of Q5 zones in Tai Tokerau is double that of NZ as a whole. The majority of the most deprived data zones are concentrated in the northern part of Tai Tokerau; 50% of the Far North district population fall into the most deprived national quintile. 1.3% of Tai Tokerau data zones fall into in the country’s least deprived quintile (Q1) suggesting that overall deprivation in the Tai Tokerau region is high.

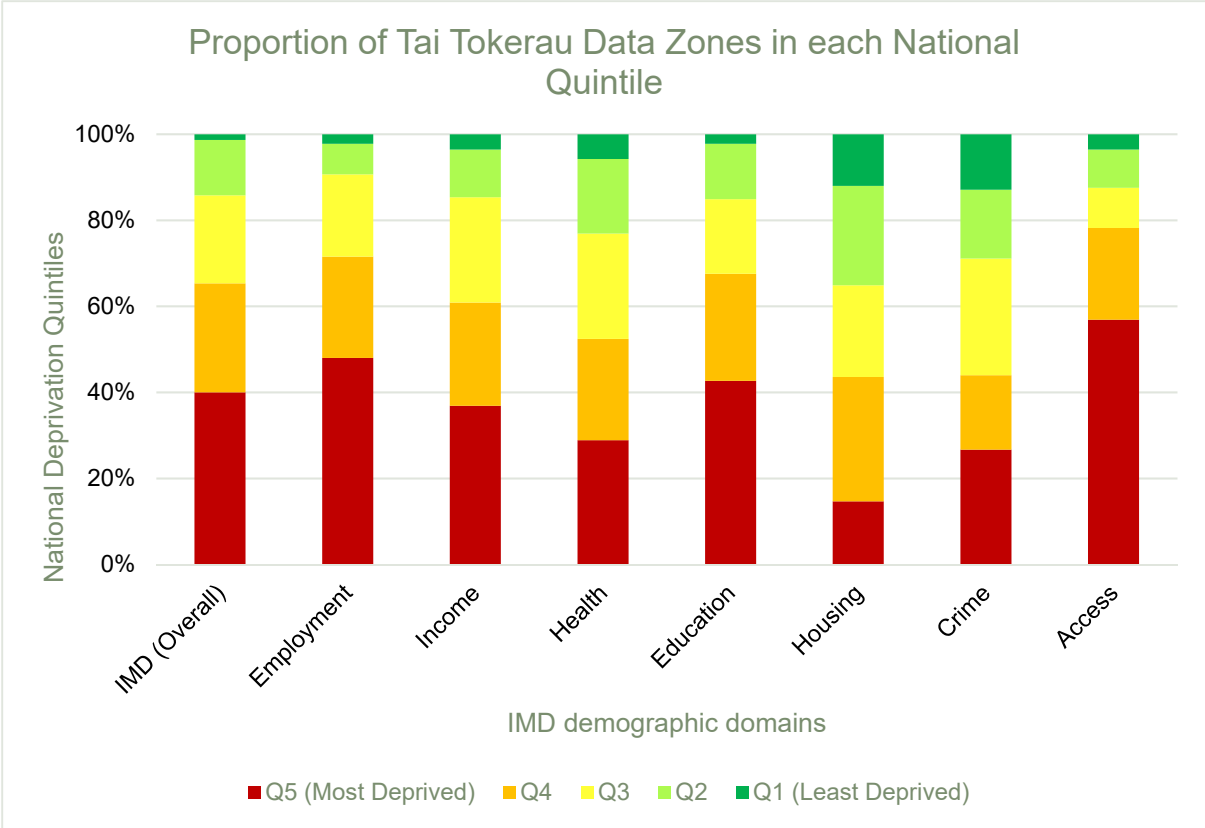


Figure 2-5 Deprivation in Tai Tokerau as at March 2013 (University of Auckland)

Figure 2-5 shows the proportion of Tai Tokerau data zones in each national quintile for each IMD domain. Housing is the domain where Tai Tokerau data zones perform best, though still slightly worse than the national average – 65% of Tai Tokerau data zones fall into the most deprived 60% of the country’s data zones for housing. Crime in Tai Tokerau scores only slightly worse than housing. The remaining five domains score very poorly within the region. The proportion of Tai Tokerau data zones which fall into the nation’s most deprived quintile, for each domain, is as follows:

- Health – 28.9%
- Income – 36.9%
- Education – 42.7%
- Employment – 48.0%
- Access – 56.7%.

Though the Access domain receives a low weighting (2%), it is particularly relevant to the SH11 project. To score this domain, the IMD measures the distance from the population-weighted centre of each data zone to the nearest three general practitioners, supermarkets, service stations, schools and early childhood education centres. The IMD results demonstrate that well over half (56.7%) of Tai Tokerau is Q5 – that is, 56.7% of the region has among the worst access in the country to these fundamental services. Though improvements to SH11 cannot move services closer to Northlanders, developments can:

- Reduce the time taken to reach services

- Reduce associated travel costs
- Increase resilience of access to services
- Increase confidence in the transport network.
- Increase travel choice options

2.3.3 Ethnicity

Figure 2-6 shows ethnicity in Tai Tokerau compared to New Zealand. The proportion of Māori living in Tai Tokerau data zones varies from 13.1% to 92%. The overall proportion of Northlanders who identify as Māori is 29.6%, placing it second in New Zealand to the Gisborne Region (45%), and significantly above the national figure of 14.9%. These two regions, which have the highest proportions of Māori residents, are also the two most deprived regions in New Zealand according to IMD. This suggests that Māori people are



Figure 2-6 Self-identified ethnicity* in the Far North, Tai Tokerau and NZ as at March 2013 (Stats NZ)
 * respondents may identify as more than one ethnicity

disproportionately affected by deprivation and poverty. The SH11 project represents an opportunity to simultaneously decrease deprivation in the region and promote Māori welfare.

There are some notable differences in ethnicity between Tai Tokerau communities. Nearly 60% of Kawakawa residents identify as Māori, which contrasts with Kerikeri, just 30 minutes' drive away, where less than 20% identify as Māori. The contrast between these two towns is further discussed in Section 2.4 Economic Context. 3.2% of Northlanders identify as Pasifika, which is significantly lower than the national average of 7.3%. However, there are pockets of the region with large Pasifika populations, including Dargaville (11%), Kaikohe (9.9%) and Kawakawa (9.9%).

2.3.4 Age

Tai Tokerau has the highest median age of any region on the North Island, at 42.9 years⁵ (see Figure 2-7). Within the Far North District, the median age is even higher, at 43.9 years. This is partially driven by a significant retiree population – 20.4% of Northlanders are 65 years or older, compared with the national average of 15.3%.

⁵ Statistics New Zealand. *Subnational Population Estimates - 30 June 2018.*; 2018.

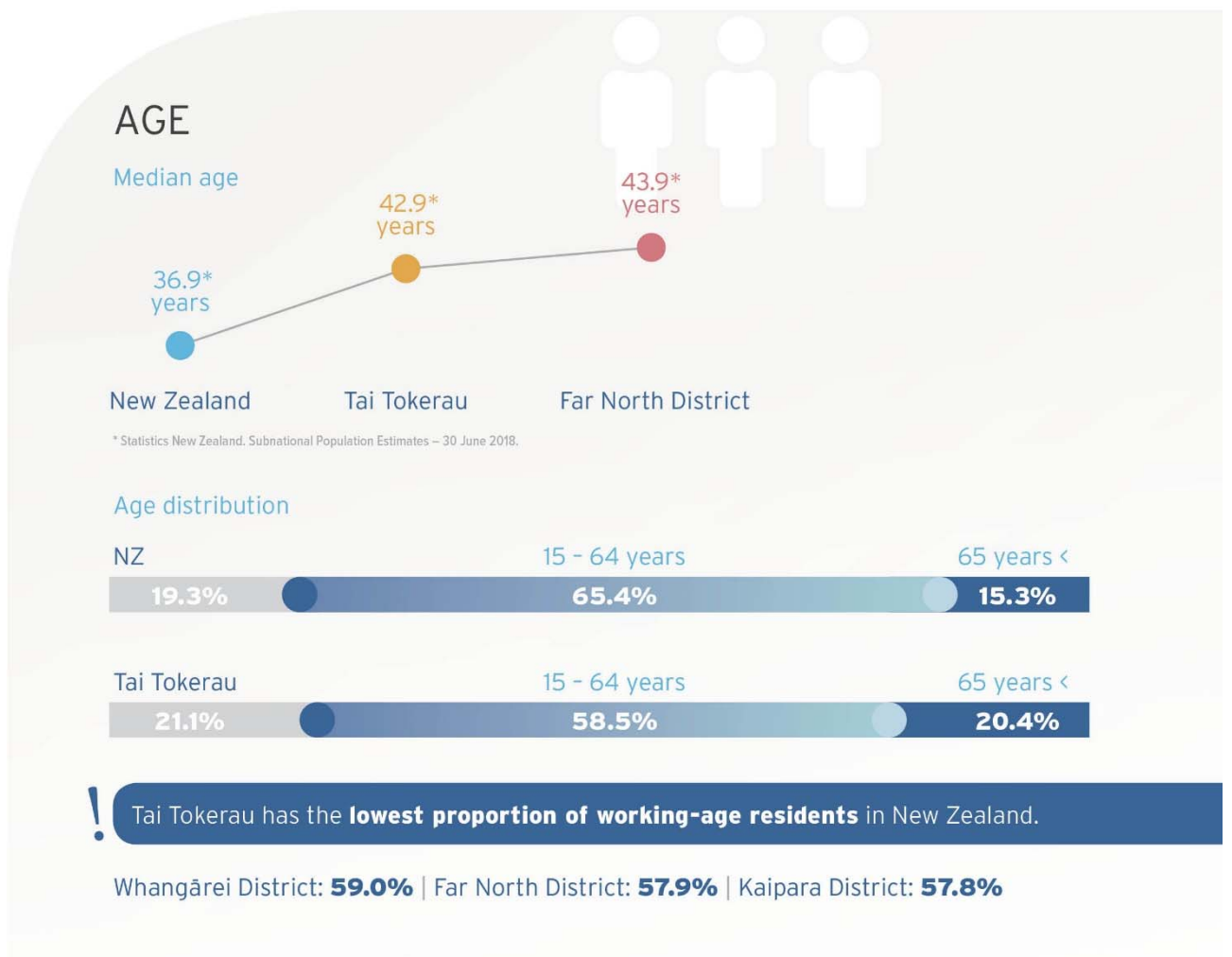


Figure 2-7 Key age demographics in Tai Tokerau

Furthermore, 58.5% of the Tai Tokerau population is of working age (15-64), which is the lowest figure of any region in New Zealand (see Figure 2-8). Granulating this data further to the district council level, all three Tai Tokerau districts have among the lowest proportion of working-age people in the country (see Figure 2-9). Just 57.9% of Far North District residents are aged 15-64, placing it 81st out of New Zealand's 89 districts (including city council districts).

Many working-age people, especially young working-age people, leave Tai Tokerau each year for more prosperous parts of the country, or even Australia. This leaves fewer people in Tai Tokerau to generate economic growth within the region, contributing to economic difficulties and deprivation in the region.

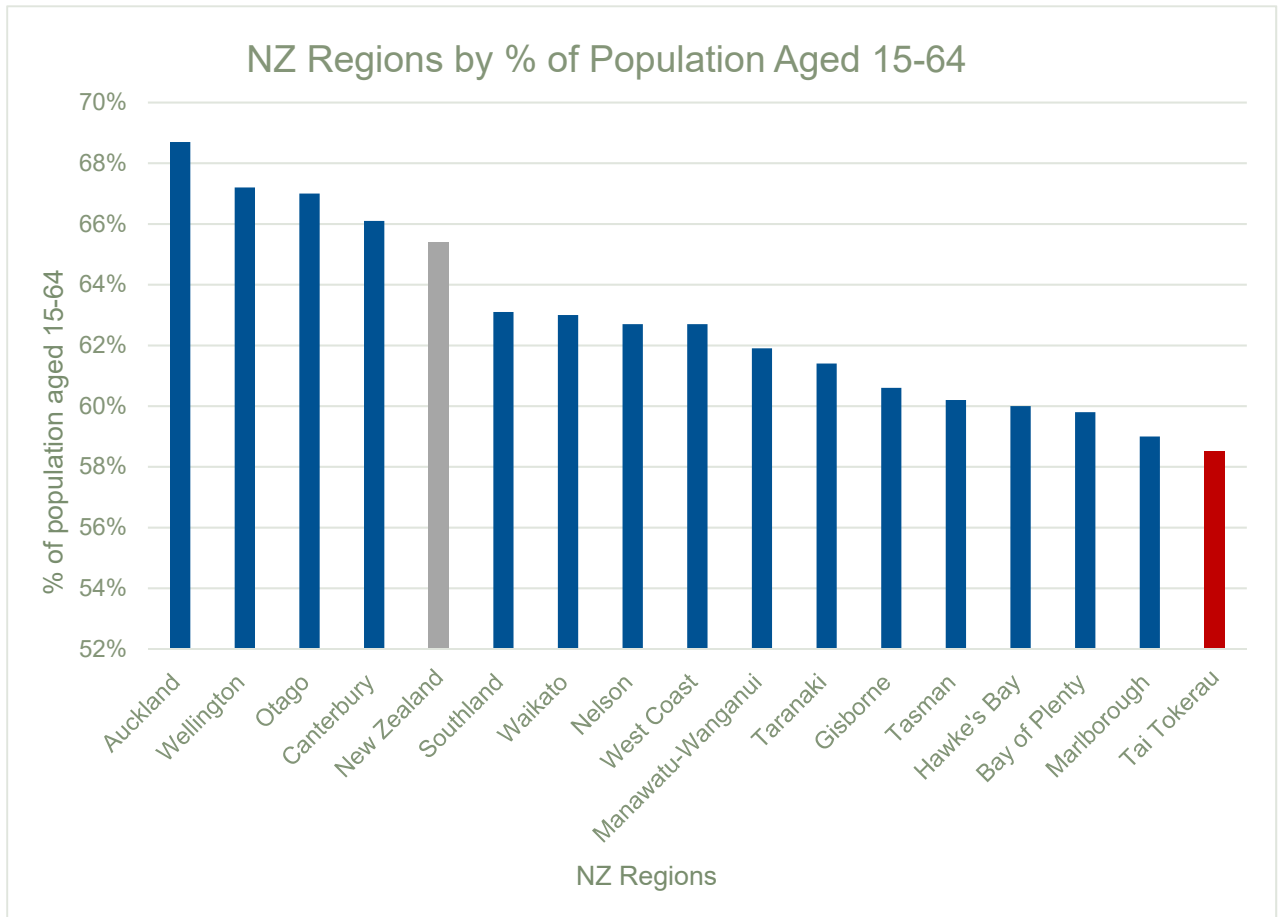


Figure 2-8 Working-age population (15-64 years) by region as at June 2018 (Stats NZ)

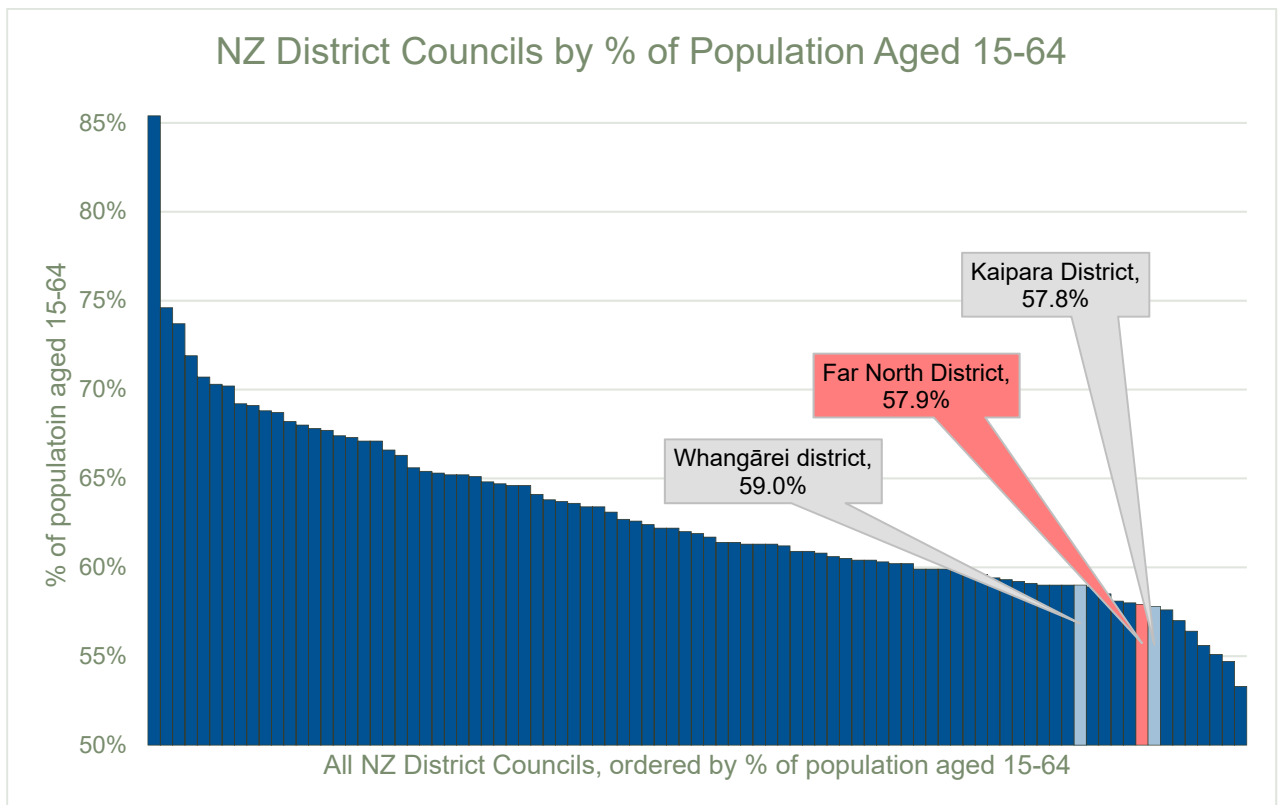


Figure 2-9 NZ districts in terms of working-age population (Tai Tokerau districts highlighted) as at June 2018 (Stats NZ)



2.3.5 Vehicle ownership

NZ Ministry of Transport figures⁶ state that in 2016 there were 716 cars per 1000 persons in Tai Tokerau (see Figure 2-10). This is the third lowest figure of any region in New Zealand, ahead of Wellington (649 cars per 1000 persons) and Gisborne (651 cars per 1000 persons). Wellington is a relatively wealthy region with a concentrated urban population and a reliable, regular public transport system⁷, and it is likely that its residents choose not to own cars because they don't need them.

However, Tai Tokerau and Gisborne are much more sparsely populated, rural regions, with considerably fewer public transport options (see Section 2.6.3). In these regions, low rates of car ownership are more likely to be indicators of deprivation, since owning a car would confer significant advantages in terms of accessibility. For example, residents travelling from Kawakawa to Paihia can catch the 8.05am bus outward and the 5.20pm bus back with no other public transport outside these times. The combination of limited public transport and low car ownership rates limits access to social and economic opportunities and services for Tai Tokerau residents.

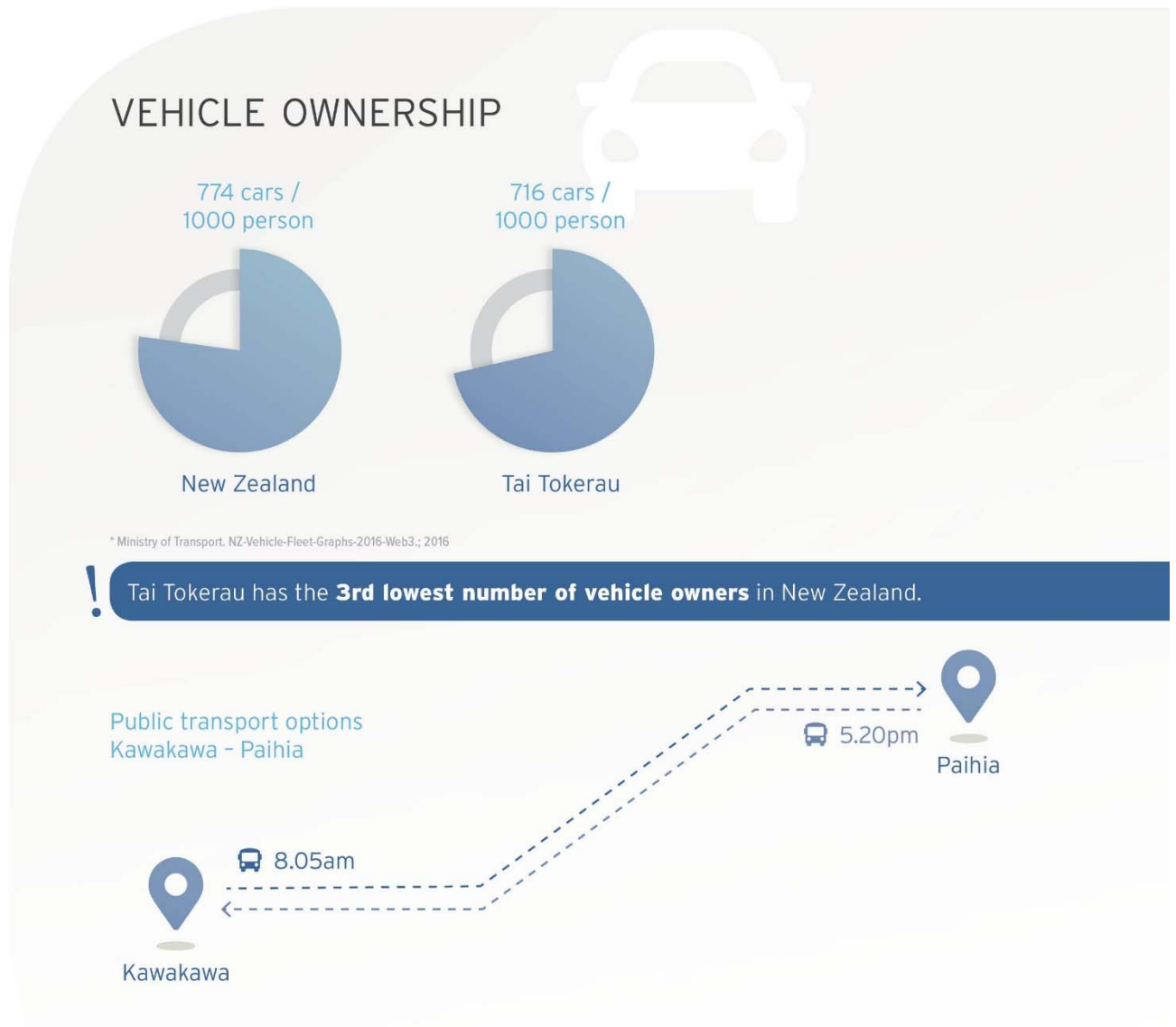


Figure 2-10 Vehicle ownership and public transport alternatives in Tai Tokerau

2.4 Economic context

⁶ Ministry of Transport. *NZ-Vehicle-Fleet-Graphs-2016-Web3.*; 2016.
⁷ Greater Wellington Regional Council, *Annual Report 2017-18*; 2018.



2.4.1 Kawakawa vs. Kerikeri

It takes less than half an hour to drive from Kerikeri to Kawakawa, but the difference between these two small towns is significant, as illustrated in Figure 2-11.

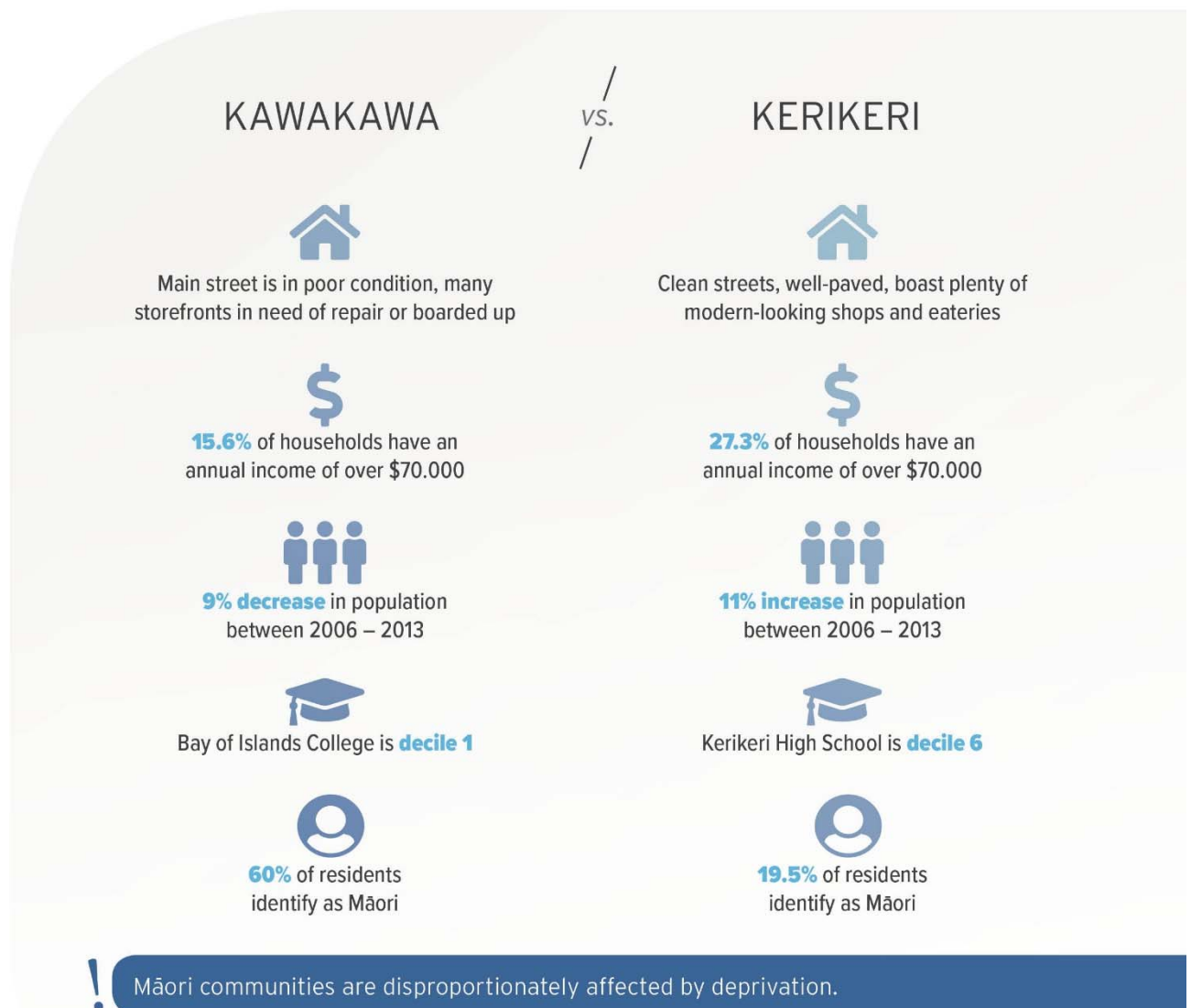


Figure 2-11 Demographics in Kawakawa and Kerikeri

2.4.2 Employment by industry

Table 2-1 details employment by industry in Tai Tokerau and New Zealand.

Industry	Tai Tokerau		New Zealand	
	Jobs	% of total	Jobs	% of total
Tourism	8,807	12.70%	230,793	9.60%
Health Care and Social Assistance	8,654	12.50%	236,735	9.80%
Agriculture, Forestry and Fishing	7,940	11.50%	140,452	5.80%
Retail Trade	7,008	10.10%	222,038	9.20%

	Tai Tokerau		New Zealand	
Construction	6,945	10.00%	220,190	9.10%
Manufacturing	6,349	9.20%	233,757	9.70%
Education and Training	6,004	8.70%	188,236	7.80%
Accommodation and Food Services	4,398	6.40%	161,349	6.70%
Professional, Scientific and Technical Services	3,441	5.00%	229,917	9.50%
Public Administration and Safety	2,886	4.20%	112,555	4.70%
Administrative and Support Services	2,762	4.00%	121,001	5.00%
Other Services	2,727	3.90%	91,194	3.80%
Transport, Postal and Warehousing	2,601	3.80%	100,709	4.20%
Wholesale Trade	2,084	3.00%	119,716	5.00%
Rental, Hiring and Real Estate Services	2,001	2.90%	58,328	2.40%
Arts and Recreation Services	1,011	1.50%	46,100	1.90%
Financial and Insurance Services	866	1.30%	63,939	2.70%
Electricity, Gas, Water and Waste Services	811	1.20%	15,695	0.70%
Information Media and Telecommunications	530	0.80%	42,603	1.80%
Mining	169	0.20%	5,647	0.20%
Total	69,187		2,410,161	

Table 2-1 Employment by industry as at June 2018 (Infometrics)

2.4.3 Tai Tokerau industry

Tai Tokerau has historically underperformed the rest of New Zealand economically (see Figure 2-12). Regional Gross Domestic Product per capita in Tai Tokerau is \$40,269, the second-lowest of any region in the country, compared to \$57,002 Gross Domestic Product (GDP) national average per capita⁸. 27% of Northlanders aged 15 or over have no educational qualifications, compared to 20% nationally. Between 2006 and 2013, labour force participation rates decreased for all areas of measure with a 2013 participation rate of 57.1% compared with 66% nationally⁹, which was the worst figure for any region in the country.

⁸ New Zealand's regional economies 2017 | Stats NZ. Stats.govt.nz. <https://www.stats.govt.nz/infographics/new-zealands-regional-economies-2017>. Published 2019. Accessed February 26, 2019.

⁹ Fndc.govt.nz. <https://www.fndc.govt.nz/about-the-district/economic-development/FNDC-Social-and-Economic-Profile-August-2016.pdf>. Published 2019. Accessed February 27, 2019.

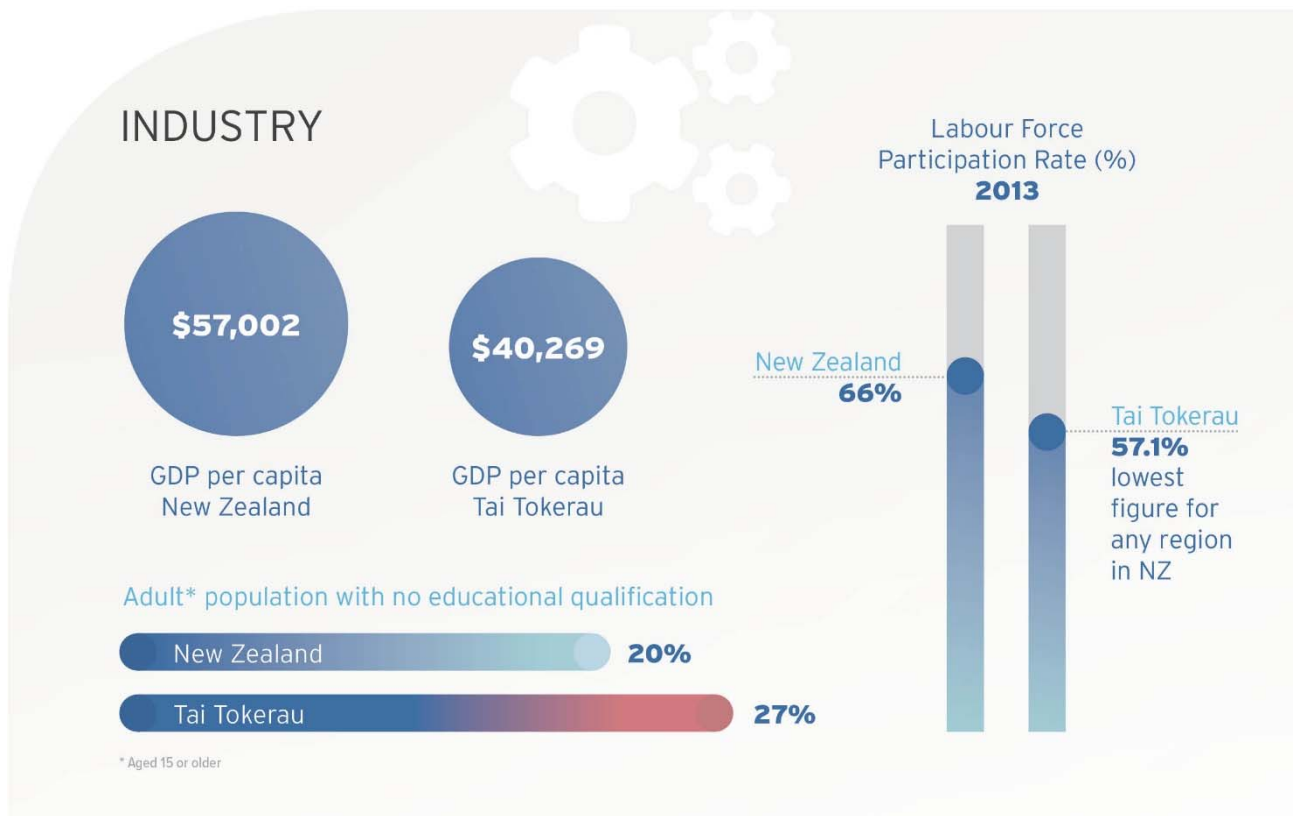


Figure 2-12 Employment, education and GDP per capita in Tai Tokerau

However, the economy of Tai Tokerau expanded by 2.8% in financial year 2017-2018, following 3.0% growth in 2016-2017, beating the national powerhouse of neighbouring Auckland, which grew by 2.3%. Commercial investment has tracked this growth, with a 70% increase in the value of non-residential building consents over the same period in Tai Tokerau, spread across a wide range of business types. Electronic card spending on retail purchases in the region grew 5.9%¹⁰ and the number of Northlanders receiving Jobseeker Support fell 1.1%.

Recent economic successes in Tai Tokerau can be attributed to the region’s major sources of output shown in Figure 2-13.

¹⁰ Quarterly economic monitor. Ecoprofile.infometrics.co.nz.
<https://ecoprofile.infometrics.co.nz/northland%20region/QuarterlyEconomicMonitor/RetailSales?compareAreaId=80>.
 Published 2019. Accessed February 27, 2019.

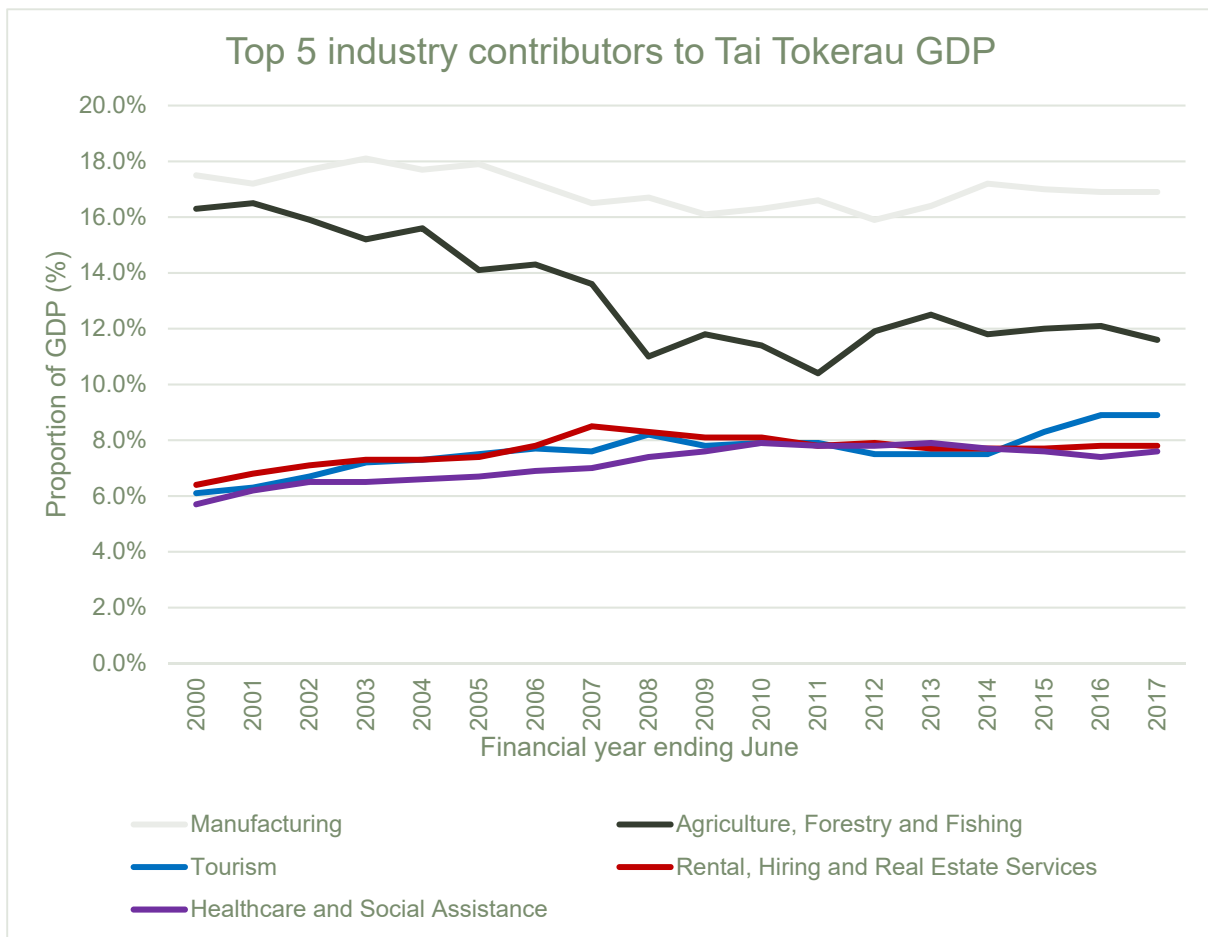


Figure 2-13 Top 5 industry contributors to Tai Tokerau GDP as at June 2018 (Infometrics)

Manufacturing is the largest contributor at 16.9% staying relatively constant since 2000. The manufacturing sector in Tai Tokerau is primarily based in the Whangārei District, with the largest sub-sector being petroleum and coal product manufacturing, which together accounted for nearly 10% of GDP in 2012¹¹. There is also significant marine manufacturing, manufacturing, timber processing and meat and dairy processing.

Agriculture, Forestry and Fishing is the second largest sector, contributing \$704m to the region’s total GDP (11.6%). Success within this industry is driven by export prices, which have risen recently. International prices for horticultural products rose 14% in the year to June 2018, the price of lamb broke \$8.00/kg for the first time on record, and there has been very strong growth in the price of wood, which has contributed to the Forestry industry in Tai Tokerau.

While price rises are positive for the Agriculture, Forestry and Fishing industry in Tai Tokerau, they cannot be relied upon to sustain growth in the long term. Analysis by Infometrics states that ‘The New Zealand economy needs the continuation of good export conditions to maintain a solid growth performance.’ Good export conditions cannot be guaranteed, and in any case primary industry provides little opportunity to add value, with its products mostly being exported in the form of raw commodities, such as logs, meat and wool.

As a result, regions like Tai Tokerau have started to look elsewhere for sources of economic growth. This is reflected in a 21st-Century shift away from primary industry in both Tai Tokerau and the Far North District (see Figure 2-13 and Figure 2-14)¹². Primary industry’s share of GDP has declined in the Far North from nearly

¹¹ Infometrics. 2012 Northland Region Annual Economic Profile.; 2012.

<http://www.wdc.govt.nz/YourCouncil/Economic-Development/Documents/Reports/Infometrics-Northland-Region-Annual-Economic-Profile.pdf>. Accessed February 5, 2019.

¹² Ecoprofile.infometrics.co.nz. <https://ecoprofile.infometrics.co.nz/Northland%2bRegion/Tourism/TourismGdp>. Published 2018. Accessed December 18, 2018.



20% in the 1999-2000 financial year to less than 15% in 2016-2017. Manufacturing has lost some ground to growth industries, particularly tourism.

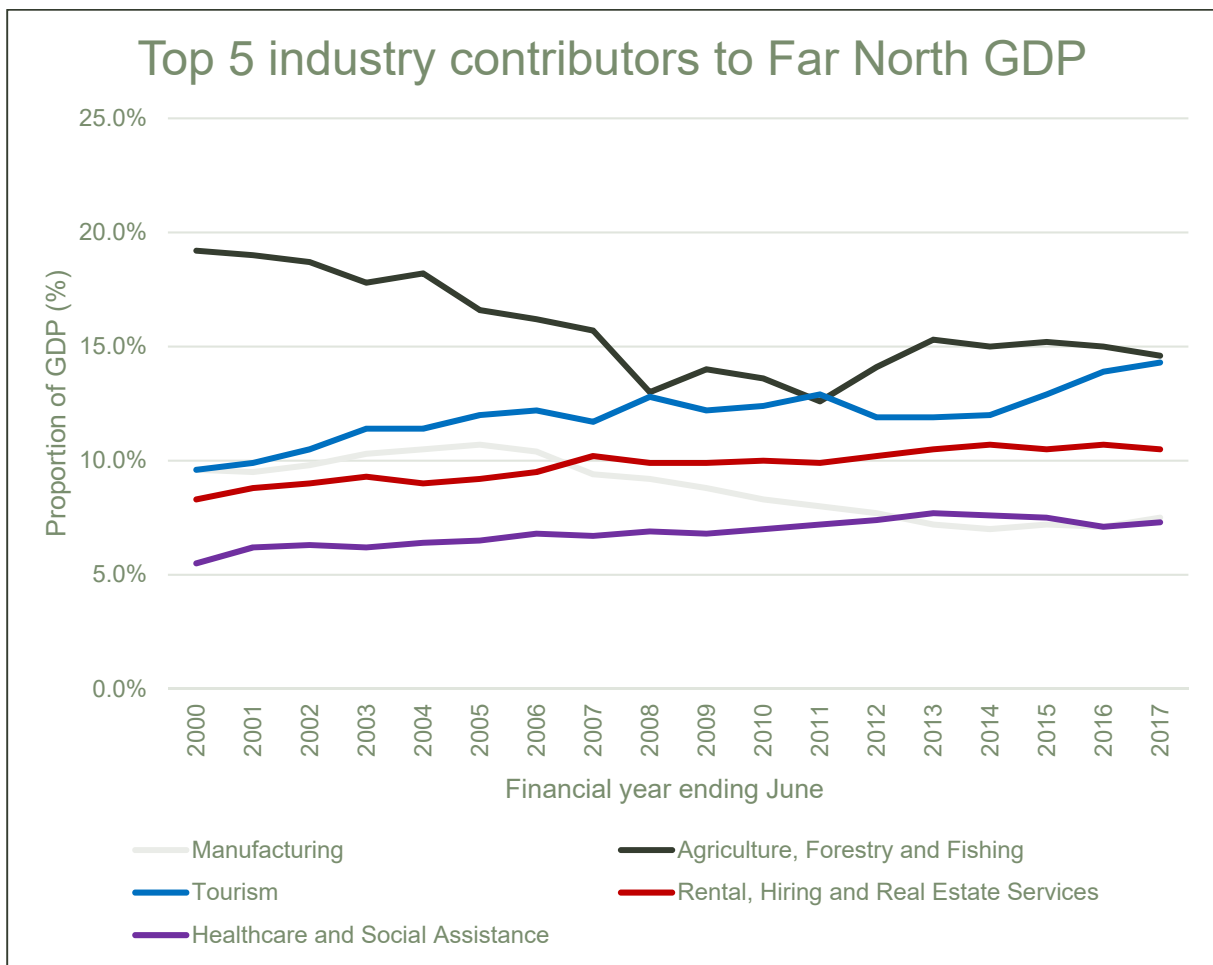


Figure 2-14 Top 5 industry contributors to Far North district GDP as at June 2018 (Infometrics)



INDUSTRY CONTRIBUTORS

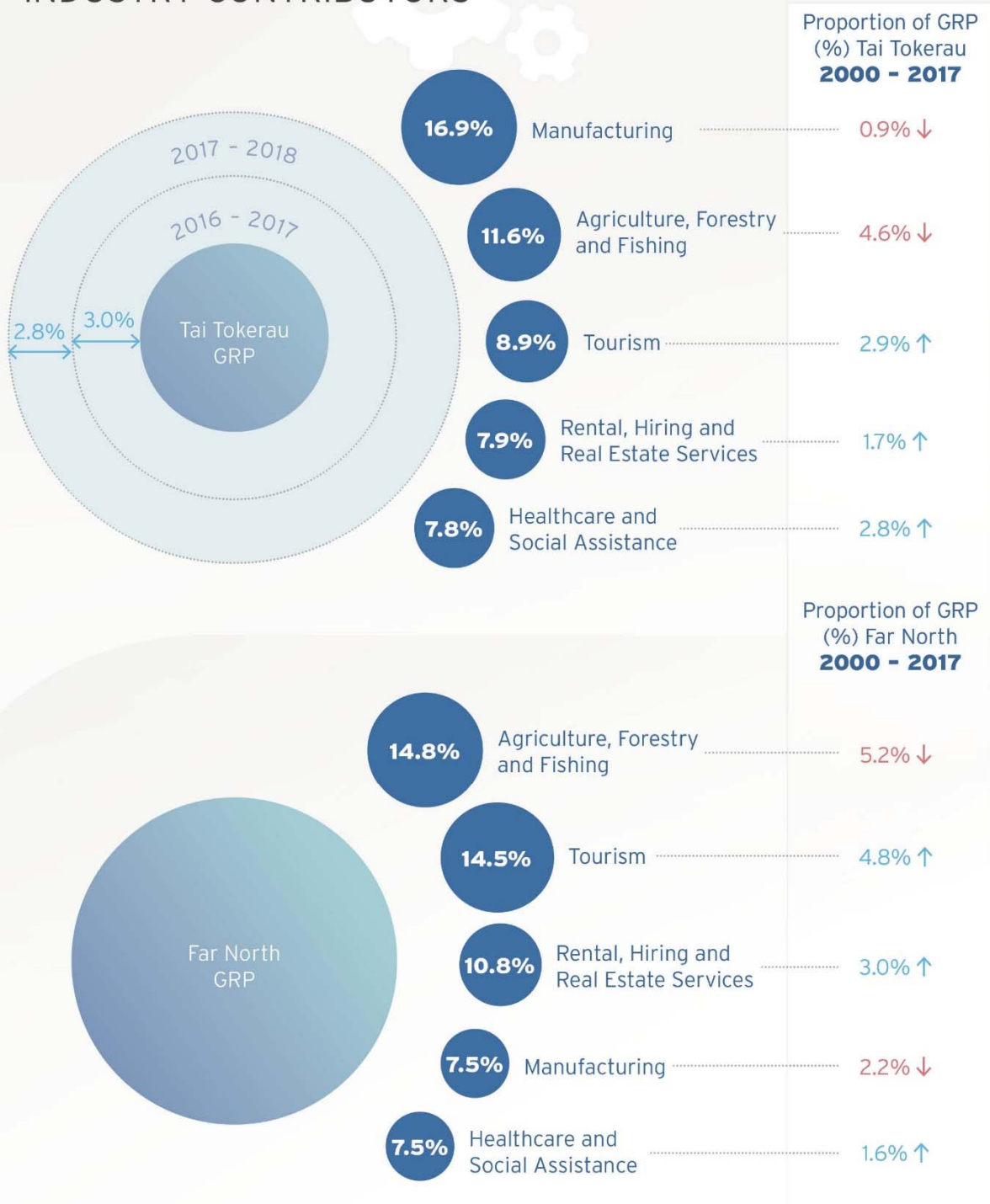


Figure 2-15 Top contributors to Regional Gross Domestic Product in Tai Tokerau and the Far North

2.4.4 Tourism

Recent growth in the Far North's tourist industry builds on a strongly-established tourist trade in Tai Tokerau. Tourism employs more Northlanders than any other sector (see Table 2-1) and contributes nearly 9% of the region's GDP, the third largest contributing sector of all (see Figure 2-15).



However, the region's tourist industry is not especially large by national standards. The tourist spend in Tai Tokerau during the year to October 2018 was \$1,132 million, placing Tai Tokerau seventh out of New Zealand's 16 regions.

Despite its fame as the 'Winterless North', the tourist industry in Tai Tokerau is impacted by seasonality, with the number of guest nights (one guest staying in accommodation for one night) typically four times higher in summer than in winter. This problem is highlighted in the TCDR Programme Business Case as one of the two key problems with Tai Tokerau tourism in its current state.

In the SH11 corridor, a significant contributor to this problem is the nature of the tourist attractions on offer. The Bay of Islands is internationally renowned for its spectacular scenery, and often this is experienced by visitors through outdoor activities such as walking, cycling, kayaking, or boat tours. These kinds of outdoor activities are often weather-dependent – demand for them can drop significantly in poor weather. Since these activities are for many visitors the main purpose of their trip, tourists generally choose to visit the Bay of Islands when the weather is more likely to be good – that is, in the summer.

As highlighted in the PBC, seasonal tourism has knock-on effects throughout the local economy. It can create significant challenges for the workforce, since seasonal work often means a lack of stable employment and therefore unreliable earnings and skill development.

One way of mitigating these problems is to develop tourist attractions which have year-round appeal. As an area with an already strong tourist economy, and significant local history and culture, the SH11 corridor is well-positioned to do this, as will be discussed further in Section 3.3.3.

The economy of Tai Tokerau is in poor shape, by national standards. However, the success of towns like Kerikeri exemplifies the strong economic potential that exists in the region. Growth industries like tourism have shown promise in recent years, with tourism already leading the pack in terms of sector employment. Though local tourism does suffer from seasonality, it is undoubtedly a large and growing contributor to the economy of Tai Tokerau. This growth can be nurtured with appropriate infrastructure investment, and the SH11 project represents an excellent opportunity to do so.

'Tai Tokerau's relatively low population density and geographic remoteness have contributed to its economic underperformance despite being in relatively close proximity to the strongly performing Auckland economy. Current travel times and transport connections make it difficult to benefit from that proximity.'

- Tai Tokerau Northland Economic Action Plan

'It is imperative that tourism growth is not compromised by the road network having a reputation for unreliability.'

- Far North District Council memo (2017)

2.5 Customer context

2.5.1 International tourists

The size of this customer group grows significantly during the summer months, particularly December and January, resulting in more vehicles travelling on SH11. Private cars, camper vans, bus tours, bicycles and walking are the main transport modes for international tourists. This group may contribute significantly to congestion on SH11 due to:

- Arrival during the same summer period each year
- Use of buses and camper vans with lower speeds and lesser ability to climb hills.

UK tour company Responsible Travel reported in May 2019¹³ that Waitangi was one of 98 destinations worldwide (with one other in New Zealand – Te Wai o Te Taniwha or the Matapouri Mermaid Pools) suffering

¹³ New Zealand included on global map of places suffering overtourism. Stuff. <https://www.stuff.co.nz/travel/news/112939359/new-zealand-included-on-global-map-of-places-suffering-overtourism?rm=a>. Published 2019. Accessed June 1, 2019.



the strains of overtourism. This is not because of an excessive number of visitors per se, but rather because the existing infrastructure does not have the capacity to deal with the tourist volume.

In many cases, international tourists may be unfamiliar with road conditions and travel times (relative to distance) found on SH11 and in New Zealand more generally, which may create safety issues.

In most cases, the purpose of international tourist visits to the SH11 corridor are limited to leisure and sightseeing. As such, use of SH11 by international tourists generally involves frequent stopping at sites of interest, viewpoints and so on.

This is a key market for the economy in Tai Tokerau, and ensuring a safe and positive user experience will be crucial to growing tourist demand.

2.5.2 Domestic tourists

Domestic tourists have a similar customer profile to their international counterparts. They may be more likely than international tourists to travel using their own vehicles and are generally more familiar with NZ road conditions and laws. However, the majority of domestic tourists live in Auckland, which has very different driving conditions to SH11. Furthermore, members of this group are more likely to be towing boats or camper vans, and so this group may present more of a safety risk than a road user living locally.

2.5.3 Commuters

The size and usage patterns of this group remains fairly consistent year-round, with the only deviation occurring over the Christmas period when many New Zealanders take two weeks off work.

Commuters can be broadly divided into those who work locally (on or near SH11) and those commuting to Whangārei. Modes used are generally limited to cars and buses, although some local commuters also cycle.

Usage of SH11 is generally twice-daily on weekdays and without stops during the journey. The purpose of travel is for access rather than leisure and continued, problem-free access is important for maintaining a positive user experience for this customer group.

2.5.4 School run

The school run customer group includes bus drivers, school staff, parents and children. Their usage pattern is similar to that of commuters, using SH11 twice-daily on weekdays throughout the year, except for the school holidays, rarely using the Highway for leisure except for the weekends. A mix of public transport (bus), private cars, cycling and walking are used to travel between destinations. For this customer group, SH11 plays an important role in ensuring positive educational outcomes.

2.5.5 Freight

The freight customer group is a key element of SH11's thriving tourist industry, supplying the hotels, restaurants, supermarkets and other institutions which are heavily used by visitors as well as locals. There are few heavy vehicles on SH11, so this customer group does not contribute as heavily to congestion as freight in other parts of the country and the majority of freight is delivered during the week. Reliable supplier access to tourist establishments along SH11 is vital for the smooth operation of the industry.

2.5.6 Cruise ship passengers

This customer group is unique in that cruise ship passengers arrive in Paihia without any mode of land transport. Once arrived, they generally use SH11 for a few hours only, relying on group bus tours, cycling and walking modes. The short timeframe limits their range, and they may not travel further than Waitangi and Haruru Falls. For these visitors, user experience is key; culture and natural beauty are advertised as the two big draws of the Bay of Islands (see Section 3.3.3). Ensuring that these passengers can 'tick both boxes' while docked in the study area will be central to their experience.

2.5.7 Cyclists

This customer group encompasses a broad range of users, including locals, visitors, commuters and leisure users. As an outdoor activity it is susceptible to seasonality, with cycleways in greater demand during the summer months. There is an annual Tour of Northland cycling race which has raised the profile of the sport locally, and cycling rates are increasing steadily. In early 2017 the Pou Herenga Tai Twin Coast Cycle Trail



(TCCT) was fully opened and there are already plans to extend it onwards from Opuia to Paihia. Safety is a key concern for cyclists, who may be more easily put off by the perception of a ‘dangerous road.’

2.6 Transport context

As the gateway to the Bay of Islands, SH11 has significant strategic importance to the Far North District and Tai Tokerau. Several sites along the route are ranked as among the best in the region from a tourist perspective and the SH11 corridor is a major source of income for Tai Tokerau¹⁴.

The major road connections to the study area are via two State Highways: SH1 and SH10. From the south, including Auckland, users take SH1 which joins SH11 at the Kawakawa junction. Users coming directly from Cape Reinga or Kaitiaki will also approach the study area on SH1 from the north-west, reaching SH11 at the Puketona junction. An alternative route from Cape Reinga is along SH10 via Mangonui, Kaeo and Waipapa. The study area is also accessible from the west coast of Tai Tokerau via SH12, through Kaikohe.

SH11 provides the major access route to the Bay of Islands, as well as to all of the homes, businesses, properties, landmarks and other destinations along the corridor. The road does not have a significant role as a through-route in the region. People travelling between Whangārei and Kerikeri generally take SH10 from Kawakawa northwards, rather than SH11, since the overall journey time is generally shorter that way. Similarly, those travelling between Whangārei and Cape Reinga will generally take SH1 all the way. As such, SH11 is for the most part used either by those living or working on the route itself, or by those visiting the Bay of Islands area.

2.6.1 Planned Developments

This SSBC forms part of the TCDR Programme, a broad regional undertaking which will look to improve various aspects of transport in Tai Tokerau. The individual projects involved in the Programme are still in the planning stage, and at the time of writing there are few concrete details about the nature of the work. However, the TCDR Programme does contain two SSBCs, independent of the SH11 SSBC, which are dedicated to cycleways and wayfinding respectively. Work related to cycleways and wayfinding falls under the scope of these SSBCs, even if the work is being conducted on SH11, and close contact should therefore be maintained between the different project teams as work on SH11 progresses.

2.6.2 Traffic volume

The Transport Agency records traffic volumes at three different locations on SH11, as indicated in Figure 2-16.

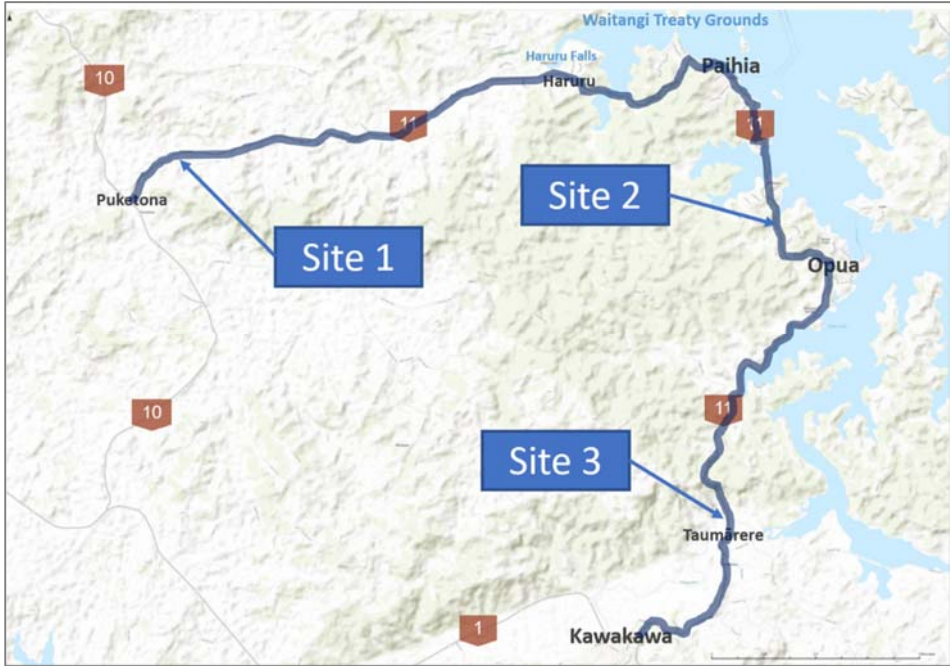


Figure 2-16 NZ Transport Agency traffic count sites

¹⁴ Tripadvisor.co.nz, quoted in NZ Transport Agency. *Twin Coast Discovery Route Programme Business Case.*; 2017:51.



Figure 2-17 charts the 7-day annual average daily traffic (AADT) at each of the three sites. The figure shows that usage of SH11 has grown significantly in recent years. AADT at Site 2 grew by 36% during 2014-2017, from 3700 in to over 5000. This is a large increase over a period of three years. Given that GDP from tourism in the Far North District increased by 31%¹⁵ over the same period, it seems reasonable to assume that tourists accounted for a significant portion of the increase in traffic volume.

Annual Average Daily Traffic at SH11 count sites

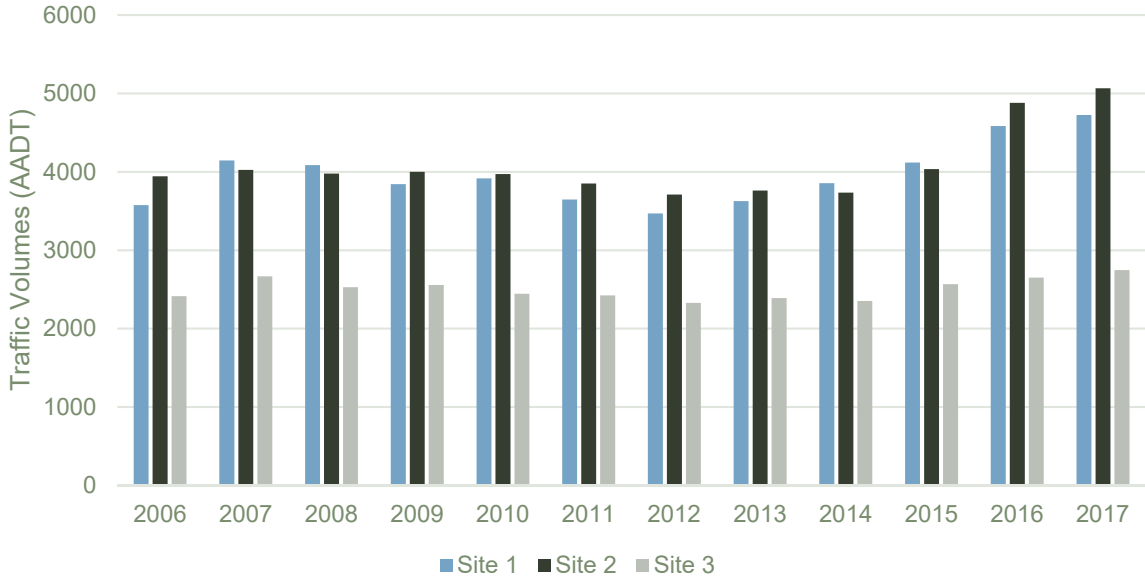


Figure 2-17 Annual average daily traffic volume at SH11 sites as at May 2018

While Sites 1 and 2 generally record similar traffic counts, there is significantly less traffic at Site 3. This is somewhat surprising given that Site 3 lies on the most direct route from Auckland to Paihia and could reasonably be expected to be the most popular route for tourists visiting the Bay of Islands, particularly international visitors.

In order to examine this further, hourly traffic counts for the three sites were examined. This data set was incomplete, which limited the possibilities for drawing robust conclusions. However, for the calendar days for which data was available, 5- and 7-day AADT figures were calculated for “summer” and “winter” at each of the three count sites, as shown in Table 2-2. This clearly shows that the 5-day AADT is consistently greater than the 7-day AADT at each count site, regardless of season.

This indicates that there is slightly more traffic during the working week, which may suggest that the majority of SH11 users are local commuters. If so, then one possible explanation of the lower AADT at Site 3 across the years is that fewer SH11 commuters approach the study area from the south. This fits with the geography of the region – the nearest large population centre to the northern end of SH11 is Kerikeri, 10km distant, while Whangārei is 55km from the southern end of SH11.

Table 2-2 5-day and 7-day AADT for each count site in “summer” and “winter”

Count Site	Season	7-day AADT	5-day AADT
Site 1	Summer	5690	6040
	Winter	4200	4460
Site 2	Summer	6300	6490
	Winter	4140	4380

¹⁵ Ecoprofile.infometrics.co.nz. <https://ecoprofile.infometrics.co.nz/Northland%2bRegion/Tourism/TourismGdp>. Published 2018. Accessed December 18, 2018.



Site 3	Summer	3090	3130
	Winter	2250	2340

Finally, there is evidence of significant seasonality in traffic volumes on SH11. Site 1, the only count site for which complete data for both January and June was available, is a case in point. In January 2017, the 7-day AADT at Site 1 was 5690 vehicles, compared with 4200 at the same site in June 2017. This represents an increase of 35% from low season to high season and provides some indication of the variation in strain placed on the study area’s road infrastructure across the calendar year.

As the Twin Coast Discovery Route programme of works gets underway, with tourism as one of its major focus areas, it is likely that traffic volumes on SH11 will increase further, placing greater strain on existing infrastructure. Sufficient investment should be made in the corridor’s transport infrastructure to support and sustain this important economic opportunity.

2.6.3 Public transport

SH11 is served by two local bus routes, number 2 shown in Figure 2-18 and number 3 shown in Figure 2-19¹⁶. Both originate in Kaikohe, reaching SH11 via SH1 at Kawakawa. Number 2 terminates at Waitangi and runs two services daily, in the morning and afternoon seven days a week. Number 3 goes on further to the Puketona Junction and beyond to Kerikeri and Waipapa. However, this service only runs in the mornings and afternoons on Tuesdays and Thursdays. Public transport options on SH11 are limited and there may be value in conducting a review of the situation to assess the merits of additional services. Given the low rates of car ownership in the region (see Section 2.3.5), a lack of regular and reliable public transport means significantly reduced access to social and economic opportunities.

Kaikohe to Paihia/Waitangi 2

Frequency
Twice daily

Route
Mangakahia Road, SH12, Ohaeawai, Pakaraka, Moerewa, Kawakawa, SH11, Paihia, Waitangi Treaty Grounds. Runs in reverse for the return Journey.



Figure 2-18 Bus Route 2

¹⁶ Buslink.co.nz. <https://buslink.co.nz/wp-content/themes/buslink/downloads/Mid-North-Link-Timetables-for-2017.pdf>. Published 2018. Accessed December 18, 2018.



Kaikohe to Kerikeri/Waipapa (via Paihia/Waitangi) 3

Frequency
Twice on Tuesdays, twice on Thursdays

Route
Mangakahia Road, SH12, Ohaeawai and Pakaraka to SH1, Kawakawa, SH11, Paihia to Te Karuwā Parade and Tau Henare Drive to Waitangi Treaty Grounds. Te Karuwā Parade, Black Bridge Road (SH11), SH10, Kerikeri Road, Hobson Avenue, Cobham Road, Homestead Road, Fairway Drive, Kerikeri Road, Heritage Bypass, Waipapa Road, SH10, Kahikatearoa Lane, Klinac Lane. Runs in reverse for the return journey.



Figure 2-19 Bus Route 3

2.6.4 Walking and cycling network

2.6.4.1 Walking

The SH11 corridor is host to a section of New Zealand’s Te Araroa trail, a 3,000km route stretching from Cape Reinga to Bluff. Around 600 people per year complete the full journey. When walking through the Bay of Islands, visitors approach from Kerikeri and reach SH11 at Paihia, continuing on to Opuā, before catching the ferry (or kayaking) across to Okiato or Waikare.

For the less ambitious, there are many shorter walks available such as:

- Opuā Forest Paihia Lookout Track
- Flagstaff Hill Loop Track
- Long Beach Track
- Haruru Falls Track
- Kerikeri River Track
- Rainbow Falls Track
- Cape Brett Track.

The natural beauty of the Bay of Islands is a major draw for foreign and domestic visitors alike. As well as being a popular activity for appreciating the surroundings, walking encourages visitors to explore parts of SH11 beyond tourist centres like Paihia. This means less crowding in towns and a greater spread of visitors with money spent in less-visited parts of the area. As such, walkers are an important market for the SH11 corridor and appropriate walking infrastructure must be in place to ensure that visitors and locals have a safe and enjoyable experience while walking in the SH11 corridor.

2.6.4.2 Cycling

Cycling is an increasingly popular mode for both residents and visitors – in the last three years, 9% of visitors to NZ participated in a cycling activity¹⁷. This popularity has been reflected in a growing cycle network in Tai Tokerau. The TCCT is an 87km cycling route stretching from Horeke on the west coast of Tai Tokerau to Opuā in the Bay of Islands, shown in Figure 2-20. It passes through Kawakawa along the way, and 11km of the route follows the historic Kawakawa-Opuā railway line. There are plans to extend this route beyond Opuā to Paihia, and possibly further to Kerikeri as well (see Section 3.7).

¹⁷ Tourism New Zealand.; 2019. <https://www.tourismnewzealand.com/media/3076/special-interest-infographic.pdf>. Accessed March 22, 2019.



The TCCT is the northernmost of the 23 Great Rides that make up Nga Haerenga (the New Zealand Cycle Trail), and opened in full at the beginning of 2017. There are already signs that this has encouraged further investment – \$1.7m has been spent on a new accommodation development in Kaikohe, according to Northland Inc. This suggests that there is confidence in the potential of cycling as a growth market and that investment at the government level inspires investment more locally. These investments do not necessarily have to be larger-scale projects like the TCCT to make a difference. Safety interventions such as wider shoulders and cycle lanes on existing sections of road, and public amenity interventions like bike storage and e-bike charging would all contribute to a more cycling-friendly corridor. Cycling tourists tend to stay longer and spend more¹⁸, and given that cycling has additional benefits including positive health and environmental impacts, interventions of this sort will be worth considering during the SH11 project.

'It's not really about the biking. The Twin Coast is at the historical heart of Aotearoa New Zealand. The trail is just a great way to experience a range of physical and cultural landscapes that will stay with you long after you've finished the ride.'

- Jonathan Kennett (NZ Transport Agency Senior Project Manager, and author of NZ's first mountain biking guidebook and magazine, and organiser of the first national race)

2.7 Environmental context



Figure 2-20 Pou Herenga Tai Twin Coast Cycle Trail (twincoastcycletrail.kiwi.nz)

The environmental context of the corridor has been reviewed to inform the risk and opportunities to obtain approvals required under the Resource Management Act 1991 to enable the construction of the interventions. This has been completed by undertaking a desktop assessment of publicly available literature and advice from environmental technical specialists¹⁹, including field visits of specific interventions. For full

¹⁸ Cycling and Mountain Biking. Tourismnewzealand.com. <https://www.tourismnewzealand.com/markets-stats/sectors/special-interest/cycling-and-mountain-biking/>. Published 2019. Accessed January 28, 2019.

¹⁹ Ecology – Bioresearches; Archaeology – Geometria; Landscape and Visual – Wayfinder; Contamination – Aurecon; Arboriculture – Greenscene



details, refer to the *Overview of Environment, Planning and Social Context of the Corridor*, included at Appendix C.

For the purposes of environmental screening, and due to the length of the corridor and the diversity of landscapes, the corridor has been divided into 3 separate zones for technical analysis as follows (Figure 2-21)

- **Zone 1:** Puketona to Haruru – approximately 8 km, comprising an inland rural environment
- **Zone 2:** Haruru to Lemons Hill – approximately 17.5 km, extending along the east coast of SH11
- **Zone 3:** Lemons Hill to Kawakawa – approximately 4.5 km, over the forested area of Lemons Hill through to Kawakawa.

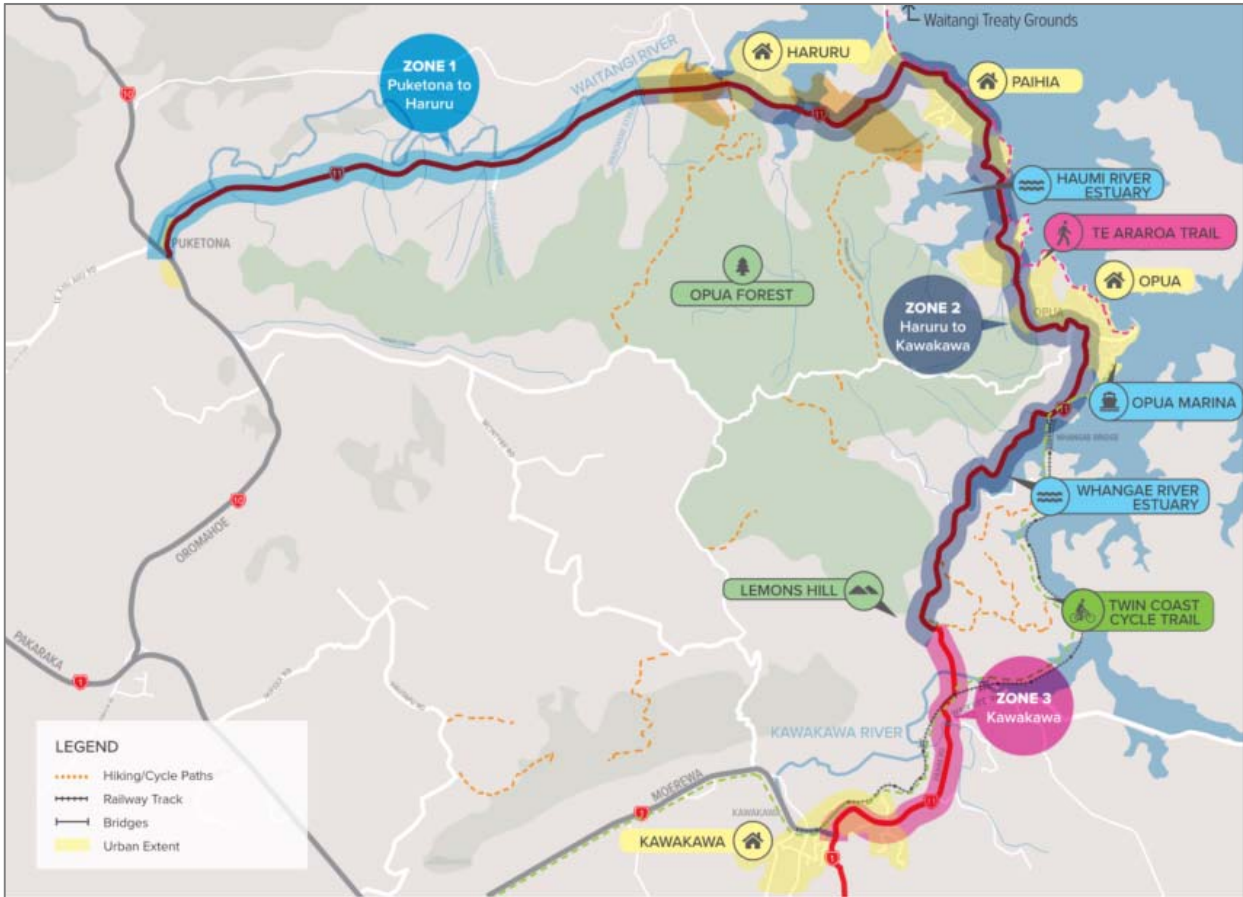


Figure 2-21 ESR Screen Key Points

2.7.1 Land Use

SH11 extends through a dynamic landscape comprising flat to undulating terrain, with bridges over rivers and extending around estuaries, the coastal environment and both rural and urban environments. Land use in the corridor is predominantly rural, with areas of more intensive urban development between Haruru and Opuia, particularly at Paihia, which is the main commercial and tourism accommodation provider along the corridor.

2.7.2 Natural Features

Outstanding Natural Landscapes and Features are located throughout the study corridor, particularly along the east coast from Haruru to Taumārere. These include:

- Bay of Islands
- Haruru Falls
- Opuia Forest
- Horotutu Scenic Reserve



- Puketutu volcanic cones

Areas recognised to have natural and/or ecological significance are sparse and are predominantly located within the estuarine environments along the east coast. These include the Haumi River at Te Haumi, and the receiving estuarine environment of the Kaipātiki Stream.

2.7.3 Built heritage, archaeology and cultural

A range of built heritage, archaeological and cultural features are present in and around the study area, with a concentration around Paihia and Haruru. These include:

- Waitangi Treaty Grounds and Museum
- Waitangi Bridge
- Hundertwasser Toilets
- Paihia Mission Heritage Area
- Site of the first cricket match in New Zealand

Preliminary advice from Archaeologist Geometria has been obtained and included within Appendix C. The advice identifies a number of heritage features along the corridor and engagement with Heritage New Zealand is recommended at future stages to ensure conformance with the Heritage New Zealand Pouhere Taonga Act 2014.

It is also noted that Predictive archaeological artefact modelling completed by the Transport Agency predicts that Zone 1 has a high likelihood of encountering artefacts during construction. This appears to be related to the close proximity this section of the corridor has to the Waitangi River.

2.7.4 Social and recreational

There are a number of social, cultural and recreational activities and social/community infrastructure located within the study area. These include:

- Paihia Beach
- Kings Theatre, Kawakawa
- Uniting Parish and Centre for Recreation, Paihia
- Baycare Retirement Home, Haruru
- Paihia School
- Bay of Islands College, Kawakawa

The range of social, cultural and recreational activities and infrastructure located within the study area will require ongoing consideration during the progression of the interventions, in order to minimise disruption to local residents and visitors.

2.8 Summary

This section paints a picture of an area with significant potential which has yet to be fully realised. The SH11 corridor is host to world-renowned scenery, including the Bay of Islands, Haruru Falls and Opua Forest. The Bay of Islands provided the setting for some of the most important historical events in New Zealand's history, including the arrival of the first Māori migration wakas, the first European settlers and the signing of the Treaty of Waitangi. These events have cemented the SH11 corridor's position as one of the country's key cultural, historical and archaeological areas.

However, these inherent advantages have often not translated into socioeconomic success in recent decades. The Bay of Islands lies at the heart of one of the country's most deprived regions. People living in Tai Tokerau tend to be older and poorer than the national average and have lower access to education and health services. They also have a high incidence of deprivation when it comes to access, as measured by proximity to services. When combined with the region's low rates of vehicle ownership, this can become a significant contributor to lower quality of life.



In some ways, the SH11 corridor itself is an exception to the regional rule. The Bay of Islands is the beating heart of a growing tourist industry, and tourist centres such as Paihia and Waitangi receive large numbers of domestic and international visitors each year. However, tourism in the Bay of Islands suffers from seasonality, and often the benefits reaped during the prosperous summer months are not distributed along the SH11 corridor. While Paihia receives the majority of the tourist dollar spend, the population of nearby Kawakawa has shrunk significantly in recent years, and its median annual household income is well below that of the Far North and Tai Tokerau as a whole.

So, while there is much to be positive about within the study area, there are localised discrepancies in levels of access, income and overall deprivation, and these issues should be held in consideration during the course of this business case.

3 Defining the problems and benefits

The ILM process for the TCDR PBC identified and agreed the following problem statements, benefits and investment objectives as set out in Figure 3-1.

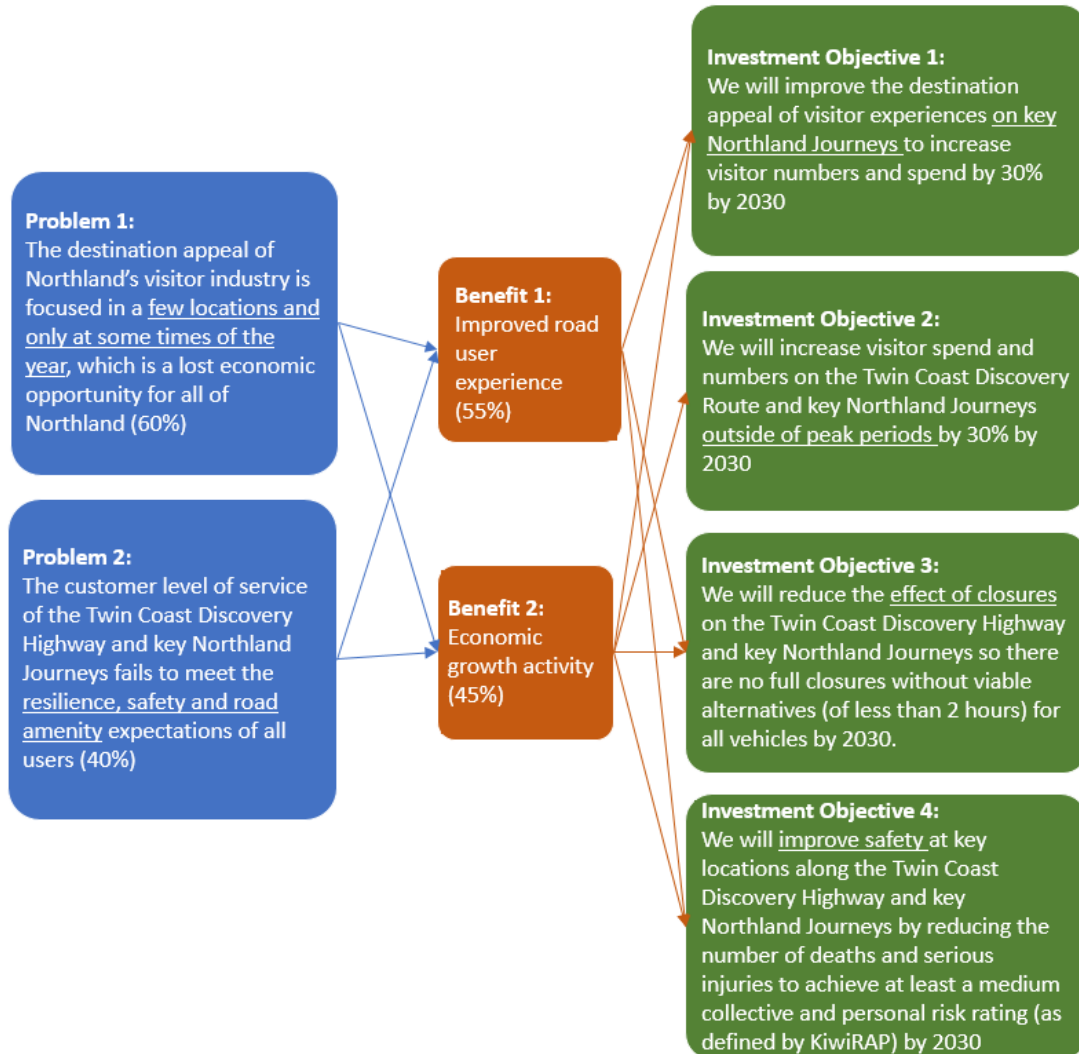


Figure 3-1 TCDR PBC investment logic map (NZ Transport Agency)

3.1 Investment logic map

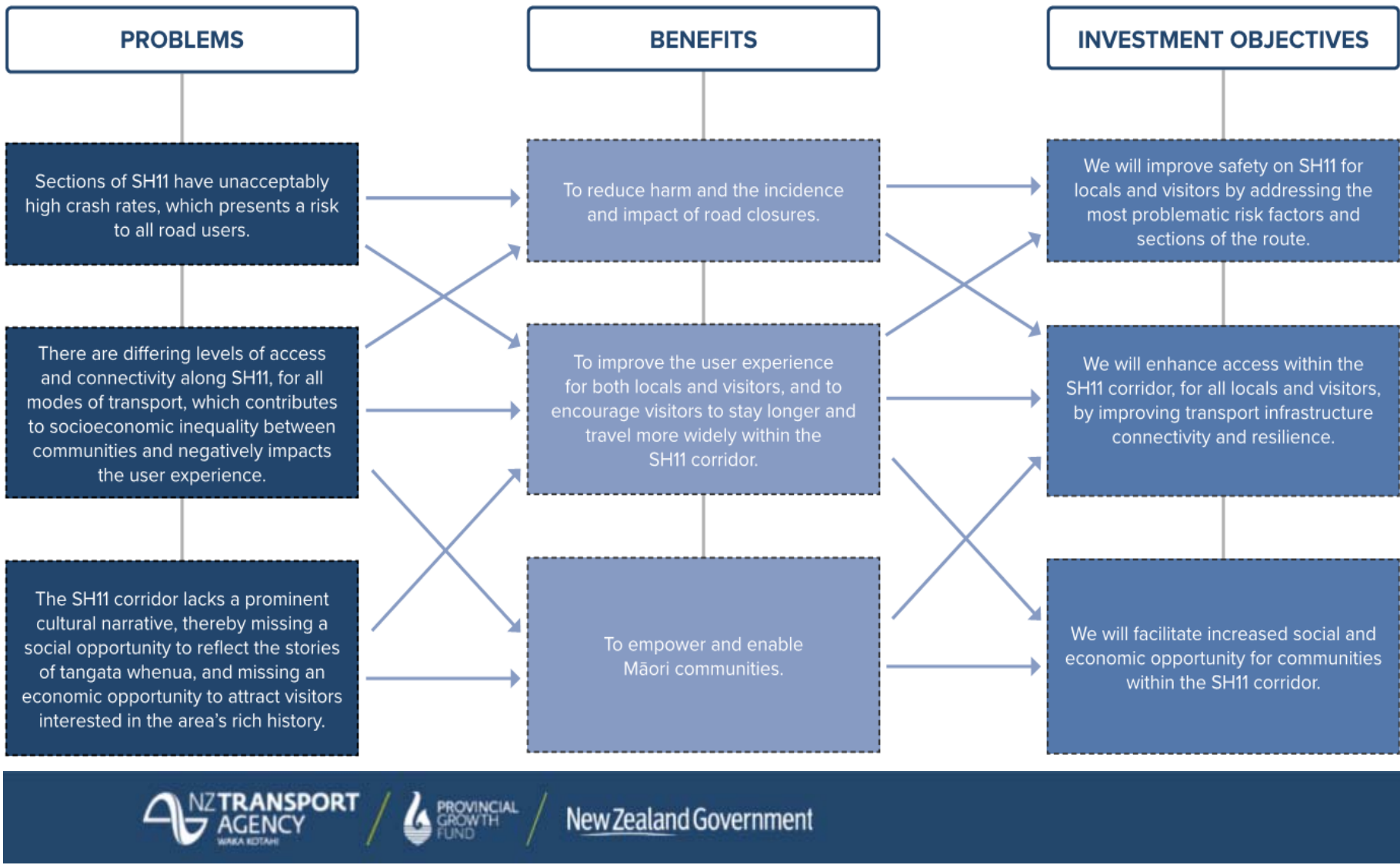
A streamlined ILM process was conducted for the SH11 SSBC. A tailored ILM (see Figure 3-2) was created using the following inputs and accepted by the project team:

- Problem statements, benefit statements and investment objectives identified in the TCDR PBC were used as a base
- Investment objectives and criteria identified in other relevant strategy documentation, such as the Provincial Growth Fund investment criteria and the Government Policy Statement on Land Transport
- Relevant contextual information about the SH11 corridor specifically
- Information gathered during stakeholder engagement activities described in Section 3.9. As project partners, hapū have played a key role in the development of the ILM and the recommended option and have been involved throughout the process. The beginning of this process was an initial hui to establish the key drivers and concerns for hapū.

This ILM was discussed and refined during a workshop with the Transport Agency and a second hui, to ensure alignment across all relevant parties with the problems, benefits and objectives of the project.



SH11 SSBC INVESTMENT LOGIC MAP



New Zealand Government

Figure 3-2 SH11 Investment Logic Map (ILM)



3.2 Problem statements

Both of the TCDR PBC’s problem statements (see Figure 3-1) have direct relevance to the SH11 SSBC, however the evidence base highlighted problem statement two as being particularly relevant to the SH11 corridor. Therefore, more focus was applied to problem statement two which was separated out into the first two problem statements below for the SH11 SSBC.

The SH11 ILM problem statements were developed by the project team in consultation with hapū and the Transport Agency, were internally peer reviewed and accepted by the Transport Agency as follows:

- **Problem statement 1:** Sections of SH11 have unacceptably high crash rates, which presents a risk to all road users.
- **Problem statement 2:** There are differing levels of access and connectivity along SH11 for all modes of transport, which contributes to socio-economic inequality between communities and negatively impacts the user experience.
- **Problem statement 3:** The SH11 corridor lacks a prominent cultural narrative, thereby missing a social opportunity to reflect the stories of tangata whenua, and missing an economic opportunity to attract visitors interested in the area’s rich history.

Details underpinning each statement are evidenced below.

3.2.1 Problem statement 1

Sections of SH11 have unacceptably high crash rates, which presents a risk to all road users.

The TCDR PBC identifies safety as a problem in Tai Tokerau. Investment Objective 4 of the PBC states:

We will improve safety at key locations along the Twin Coast Discovery Highway and key northland Journeys by reducing the number of deaths and serious injuries to achieve at least a medium collective and personal risk rating (as defined by KiwiRAP) by 2030.

To better understand the extent to which safety is a problem for SH11 specifically, an initial assessment of the most recent (December 2018) KiwiRAP report²⁰ was undertaken for the Tai Tokerau/Auckland region. KiwiRAP analyses road safety statistics and assigns safety ratings accordingly to New Zealand’s rural state highway network. Its most recent report dates from 2018, with the excerpt relating to SH11 shown in Figure 3-3.

Across the five-year period from 2012 to 2016, the report judges SH11 to be in the Medium-Low Collective Risk Band, which is based on the annual average fatal and serious injury crashes per kilometre. When factoring in the number of cars using the road (Personal Risk rating), KiwiRAP places SH11 again in the Medium-Low Risk Band. By the standards set by Investment Objective 4 of the PBC, SH11’s 2018 Personal and Collective Risk ratings should be considered acceptable.

Link Name	Region(s)	Length(km)	2002 - 2006				2007 - 2011				2012 - 2016			
			Crashes		KiwiRAP Risk		Crashes		KiwiRAP Risk		Crashes		KiwiRAP Risk	
			Fatal	Serious	Collective	Personal	Fatal	Serious	Collective	Personal	Fatal	Serious	Collective	Personal
SH 11 from Kawakawa to Puketona (SH 10)	Northland and Auckland	29.667	2	14	MH	H	1	11	M	MH	0	7	LM	LM

Figure 3-3 SH11 KiwiRAP risk ratings 2018 (KiwiRAP)

²⁰ KiwiRAP. Highway Safety Ratings 2012-2016.; 2018:41.

<http://www.kiwiRAP.org.nz/pdf/KiwiRAP%202018%20compressed.pdf>. Accessed January 31, 2019.



However, analysis of more recent data, from the 2013-2017 period, provides a different insight into safety on SH11 (detailed in Table 3-1). During this period, there were ten serious crashes and one fatal crash along the route. Using the KiwiRAP methodology, this places SH11 within the Medium band for both collective and personal risk. This represents an increase in both risk ratings (from medium-low to medium) as compared with the KiwiRAP analysis of 2012-1016 data. However, by achieving Medium collective and personal risk ratings, SH11 does still satisfy the aim stated in the PBC, which is that all roads should have Medium ratings or better by 2030.

These Medium collective and personal risk ratings are averaged across the entire 30km route. Though the ratings provide a useful metric to gauge average safety along the whole of SH11, they can mask the fact that certain sections are more dangerous than others. Dividing SH11 into two sections, to the west and the south of Paihia respectively, yields more refined results:

- In the five years from 2013 to 2017, between Puketona and Paihia, there was one fatal crash and seven serious crashes.
- During the same period, there were no fatal crashes and three serious crashes between Paihia and Kawakawa.

These figures generate different collective and personal risk ratings, as shown in Table 3-1.

	SH11 (total)	Puketona-Paihia	Paihia-Kawakawa
Length of Road (km)	29.6	14	15.6
Data Period	2013-2017	2013-2017	2013-2017
Length of data period (years)	5	5	5
AADT (2015 count, averaged across all count sites on route)	3573	4118	3301
Fatal Crashes	1	1	0
Serious Crashes	10	7	3
Collective Risk Rating	0.074	0.114	0.038
Collective Risk Band	Medium	Med-high	Low
Personal Risk Rating	5.699	7.603	3.192
Personal Risk Band	Medium	Med-high	Low

Table 3-1 SH11 risk ratings 2013 to 2017

The Puketona-Paihia section sits in the Medium-High band for both collective and personal risk, while the Paihia-Kawakawa section is Low risk in both categories. This suggests that the Puketona-Paihia section is significantly more dangerous, and is unacceptably risky by the standards defined in the PBC.

This conclusion aligns with the recommendations of the Transport Agency, which has identified the section of road between Haruru and Puketona as one where “reviewing speed limits could make a big difference in preventing deaths and serious injuries, and where communities are calling for change.” This is one of only three sections of road in Northland which has been earmarked for a speed review, which strengthens the finding that this section presents an unacceptable risk to road users.



To cross-check these findings, data was analysed from the 2008-2013 period. Serious and fatal crashes from 2008-2013 are presented as a heatmap in Figure 3-4. Serious and fatal crashes from the years 2013 to 2018 are also included and represented as columns. Each column represents a crash, with column height indicating the number of people involved.

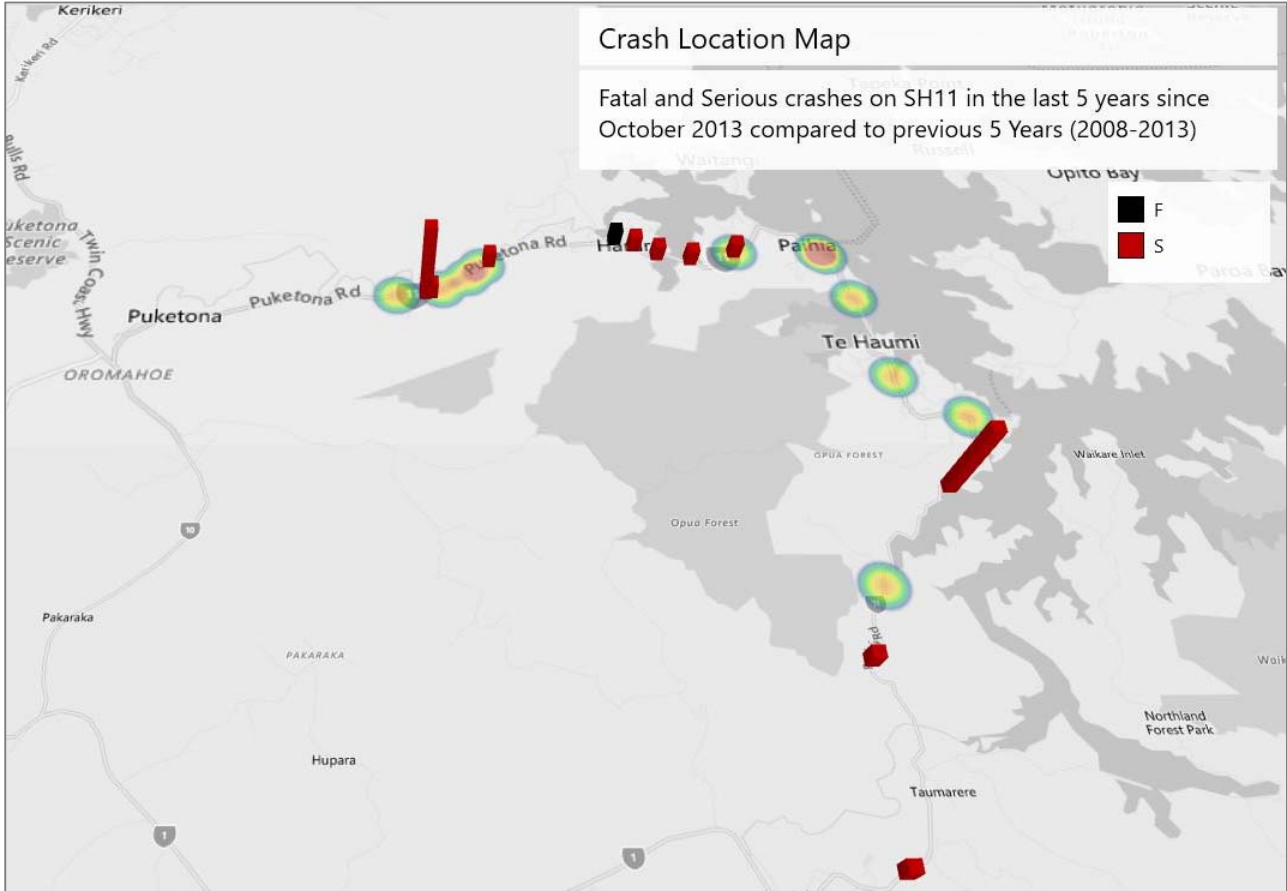


Figure 3-4 SH11 serious and fatal crashes 2008 to 2017 (NZ Transport Agency CAS Data)

There were slightly more fatal (black) and serious crashes (red) overall during the 2008-2013 period than the 2013-2018 period. There was also a sharp reduction in the number of fatal and serious crashes south of Paihia, which corroborates the analysis of the 2013-2017 data, which gave that section a Low risk rating.

However, Figure 3-5 reveals that the southern section is perhaps more dangerous than this low risk rating would immediately suggest. While the southern section only recorded three fatal or serious crashes, it did register a significant number of minor crashes. This shows that the risk of crashing between Paihia and Kawakawa remains significant. Minor (grey) crashes are not included in the KiwiRAP risk rating calculation but, importantly, the difference between a minor crash outcome and a serious or fatal crash outcome can be just very slight variations in the crash’s causal conditions. This means that patterns of minor crashes should be taken seriously, as they may indicate sections of the road which require intervention. An important step towards improving safety on SH11 will be bringing the route into closer alignment with the Transport Agency’s high-risk rural roads guide²¹.

²¹ Nzta. Govt. Nz, 2019, <https://www.nzta.govt.nz/assets/resources/high-risk-rural-roads-guide/docs/high-risk-rural-roads-guide.pdf>. Accessed 19 Aug 2019.

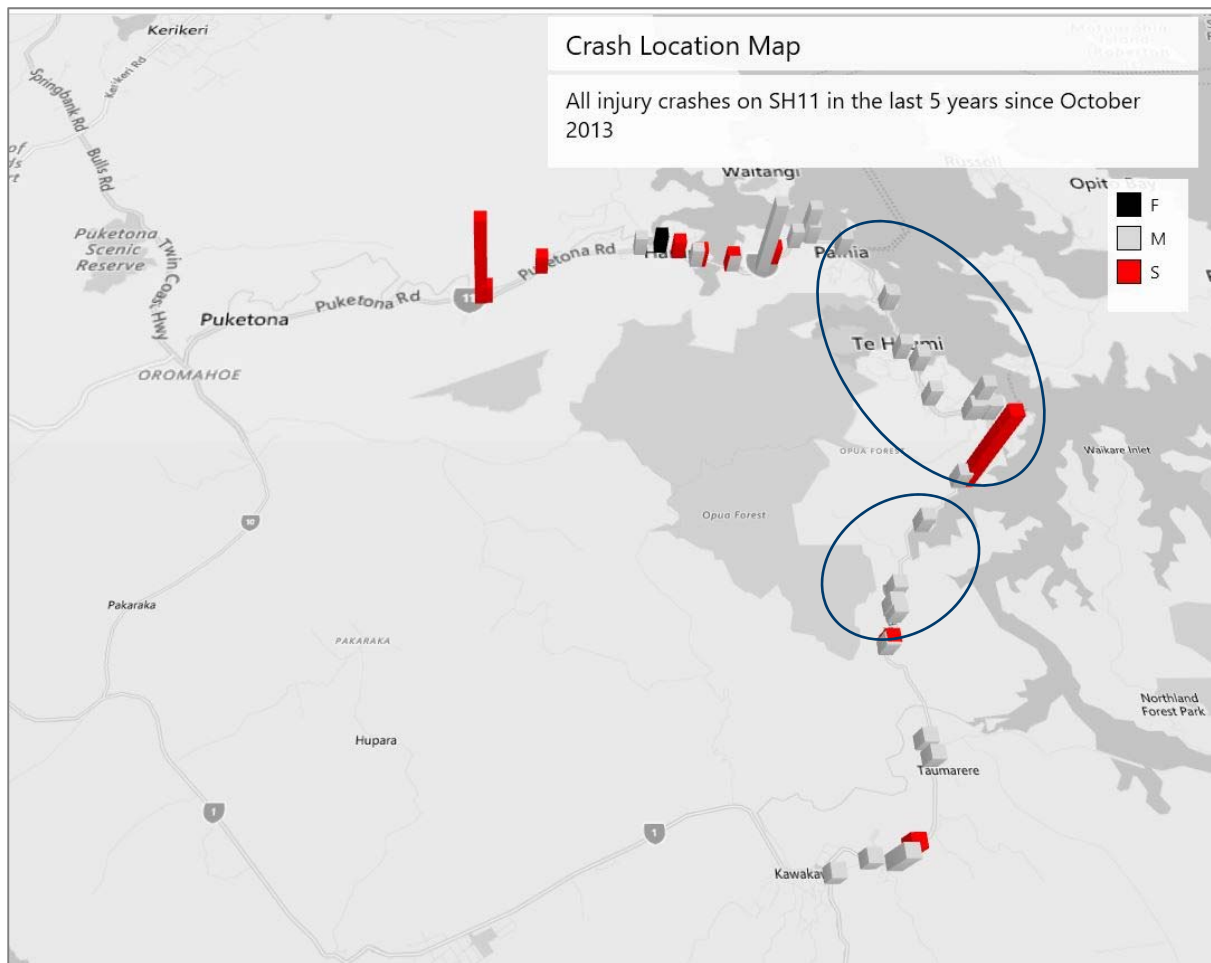


Figure 3-5 SH11 all injury crashes 2013 to 2018, with two minor crash clusters circled (NZ Transport Agency CAS Data)

3.2.1.1 Crash trends

The July 2018 Annual Monitoring Report for SH11²² provides a compelling insight into the risk factors for crashes along the route. Across the 2013-2017 period, the report noted trends in crash factors, shown in Figure 3-6. These findings show that SH11 performs poorly in a number of key risk factor areas on a regional and national scale. Areas of concern include:

- Wet weather
- Foreign drivers
- Dark conditions
- Alcohol
- Excessive speed
- Poor handling

It should not be definitively concluded that these factors are a problem – for example, a higher involvement of foreigners may only reflect the high proportion of tourists in the area, and the high proportion of wet-weather crashes may simply be due to greater-than-average annual rainfall in Tai Tokerau. However, all of these factors demand closer scrutiny and should be assessed as part of an effort to improve safety in the study area.

It should also be noted that 56% of crashes on SH11 are head-on collisions, compared with a national average of 25%. This crash type is specifically identified in the report as having a high injury severity and

²² NZ Transport Agency. *State Highway 11 Annual Monitoring Report*; 2018.



therefore requiring intervention priority, which should be taken into consideration during the course of this business case.

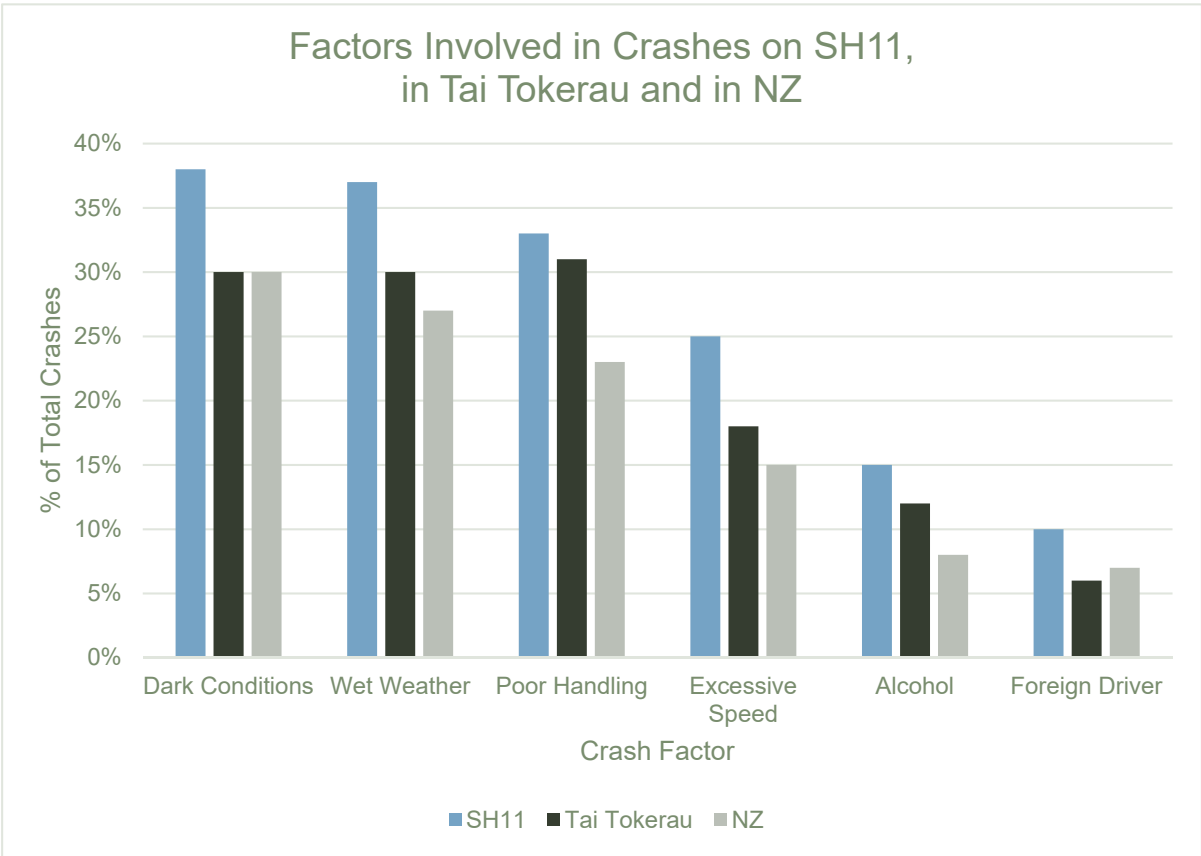


Figure 3-6 Factors involved in crashes on SH11

3.2.1.2 Major Intersections

An analysis of the Kawakawa and Puketona intersections at either end of SH11 was conducted using the Transport Agency’s “High-risk intersections guide”²³ and “Determining Safety Risk Practitioner’s Spreadsheet”. During the 2008-2018 period, the Puketona intersection experienced five crashes, and the Kawakawa intersection experienced eight crashes. Each crash was categorised by crash movement type, with each type having an associated risk of death or serious injury. The number and types of crashes at Kawakawa and Puketona yielded a “high” collective risk for both intersections, with a “medium” infrastructure risk rating for both. This determined that the strategic fit for both was also “high”. This strongly suggests that investigations should be conducted at both intersections with a view to improving safety for users.

3.2.2 Problem statement 2

There are differing levels of access and connectivity along SH11 for all modes of transport, which contributes to socio-economic inequality between communities and negatively impacts the user experience.

Causes and Impact of Tourist Dispersal

The TCDR PBC identifies uneven dispersal of tourism as a problem for Tai Tokerau. At a regional level, this is partly because the Bay of Islands draws a significant proportion of all visitors to Tai Tokerau:

- 66% of visitors to the region go to the Far North district

²³ Nzta.govt.nz. <https://www.nzta.govt.nz/assets/resources/high-risk-intersections-guide/docs/high-risk-intersections-guide.pdf>. Published 2019. Accessed March 18, 2019.



- 27% to the Whangārei district
- 7% to the Kaipara district.

There are also significant disparities in visitor numbers within the study area. While there are few official statistics available for areas of this size, there is strong anecdotal evidence suggesting that the majority of visitors to the Bay of Islands head to Paihia, Waitangi and to a lesser extent, Haruru and Opuā. Meanwhile, towns like Kawakawa receive considerably less attention from the tourist industry. If people do visit Kawakawa, they mainly stop for a flying visit to the famed Hundertwasser Toilets or the nearby Kawiti Glow Worm Caves or perhaps for lunch, but rarely for the night. Underlining this point is that there are numerous accommodation options in Paihia, but just one motel in Kawakawa (see Figure 3-7).

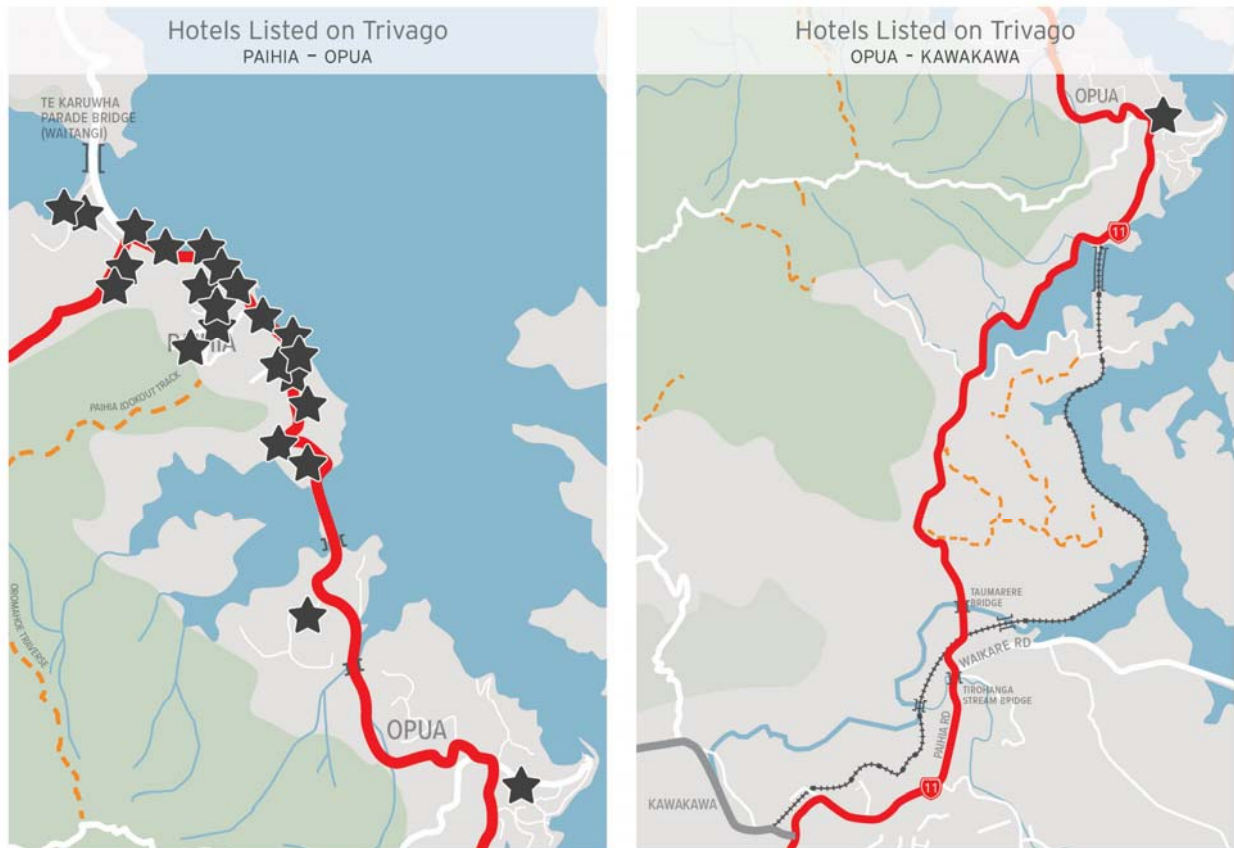


Figure 3-7 Hotels in the Bay of Islands listed on Trivago

This demonstrates that tourist dispersal, highlighted in the TCDR PBC as a key regional problem, is also problematic at the local level. Tourism is a major industry, and increased tourist numbers create significant economic opportunities. In the Bay of Islands, these opportunities are concentrated in Paihia, and this means that Paihia residents have immediate access to them. Meanwhile, residents of further-afield towns like Kawakawa have much poorer access to them.

Clearly, then, Kawakawa residents face socioeconomic challenges which are at least partially caused by poor access. Since Kawakawa cannot be moved closer to Paihia, it is critical that the impact of these problems is minimised with a well-functioning, resilient road between the two towns. However, SH11 has suffered from poor resilience in recent times.

Resilience

As per the GPS 2018, having a resilient transport system is a key component of accessibility.

In 2018, SH11 was closed for 107 days as a result of two slips on Lemon’s Hill. During this time, anyone driving between Kawakawa and Paihia was required to go via SH10, causing an increase in journey time of at least ten minutes.



A desktop geotechnical review conducted by the Project team indicates that there have been at least eight small to large landslides on the road in the area around Lemon's Hill over the last 10 to 15 years. Most seem to have blocked half to one lane each, though larger slips have also occurred during this time, which have blocked the entire road. There is also evidence of similar frequent slips near Opua and south of Lemon's Hill, Northland Regional Council has determined that there is a flooding hazard over several sections of the road for both 10-year and 100-year floods.

Any of these geotechnical features of the study area could close SH11 at any time. Road closures create a bigger problem for Kawakawa residents working in Paihia than for Paihia residents in the same job. As such, these resilience risks faced by SH11 contribute to differing levels of access along the SH11 corridor, which reinforces inequality across the route, specifically, inhibiting economic growth of Kawakawa.

Impact of Resilience on Tourist Access along SH11

Kawakawa is not generally seen by tourists as a must-visit destination in the same way as Paihia or Waitangi – the distribution of tourists can be broadly attributed to the perceived appeals of each place:

- Waitangi is well-visited because it is culturally important
- Paihia is popular because of its natural beauty.

However, a significant amount of traffic to Paihia and Waitangi passes through Kawakawa, which provides an opportunity for economic growth. This highlights the fact that SH11 can contribute to bringing the benefits of a booming local tourist trade to a greater number of people living in the study area, even those living beyond the tourist centres.

The benefits that Kawakawa accrues from tourism in the study area can be severely disrupted by access issues on SH11. This section has discussed how Kawakawa residents can suffer through poor access and connectivity, but it is also true that reduced access, particularly through poor resilience can alter the behaviour of tourists themselves in a way that negatively impacts Kawakawa.

Impact of Resilience on Tourist Decision-making – An Example

A visitor from Kerikeri might arrive in Paihia with the intention of heading to Kawakawa for lunch the next day. During their stay in Paihia, they are told about a road-blocking slip on Lemon's Hill, which deters them from making the trip, thereby depriving Kawakawa of tourist income. The tourist then decides to cycle to Opua instead - however, Far North Holdings have said that the Paihia-Opua road is viewed locally as dangerous for cyclists. Hearing this, the tourist then decides to stay in Paihia after all.

In this example, by improving resilience on Lemon's Hill or by creating a dedicated cycle trail from Paihia to Opua, the SSBC may be able to increase the impact and dispersal of the benefits of local tourism.

Academic Evidence

A 2009 report²⁴ from the NZ Ministry of Transport states that:

“Transport infrastructure can be either a springboard or stumbling block for economic growth and development in New Zealand. Therefore, the approach to transport investment is important because inappropriate or inadequate investment could constrain the growth and development in New Zealand.”

The report goes on to describe the role of transport as an “enabler of economic activity”, linking people to jobs, delivering products to markets, and underpinning supply chains and logistics. In the context of SH11, an unreliable or poorly-connected route has a correspondingly reduced ability to confer these benefits on the study area's residents.

²⁴ Ministry of Transport NZ. TRANSITION TO GROWTH: TRANSPORT AS A SPRINGBOARD FOR ECONOMIC GROWTH.; 2009. https://atrf.info/papers/2009/2009_Bealing.pdf. Accessed February 4, 2019.



In a similar vein, a 2016 Highways England report²⁵ identifies several mechanisms by which road investment can support economic growth. In particular, it highlights the ways in which access and connectivity can reduce commuting costs, increase the labour supply and create larger labour markets. The report states that the economic gains following road infrastructure investment are more limited in a place like the UK, which already has an extensive transport network. However, a region like Tai Tokerau, where the network is more limited, can benefit more substantially from new infrastructure or from improvements made to existing infrastructure. The report offers the specific example of improved road infrastructure attracting additional domestic tourism, by making domestic journeys more appealing and thereby displacing foreign holidays which may otherwise have been taken.

The SH11 corridor is host to significant variations in access and connectivity along its length, which contribute to socioeconomic inequalities. By ensuring resilient access and connectivity across a range of modes, SH11 can bring a greater range of socioeconomic opportunities to locals, while also encouraging visitors to travel more widely.

Roads are the arteries through which the economy pulses. By linking producers to markets, workers to jobs, students to school, and the sick to hospitals, roads are vital to any development agenda.

- The World Bank (2015)

3.2.3 Problem statement 3

The SH11 corridor lacks a prominent cultural narrative, thereby missing a social opportunity to reflect the stories of tangata whenua, and missing an economic opportunity to attract visitors interested in the area's rich history.

The SH11 corridor is perhaps New Zealand's most significant historical and cultural area (see Section 2.2). The first settlers from both Polynesia and Europe landed in the Bay of Islands and it was the site of the nation's first capital and the signing of the Treaty of Waitangi. However, beyond the plaques and museums at the sites themselves, there are few signs or landmarks to indicate the huge cultural significance of the SH11 corridor to visitors. SH11 is effectively the gateway to the Bay of Islands and Waitangi, but is not clearly marked as such.

This was strongly reinforced during the stakeholder engagement process, particularly by hapū. As part of the outreach, a hui hosted by the Transport Agency was attended which brought together representatives from Ngāti Rehia, Ngāti Hine and Ngāti Rahiri. Hapū felt strongly that there is a lack of storytelling along SH11 and that the historical and cultural importance of the area is currently underrepresented.

The lack of a cultural narrative along SH11 creates two missed opportunities:

- **Social opportunity:** Tai Tokerau generally and the study area in particular have had a significant impact on the course of New Zealand's history. Around the time of the Treaty of Waitangi, this was one of the most prosperous parts of the country, however, since then Tai Tokerau has become one of the most deprived regions in New Zealand (see Section 2.3.2). This recent history has somewhat obscured the historical importance of Tai Tokerau and the Bay of Islands, and an effectively-implemented cultural narrative along the SH11 corridor would go a long way towards recognising its history and instilling a sense of regional pride in Tai Tokerau.
- **Economic opportunity:** The October 2018 Aotearoa New Zealand Government Tourism Strategy published by the Ministry of Business, Innovation and Employment (MBIE) identifies Māori tourism as a key element of New Zealand's tourist industry:

²⁵ Highways England. Economic Growth And The Strategic Road Network.; 2019. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600268/SEGP_-_Underpinning_Report_-_Economic_Growth_and_the_SRN.pdf. Accessed February 1, 2019.



*'Māori tourism experiences are at the heart of the New Zealand visitor experience and encourage New Zealanders and international visitors to connect to and value our land, people, heritage and stories.'*²⁶

Anecdotal evidence indicates that cultural tourism is a major drawcard for Tai Tokerau. However, MBIE's 2018 Tourism Data Domain Plan²⁷ recognises that detailed information on Māori cultural tourism is currently unavailable at a regional level and is limited at a national level. Jude Thompson, portfolio manager for the Tai Tokerau Northland Economic Action Plan says that people come to the Bay of Islands for the beauty of the natural surroundings and for an authentic Māori experience. Cultural storytelling along the SH11 corridor would make a strong positive contribution to this experience. For those visiting the area who have not explicitly come for a cultural experience, but are receptive to one, an improved narrative would also be an excellent means of raising the profile of the area's cultural and historical importance.

Furthermore, cultural tourism is less susceptible to the problem of seasonality than tourism focused on outdoor activities, which has traditionally formed a large part of the Bay of Islands' appeal. As discussed in further detail in Section 2.4.4, seasonality in tourism can have negative effects on the local workforce, such as a lack of stable year-round employment. A greater focus on cultural tourism would likely help to mitigating this problem in Tai Tokerau.

Rotorua, for example, is also a predominantly rural region with beautiful scenery which is often enjoyed by visitors through outdoor activities. However, Rotorua is also considered a centre for cultural tourism, and it is significant that this region experiences significantly less seasonality in its tourism than Tai Tokerau (Figure 3-8). There are many factors that cause seasonality, and this comparison is somewhat simplistic without further analysis, but the correlation between Rotorua's reduced seasonality and the diversity of its tourist offering should not be ignored.

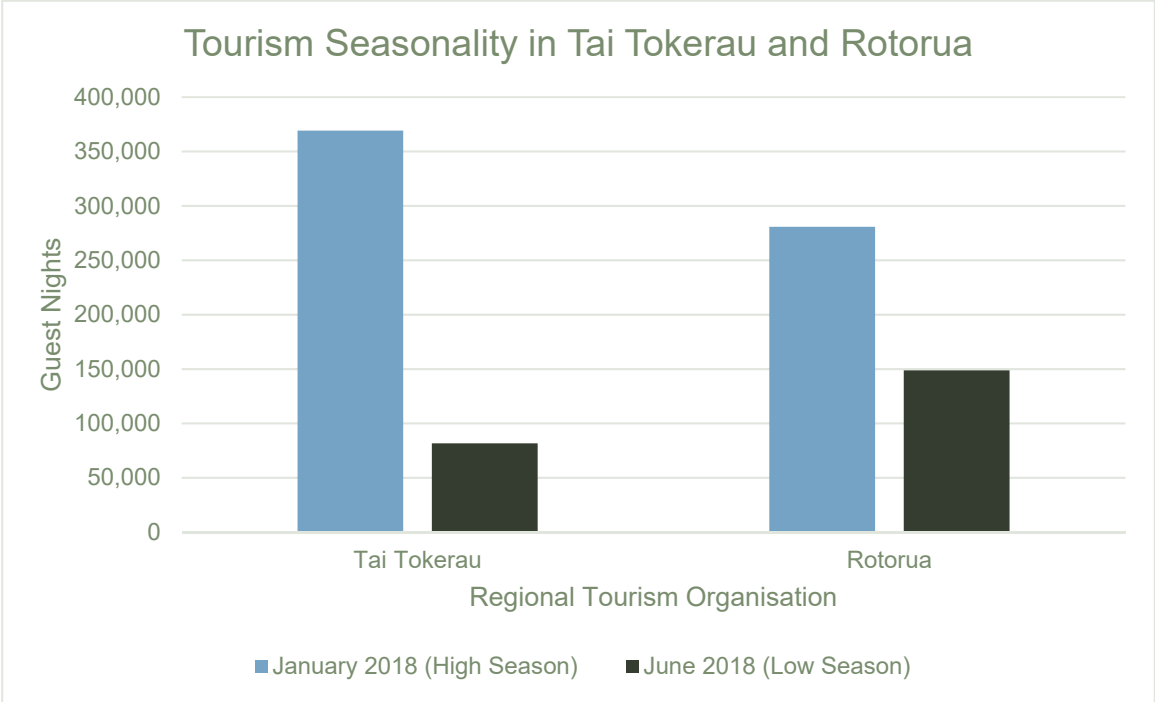


Figure 3-8 Tourism Seasonality in Tai Tokerau and Rotorua (Stats NZ)

3.3 Benefits

The potential benefits of successful investment that address the identified problem statements were identified and agreed by the ILM stakeholder group as:

- **Benefit 1:** To reduce harm and the incidence and impact of road closures.

Safety is of paramount importance, and a safe road has the dual advantage of reducing harm and also reducing road closures, which leads to improved access along the SH11 corridor.

²⁶ Ministry of Business, Innovation and Employment. *Aotearoa New Zealand Government Tourism Strategy: Summary*; 2018:8.

²⁷ Ministry of Business, Innovation and Employment. *Tourism Data Domain Plan 2018*; 2018.



- **Benefit 2:** To improve the user experience for both tourists and locals, and to encourage tourists to stay longer and travel more widely within the SH11 corridor.

Benefit 2 relates to all three ILM problem statements, since safety, access, resilience and culture all contribute to a positive user experience for those on SH11. This positive experience may encourage visitors to stay longer and travel more widely, while also providing them with the access to do so.

- **Benefit 3:** To empower and enable Māori communities.

The SH11 corridor is home to a high proportion of Māori residents. Nearly 60% of Kawakawa's residents identify as Māori, compared with 21.6% for Paihia-Opua-Haruru Falls, suggesting that Māori are disproportionately affected by the uneven concentration of opportunities in the study area. Two actions have been identified to achieve Benefit 3:

- Improve access and connectivity along SH11 to increase availability of social and economic opportunities, thereby facilitating improved inclusion and socio-economic growth
- Development of a strong cultural narrative along the route is a priority for hapū and will help to develop cultural tourism in the area.

3.4 Opportunities

The following items are considered to be opportunities which are recommended for further investigation with the investment and project partners, and stakeholders:

- **Hapū engagement.** There are opportunities to draw on best practice engagement and design frameworks which adopt a Māori worldview and holistically capture hapū inputs into infrastructure projects, for example the Mauri Model or Te Aranga Design Principles. Any adopted framework will be agreed in discussion with hapū.
- **Acknowledgement of cultural heritage in design and place-naming.** The creation of new places, structures, pathways and so on presents an opportunity to acknowledge local history and cultural heritage. In consultation with hapū, the new infrastructure can incorporate design elements and names which raise awareness of the important natural and heritage context of the area.

3.5 Investment Objectives

Investment Objectives (IOs) have been developed in order to provide clarity for resolving the identified problems, while contributing towards achieving a range of the identified benefits for customers.

The investment objectives were identified as follows:

- **Investment Objective 1:** We will improve safety on SH11 for locals and visitors by addressing the most problematic risk factors and sections of the route.

IO1 follows directly from Problem Statement 1 and Benefit Statement 1, and indirectly from Benefit Statement 2, since a safer road will increase the likelihood of a positive user experience, and therefore contribute to visitor numbers and the length of visitor stay.

- **Investment Objective 2:** We will enhance access within the SH11 corridor, for all locals and visitors, by improving transport infrastructure connectivity and resilience.

IO2 follows from all three Benefit Statements and all three Problem Statements. A more resilient road will reduce the incidence and impact of road closures, and the safety issues than can result from them. This, together with improved overall access, will improve the user experience, while increased connectivity may encourage visitors to travel more widely, and will empower local communities by increasing travel options.

- **Investment Objective 3:** We will facilitate increased social and economic opportunity for communities within the SH11 corridor.

IO3 follows directly from Benefit Statements 1 and 2. Improving the road user experience and encouraging visitors to stay longer and travel more widely will create additional economic opportunities for SH11 communities. This process will enable and empower all communities on SH11, including Māori. In this way, IO3 aims to address Problem Statements 2 and 3 in particular.



3.6 Alignment to existing strategies and goals

Given the significant commitments required to undertake infrastructure projects, it is always important to ensure at the outset that they will fit properly into the strategic framework of the organisations involved. On the SH11 project, this strategic alignment will arguably play an even more critical role. This is because the work is motivated not by a specific need at a specific site, but rather by the broader, long-term interests of an entire region. Instead of focusing on an isolated problem to be solved, this project aims to make a bold positive contribution to a complex landscape of interwoven interests and goals. This landscape and the destinations that must be worked towards are mapped by strategic documents, and making good use of these documents will be essential to ensuring the success of the project.

A range of national and regional strategies and organisational goals have been reviewed to ensure the aims of the SSBC are in alignment with those of relevant external parties. This section will outline these existing strategies and will demonstrate that the proposed improvements to SH11 represent a positive step towards realising their goals.

In these strategies, the importance of the SH11 project as part of the Tai Tokerau wider regional transport network is explicit and extensive. SH11 interventions are motivated not by a specific need at a specific site, but rather by the broader, long-term interests of an entire region. This project aims to make a positive contribution to a complex landscape of interwoven interests and goals which are mapped by strategic documents identified as essential to ensuring the success of the project.

3.6.1 Alignment to existing strategies

Figure 3-9 summarises the alignment of the ILM with relevant key documentation issued by related organisations. Note that the lack of a tick does not indicate that a document places no emphasis at all on a particular objective, only that that objective is not one of its explicitly stated aims. For more detail, see Appendix A.



ALIGNMENT TO EXISTING STRATEGIES



Figure 3-9 Alignment to Existing Strategies

3.7 Recent and planned developments

The proposed works on SH11 will follow closely behind a string of recent and planned investments in the corridor, many of which have strong tourist appeal, summarised in Table 3-2.

Project/Development	Description
Bay of Islands Vintage Railway	This project is currently underway, aiming to restore the historic railway line from Kawakawa to Opuā. The route currently forms part of the TCCT, which as part of the redevelopment will be moved alongside the railway line. There will be a combined railway and cycleway terminus in Opuā. The project is scheduled for completion in 2020.
Unnamed commercial development	This site sits across the road from the planned Opuā railway terminus and Far North Holdings estimate its completion timeline to be in the 3-5 year range.



Project/Development	Description
Paihia waterfront development	<p>This is a wide-ranging project involving pedestrian facilities on the waterfront, improving the beach, reclaiming land, building a new promenade and generally creating a pleasant, user-friendly harbour environment. A masterplan has been created.</p> <p>A major element of this development is providing an alternative link between School Road and Bayview Road, which has been considered as part of the “Paihia Town Centre Upgrades” project recommended by this SSBC.</p>
Watea housing development	This development is located immediately to the west of Haruru. Far North Holdings have described it as the only location on the Bay of Islands which has the potential to grow the local housing stock.
Māori Battalion Museum, Waitangi	This has backing from a coalition of stakeholders and funding bodies to proceed.
Mountain bike park, Waitangi	This project has recently received \$500,000 from the PGF. The Trust are investigating an off-road trail for cyclists from Haruru Falls Road to the park, adjacent to Bayly Road.
New four-star hotel, Waitangi	This project is currently seeking funding.
New puffin crossing in Paihia Town Centre	A puffin crossing was installed on SH11 in 2017 which has improved safety for pedestrians crossing between the town centre and the waterfront and improved efficiency for motorists.
Opua to Paihia walkway	Currently there is a winding bush track around the coastal headlands between Opua and Paihia, which forms part of the Te Araroa Trail (see Section 2.6.4). A project in the early planning stages proposes a shared-use path for use by tourists and locals, cyclists and walkers. This option will be likely be considered as part of the Northland Integrated Cycling Implementation Plan.

Table 3-2 Recent and Planned Developments

Other projects include:

- Environmentally-themed tourist experience, Te Haumi Flats
- New café, Opua
- New oyster farming infrastructure, Opua.

This broad range of developments captures the diversity of appeal exhibited by the Bay of Islands. It will be important to ensure that there is well-functioning, resilient access around the SH11 corridor to ensure that locals can participate in and benefit from these new attractions and that tourists can travel easily between them and beyond to less-visited sections of the corridor.

3.8 Issues, constraints and dependencies

A range of risks issues and uncertainties which could influence the achievement of the project objectives and outcomes have been identified. These remain in working draft format and will be amended as the project progresses and more information comes to light.

3.8.1 Issues

Table 3-3 details scope uncertainties which the SSBC may not be able to resolve.



Issue	Comments and risk mitigation
Treaty of Waitangi claim yet to be settled with the Crown	Areas of value to hapū may be located throughout the SH11 corridor. Further engagement will be required with hapū to manage these possibilities.
Climate change and its impacts on weather patterns and sea-level rise	<p>Weather patterns are likely to become more severe with climate change, bringing more intense rain and wind during storms. Flood events and heavy rain causing slips may occur at a higher frequency than current infrastructure is designed for, resulting in more closures.</p> <p>Options need to allow for the impact of these events and consider the potential scenarios developed by the Ministry for the Environment.</p>
Tourism seasonality	<p>The TCDR Programme Business Case identifies seasonal tourism as a problem for Tai Tokerau and the study area is affected. The Far North district receives approximately four times more visitors in the summer than the winter.</p> <p>The PBC recommends a ‘wider offering of less seasonal visitor attractions or improving...destination appeal’ to solve the seasonality problem and does not mention road improvements as a potential solution. As such, this is not considered within the scope of the SSBC.</p>
Uneven dispersal of tourists within the SH11 corridor	The PBC includes uneven dispersal of tourists as one of its four problem statements. The SSBC finds that improved transport infrastructure would result in broader and better access to the opportunities that tourism creates (Section 3.2.3). However, dispersal of tourism is linked to destination appeal and cannot be solved by road improvements alone. As such, this is not considered within the scope of the SSBC.
No overarching Urban Landscape Design Framework for the corridor	The previous designs considered in this SSBC have not been coordinated with an overall consistent design approach. Without an overarching ULDF for the corridor there is a risk to the cohesion of the cultural story, narrative, user experience and site items.

Table 3-3 Issues and uncertainties

3.8.2 Constraints

Table 3-4 details the factors which are likely to limit or restrict the impact of the outcomes of the SSBC. These can include relevant Government policy decisions, initiatives or rules.

Constraints	Comments
Lead time	Relatively new relationships with Hapū along with local government stakeholders means longer lead times for decision-making, planning and construction times before infrastructure projects can generate potential benefits.
Interface with other TCDR Business Cases	Reliance on TCDR programme wide financial, commercial and management cases, means that that the delivery of SH11 SSBC recommendations could be delayed. It also means that funding approval of this SSBC may be dependent on the robustness of the other cases produced by other suppliers.
Low benefit cost ratios	With relatively low vehicle volumes compared to neighbouring state highways, cost benefit analysis may result in projects within the recommended option having a lower BCR than what the Transport Agency may typically accept. The wider economic benefits will enhance the overall BCR.



Constraints	Comments
Potential lack of skilled workers residing in Tai Tokerau	Tai Tokerau has the lowest population of working age persons in New Zealand. Coupled with skill shortages, this can mean that infrastructure projects struggle to employ local people with the skills required to complete the work. Recent infrastructure projects in Tai Tokerau have in some instances required resources from Auckland. This would reduce the economic benefit received by the study area.
NZ Coastal Policy Statement	Consideration of and compliance with the NZ Coastal Policy Statement in coastal areas.
Process robustness and timeframes	SSBC has been developed using a modified methodology which may not be considered as robust as the traditional SSBC approach. The accelerated delivery timeframes meant that, in some instances, when information was not received punctually it has not been included in this SSBC due to time constraints. Also, recognising its development concurrently with other TCDR business cases so that a comprehensive view of the whole route is provided, and that some content that would normally be included in this BC is included in another (eg, Cycleways, Wayfinding and Signage, Townships).

Table 3-4 Constraints

3.8.3 Dependencies and interfaces

Figure 3-10 outlines the key dependencies and interfaces with the SH11 SSBC. See Appendix B for more details.



Figure 3-10 Dependencies and Interfaces

3.9 Stakeholder engagement

Hapū are recognised as Treaty Partners by the Transport Agency, under the Treaty of Waitangi 1840/Te Tiriti o Waitangi. In relation to the development of the SH11 SSBC, this means sharing decision-making with iwi and hapū when identifying priorities for investment which will most effectively help their communities, both regionally and nationally.

Given the cultural and historical significance of the SH11 corridor, multiple hapū are recognised as having a significant connection and relationship to the area. The range of cultural, spiritual and historical values which may be held require further understanding and ongoing consideration in the SSBC, in partnership with hapū.

3.9.1 Activities outcomes

Table 3-5 outlines key engagement activities that have been completed to date.

Date	Description	Outcome
October 2018	<p>Project team members conducted a site visit with the Transport Agency Project Manager and took part in the Kawakawa Mental Health Hikoi hosted by the Ngāti Hine Health Trust.</p> <p>This was a valuable, yet low-key way to begin meeting locals to understand issues as they see them.</p>	<p>In a community where roads are critical to mobile health support services, education and tourism across the region, the community faces considerable ongoing socio-economic challenges, including a recent meningococcal outbreak.</p>
November 2018	<p>Project team members attended the hapū hui hosted by the Transport Agency. Representatives shared their local knowledge as well as their hopes and concerns.</p> <p>The Project team were able to explain the process and programme through to March 2019.</p> <p>Hapū representatives from Ngāti Rahiri, Ngāti Hine and Ngāti Rehia sought a strong, trustworthy relationship with the Transport Agency to ensure their voices are heard and views taken into account.</p>	<p>Their first priority was safety, along with a wish to see their story made more evident on SH11, whether through storyboards at areas of significance, corrected name places or specifically marked areas.</p> <p>There was particular discussion around the Kawakawa and Puketona intersections, supporting local tourism opportunities with better access, and the future of the bridge at Waitangi.</p>
December 2018	<p>Project team members participated in an ILM workshop hosted by the Transport Agency. The aim of the meeting was to inform the Transport Agency of progress with the SSBC so far, and to refine and confirm the narrative of the proposed ILM.</p>	<p>Adjustments were made to the proposed problem statements, benefit statements and investment objectives, and by the end of the workshop there was broad agreement on the direction of the ILM.</p>
January 2019	<p>Project team members attended a second hapū hui hosted by the Transport Agency. Hapū were informed of progress with the TCDR programme, and attendees reviewed outcomes from Hui 1 and the proposed ILM. All attendees discussed the content of the intervention long list in its current form.</p>	<p>The ILM was adjusted to frame the SSBC story as being told “with hapū, not about hapū.” Long list interventions were assigned priorities by attendees, which then became an input to the options analysis process.</p>
February 2019	<p>Project team members attended a third hapū hui, where attendees were presented with the packaged options and the preferred programme of works.</p>	<p>The preferred programme was approved by attendees.</p>
April 2019	<p>A flyer was sent to 1,880 properties around the corridor, with project information, details of the community events and contact details through which to provide feedback or find out more. A webpage was also set up on the Transport Agency website for the TCDR Programme, which includes information on all seven TCDR business cases.</p>	<p>Project information was widely distributed to relevant stakeholders, together with contact details for providing feedback.</p>



May 2019	A public feedback period was undertaken from 30 April to 31 May. This included a series of six community drop-in sessions. An online form was also available from the beginning of the community open days until 31 May.	The public were informed of the recommended option and given the opportunity to ask questions.
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Table 3-5 Engagement activity outcomes

A complete summary of the engagement and activities carried out with partners, key stakeholders and the community between November 2018 and May 2019 can be found in Appendix S.

3.10 Summary

The ILM is at the heart of the strategic case. Through extensive consultation with stakeholders, review of relevant documentation, adaptation of the TCDR PBC, and assessment by technical specialists, it was determined that the core problems in the study area relate to safety, access and cultural exposition.

Though the latest KiwiRAP report indicates that SH11 is not an especially dangerous road, analysis of crashes over the last five years shows that specific sections are sufficiently dangerous to warrant intervention. Furthermore, there are a number of crash factors which are overrepresented on SH11 when compared to Tai Tokerau and New Zealand as a whole. Again, these are significant enough to merit consideration during this business case.

Paihia is a major destination for New Zealand tourism, and receives considerable numbers of visitors each year. Meanwhile, residents in nearby Kawakawa have significantly lower household income, and worse health and educational outcomes, benefitting relatively little from the tourist boom happening nearby. Though this inequality between the two towns can be partially attributed to inherent destination appeal, issues with connectivity and resilience on SH11 undoubtedly play their part. A more reliable road, with more travel choices, would be an important contributor to the welfare of those living outside the study area’s tourist hubs.

Finally, the cultural and historical significance of the Bay of Islands is underrepresented throughout the corridor. This was understandably a concern for hapū. Greater acknowledgement of the culture and traditions of the area would not only give an important sense of recognition to tangata whenua, but would also provide storytelling for visitors, thereby promoting cultural tourism and consequently increased economic opportunity within the SH11 corridor.

Clearly framing these problem statements has allowed the development of a set of investment objectives which summarise the goals of the project. The goals of improving safety, access and socioeconomic opportunity will drive the project moving forward. These investment objectives will lay the foundation for the consideration of interventions and options which will be described in the following sections.



Part B Readiness and Assurance



4 Recommended Option Identification and Development

4.1 Overview

This section provides an overview of the recommended option. The 26 projects contained within the programme represent a balanced provision of interventions which will deliver the investment outcomes identified in the ILM, and collectively align with the objectives of the GPS and the PGF.

The recommended option delivers significantly improved safety for locals and visitors. It also expands access and connectivity throughout the corridor, by both building physical infrastructure and by implementing services improving travel choice. The impact of these projects will be to increase dispersal of visitors, which will spread the benefits derived from tourism, while also allowing locals to travel more often and further to take advantage of social and economic opportunities.

The recommended option has been arrived at through a rigorous process of data analysis, expert technical input and engagement with key stakeholders and partners. This programme will cost \$143m-\$216m and has been staged over 10 years. Projects that are low-risk, low-cost and/or high-priority for stakeholders being forward-weighted within the 10-year timeframe.



4.2 Recommended Option Selection

A long list of 122 potential projects was developed through a literature review, together with inputs from project partners, stakeholders and technical specialists, including:

- Design engineers
- Geotechnical engineers
- Environment and planning experts
- Smart mobility experts.

The long list was then filtered to remove:

- Duplicates
- Options not relevant to SH11 (which would therefore not deliver on any investment objectives)
- Options which fall under the scope of another TCDR SSBC
- “Business as usual” operations and maintenance projects

Following this filtering process, a shortlist of 39 options remained. These 39 options were assessed using multi-criteria analysis (MCA). Each option was evaluated based on the extent to which it aligned with the identified investment objectives. An indicative assessment of each option against the PGF objectives was also undertaken.

In addition, options were scored against the criteria listed in Table 4-1 below:

Criteria	Description
Community/ Stakeholders	Assessment of potential stakeholder risk Level of anticipated risk associated with property negotiation and acquisition.
Consentability	Level of complexity of gaining approvals (e.g. activity status, risk of appeal, accordance with policy direction). Level of compliance with regulatory plans e.g. could the option include activities which are prohibited/ non-complying under the policies and rules of the district or regional plan?
Environment	The effects of the transport system on the environment and taonga. Effect on air, land water and other resources including on mātauranga Māori.
Constructability	Level of complexity, programme and network disruption. Economic impacts on businesses / community / town centres of the build.
Operation and maintenance	Any factors that may affect the ability to operate or maintain the option over its projected life (e.g. major ongoing or additional costs and/ or whole of life costs), level of maintenance activities required and capability to carry out maintenance activities.
Value for money	Ensure the development of cost effective options.

Table 4-1 Feasibility criteria

The results of the MCA were analysed, and a package of 30 projects were chosen which would collectively work towards the achievement of the investment objectives. Importantly, the requirements of the wider TCDR Programme were also taken into account, and consideration was given to the fact that the SH11 programme should support the desired outcomes of the broader PBC.



It was subsequently determined that several projects were sufficiently similar, in terms of geographic location and outcomes achieved, to be bundled together:

- The footpath to Bay of Islands College was incorporated into the development of the roundabout at the SH1/SH11 intersection
- The resilience improvements to Zone 2, Zone 3 and Lemon's Hill were bundled together
- The improvements aimed at reducing loss of control on bends were incorporated into the wider safety improvements project

Two further projects were added as the Recommended Option was developed. These are:

- Mobile facility for driver licensing, registrations and WoFs
- Te Karuwhā Parade Upgrades - an alternate version of the previously identified Closure of Te Karuwhā Parade project

These projects were subsequently taken through the MCA assessment resulting in total of 41 projects being shortlisted.

This bundling process reduced the recommended option to a final list of 26 projects, which are detailed in Section 5 below.

For a more detailed description of the option assessment process, see the Options Assessment Report – Appendix D1.

4.3 Recommended Option Development

The projects included within the recommended option of this SSBC have been identified and prioritised by the investment and project partners. Due to the breadth of projects assessed, limited activity-level optioneering has been undertaken. This business case will act as the “strategic driver” for the projects, outlining the next steps for their assessment and future implementation. Some projects have been identified as “early deliverables” with the ability to be implemented in the short term (0-2 years), while in some instances, projects may require the further development of detailed business cases.

The 26 projects in the recommended option have been staged across a ten-year programme. The programming balances several considerations:

- **Cost.** The total cost of the programme has been spread relatively evenly, given all other considerations, across each of the ten years in the programme, since this is likely to simplify funding flows. Year 5 bears the greatest share of the cost, with approximately 21% of the total. In most cases, the programme assumes that consenting and design will each take up 10% of a project's total costs, with construction taking up the remaining 80%.
- **Risk.** Higher-risk projects have been programmed further out, which will allow time for further investigations to take place. By contrast, many of the lower-risk projects have been programmed earlier on. A few higher-risk projects do feature earlier in the programme, where other considerations such as stakeholder support were considered dominant.
- **Resourcing.** Workforce constraints in the Far North District mean that it is likely not possible to undertake several complex construction projects (such as bridge replacements) simultaneously. As such, these types of projects have been staged across the ten-year programme.
- **Fast delivery of benefits.** Several projects have been identified which can be completed within one year of commencement. The majority of these have been programmed for Year 1, which will allow for delivery of benefits across several different objectives early in the programme.



- **Stakeholder appetite.** Project partners and stakeholders were engaged at workshops, where they gave their prioritisation of the project list. As representatives of the local communities, this was an important consideration in the staging process.
- **Staged delivery of benefits across all investment objectives.** The projects contained within the recommended option have been selected because they cumulatively work towards the achievement of the benefit statements and investment objectives of the business case. Figure 4-1 illustrates how the programme has been managed to ensure that delivery of benefits against each

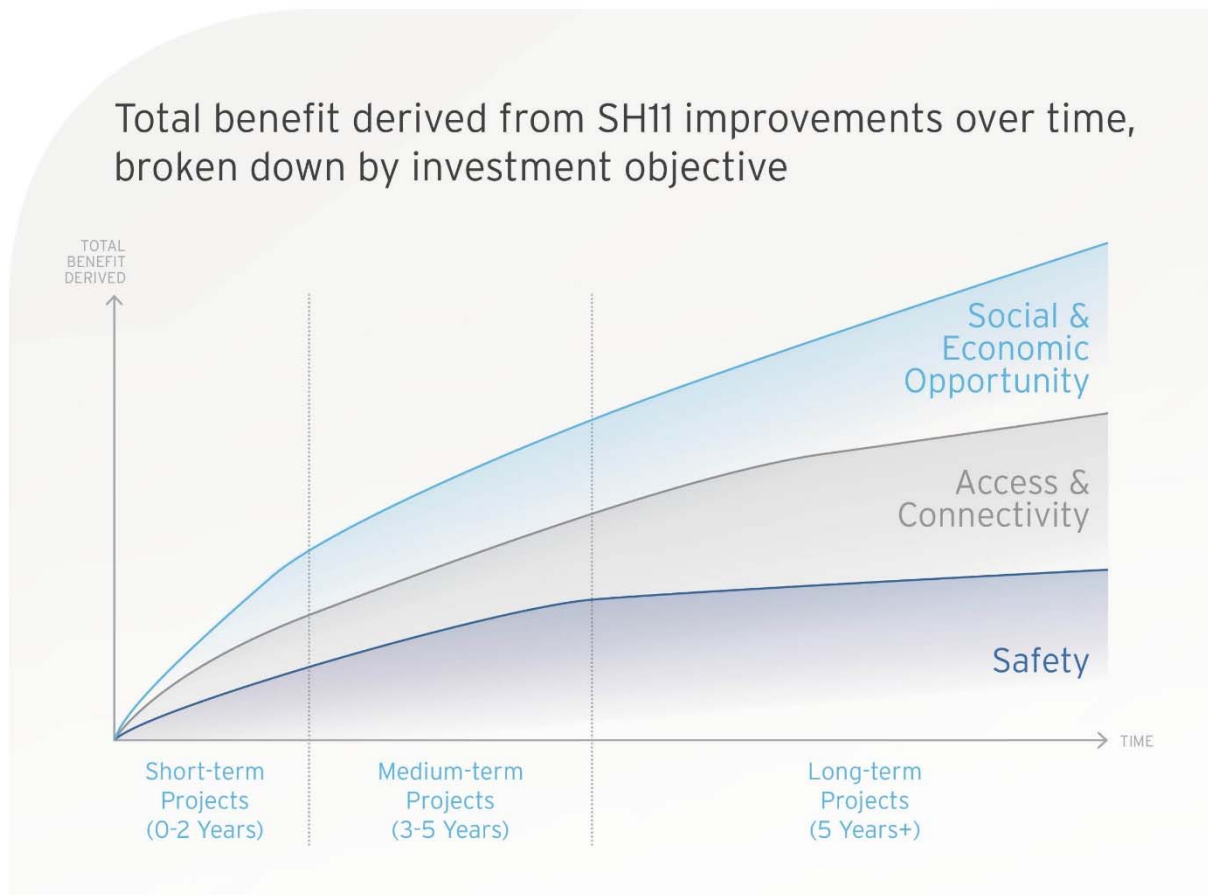


Figure 4-1 Total benefits derived from SH11 improvements over time

investment objective is delivered across the ten-year programme. The programme has been forward-weighted with safety projects, in accordance with the priorities set out in the GPS.

4.4 Alignment with other SSBCs in the Twin Coast Discovery Route Programme

During development of the recommended option, consideration has been given to the objectives of the TCDR Programme, and the scope of its individual SSBCs.

- **Northland Integrated Cycling Implementation Plan.** A key element of the Northland Integrated Cycling Implementation Plan is the extension of the Pou Herenga Tai Twin Coast Cycle Trail (TCCT) from Opuia to Paihia. This supports the investment objectives of the SH11 SSBC by improving connectivity along the SH11 corridor. In turn, the recommended option includes a number of projects which will improve the safety and user appeal of cycling in the Bay of Islands. By building a new shared use path (SUP) from Paihia to Waitangi, and extending and connecting



the SUP at Haruru, the recommended option will provide increased route options for the influx of TCCT cyclists. Meanwhile, the installation of improved cycle safety measures and destination facilities for cyclists on SH11 will also support the outcomes of the Northland Integrated Cycling Implementation Plan.

- **Wayfinding Signage Implementation Plan.** A signage strategy for the TCDR will be developed as part of the dedicated Wayfinding Signage Implementation Plan. The SH11 programme will interface with this SSBC by implementing the signage strategy as part of the early improvements.
- **Township Plans.** Improvements to Kawakawa will be recommended as part of the dedicated Township Plans. As such, the recommended option does not include any projects in or around Kawakawa, with the exception of the new roundabout at the SH1/SH11 intersection, including an improved pedestrian connection up to Bay of Islands College.



5 Recommended Option

This section outlines the recommended option, which will address the problems identified and deliver the benefits sought, has been endorsed by stakeholders, and represents value for money.

The projects are proposed to be implemented across three stages over 10 years, including short-term (0-2 years), medium-term (3-5 years) and long-term projects (5+ years) and aligning with the other TCDR business cases' staging. This section has been broken up accordingly, with the recommended projects presented in their proposed order of implementation.

Three maps have been created, one for each of the short-term, medium-term, and long-term projects. The maps are then followed by summaries of the projects within that timeframe, in the format explained in Figure 5-1. These summaries are then followed by a brief outline of the benefits and outcomes which will be provided the projects during that stage of the programme. Finally, the present value (PV) benefits, costs and benefit-cost ratios (BCRs) of each project are presented in a table, together with a simplified representation of which investment objective that project primarily supports.

In keeping with the streamlined business case methodology agreed at the outset, these projects have been investigated in varying levels of detail. Some have been scoped to a level of detail appropriate for a PBC, while others have undergone detailed investigation and concept design.

A template has been developed which allows for single-page presentation of each of the 26 projects in the recommended option. This means that all key information relating to each project can be viewed at once, such as project description, cost, risks, funding recommendation and so on. Information included in the template is summarised in Figure 5-1.



A description of the project, including any work completed to date.

Costs are indicative at this stage – refer to Appendix E – for details on assumptions.

Benefits have been generated using the Transport Agency's Economic Evaluation Manual, with additional input specified in Section 6.

Rationale as to why the project has been included in the recommended option, with reference to the GPS, stakeholder feedback and the investment objectives.

Interdependencies with other projects or documents, such as other TCDR business cases.

Key risks or constraints associated with the project.

The project's indicative score against the investment objectives and the feasibility criteria, and a resulting funding recommendation.

The proposed project owner/ leader and potential investment partners

Reference documents which support the project and should be read alongside this summary.

The next steps required prior to progress the project through to implementation.

SH1/SH11 - Kawakawa Roundabout							
Project description:	<p>This project includes the construction of a new roundabout at the SH1 / SH11 intersection at Kawakawa. The project will give SH1 traffic priority at this intersection. The roundabout will improve access to Kawakawa Town Centre and safety, which can be problematic, especially during holiday and other busy periods. The project will also include the installation of a new roundabout as a means of incorporating cultural markers and respecting the cultural significance of the area.</p> <p>In 2017, a feasibility study (State Highway 1 / State Highway 11 (Kawakawa) Intersection Improvements Project Feasibility Report, GHD, 2017) was undertaken to assess options to improve the operational performance of the intersection. This study recommended that a roundabout option be taken forward. Detailed design was completed in December 2018. A Road Safety Audit (RSA) undertaken which recommended minor changes to the design. At the time of writing, the detailed design has not yet been updated to address these changes.</p> <p>In addition to the roundabout, it is recommended that a new footpath be considered in the grass berm from Waiomo Stream bridge, Waiomo Road towards Bay of Islands College on the northern side of SH11 (approximately 100m). This will provide a safe pedestrian connection on the northern side of the corridor with better passive surveillance and lighting than the current access under the bridge to Dennis Road. An alternative could be improved kerbside and an upgrade of the existing track through the bush to Dennis Road.</p> <p>Cost estimate contains allowance for footpath treatment as well as contingencies for 2x Pkx, landscaping, MGA and further design updates, on top of the cost estimate supplied in the SH1/SH11 Intersection Improvements DRAPFT Detailed Design Report, GHD, 2018.</p>						
High level estimate:	<table border="1"> <tr> <td>\$3.7m - \$4.7m</td> <td>PV Costs: \$4.0m</td> <td>PV Benefit: \$23.0m</td> <td>BCR: 1.5</td> </tr> </table>	\$3.7m - \$4.7m	PV Costs: \$4.0m	PV Benefit: \$23.0m	BCR: 1.5		
\$3.7m - \$4.7m	PV Costs: \$4.0m	PV Benefit: \$23.0m	BCR: 1.5				
Rationale for inclusion in recommended option:	<p>Improves safety by reducing severity of potential crashes, as well as reducing the prevalence of the road crash factors. Initial assessments indicate the project's alignment with the Social Benefits and Resilience POI criteria, and improving connectivity and access to critical services, in particular for emergency services to/from Kawakawa Hospital.</p> <p>This project enhances access to and through Kawakawa town centre where a number of social services and attractions are located. It also improves access further west from the Bay of Islands, aligning with the wider TCDR goals encouraging visitor access to Takaka.</p>						
Interdependencies:	<p>Access to the War Memorial Rest Area is affected in the design, and as such, may require interface with the War Memorial Rest Area Strategy and Implementation Plan. Although this combined area is excluded from the Rest Area Strategy, alignment with the Plan should be considered.</p> <p>Project will also interface with the planned improvements to Kawakawa township as part of the Township Plans, there is a need to determine where the contractor scope of the roundabout ends up SH11 and how it interfaces with the retaining wall project allowance has been made in cost estimate for funding of landscaping.</p>						
Risks and constraints:	<ul style="list-style-type: none"> Access restrictions and partial road closures over the duration of construction works as it is at a major intersection of two state highways. Pedestrian connection on northern side of SH11 connecting up to Bay of Islands College will likely require bank stabilization, therefore may not be considered an early improvement due to added design complexity. 						
Performance against Investment Objectives	<table border="1"> <tr> <td></td> <td>+</td> <td>0</td> <td>-</td> <td>++</td> <td>---</td> </tr> </table>		+	0	-	++	---
	+	0	-	++	---		
Feasibility Criteria	<table border="1"> <tr> <td></td> <td>+</td> <td>0</td> <td>-</td> <td>++</td> <td>---</td> </tr> </table>		+	0	-	++	---
	+	0	-	++	---		
Funding recommendation:	<p>This project is considered strategically important to Takaka given it is improving efficiency on SH1, the main north-south highway in the region, and as a regional strategic route under the CHRC. Importantly, it will provide more resilient access for emergency services to and from Kawakawa Hospital. It will improve safety and efficiency at the intersection and through the town centre and provide improved access to visitor attractions and social services in Kawakawa.</p> <p>Initial assessments indicate that this project aligns with the access objectives under the GPS 2018 strategic direction, and, therefore, may be a candidate for NLTF funding.</p>						
Likely Project Leadership:	<p>This project will likely be delivered by NCTA. Maintenance responsibilities following implementation are still to be agreed.</p>						
Pathway to implementation:	<p>The following steps to implementation are proposed or currently underway:</p> <ul style="list-style-type: none"> Update pavement design and subsequent update of cost estimate Undertake Safety in Design workshop Update detailed design with RSA and SID recommendations Peer review of the cost estimate (existing peer review of SH11 package estimate may be sufficient pending pavement design updates) Prepare contract documents and commence procurement. 						
References:	<p>Appendix 1 - SH1/SH11 - Kawakawa Roundabout</p> <ol style="list-style-type: none"> 1 - Kawakawa Roundabout CDRA Scope Review, Aurecon, 2019 (RD4164-2019-TEO-UJ-1021) 2 - SH1/SH11 Intersection Improvements Road Safety Audit Detailed Design, NCTA Consulting, 2018 3 - SH1/SH11 Intersection Improvements DRAPFT Detailed Design Report, GHD, 2018 <p>Appendix C - Overview of Environment, Planning and Social Context of the Corridor Preliminary Archaeology Risk Screen, Geometra, 2019</p>						

Figure 5-1 Project summary format



5.1 Short-term Projects (0-2 years)

Short-term Projects
SH1/SH11 - Kawakawa Roundabout (including new pedestrian connection)
Shared Use Path Extension and Slip Repair at Haruru
Wayfinding and Signage Upgrades
Undertake Parking Strategy
Te Haumi Flats Safety and Beautification Improvements
Bus Stop Improvements
Corridor wide Safety Improvements

A map depicting the location of each of these projects can be found on the next page, followed by a summary of each project in turn.



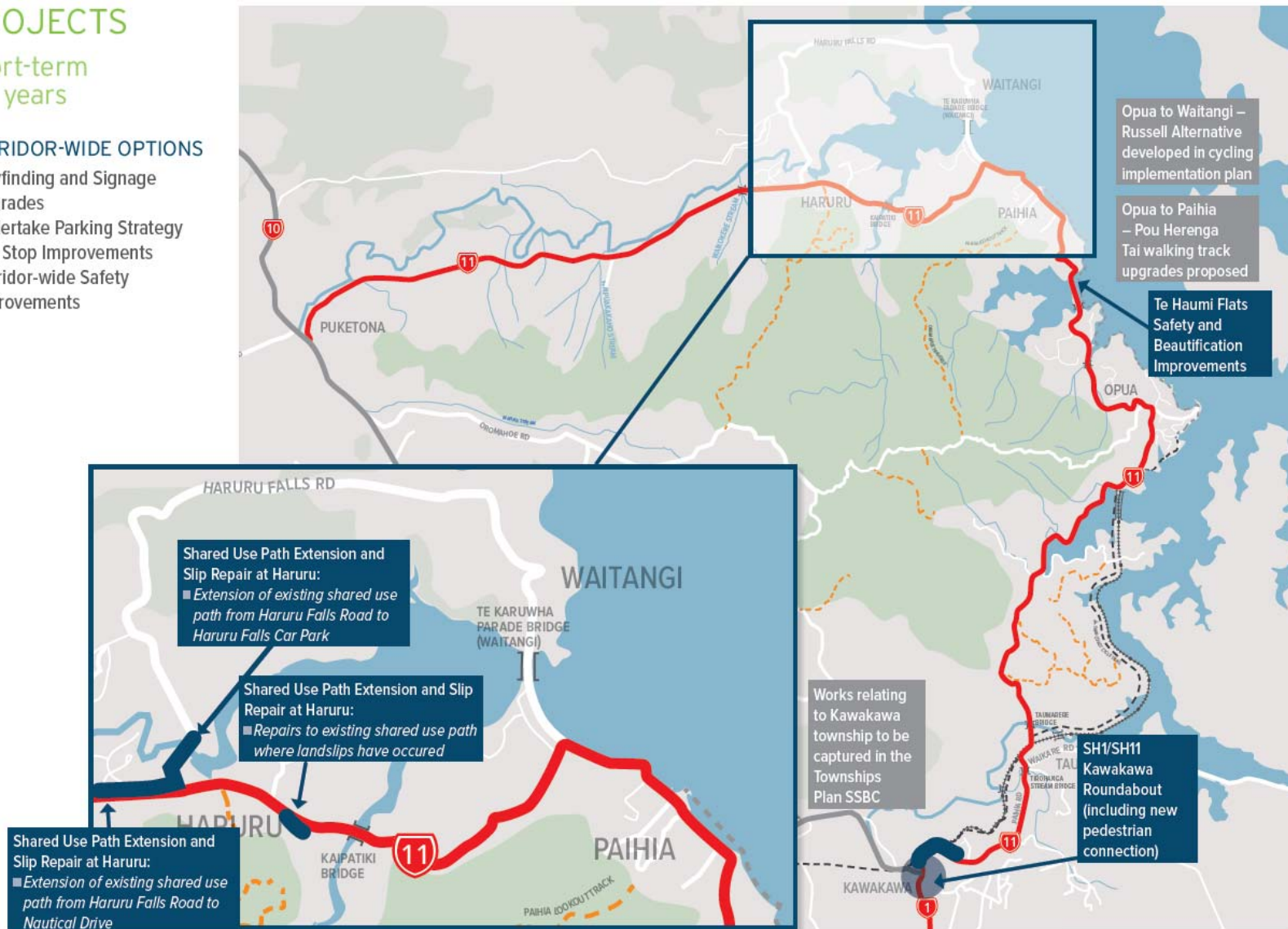
5.1.1 Map of short-term projects

PROJECTS

Short-term
0-2 years

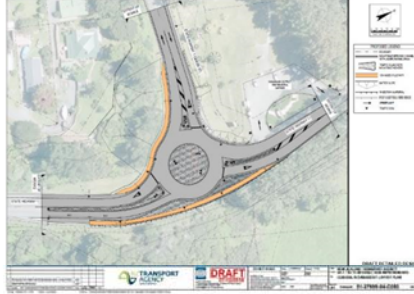
CORRIDOR-WIDE OPTIONS

- Wayfinding and Signage Upgrades
- Undertake Parking Strategy
- Bus Stop Improvements
- Corridor-wide Safety Improvements





5.1.2 Project Descriptions

SH1/SH11 - Kawakawa Roundabout							
Project description:	<p>This project includes the construction of a new roundabout at the SH1 / SH11 intersection at Kawakawa. The project will give SH1 traffic priority at this intersection. The roundabout will improve access to Kawakawa Town Centre and safety, which can be problematic especially during holidays and other busy periods. The project will also include the installation of pou as a means of incorporating cultural markers and illustrating the cultural significance of the area.</p> <p>In 2017, a feasibility study (<i>State Highway 1 / State Highway 11 (Kawakawa) Intersection Improvements Project Feasibility Report, GHD, 2017</i>) was undertaken to assess options to improve the operational performance of the intersection. This study recommended that a roundabout option be taken forward. Detailed design was completed in December 2018. A Road Safety Audit (RSA) undertaken which recommended minor changes to the design. At the time of writing, the detailed design has not yet been updated to address these changes.</p> <p>In addition to the roundabout, it is recommended that a new footpath be considered in the grass berm from Waiomo Stream Bridge / Waiomo Road towards Bay of Islands College on the northern side on SH11 (approximately 600m). This will provide a safe pedestrian connection on the northern side of the corridor with better passive surveillance and lighting than the current access under the bridge to Derrick Road. An alternative could be improved wayfinding and an upgrade of the existing track through the bush to Derrick Road.</p> <p>Cost estimate contains allowance for footpath treatment as well as contingency for 2x Pou, landscaping, MSQA and any further design updates, on top of the cost estimate supplied in the <i>SH1/SH11 Intersection Improvements DRAFT Detailed Design Report, GHD, 2018</i>.</p>						
High level estimate:	\$3.7m - \$4.7m	PV Costs:	\$4.0m	PV Benefit:	\$29.8m	BCR:	7.5
Rationale for inclusion in recommended option:	<p>Improves safety by reducing severity of potential crashes, as well as reducing the prevalence of the speed crash factors. Initial assessments indicate the project's alignment with the Social Benefits and Resilience PGF criteria, by improving connectivity and access to critical services, in particular for emergency services to/from Kawakawa Hospital.</p> <p>This project enhances access to and through Kawakawa town centre where a number of social services and attractions are located. It also improves access further west from the Bay of Islands, aligning with the wider TCDR goals encouraging wider travel across Tai Tokerau.</p>						
Interdependencies:	<p>Access to the War Memorial Rest Area is affected in the design, and as such, may require interface with the Northland Rest Area Strategy and Implementation Plan. Although this corridor/rest area is excluded from the Rest Area Strategy, alignment with the Plan should be considered.</p> <p>Project will also interface with the planned improvements to Kawakawa township as part of the Township Plans, there is a need to determine where the contractors scope of the roundabout ends up SH1 and how it interfaces with the retaining wall project (allowance has been made in cost estimate for funding of landscaping).</p>						
Risks and constraints:	<ul style="list-style-type: none"> • Access restrictions and partial road closures over the duration of construction works as it is at a major intersection of two state highways. • Pedestrian connection on northern side of SH11 connecting up to Bay of Islands College will likely require bank stabilisation, therefore may not be considered an early improvement due to added design complexity. 						
Performance against	--	--	-	0	+	++	+++
Investment Objectives							
Feasibility Criteria	✓						
Funding recommendation:	<p>This project is considered strategically important to Tai Tokerau given it is improving efficiency on SH1, the main north-south highway in the region, and as a regional strategic route under the ONRC. Importantly, it will provide more resilient access for emergency services to and from Kawakawa Hospital. It will improve safety and efficiency at the intersection and through the town centre and provide improved access to visitor attractions and social services in Kawakawa.</p> <p>Initial assessments indicate that this project aligns with the access objectives under the GPS 2018 strategic direction, and, therefore, may be a candidate for NLTf funding.</p>						
Likely Project Leadership	This project will likely be delivered by NZTA. Maintenance responsibilities following implementation are still to be agreed.						
Pathway to implementation:	<p>The following steps to implementation are proposed or currently underway:</p> <ul style="list-style-type: none"> • Update pavement design and subsequent update of cost estimate • Undertake Safety in Design workshop • Update detailed design with RSA and SiD recommendations • Peer review of the cost estimate (existing peer review of SH11 parallel estimate may be sufficient pending pavement design updates) • Prepare contract documents and commence procurement. 						
References:	<p>Appendix I - SH1/SH11 - Kawakawa Roundabout I1 - Kawakawa Roundabout SIDRA Model Review, Aurecon, 2019 (504164-2000-TEQ-JJ-1021) I2 - SH1/SH11 Intersection Improvements Road Safety Audit Detailed Design, NCC Consulting, 2018 I3 - SH1/SH11 Intersection Improvements DRAFT Detailed Design Report, GHD, 2018</p> <p>Appendix C - Overview of Environment, Planning and Social Context of the Corridor Preliminary Archaeological Risk Screen, Geometria, 2019</p>						




Shared Use Path Extension and Slip Repair at Haruru

Project description:

This project includes improvements to the existing shared use path along SH11 at Haruru being:

- Site 1: Puketona Road SUP extension (Orange): From the intersection of Haruru Falls Road/ SH11, extend a SUP west along Puketona Road to the intersection of Nautical Drive/SH11 (Watea Development).
- Site 2: Haruru Falls Road SUP extension (Yellow): From the intersection of Haruru Falls Road/ SH11, extend a SUP north along Haruru Falls Road to Haruru Falls Carpark.
- Site 3: SH11 SUP Gap Connection (Blue): SUP connectivity adjacent to the slip site along SH11 (approximate location: a 200m section length located on the east side of SH11, 100m south of Ash Grove Circle and 100m north of Kaipātiki Rise).



Scheme Design for Sites 1 and 2 along with a potential cross-section option for Site 3 was undertaken as detailed in the Haruru Shared Use Path Extensions Scheme Design Report (504164-2000-REP-JJ-1022). At the time of writing, ground investigations were planned for Site 3 to assess the slip condition and risk of further failure.

PV Costs, PV Benefits and BCR have been calculated cumulatively for the Shared Use Path Extension and Slip Repair at Haruru, Haruru Falls Road SUP (to Bayly Road) Destination Facilities for Cyclists and Cycle Safety Measures. A p50 and p95 cost estimate has been undertaken of the scheme design however no allowance has been made at this stage for a retaining structure pending the results of the geotechnical investigation.

High level estimate:	\$1.2m - \$1.8m	PV Costs:	\$11.6m	PV Benefit:	\$12.3m	BCR:	1.1
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Rationale for inclusion in recommended option:

Improves connectivity by upgrading walking and cycling infrastructure, and increases options for travel between town centres and/or tourist destinations. Also improves safety by reducing the risk of injury/fatalities caused by conflict points through physical separation of active modes from vehicle traffic. There is strong stakeholder support for this project given it is a popular tourist loop walk. Very strong support in favour of these projects received during public consultation.

Interdependencies:

This project is dependant on the outcomes of the speed review and proposed speed limit reduction through Haruru. The scheme design has proposed and assumed that the speed will be lowered from Site 1 through to Site 3. Should the speed limit remain as is, barriers will need to be considered in the design of the SUP which will likely require considerably more earthworks to fit it in at Site 1.

Risks and constraints:

- The section along Haruru Falls Road is outside of the Transport Agency's designation, being a local road under the Far North District Plan, requiring resource consents from Far North District Council.
- Existing SUP is an FNDC asset which would require agreement between FNDC and NZTA for any design and construction.
- Medium risk associated with land contamination from previous uncontrolled filling slip section.
- Watea Village Centre Development planned for site between Watea and Placemaker which may dig up a section of the shared use path for driveway access.
- Unknown geotechnical risk associated with filling over culvert at Site 1 and the extent and risk of the slip at Site 3
- Potentially impacted trees at Site 2 which if required to retain will increase costs and risks to programme.

Performance against	--	--	-	0	+	++	+++
Investment Objectives						✓	
Feasibility Criteria						✓	

Funding recommendation:

This project appears to align with PGF investment objectives through tourism benefits associated with completing missing sections of the Waitangi to Haruru Loop Walk and increasing connectivity between towns and visitor attractions.

This project also aligns with the 'Safety' goals under the GPS 2018 strategic direction--specifically, priorities around improving walking and cycling--and, therefore, may be a candidate for NLTF funding.

Likely Project Leadership

This project spans the designation and assets of both NZTA and FNDC. FNDC is likely to lead delivery of this project as the existing sections of path were delivered by FNDC previously and are currently maintained by them also. It is anticipated that FNDC would also be responsible for maintenance of any future build. NZTA is likely to be an investment partner as the extension to Watea is within the NZTA designation.

Pathway to implementation:

The next stage of design is to progress the plans to detailed design, converting the 2D scheme plans to 3D design, including detailed stormwater design. Some particular aspects for integration include:

- Adding design details such as reflective markers and tactile pavers.
- Coordination with outcomes from ESR Screen (Arborist, Archaeology, Ecology, Planning) and any developing subsequent specialist reporting that may result from this.
- Acquisition of any required planning approvals.
- Coordination with finalised outcomes of SH11 Safety Improvements (Signage and Posted Speed Limits)
- At Site 1 Puketona Road SUP Extension - Confirm batter slopes, integration with adjacent Watea Village Development Site and undertake ground investigations required to extend SUP across existing culvert.
- At Site 2 Haruru Falls Road SUP Extension - Arborist Assessment of impacted trees (i.e. assessed through ESR screen)
- At Site 3 Puketona Road SUP Gap Connection - Geotechnical Assessment, ground investigation works and remedial solution recommendations, Contamination site investigations and assessment and confirm Guardrail design/extends.

In addition, a safety in design (SiD) workshop should be undertaken, so that any improvements considered through the projects lifecycle (including maintenance constraints) can be accommodated into the final design solution along with the outcomes of the Stage 1 - Road Safety Audit (Appendix U).



References:	Appendix J - Shared Use Path Extension and Slip Repair at Haruru J1 - Haruru Shared Use Path Extensions Scheme Design Report, Aurecon, 2019 (504164-2000-REP-JJ-1022) J2 - Haruru Shared Use Path Extensions Scheme Design Drawings, Aurecon, 2019 (504164-2000-SKT-CC-0001) J3 - Haruru Shared Use Path Extensions - Preliminary Consenting Strategy, Aurecon, 2019 (504164-2000-MEM-NN-1031) J4 - Site 3: Summary of site investigations and utility findings, Aurecon, 2019 (504164-2000-MEM-GG-0002) Appendix U - Road Safety Audits U1 - SH11 Haruru Shared Use Path Concept Stage Safety Audit Report, Urban Connection, 2019
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Wayfinding and Signage Upgrades

Project description:	<p>This project includes the implementation of the recommendations of the Wayfinding Signage Implementation Plan along the corridor.</p> <p>The strategy is likely to include (but is not limited to):</p> <ul style="list-style-type: none"> - Bilingual signage - Correction of sign locations - Installation of pou along the corridor - Install an additional ADS sign for Haruru Falls Road between Wharf Road and Haruru Falls Road - Rationalise the signage at the intersection with Wharf Road <p>The project also includes correcting existing signage and their locations to accurately reflect the geographical area and improve the overall experience of road users.</p> <p>It is important to note that during consultations, local hapū viewed this project as a priority as it provides an opportunity for locals and visitors to understand more about the history of the whenua and the importance of the associated hapū. Notably this option has not been developed further as it will be picked up in the Wayfinding Signage Implementation Plan.</p> <p>The cost of this project will be incorporated into the Wayfinding Signage Implementation Plan. However, it is recommended that the roll out of wayfinding signage upgrade take place concurrently with improvements to safety signage as they are inter-related and this will reduce disruption along the corridor only having to deploy Temporary Traffic Management for one set of works.</p>						
High level estimate:	Not costed	Estimated Benefit:	WEBS only (TBC)	BCR:		WEBS only (TBC)	
Rationale for inclusion in recommended option:	Strongly empowers Māori by recognising and exhibiting the cultural significance of the area; for the same reason, this project scores very well against the Maori Aspirations PGF objective. Supports road user experience, safety and tourist outcomes.						
Interdependencies:	<p>This project will require interface with the Wayfinding Signage Implementation Plan to provide the scope of works and signage strategy. There is a need to coordinate this project to inform locals and visitors of the significance of the whenua they are entering and acknowledge the hapū of the area.</p> <p>This project is likely to be delivered in parts and in conjunction with other projects happening at the same location, such as upgrading of rest areas. In particular, the signage elements of the corridor-wide safety improvements would likely benefit from concurrent delivery.</p>						
Risks and constraints:	• Low implementation risk with minor concerns around statutory planning and opportunities for Iwi involvement						
Performance against	—	-	-	0	+	++	+++
Investment Objectives	✓						
Feasibility Criteria	✓						
Funding recommendation:	<p>This project appears to be in alignment with the PGF investment objectives of sustainable economic growth and in enabling Māori to realise aspirations given its contribution to tourism, inclusion of Indigenous values and capacity to empower Māori through sharing the stories of the whenua. As such, initial assessments suggest that this project may be more strongly aligned to PGF funding. Additionally, this project will support the wayfinding outcomes across Tai Tokerau for locals and visitors.</p> <p>The Transport Agency's State Highway related road signs eligible for funding through existing NLTF Operations and Maintenance budget (tbc).</p>						
Likely project leadership	Led by Northland Inc in partnership with FNDC and NZTA. NRC and FNDC depending on the location of potential signage.						
Pathway to implementation:	The SH11 SSBC has not determined exact locations where new or improvements to signage is required along the corridor. The overarching strategy and recommendations of the Wayfinding Signage Implementation Plan are to be first determined before developing this option further. Coordination of delivery to be undertaken at a programme level.						
References:	N/A						





Undertake Parking Strategy							
Project description:	<p>This project will involve the development of an overall parking management strategy to provide locals and visitors with better awareness of parking availability, assess parking demand and supply and investigate alternative parking solutions.</p> <p>To inform the work, an assessment of future parking demand will be considered to determine the impact of a growing tourist industry and the ensuing pressures on parking at key locations. Variable pricing and demand management strategy will be considered.</p> <p>This project will allow for opportunities to allow more tourists to stop conveniently for greater periods of time at key visitor locations including town centres, in particular in Paihia where the issue of insufficient parking has already been raised.</p>						
High level estimate:	\$150k - \$250k	Estimated Benefit:	WEBs only (TBC)	BCR:	WEBs only (TBC)		
Rationale for inclusion in recommended option:	This project is critical to enable the success of the other projects within this Business Case which require reallocation of existing road space and loss of carparking in some areas.						
Interdependencies:	<p>As this project will be reviewing the availability of parking in town centres and making a recommendation, there will need to be a consideration to the works being completed under the Township Plans.</p> <p>Several projects recommended under this SSBC interface with this project including Pedestrianising Te Karuwā Parade, Paihia Town Centre Upgrades and the New Paihia to Waitangi Shared Use Path, all of which rely on the removal of existing car parking spaces. Alternative solutions for where to relocate car parking needs to be considered to deliver these projects.</p>						
Risks and constraints:	<ul style="list-style-type: none"> • Considerable stakeholder engagement required • Much of the car parking is outside of the Transport Agency's designation. Parking strategy will need to be developed in partnership with the Far North District Council. 						
Performance against	---	--	-	0	+	++	+++
Investment Objectives				✓			
Feasibility Criteria				✓			
Funding recommendation:	<p>This project aligns with the 'Access' goals under the GPS 2018 strategic direction and, therefore, may be aligned for funding under the NLTP or RLTP.</p> <p>Given that increased parking is an enabler for tourism and economic growth and that improvements will also reduce the environmental and congestion impacts of cars "circling" for a place to park, alignment with the PGF investment objectives of sustainable economic growth and environmental sustainability is noted.</p>						
Likely project leadership	<p>This project will be led by FNDC.</p> <p>As parking scenarios will need to test removal of parking from the State Highway, NZTA will be a key project partner, noting that the parking on SH11 at present is currently outside of FNDC's jurisdiction for enforcement.</p> <p>Alternative parking locations likely to be supplied on FNDC property/ road corridors. FNHL and local business associations are likely to be key stakeholders involved in delivery and optioneering as part of the strategy.</p>						
Pathway to implementation:	<p>The next steps in delivery of this project would include the engaging a supplier to commencement data collection to inform current and future parking demand to key tourist destinations and townships in the Bay of Islands region. Steps will likely include:</p> <ul style="list-style-type: none"> - Undertake parking demand surveys during summer peak - Assess parking demand and future projected growth - Assess parking demand management options and potential parking relocation options - Stakeholder engagement - development of the strategy through a Design Led Thinking series of workshops where key stakeholders participate (FNDC/NZTA/FNHL/Focus Paihia/Business Associations etc) to develop the response solutions together should be considered, to ensure maximum buy-in to a common goal. 						
References:	N/A						



Te Haumi Flats Safety and Beautification Improvements

Project description:

This project includes improvements to the Te Haumi Flats area to achieve safety interventions and deliver a range of environmental, economic, social and cultural user benefits for the local community and visitors. Te Haumi is a popular waterfront gathering place for locals, including easy access for kai moana collection, boating, swimming and food trucks/market stalls for fresh seafood and market produce. Waterfront activation and safety improvements will be welcomed by a range of users including iwi/hapū.

Te Haumi has well-established historic and cultural values as a place of wāhi tapu and known in-ground archaeological evidence. The site has a long history as a place of occupation pre- and post-European settlement, including proximity to Waitangi and nearby Russell, the first capital of New Zealand.

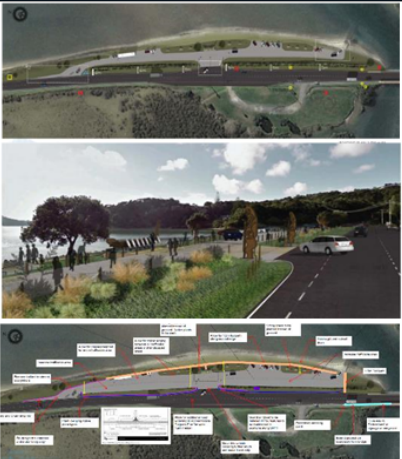
Improvements will deliver a safer speed environment, ingress and egress from the stopping place, flows of vehicles and pedestrians-including buses and cars with boat trailers, advance signage for wayfinding and information, along with a cultural narrative through artworks, cultural planting and other story telling elements.

Earlier versions of a safety and beautification scheme were explored by the Bay of Islands Rotary Club. A special working group Te Pēwhairangi Charitable Trust was established to settle on a concept design as a Rotary centenary project. The vision was to create "an attractive, people friendly amenity area that provides a welcoming and instructive entrance to Paihia with full acknowledgement of its historical and cultural importance." A number of versions were considered, with the most recent design update completed in 2012, before the time period for funding and delivery was exceeded.

The *Te Haumi Flats Concept Design Review (504164-2000-TEQ-JJ-1027)* was undertaken to bring the 2012 design in-line with current standards and project requirements and has provided a number of recommendations.

Public consultation indicated a strong desire for a pedestrian facility along the flats to improve safety for people walking in between Opuā and Paihia including school children walking to their bus stop and walkers on the Te Ararōa trail. Provision of a formalised pedestrian crossing was included in the recommended design update.

A p50 and p95 cost estimate has been undertaken of the design - it excludes allowance for any pou or the waka which will likely incur an additional cost.



High level estimate	\$1.3m - \$1.7m	PV Costs:	\$1.4m	PV Benefit:	\$1.2m	BCR:	0.9
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Rationale for inclusion in recommended option:

Improves safety by reducing excessive speed and discourage overtaking, which will reduce conflict points. Empowers Māori by including cultural storytelling opportunities, and creates economic opportunity by improving the site and thereby encouraging more vendors to operate at Te Haumi Flats.

Scores well on the Social Benefits PGF criteria, since the improved area creates a space for people to meet, recreate, and enjoy the surroundings. Received support from hapū. Considerable work has been done on this project previously.

Interdependencies:

- Speed limit reduction through this section is strongly recommended - interfaces with NZTA's speed limit review (although this section is not considered as part of the current review scope).
- Project interfaces with the Northland Integrated Cycling Implementation Plan noting that strategy assumes Po Herenga Tai trail riders use the ferry from Opuā to Paihia. The Te Ararōa Trail traverses along the flats and improvements to the trail are planned under the Northland Integrated Cycling Implementation Plan - however from discussion with the Cycleways team, there are no planned improvements for Te Haumi.
- Note that the scope of the Northland Rest Area Strategy and Implementation Plan does not include SH11 location however the design and recommendations developed as part of the SH11 SSBC were circulated to the Plan team for review.

Risks and constraints:

- Project is of high interest to project partners and stakeholders requiring comprehensive consultation with iwi/hapū, Heritage NZ, Councils and Focus Paihia. There is an opportunity to create a light footprint approach similar to Te Onewā Pā, Auckland and to collaborate with iwi and Heritage NZ in an iwi-led design framework and interpretive approach.
- Known wāhi tapu nature of the Te Haumi flats and presence of intact archaeological sites (such as identified midden) means that any earthworks within the vicinity will require an archaeological authority and this may include an initial exploratory investigation. Further design development should take this into account when planning extent and location of earthworks including geotechnical investigations, site enabling works, construction and landscaping works.
- No allowance has been made for lighting at this site due to the high cost associated with installing utilities and lighting in the rural setting but noting that this has been raised and is being considered for other sites as part of the Northland Rest Area Strategy and Implementation Plan. Provision of lighting can be made a subsequent stages of design with an effect on project cost.
- Works close to or potentially within the CMA.

Performance against	--	--	-	0	+	++	+++
Investment Objectives					✓		
Feasibility Criteria					✓		

Funding recommendation:

This project appears to be in alignment with the PGF investment objectives of economic growth and improving social inclusion by creating an area to highlight the historical and cultural importance of this region for visitors and locals alike. Notably, this area is important to local Hapū as it is the main site for gathering kaimoana; therefore, improved facilities and safer access would deliver better outcomes for Māori, also a PGF investment objective. As such, initial assessment suggest that the project may be strongly aligned to PDU funding.



Likely Project Leadership	The owning organisation for this project is still to be confirmed. Responsibility for the ongoing maintenance of the rest area will be discussed and agreed with FNDC. The Transport Agency will likely retain operations and maintenance responsibility for assets such as VMS.
Pathway to implementation:	<p>A design review of the Te Pēwhairangi Trust Concept Design (2012) has been undertaken which identified next steps to progress this project to implementation. These include:</p> <ul style="list-style-type: none"> • Topographical survey of the site including the existing sea wall and foreshore area. • Status check of land ownership • Hui with trust and Hapū to agree methodology, identify risks and desired outcomes for this project. • Preliminary meeting with Heritage NZ to consider the special history of the site and appropriate design outcomes • Site investigations including CBR testing, boreholes and Preliminary Site Investigation with preliminary soil sampling • Develop Scheme design incorporating comments from the Stage 1 Road Safety Audit, outcomes of the Hui and recommendations as per the environmental screen. • Acquisition of required planning approvals.
References:	<p>Appendix M - Te Haumi Flats Safety and Beautification Improvements</p> <p>M1 - Te Haumi Flats Safety and Beautification Improvements - Design Recommendations & Cost Estimate, Aurecon, 2019 (504164-2000-TEQ-JJ-1027)</p> <p>M2 - Bay of Islands Rotary Club/ Te Pēwhairangi Charitable Trust Te Haumi Project Summary, Richard Green, 2014</p> <p>M3 - Te Haumi Flats Safety and Beautification Improvements - Preliminary Consenting Strategy, Aurecon, 2019 (504164-2000-MEM-NN-1034)</p>



Bus Stop Improvements							
Project description:	<p>This project includes improvements to bus infrastructure along SH11. This will include measures to facilitate safe stopping on the existing bus route in specific areas of the corridor as well as the installation of new designated bus stops where appropriate. Where possible these stops should be located to accommodate multiple services, including school buses, local buses and inter-regional services. Consideration will also be given to the provision of bus shelters and lighting at these sites. This will be defined at the next design stage.</p> <p>Specific areas of improvements have been initially identified by stakeholders and include:</p> <ul style="list-style-type: none"> - Opua at the top of the hill- Although there have been recent improvements with bus stops installed and the shoulder widened, additional widening is required, currently only stop on the southbound side and when its raining, anecdotal feedback from the community open day noted that school children wait on the opposite side of the road and dash across when they see the bus coming, putting themselves at risk of being hit by a vehicle coming around the bend. - Te Haumi beach stop by the toilets- There is no shoulder for buses to pull off on and they must drive up the curb and along the grass berm in current conditions - Caltex service station- Curb and channels prevent buses from pulling off on existing shoulder - Watea- There is no designated stop and wider shoulders are required - Roadrunner Tavern- The new guardrail (southbound) prevents buses safely pulling over off the road, so they are forced to stop in the lane <p>Feedback was received about a number of the bus stop locations as part of the community events, which are perceived to be unsafe for waiting school children, in the path of vehicle traffic should it lose control and lacking in shelter or a safe pull off area for the bus.</p> <p>Delivery of this project would make bus services safer, improving the user experience, encouraging the use of public transport and facilitate better means of travel for those who do not own private vehicles.</p>						
High level estimate:	\$200k - \$300k	Estimated Benefit:	WEBs only (TBC)	BCR:	WEBs only (TBC)		
Rationale for inclusion in recommended option:	Improves safety for bus drivers, passengers and pedestrians by creating safer spaces for buses to stop. Improves access by increasing appeal of bus travel. Investment in bus service infrastructure will improve the customer experience.						
Interdependencies:	Project would require interface with the safety improvements and planned works at Te Haumi flats. Interface with bus loop trial and potential upgrade stops to support trial which will improve the customer experience and encourage mode shift.						
Risks and constraints:	• Interface with Far North District Council and Northland Regional Council over bus stop infrastructure.						
Performance against	---	--	-	0	+	++	+++
<i>Investment Objectives</i>					✓		
<i>Feasibility Criteria</i>						✓	
Funding recommendation:	This project appears to be in alignment with the 'Safety' and 'Access' goals under the GPS 2018 strategic direction and, therefore, may be aligned to NLTF funding. Funding may come from existing budgets, or if existing funds are exhausted, given its indicative alignment with the PGF objectives and bus services trial project, these projects may be bundled together.						
Likely project leadership	This project will likely be delivered by NRC with the Transport Agency as the primary funding partner as they are responsible for any widening required. Other investment partners may include FNDC should bus stops be constructed on local roads.						
Pathway to implementation:	The SH11 SSBC has not determined exact locations where new or improved bus stops are required. Next steps in delivery of this project would include consultation with local council/s and private bus services providers to understand the demand along specific routes. This will inform what infrastructure or improvements are required to the bus stops.						
References:	N/A						



Corridor wide Safety Improvements							
Project description:	<p>A review of the existing safety infrastructure along the SH11 corridor was undertaken as part of this project. Concept sketches showing the identified recommended improvements to signage, linemarking and safety barriers were produced. These were developed to address common crash factors, high risk locations, in response feedback from stakeholders and during public consultation and to support a consistent 'no surprises' environment.</p> <p>The scope of the project includes:</p> <ul style="list-style-type: none"> - Installing appropriate speed advisory signs and chevrons on curves - Improvements to safety signage and edge markers to meet standards as well as relocation and installation of new items where deemed insufficient - Audio tactile paving, red reflectorised raised pavement markers, linemarking - Traffic directional arrows for overseas driver - Improvements to guardrails including installation of new guardrail where deemed deficient and addressing existing non-compliant guardrails - Removal or protection of roadside hazards - Pedestrian crossing improvements. <p>The project also recommended (these items have not been costed as require further assessment and/or scoping):</p> <ul style="list-style-type: none"> - Reducing the speed limit in sections - Right turn bay and acceleration lanes for HCV's at Broad-spectrum Ltd Quarry site. - Widening culverts and improving rear support behind safety barriers - Extension of the SUP from Haruru to the Bay of Islands Holiday Park - Localised widening at Bay of Islands Holiday Park for vehicle and school bus turning traffic. - Upgrades of non-compliant guardrails west of Bay of Islands Holiday Park with TL4 barrier as part of Upgrade Programme - Installing areas from Puketona to Haruru to provide a safe space to pull over in emergencies e.g. to change a tyre - Shortening the southbound slow vehicle bay at Haruru or conversion to a pullover bay - Improvements to Opuia intersection. <p>A p50 and p95 cost estimate has been undertaken of the concept design. Where widening has been noted as 'may be required', this has been included in the cost estimate for the full length of the barrier.</p>						
High level estimate:	\$10.8m - \$16.2m	PV Costs:	\$12.5m	PV Benefit:	\$14.2m	BCR:	1.1
Rationale for inclusion in recommended option:	Improves safety by reducing conflict points at intersections and reducing likelihood of head-on collisions, and by reducing the prevalence of crash factors including fatigue, foreign drivers, dark conditions and wet weather.						
Interdependencies:	Given an aspect of this project is reviewing passing lanes, it may require coordination with the Northland Passing and Overtaking Opportunities SSBC for consistent treatment strategy in Northland however noting that these passing lanes on SH11 are outside of that SSBC scope. Coordination will also be required with the Wayfinding Signage Implementation Plan to ensure that both implementation strategies complement each other.						
Risks and constraints:	<ul style="list-style-type: none"> • Current width of the road and physical constraints to widening will limit the types of solutions able to be delivered (e.g. additional shoulders, cycle lanes etc.) • Temporary traffic management and network disruption costs to implement these improvements is considerable and a staged approach may be more suitable - as part of another adjacent project. • individual scope of works may require approvals under the Resource Management Act 1991, to be reviewed once detailed design of the specific interventions are confirmed. 						
Performance against	--	-	-	0	+	++	+++
<i>Investment Objectives</i>	✓						
<i>Feasibility Criteria</i>	✓						
Funding recommendation:	This project appears to align with the 'Safety' goals under the GPS 2018 strategic direction and, therefore suggests it is more strongly aligned to NLTF funding.						
Likely Project Leadership	This project will be delivered by NZTA with input from FNDC where treatment is proposed at the intersections of a local road with the state highway.						
Pathway to implementation:	<p>The following next steps are recommended:</p> <ul style="list-style-type: none"> • Updates to the concept design drawings with the outcomes agreed in the Stage 1 - Road Safety Audit. • Consider outcomes from speed management review and implement proposed safety improvements in conjunction proposed roll out of any posted speed limit changes. • Further environmental assessments of works which may impact archaeological and/or other environmental values, such as if substantial footings or earth works are required, may be at or near an archaeological site. • Acquisition of required planning approval (where required for specific scope of works) 						
References:	<p>Appendix K - Corridor wide Safety Improvements K1 - Corridor wide Safety Improvements Technical Note, Aurecon, 2019 (504164-2000-TEQ-JJ-1023) K2 - Corridor wide Safety Improvements Concept Drawings, Aurecon, 2019 (504164-2000-SKT-CC-0001) K3 - Corridor wide Safety Improvements - Preliminary Consenting Strategy, Aurecon, 2019 (504164-2000-MEM-NN-1032)</p> <p>Appendix U - Road Safety Audits U3 - SH11 Safety Improvements Concept Stage Safety Audit Report, Urban Connection, 2019</p>						



5.1.3 Benefits and Outcomes

The short-term projects aim to deliver an achievable package of benefits in the first two years of the programme.

There will be a comprehensive review of all safety features of the SH11 corridor. The outcomes of this review will generate recommendations for interventions in high-risk areas, which will help to improve KiwiRAP ratings on the route. This will also include recommendations for improvements which will more closely align the design of SH11 to the Transport Agency's high-risk rural roads guide. Safety and access will be boosted by extending the Haruru shared use path, and by connecting the existing sections around the slip. Safety will also be improved for public transport users; buses are currently unable to pull off the road at several bus stop locations along SH11, and at these sites kerb and barrier realignment and the installation of bus shelters will significantly improve the user experience.

These projects will enhance the appeal of public transport and active modes, which will help to diversify mode use away from cars on SH11 to reduce greenhouse gas emissions, and also provide more attractive travel opportunities for the relatively large proportion who do not own cars. Increased use of public transport and active modes will also reduce congestion, thereby improving efficiency for locals and visitors during holidays and other busy periods.

SH1 vehicles and freight will find efficiency significantly increased at Kawakawa, where a new roundabout will replace the current T-junction at the SH1/SH11 intersection. The customer experience of the corridor will also be enhanced by providing recognition of the historical and cultural importance of the Bay of Islands, and will include bilingual signage, historical storyboards and hand-carved pou. This will support a key desired outcome for hapū by increasing cultural exposition along the corridor.

This will complement the installation of public artwork at Te Haumi Flats, part of a storytelling initiative to encourage visitors to stop at the rest area and thereby create new economic opportunities. The beautification of this site will pave the way for the creation of a space where food trucks can stop to serve visitors. Finally, in preparation for the increase in visitors in the coming years, a parking strategy will be developed and implemented to ensure that the parking provision is able to cope with demand. This expanded capacity in Paihia will help to increase the tourist spend, providing an important economic opportunity.



5.1.4 Investment Objective Alignment and Benefit-Cost Ratio

Project	Safety	Access and Connectivity	Social and Economic Opportunity	PV Cost	PV Benefits	BCR
SH1/SH11 - Kawakawa Roundabout (including new pedestrian connection)		✓		\$4.0m	\$29.8m	7.5
Shared Use Path Extension and Slip Repair at Haruru*	✓	✓		\$11.6m*	\$12.3m*	1.1*
Wayfinding and Signage Upgrades			✓	WEBs only (TBC)		
Undertake Parking Strategy			✓	WEBs only (TBC)		
Te Haumi Flats Safety and Beautification Improvements			✓	\$1.4m	\$1.2m	0.9
Bus Stop Improvements	✓			WEBs only (TBC)		
Corridor wide Safety Improvements	✓			\$12.5m	\$14.2m	1.1

*PV Costs, PV Benefits and BCR have been calculated cumulatively for the Shared Use Path Extension and Slip Repair at Haruru, New Paihia to Waitangi Shared Use Path, Haruru Falls Road SUP (to Bayly Road) and Cycle Safety Measures.



5.2 Medium-term Projects (3-5 years)

Medium-term Projects
Kaipātiki Bridge Upgrades
Crossing Improvements at Taumārere
Improve Bus Connections in Tai Tokerau
Mobile Facility for Driver Licensing, Registration and WoFs
Te Karuwā Parade Upgrades
Tirohanga Stream Bridge Replacement
Implement Carpooling and Rideshare Services
Paihia Town Centre Upgrades
Stormwater Upgrades

A map depicting the location of each of these projects can be found on the next page, followed by a summary of each project in turn.



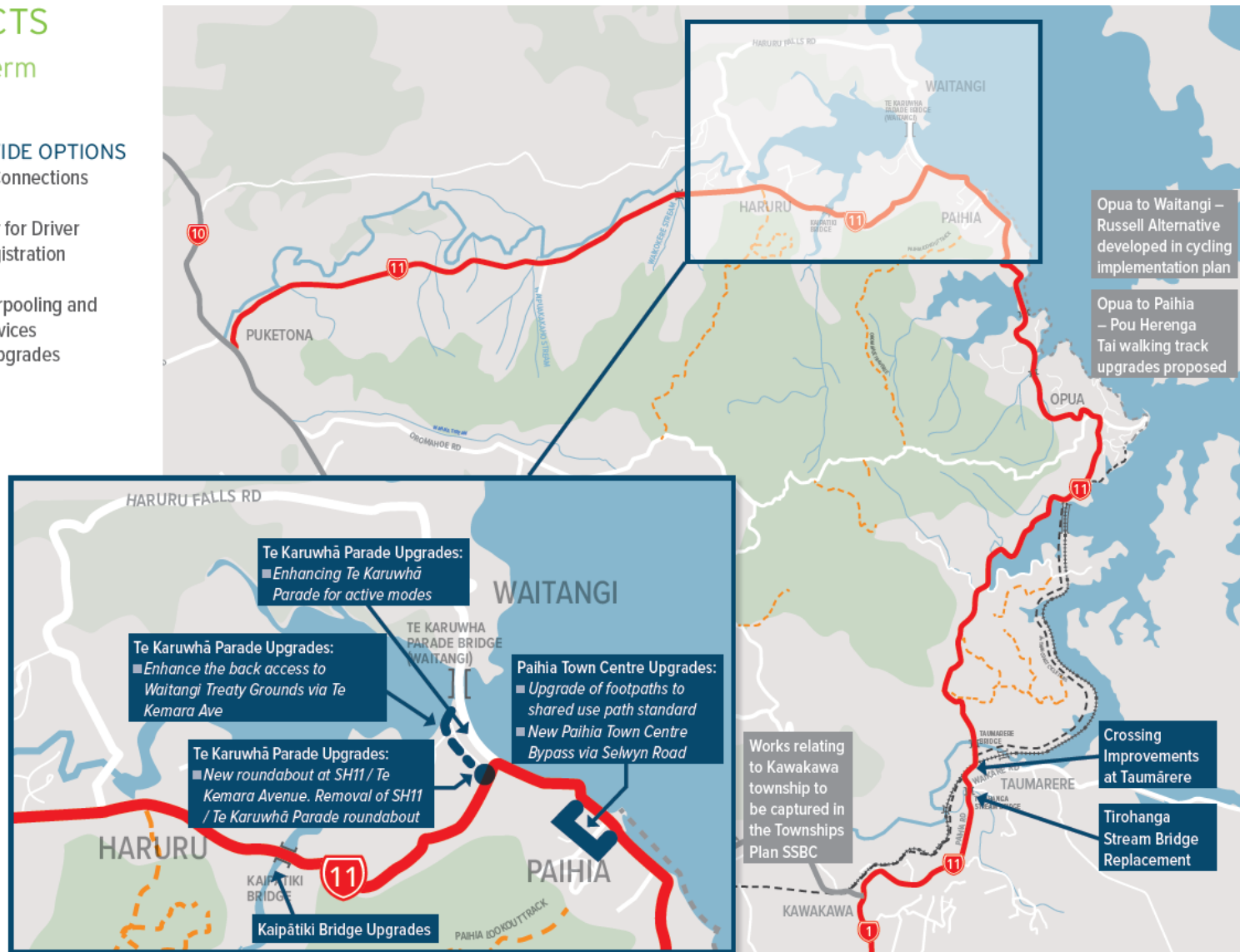
5.2.1 Medium-term Projects Map

PROJECTS

Medium-term
3-5 years


CORRIDOR-WIDE OPTIONS

- Improve Bus Connections in Tai Tokerau
- Mobile Facility for Driver Licensing, Registration and WoFs
- Implement Carpooling and Rideshare Services
- Stormwater Upgrades





5.2.2 Project Descriptions

Kaipātiki Bridge Upgrades							
Project description:	<p>This project includes improvements to the Kaipātiki Bridge between Paihia and Haruru. Currently there exists a 6m wide bridge which is notably too narrow for buses and/or heavy vehicles to pass each other on bridge. Bus operators advise their drivers not to attempt to cross the bridge if there is an on-coming large vehicle or bus.</p> <p>The scope of the bridge improvements includes widening of the bridge and an upgrade of the existing footpath to allow for safer vehicle and pedestrian access across this bridge.</p> <p>The initial findings in the Kaipātiki Bridge High Level Widening Assessment recommends widening from 6m to 8.4m and installation of a TL-4 barrier. The proposed widening solution will require services to be shifted away from the bridge and replacement of the 1.5m SUP bridge deck and barrier to allow for widening.</p>						
							
	High level estimate:	\$1.8 - \$2.5m	PV Costs:	\$2.0m	PV Benefit:	\$15.7m	BCR:
Rationale for inclusion in recommended option:	Improves safety by significantly reducing conflict between vehicles and reducing the prevalence of crashes. Improves connectivity by upgrading the existing pedestrian/SUP route which is in poor condition. This option had very strong support during public engagement.						
Interdependencies:	This project interfaces with the Corridor-wide Safety Improvements project in that it benefits from a proposed reduced speed limit through this section, recommended in the Safety Improvements project.						
Risks and constraints:	<ul style="list-style-type: none"> • Further work is still required to confirm that the bridge substructure has sufficient capacity for additional bridge width. There is a risk that this further work results in widening not being feasible. • Widening of the existing bridge will require a number of departures from NZTA relating to modification of a new TL-4 traffic barrier, bridge widths still below current standards, and no strengthening of existing bridge elements to bring them up to current standard. • As the TL-4 barrier is semi-rigid, when it is hit by a vehicle, it will deflect into the Shared Use Path - a significant safety risk for pedestrians and cyclists. • Consultation with services asset owners is still to be undertaken. Widening requires the relocation of 2 No. watermains on the southern side of the bridge. • Potential access restrictions and partial road closures over the duration of construction works. Possible requirement to close one lane or detour traffic through Waitangi / Haruru Falls Road for parts of the of construction period. • A listed heritage feature is located below the road surface to the south of the southern bridge abutment, comprising a former bridge. 						
Performance against	—	—	—	0	+	++	+++
Investment Objectives	✓						
Feasibility Criteria	✓						
Funding recommendation:	<p>This project appears to be in alignment with the 'Safety' goals under the GPS 2018 strategic direction and, therefore, may be a candidate for NLTF funding given it's main outcomes are improved safety (for vehicles, buses, HCVs, pedestrians and cyclists).</p> <p>This project also appears to be in alignment with PGF investment objectives of improving the resilience of critical infrastructure. Alignment with PGF outcomes may present an opportunity to bring forward this project given the strategic importance of the bridge's physical connection to the Bay of Islands.</p>						
Likely Project Leadership	This project will be delivered by NZTA who own the asset. It is suspected that FNDC own the pedestrian clip-on and therefore will likely be an investment or project partner.						
Pathway to implementation:	<p>Under the SH11 SSBC, a high level widening assessment on the current bridge has been undertaken. This study has investigated how the existing bridge could be feasibly widened to improve safety for vehicle users, pedestrians and cyclists. The study shows the widening appears feasible but further investigation is needed to assess the bridge sub-structure (to take increased loading), determine the condition of existing piles, and carry out consultation with services owners (2 No. watermains to be relocated).</p> <p>The next steps in delivery of this option will include the development of the feasibility design through to concept design.</p> <p>Step 1:</p> <ul style="list-style-type: none"> • further investigation to assess the bridge piles and RSJ beams, a full structural inspection, load rating, and detailed assessment of the proposed widening feasibility. • discussion with NZTA to confirm that the departures needed for the widening option are acceptable. • engagement of Archaeologist to inform location of listed heritage feature with consideration to works disturbance area and consultation with Heritage New Zealand. <p>Step 2:</p> <ul style="list-style-type: none"> • Assess pile condition – likely destructive testing (i.e. coring or the like); • Assess relocation of utilities/ services on southern side of bridge. This includes consultation with asset owners; • Assess the structural feasibility of widening the SUP over the bridge discussions with Far North District Council the SUP asset owner; • Survey bridge RSJ beams to confirm web and flange thicknesses; • Concept design and P50 cost estimation for the widening option. • Acquisition of required planning approvals. <p>If upon further investigation, widening of the bridge is not deemed suitable, replacement of the bridge may be recommended. A new bridge is likely to be a multi-span structure to address hydraulic issues at the site. This will inform a feasibility design which can be used for a cost estimate.</p>						



References:	Appendix L - Kaipātiki Bridge Upgrades L1 - Kaipātiki Bridge High Level Widening Assessment, Aurecon, 2019 (504164-2000-TEQ-JJ-1028) L2 - Kaipātiki Bridge Upgrades - Preliminary Consenting Strategy, Aurecon, 2019 (504164-2000-MEM-NN-1033)
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Crossing Improvements at Taumāreare

Project description:	<p>This project includes interventions to improve safety at Taumāreare where the Twin Coast Cycle Trail and the BoI Vintage Rail Line crosses SH11. The following improvements recommended below were captured by the road safety team as part of the <i>Corridor-wide Safety Improvements Technical Note</i> (504164-2000-TEQ-JJ-1023).</p> <p>Currently there are no safety barriers or lights to signify oncoming trains. The relative infrequency of trains (eight per day proposed) and their low speed has meant this intervention has not been a huge cause for concern for safety in the past. To determine if flashing lights, bells or a barrier arm are warranted a full Level Crossing Safety Impact Assessment is required. The outputs of the assessment will indicate what equipment and warning devices are required, it may not be the full works but could be something like the advanced electronic warning signs that are / have been trialled for rural level crossings</p> <p>The following scope is recommended for the cycle trail crossing:</p> <ul style="list-style-type: none"> - Cut back vegetation to ensure there are good sight lines (Maintenance activity - not included in cost) - Replace wooden bollards with chicane and hold rail, to slow cyclists down without a risk that they will crash - Install STOP signs on the cycle trail approach (and removed existing DISMOUNT signs) - Seal the trail approaches on both sides of the highway for 10m, to improve traction and be able to paint limit lines - Install a guard rail around the culvert on the western side <p>This project would improve the safety for all road users by slowing cyclists down approaching the highway crossing, making the crossing clearer to all users and making it easier for cyclists to take off quickly when crossing.</p>	 
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High level estimate	\$610k - \$710k	Estimated Benefit:	WEBs only (TBC)	BCR:	WEBs only (TBC)
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Rationale for inclusion in recommended option: Improves safety by alerting drivers and cyclists to crossing and reducing conflict points. Strong stakeholder sentiment for this project due to the perceived improvements to safety that it would provide for motorists at this crossing.

Interdependencies: Project will require interface with the Northland Integrated Cycling Implementation Plan to ensure compatible solution with any concurrent works to the cycle trail. This project may not be required should the Tirohanga Stream Bridge project be brought forward in the investment programme, and the scope proposes changes to the approach extending back to this site.

Risks and constraints:

- No crashes involving trains recorded at the crossing to support the EEM calculation of benefits for rail crossing improvements.
- Contamination suspected from HAIL activities - likely to require soil testing.
- Works to be undertaken within existing New Zealand Railways Corporation designation, to which KiwiRail's approval (s177 Resource Management Act) will be required to undertake the works.

Performance against	---	--	-	0	+	++	+++
<i>Investment Objectives</i>	✓						
<i>Feasibility Criteria</i>	✓						

Funding recommendation: This project aligns with the 'Safety' goals under the GPS 2018 strategic direction and, therefore is more strongly aligned to NLTF funding. If funded, funding may come through maintenance or low cost low risk activity budgets.

Likely project leadership The Transport Agency and Bay of Islands Vintage Railway Trust are responsible for the Rail Level Crossing and FNDC are responsible for the Cycle Trail. Given that the current give way control is deemed valid at present according to ALCAM, any changes to the crossing would need to be led by the Transport Agency or BoI Vintage Railway Trust. The sealing of the cycle way approach may be carried out as a maintenance or low cost low risk activity.

Pathway to implementation:

Next steps in delivery of this project are to:

- Monitor safety of rail level crossing and complete a Level Crossing Safety Impact Assessment, taking into consideration all likely users, including cyclists and train drivers, as well as pertinent rail risk factors should changes in the train frequency or safety issues occur.
- Coordinate foliage maintenance activities with maintenance contractor
- Undertake any designs, consents and environmental assessments (including consultation with KiwiRail requesting their written approval under s177 of the Resource Management Act 1991) required to deliver the improvements recommended above.

References:

Appendix K - Corridor wide Safety Improvements
 K1 - Corridor wide Safety Improvements Technical Note, Aurecon, 2019 (504164-2000-TEQ-JJ-1023)
 K2 - Corridor wide Safety Improvements Concept Drawings, Aurecon, 2019 (504164-2000-SKT-CC-0001)



Improve Bus Connections in Tai Tokerau

Project description:

This project looks to improve connections to Kaikohe, Okaihau, Kerikeri, Paihia, Kawakawa and Moerewa in order to meet demand for access for tourism, encourage residents from these outer areas to visit the Bay of Islands and improve access to job opportunities for locals.

Notably, this project will look to build on the work by Northland Regional Council who implemented a two year trial passenger transport service across the mid north including providing transport links between Kaikohe, Okaihau, Kerikeri, Paihia, Kawakawa and Moerewa from July 2016 to July 2018. Feedback received indicated fares were too high (\$17 return for Kaikohe to Paihia), services infrequent and did not cater for late night hospitality workers or afternoon housekeeping staff.

Following the trial, a new route was implemented early May 2019 with the 'Hokianga link' from Omapere to Kaikohe (red), the mid-north link from Kaikohe to Waipapa/Kerikeri (pink) which passes through Okaihau and the second mid-north link from Kaikohe to Waipapa (navy) via Waitangi (pictured).

The latest service via Waitangi runs at 3.40pm and a return trip from Kaikohe to Paihia remains at \$17. The services only operate on Tuesdays, Thursdays and Saturdays.

This project can enhance the existing service by seeking funding to increase frequency providing a daily service with higher frequencies. In particular provision of a service which operates later in the day to cater for employees in the hospitality industry around the Paihia/ Bay of Islands area.



High level estimate:	\$600k - \$800k	PV Costs:	\$7.2m	PV Benefit:	\$17.2m	BCR:	2.4
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Rationale for inclusion in recommended option:

Improves access by increasing options for travel between town centres and tourist destinations. Expands economic opportunity by providing new connections to points of interest and thereby increasing tourist access to multiple areas of the route. In particular, improved access to healthcare services such as dentists, optometrists etc. in Kerikeri; of particular concern for seniors from Paihia, Moerewa and other towns who often require these services. Bus connection provides easy access for people visiting patients in Kawakawa Hospital. Also supports local tourism for people wanting to spend a day in Paihia or Russel.

Scores well against PGF criteria, particularly Job Creation through creating bus industry jobs, and Social Benefits through improving access for people without vehicles and increasing accessibility for locals seeking job opportunities.

To date, the actual demand for public transport services in this part of Tai Tokerau has not been proven. By providing a lower price point (if supported by PGF), the next phase of the trial can provide "testing demand" on which a future operating model could be optimised to better serve the most promising links.

Interdependencies:

This project may interface with the Bus Stop Improvements project included under this business case for coordination of any additional infrastructure required to facilitate the next phase of the trial including new stops, bus shelters etc. which will improve the customer experience and encourage mode shift.

Risks and constraints:

- Farebox recovery condition of 50% will not be met. This requires consideration by the Transport Agency to accept lower recovery rate. Supergold funding is currently applied to the existing service so further subsidising fares may be infeasible.
- High infrastructure cost and operating costs (for charging) associated with facilitating electric buses on long, rural routes. To date, electric bus trials in NZ are focused on urban environments.

Performance against	---	--	-	0	+	++	+++
Investment Objectives	✓						
Feasibility Criteria	✓						

Funding recommendation:

This project appears to be in alignment with the PGF investment objectives of sustainable economic growth, social inclusion and participation and environmental sustainability by improving access to employment and tourism opportunities, increasing connectivity, and presenting economic, social and cultural benefits through the provision of new connections to significant historical and cultural points of interest.

As this project appears unlikely to meet farebox recovery, as well as unproven demand and social need required for NLTF funding, initial assessments suggest that this project may be more strongly aligned to PCF funding.

Likely project leadership

This project will be delivered by NRC who are the registering authority for public transport services.

Pathway to implementation:

Following the trial a new 'Buslink' was implemented in May 2019; but appears it may face similar problems from the previous trial (ridership, high cost Kaikohe to Paihia). Recommended next steps are:

- Advertising campaign to inform public of new services.
- Seek feedback on the service from users and other community members to reassess service frequency and route.
- Partnership trials with tourism operators e.g. bike enabled buses to transport people from the cycle trail end at Opuia into Paihia
- Roll out daily service followed by increased frequencies
- Potential to submit funding request to Energy Efficiency and Conservation Authority to procure an electric bus.

References:

Appendix N - Improve Bus Connections in Tai Tokerau
 N1 - Trial Mid North Passenger Transport Service, Northland Regional Council, 2016
 N2 - <https://buslink.co.nz/wp-content/themes/buslink/downloads/Buslink-mni-hl-timetables-2019.pdf>



Mobile Facility for Driver Licensing, Registration, and WoFs								
Project description:	<p>Due to the geographic spread of Te Tai Tokerau region, communities are isolated and often find it difficult to access necessary services such as driver training, licensing facilities and Warrant of Fitness registrations. This means that when unlicensed drivers or unregistered vehicles encounter law enforcement, they are faced with having to pay infringement fees which adds to financial burdens.</p> <p>The procurement of a mobile facility would enable convenient access for these isolated communities across Tai Tokerau wide, to driver licensing and vehicle registration services - which most locals do not access according to feedback from consultation with the only licensing facilities being Kerikeri or Whangarei at present - this service will create employment opportunities for the community.</p> <p>The NSW Mobile Service Centre operates with timetables updated every month on the website and mobile app. Certain services require appointments to be booked. Prior information is given online to plan all paperwork and save processing times at the counter. Solar panels eliminate the need for external generators.</p> <p>Notably, this will require coordination with the Road Safety Group (including Northland Regional Council and Far North District Council) and alignment with existing strategies should these organisations have plans in place. Funding grants could be provided to existing community organisations such as the Far North REAP (Rural Education Activities Programme) that facilitates workshops for road safety among other community initiatives to roll out this new service.</p>							
	High level estimate		Costed at TCDR programme level		Estimated Benefit:		Region-wide WEBs benefits captured at programme level	
	Rationale for inclusion in recommended option:		Scores well against several PGF criteria, including Social Benefits by allowing isolated communities to access government service and Job Creation as the service will need resourcing.					
	Interdependencies:		There is a need to coordinate this project to ensure access to necessary licensing and registration services in partnership with community organisations such as the Northland Regional Council and the Far North District Council. Project is likely to require coordination with and delivery by the New Zealand Automobile Association Ltd who are the licensing agents for driver licences in New Zealand.					
Risks and constraints:		<ul style="list-style-type: none"> Risk associated with procurement, operation and maintenance of a new mobile facility as well as associated costs for management of a new fleet of vehicles and operators. 						
Performance against		---	--	-	0	+	++	+++
Investment Objectives		✓						
Feasibility Criteria		✓						
Funding recommendation:		<p>This project appears to be in alignment with the PGF investment objectives of sustainable economic growth and social inclusion and participation. Given its role in increasing accessibility for isolated communities and the opportunity for job creation from resourcing the mobile facility, initial assessments suggest that this project may be aligned to PGF funding .</p> <p>This project appears to be in alignment with the 'Access' goals under the GPS 2018 strategic direction and, therefore, may be also be aligned to NLTF. While NLTF funding may be considered, funding does not exist for such an activity in the current NLTF. Given this model hasn't been tested before in New Zealand, initial assessment suggest that this project may be more strongly aligned to PGF funding, which is more likely to support trial-type projects.</p>						
Likely project leadership		<p>This project will likely be delivered by NRC as part of a Northland-wide trial. Project partners will likely include the AA for licensing and other established community groups or individuals who may receive funding support to deliver driver training such as the Far North REAP.</p> <p>Other investment partners may include the Transport Agency.</p>						
Pathway to implementation:		<p>The SH11 SSBC has not determined the appropriate mobile facility service for this area. Next steps in delivery of this project would include discussions and consultations with the Road Safety Group relevant stakeholders (AA, Far North REAP, NTA) and local hapū to develop functional specification for a mobile facility in terms of services offered, operation strategy, vehicle fleet and resourcing, costs regarding operation and maintenance. This would inform the development of a trial service prior to full roll-out and support a funding application for the trial and vehicle procurement.</p>						
References:		N/A						





Te Karuwā Parade Upgrades							
Project description:	<p>This project includes the conversion of Te Karuwā Parade into a 'greenway' also known as a 'bicycle boulevard' which encourages lower volumes of motor traffic travelling at low speeds; to create a pleasant cycling environment, without requiring specific cycle facilities for both cyclists and vehicles. This will be further supported by the re-direction of vehicle traffic onto the adjacent Te Kemara Avenue. A 2m wide footpath along the coastal edge of Te Karuwā Parade is proposed to accommodate pedestrian traffic enhancing the alternative access to Waitangi Bridge via Te Kemara Avenue.</p>						
	<p>This new configuration would require the installation of a new roundabout at the Te Kemara Avenue intersection with SH11 and removal of existing roundabout at the Te Karuwā intersection with SH11. The closure of Te Karuwā Parade will activate the waterfront, increasing the connection between the marae and the ocean. This will regenerate an area for social congregation, such as markets, food trucks etc. for all foot traffic along this route.</p> <p><i>*This cost for this project has been captured with Paihia Town Centre Improvements and Paihia to Waitangi Shared Use Path Upgrades due to the overlap of works therefore making it challenging to separate out project costs. Similarly the benefits have been jointly aggregated including a portion of the PV Costs, PV Benefits and BCR calculated cumulatively for the cycling projects.</i></p>						
High level estimate	\$19.4m*	PV Costs:	\$17.3m*	PV Benefit:	-\$16m*	BCR:	WEBS (TBC)*
Rationale for inclusion in recommended option:	<p>Empowers Māori communities by creating a new and significant entrance to Waitangi. Improves safety by reducing or removing traffic and therefore conflict points from Te Karuwā Parade, and improves connectivity by providing improved, safer pedestrian and cycling access.</p> <p>Initial assessment suggest this project scores well against several PGF criteria, particularly Social Benefits by creating a new communal space and Māori Aspirations by helping to protect Te Tii Marae. Very high support for this project amongst project partners at workshops and with the community at public engagement events.</p>						
Interdependencies:	<p>As this project is considering the redirection of traffic to Waitangi Bridge, there will need to be a consideration to the proposed treatment of Waitangi Bridge and be completed in coordination with the new Paihia to Waitangi shared use path. This project is interlinked with the Paihia to Waitangi Shared Use Path as well as the Access to Waitangi project, coordination is required with the Paihia to Waitangi Shared Use Path and Paihia Town Centre projects to ensure consistent urban design treatment is applied and construction staging is considered.</p>						
Risks and constraints:	<ul style="list-style-type: none"> • Project is of high interest to Paihia township and hence will require a comprehensive consultation with project partners and stakeholders including hapū, councils, Focus Paihia, Heritage New Zealand and others. There is a likelihood that there will be strong views of the ideal solution from various parties which may potentially restrict the solution. • Te Karuwā Parade is outside of the Transport Agency's designation (Far North District Council designations). Greater understanding required of the extent of the FNDC's management and "ownership" of Te Karuwā Parade. • Given the underlying cultural landscape of the area and given the majority of the surrounding land is Māori Owned Land, hapū will have some underlying interest. • Resource consents will be required to undertake the proposed works, with consideration to effects during construction to receiving coastal environment, and encountering archaeological artefacts during construction 						
Performance against	---	--	-	0	+	++	+++
Investment Objectives	✓						
Feasibility Criteria	✓						
Funding recommendation:	<p>This project appears to be in alignment with the PGF investment objectives of enabling Māori to realise their aspirations and improve social inclusion and participation by opening up the waterfront, providing an opportunity to repurpose the space to better highlight the scenic beauty and cultural history that support tourism outcomes. It also appears to be in alignment with the PGF investment objective of improving resilience against coastal processes by removing or reducing traffic along the waterfront. As such, initial assessments suggest that the project may be strongly aligned to PGF funding.</p> <p>The connection to Te Tii Marae and the land surrounding Waitangi as we know it today is part of an important story of interaction between Maori and pakehā from 1815 onwards - so a place of manaakitanga and whanaungatanga. This project will help activate the space in front of Te Tii Marae to reflect this.</p> <p>Bundling the application with the Paihia Town Centre Improvements and Paihia to Waitangi SUP projects may be suitable given its interface with these projects for repurposing the waterfront space.</p>						



Likely Project Leadership	This project will likely be delivered by FNDC as the project is within their designation. Responsibilities for the business case may be led by FNDC and partners such as Iwi. Investment partners may include NZTA as changes to the State Highway including the proposed new roundabout are within NZTA's designation.
Pathway to implementation:	<p>Under the SH11 SSBC, a concept design has been developed for the upgrades to Te Karuwhā Parade. The design also incorporated the Paihia to Waitangi SUP and Paihia Town Centre improvements.</p> <p>Following completion of the concept design the recommended next steps to progress this project (together with the Paihia to Waitangi SUP and Paihia Town Centre improvements) through to pre-implementation are:</p> <ul style="list-style-type: none"> • Establishment of a Project Steering Group made up of FNDC/ FNHL/ NZTA/ Iwi. Agree the functions of this group, the roles and responsibilities, the project scope and decision making powers. • Develop a Funding Strategy to commission pre-implementation activities including early investigations, a detailed business case and stakeholder engagement. • Commission a combined Detailed Business Case with early deliverables focusing on preliminary environmental investigations and the development of a Communications and Engagement Strategy. • The Preliminary Environmental Assessments will identify fatal flaws/ key risks and constraints and be detailed enough to inform subsequent optioneering. Analysis should include heritage built environment and archaeological assessments, ecological assessment, Māori cultural values assessment etc, and traffic impact assessment to assess constraints of the existing transport network and the impacts of the proposed development. This would inform the development of a detailed Cultural Strategy for the intervention. • Acquisition of required planning approvals.
References:	<p>Appendix O - Te Karuwhā Parade / Paihia Town Centre / Paihia to Waitangi SUP</p> <p>O1 - Te Karuwhā Parade / Paihia Town Centre / Paihia to Waitangi SUP Technical Note, Aurecon, 2019 (504164-2000-TEQ-JJ-1024)</p> <p>O2 - Te Karuwhā Parade / Paihia Town Centre / Paihia to Waitangi SUP Infracore Model, Aurecon, 2019</p> <p>O3 - Focus Paihia - Paihia Master Plan Presentation, Stephenson & Turner Architects Engineers, 2011</p> <p>Appendix U - Road Safety Audits</p> <p>U2 - SH11 Paihia to Waitangi – Shared Use Path Concept Stage Safety Audit Report, Urban Connection, 2019</p>



Tirohanga Stream Bridge Replacement							
Project description:	<p>This option includes improvements to the Tirohanga Bridge between Paihia and Haruru. Currently there exists a one-way bridge which has historically been prone to flooding. Improvements would include full replacement of the bridge and upgrade from a one-way to a two-way bridge including the realignment of approaches. This project would create a safer and more resilient link between Kawakawa and Opuā / Paihia for vehicle traffic.</p> <p>A draft scoping report for the investigation of the State Highway Realignment at Taumāreere was completed in 2002. This assessed two options for the realignment, with the preferred option being:</p> <ul style="list-style-type: none"> - A single 2000m radius curve connecting the tangents at each end of the study corridor with a design speed of 110kph and seal width of 8.5m (3.5m lanes, 0.75m shoulders) - New single span bridge 20m long and 9.4m wide including drainage channels on both sides of the deck. <p>At the time of review, the option did not meet the BCR funding cut-off to secure funding for further project development. Peer review of the design was completed in 2003 which recommended the scope of the options be reconsidered to include lower cost and lower standard alternatives and as such, this existing design can form the basis for further investigations under a DBC.</p> <p>This project will require a detailed business case to assess the options and either reconfirm the existing recommendation or another alternative.</p>						
High level estimate:	\$20m - \$30m	PV Costs:	\$20.2m	PV Benefit:	\$3.3m	BCR:	0.16
Rationale for inclusion in recommended option:	<p>This project is a top priority for hapū due to loss of a family member on this bridge. Delivery of this project will be critical for ensuring a consistent user experience - it improves access for all road users, and provides more resilient connection, reducing the number of closures due to flooding. The project will also improve safety by significantly reducing conflict points between oncoming vehicles and improving alignment.</p>						
Interdependencies:	<p>This project interfaces with the flood resilience project and the geographic extent of the improvements may overlap. This won't be confirmed until later design phases.</p> <p>This bridge forms part of the Northland Bridges programme, it is understood that it hasn't been progressed at this time but it may be the next bridge in line for design and construction.</p>						
Risks and constraints:	<ul style="list-style-type: none"> • [REDACTED] • There is an existing community expectation for the bridge to be two-laned due to promise under the Northland Bridges Project. • Likely access restrictions and partial road closures over the duration of construction works as it is only link between Kawakawa and Opuā and as such the route is required to be operational. • The design may require departures from the Transport Agency design manuals in terms of the ARI to which it will be resilient and in the approaches. • Surrounding land is identified to be flood prone • Further risks are captured in the project risk register 						
Performance against	---	--	-	0	+	++	+++
Investment Objectives	✓						
Feasibility Criteria	✓						
Funding recommendation:	<p>This project appears to align with PGF investment objectives through its strategic importance in providing more resilient access to the Bay of Islands and improve the user experience of the state highway.</p> <p>As this project will help mitigate safety issues with the existing one-way bridge, it also aligns with the safety goals under the GPS 2018 strategic direction and, therefore, may be a candidate for NLTF funding. However, as these issues are not considered as severe as issues in other areas of the network, a replacement bridge is not currently prioritised under the NLTP. As such, the initial assessments demonstrating alignment with PGF outcomes presents a potential opportunity to bring this project forward for funding.</p>						
Likely Project Leadership	<p>This project will be delivered by the Transport Agency. Other investment partners may include NRC from a river management perspective if there is a catchment benefit.</p>						
Pathway to implementation:	<p>The SH11 SSBC has not advanced the optioneering for this project. The recommended next steps to progress this project through to pre-implementation are:</p> <p>Development of a Detailed Business Case to determine the best solution considering the outcomes of the peer review. This DBC will drive the programming of this project, likely replacing the programme proposed by this SSBC. The DBC may be delivered under the existing Northland Bridges Project.</p>						
References:	<p>Appendix P - Tirohanga Stream Bridge Replacement</p> <p>P1 - Taumāreere Realignment Scoping Report, MWH, 2002 P2 - SH11 Taumāreere Realignment - Peer Review of Scoping Report, Northern Civil Consulting Engineers, 2003</p>						



Implement Carpooling and Rideshare Services							
Project description:	<p>This project aims to leverage the work already undertaken by the Transport Agency and looks to develop a local community pool car service or similar rideshare services.</p> <p>Following consultations with hapū, many locals find it difficult to secure employment due to the dispersal of communities in Tai Tokerau. Thus, providing a service such as this, will make it more convenient and provide more options for people to access both social and employment services and opportunities.</p> <p>Further development of this project's scope is required in consultation with the communities to understand what type of ride-share service would be utilised. Options considered will likely include:</p> <ul style="list-style-type: none"> • Provision of a grant to fund a community group who provide an 'on-demand' type ride share service within their community. This would likely include the procurement and provision of an electric vehicle to operate this service. • Repurposing an existing community group or organisation's fleet (such as Ngāti Hine) which could be booked and used by members of the community when not in use by the community organisation. Feedback has also indicated that many vehicles currently owned and used by people in the community for travel are not registered adding to financial burdens should law enforcement become involved. This project would help ease some of these issues. Consideration could be given to the procurement of electric vehicles to provide this service. • A trial similar to that being undertaken in Whangarei at present. • A community carpool/ rideshare application where people can share rides and the cost of transport with other members of the community. This would require a digital application/ digital infrastructure and could piggy-back off work being undertaken by the NZ Transport Agency. 						
High level estimate	\$0.4m - \$1.0m	Estimated Benefit:	WEBs only (TBC)	BCR:	WEBs only (TBC)		
Rationale for inclusion in recommended option:	Improves access by providing alternative options for locals to commute to and from work or to access social services. Scores positively against various PGF criteria, including Job Creation by creating employment for service providers, Environmental Sustainability by reducing emissions due to vehicle sharing and Social Benefits by improving access to services and social opportunities.						
Interdependencies:	<p>There is a need to coordinate this project to improve access to key services and connectivity for communities in or nearby SH11. Thus, this project may also depend on agencies who can provide a fleet of vehicles or set up a digital rideshare system to initiate the service.</p> <p>Option should be developed in partnership with FNDC and NTA.</p> <p>Project will likely require procurement of an electric vehicle and may consider an application to EECA for a funding grant to purchase the initial vehicle and install a charging station.</p>						
Risks and constraints:	<ul style="list-style-type: none"> • Unproved demand if the fare/ ride cost is set too high • Low implementation risk • May take passengers who already use public transport therefore bus service viability declines as a result. 						
Performance against	---	--	-	0	+	++	+++
Investment Objectives	✓						
Feasibility Criteria	✓						
Funding recommendation:	<p>This project appears to be in alignment with the PGF investment objectives of sustainable economic growth and social inclusion and participation. Due to the short duration of the fund, if funded by the PGF, it would be likely that only a trial could be supported.</p> <p>This project aligns with the 'Access' goals under the GPS 2018 strategic direction, however to date, the actual demand for public transport services in this part of Tai Tokerau has not been proven therefore is likely to be excluded from the NLTP.</p> <p>If a trial is to be progressed using an alternate funding source, there is the potential to justify a lower price point to test the demand for this initiative. A future operating model could then be optimised to better serve the most promising links, and, therefore, may be aligned to NLTF funding in future.</p> <p>NLTF may be a better vehicle for ongoing support than the PGF if the trial is able to identify that the project is viable / enduring. Funding for an EV would likely come through a grant from EECA.</p>						
Likely project leadership	This project will likely be delivered by NRC, with other investment partners likely to include the Transport Agency. Other project partners may be the NTA or FNDC.						
Pathway to implementation:	The SH11 SSBC has not determined the appropriate ride-share service for this area. Next steps in delivery of this project would include a public consultation to determine the utilisation of such a service and whether the investment into a ride-share or pool car would be most beneficial for locals. This would provide a better understanding on employment, tourism and other flows to inform demand projections.						
References:	N/A						



Paihia Town Centre Upgrades

Project description:

This project includes the reconfiguration of the Paihia Town Centre. A bypass road is proposed between School Road and Williams Road to direct traffic off SH11 (Marsden Road) and reduce the number of vehicles travelling along the beach front. The speed limit along Marsden Road (starting at School Road) will be reduced to 30km/hr and traffic lanes will be narrowed to 3m wide to further reinforce a slow moving, pedestrian and cyclist friendly environment along the coastal edge and encourage the use of the proposed bypass by vehicles.

The alternate connection will help create a multi-modal environment from School Road to Waitangi bridge where pedestrians and cyclists are able to travel through Paihia in a safe, visually attractive and slow-moving environment. This project ties in with the Paihia to Waitangi Shared Use Path and Te Karuwā Parade upgrades to create a consistent and well-connected route for cyclists and pedestrians and aims to redirect the majority of vehicle traffic away from the beach front to create a more pedestrian/cyclist focused area along the coastal edge, improving the resilience of state highway through the provision of an alternative route.

The project will enhance access to Paihia Town Centre for locals and visitors by improving transport infrastructure and connectivity and facilitate increased social and economic opportunity for the local communities through providing an improved tourist experience

For the SH11 SSBC the design for this project has been based on the concept designs developed by FNHL and Focus Paihia. *The Paihia Town Centre Bypass/ Waitangi SUP and Te Karuwā Parade improvements Infracore Model and accompanying Technical Note (504164-2000-TEQ-JJ-1024)* further outline the scope of the improvements.

**This cost for this project has been captured with Paihia to Waitangi Shared Use Path and Te Karuwā Parade Upgrades due to the overlap of works therefore making it challenging to separate out project costs. Similarly the benefits have been jointly aggregated including a portion of the PV Costs, PV Benefits and BCR calculated cumulatively for the cycling projects.*



High level estimate	\$19.4m*	PV Costs:	\$17.3m*	PV Benefit:	-\$10m*	BCR:	WEBS (TBC)*
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Rationale for inclusion in recommended option:

Provides significant economic opportunity by creating space for new shops, cafes etc along the waterfront area, and empowers Māori by recognising the cultural importance of the area through associated urban design. Significantly improves safety for pedestrians and cyclists along the waterfront, and improves connectivity by upgrading walking and cycling infrastructure along the waterfront.

The project has significant social benefits and will facilitate Job Creation and contribute to achieving Māori Aspirations.

This project has strong stakeholder support especially from hapū and community organisations like Focus Paihia and FNHL.

Interdependencies:

As this project is considering the reconfiguration of Paihia Town Centre, there will need to be a consideration to the works being completed from the foreshore outwards by FNHL including new breakwaters, reclamation, additional berths etc. This project is interlinked with the Paihia to Waitangi Shared Use Path as well as the upgrades to Te Karuwā Parade. Changes to the town centre roads and traffic circulation may reduce the number of car parking spaces available. The overall car parking strategy for Paihia and Waitangi must take this into consideration.

Project will also require coordination with the Paihia to Waitangi Shared Use Path and upgrading Te Karuwā Parade projects to ensure consistent urban design treatment is applied and construction staging is considered.

Alignment with Wayfinding and Signage Implementation Plan required

Risks and constraints:

- Project is of high interest to Paihia township and hence will require a comprehensive consultation with project partners and stakeholders including hapū, councils, Focus Paihia, Heritage New Zealand and others.
- Proposed route of bypass is outside of the Transport Agency's designation (Far North District Council designation).

Significant built heritage constraints and considerations through Paihia Town Centre.

Resource consents required may be publicly notified.

Performance against	---	--	-	0	+	++	+++
Investment Objectives						✓	
Feasibility Criteria			✓				

Funding recommendation:

This project appears to align with PGF investment objectives by increasing connectivity and in facilitating cultural exposition and tourism. Notably, it appears to align with proposed concurrent PGF funding applications that Focus Paihia and FNHL are developing for improvements to the Paihia waterfront. As such, this project appears to be strongly aligned to funding from the PGF.

This project also appears to align with the GPS 2018 strategic direction in that it activates the waterfront encouraging active transport modes and enables regional economic development for tourism.

Likely Project Leadership

This project will likely be delivered by FNDC as they are likely to lead the business case and have adopted this project in their long-term plan. Other investment partners could include NZTA as owners of the Countdown site for the bypass road and FNHL who are leading the foreshore works.



<p>Pathway to implementation:</p>	<p>Under the SH11 SSBC, a concept design has been developed for the new connection to provide an alternate link to bypass the waterfront. The design also incorporated the Paihia to Waitangi SUP and Te Karuwā Parade upgrades. Following completion of the concept design the recommended next steps to progress this project (together with the Paihia to Waitangi SUP and Te Karuwā Parade upgrades) through to pre-implementation are:</p> <ul style="list-style-type: none"> • Establishment of a Project Steering Group made up of FNDC/ FNHL/ NZTA/ Iwi. Agree the functions of this group, the roles and responsibilities, the project scope and decision making powers. • Development of a Urban Landscape Design Framework (ULDF) which recognises and communicates the cultural dimension for the Paihia and Waitangi townships section of the corridor. The ULDF will help paint the natural values of the areas to then allow linking with the safety, access, and social economic opportunities and help focus people, and by default lead to better conservation management (given people go there for the sun, open spaces, views and landscape, plants and animals, and connections, boating, international sailing, fishing). A corridor-wide ULDF could also be considered and ensuring it is aligned to the Wayfinding and Signage Implementation Plan. • Develop a Funding Strategy to commission pre-implementation activities including early investigations, a detailed business case and stakeholder engagement. • Commission a combined Detailed Business Case with early deliverables focusing on preliminary environmental investigations and the development of a Communications and Engagement Strategy. • The Preliminary Environmental Assessments will identify fatal flaws/ key risks and constraints and be detailed enough to inform subsequent optioneering. Analysis should include heritage built environment and archaeological assessments, ecological assessment, Māori cultural values assessment etc, and traffic analysis of the existing access corridors to determine the capacity of each new/upgraded connections to handle increased traffic volumes, that would have otherwise travelled along the waterfront. • Acquisition of required planning approvals.
<p>References:</p>	<p>Appendix O - Te Karuwā Parade / Paihia Town Centre / Paihia to Waitangi SUP O1 - Te Karuwā Parade / Paihia Town Centre / Paihia to Waitangi SUP Technical Note, Aurecon, 2019 (504164-2000-TEQ-JJ-1024) O2 - Te Karuwā Parade / Paihia Town Centre / Paihia to Waitangi SUP Infracore Model, Aurecon, 2019 O3 - Focus Paihia - Paihia Master Plan Presentation, Stephenson & Turner Architects Engineers, 2011</p> <p>Appendix U - Road Safety Audits U2 - SH11 Paihia to Waitangi – Shared Use Path Concept Stage Safety Audit Report, Urban Connection, 2019</p>



Stormwater Upgrades							
Project description:	<p>This project aims to target sensitive environments and implement stormwater treatment options to ensure the integrity of the environment is maintained. The project will look at possible retrospective treatments as well as new stormwater designs for future infrastructure which consider stormwater treatment plans for the benefit of the environment. General interventions may include (but are not limited to):</p> <ul style="list-style-type: none"> - Inclusion of planted buffer strips where road is adjacent to water body - Installation of swale drains including detention ponds or wetland planted areas prior to discharge into waterway to enable sediment deposition and hydrocarbon treatment, check dams to slow flows that may cause erosion, and rock to line swales to reduce erosion of soils - Upgrade vehicle crossings of swales to reduce sediment transport - Buffer strips below steep cut faces that fret rock and soil material to stop sediment reaching road and stormwater system - Cut-off drains at head of slopes to minimise overland flows that can erode slope faces - Bench drainage on larger cut slopes to minimise flows downslope face that can cause erosion - Additional planting of slope faces / hydroseeding systems - Possible use of linear or pit soakage structures for ground discharge rather than overland discharge to watercourses (subject to suitable soil types) - Stock underpasses (treat stormwater from underpass prior to discharge to watercourse) - Ensure highway structures adjacent to waterways are protected from erosion. <p>It is noted that the protection of waterways is a priority for hapū as often rubber from tyres, road debris and other pollutants infect the Tai Tokerau rivers resulting in adverse effects for marine life.</p>						
High level estimate	\$5m - \$15m	Estimated Benefit:	WEBs only (TBC)	BCR:	WEBs only (TBC)		
Rationale for inclusion in recommended option:	<p>Strongly supports preservation of the surrounding environment, and empowers Māori by acknowledging the cultural significance of the land. For these reasons, this project scores well for "Māori Aspirations" and "Environmental Sustainability" PGF criteria. Scores well against several feasibility criteria, including community/stakeholder risk, environment and value for money.</p>						
Interdependencies:	<p>Will interface with all infrastructure projects delivered under the SH11 SSBC as well as Twin Coast Discovery Programme of Works. Project will consider timing of any projects with other improvements being undertaken along the corridor, so as not to result in rework.</p>						
Risks and constraints:	<ul style="list-style-type: none"> • Medium risks arise from environmental management and it is noted that this is a top priority for hapū. Greater risks arise in the complexity of designing waterway protection systems and measuring the impact of operational stormwater discharges on Te Tai Tokerau rivers. • Resource consents anticipated to be required for works within waterbodies, discharges and works within the CMA; require consideration of effects to cultural values. 						
Performance against	---	--	-	0	+	++	+++
<i>Investment Objectives</i>	✓						
<i>Feasibility Criteria</i>	✓						
Funding recommendation:	<p>Three waters (drinking, waste and stormwater) projects are not eligible for PGF funding. However, given its alignment with the aspirations of Maori, demonstrated by it being a key priority for hapū, the funding provider could explore this opportunity further with the PDU.</p>						
Likely project leadership	<p>This project will likely be delivered by the Transport Agency. Other investment partners may include FNDC and NRC.</p>						
Pathway to implementation:	<p>The SH11 SSBC has not determined exact locations where retrospective treatment is required. Proposed next steps in delivery of this project would include</p> <ul style="list-style-type: none"> • Development of a Stormwater Strategy for the corridor, which considers existing stormwater treatment plans and provides a recommended treatment strategy that can be applied to the corridor and the other infrastructure projects taking place. • This project will likely be delivered on a section-by-section basis as an integrated part of other projects within the recommended investment programme. As such, any new potential development of infrastructure along SH11 should consider stormwater treatment in the development of their design, and these considerations should be incorporated into any Detailed Business Cases being developed for projects which will be delivered alongside stormwater treatment. • Development of a consenting strategy for specific scope of works, and progression of acquiring required approvals. 						
References:	N/A						



5.2.3 Benefits and Outcomes

The medium-term projects have a major focus on safety and socioeconomic opportunity outcomes.

The Tirohanga Stream Bridge replacement and Kaipātiki Bridge improvements, both identified as priorities for hapū, will make the corridor significantly safer and more resilient. Both projects will reduce the risk of head-on crashes and crashes due to poor handling and excessive speed, thereby reducing harm and road closures due to vehicle accidents.

The medium-term projects will also provide locals with significantly improved access and opportunities to travel. The roll-out of a Tai Tokerau-wide mobile facility for licensing, registration and WOFs will see more people benefiting from safe driving education and closer management of vehicle safety.

Those who don't own cars (a relatively high proportion in Tai Tokerau²⁸) will have new options: an organised carpooling or ridesharing service, enhanced bus connections with improved frequency. These projects will benefit people by allowing them to travel further and more often, broadening their employment options and social opportunities.

The Paihia town centre will be transformed as part of a broad package of works which will provide reinvigorated economic opportunities in Paihia. This project will redesign the waterfront, dramatically increasing its destination appeal, and encouraging more visitors to come. The greatly improved access provided over the 10-year programme will then allow these extra visitors to travel more widely beyond Paihia, spreading the benefits realised by a booming tourist industry.

People will be able to enjoy a safer and more pleasant walk from Paihia to Waitangi, as Te Karuwhā Parade will be repurposed into a bus-only route (later in the programme, a dedicated shared use path will be built on this route to enhance safety further). Stormwater treatment will be integrated into both of these projects, as it will into other relevant projects throughout the corridor.

²⁸ Ministry of Transport. *NZ-Vehicle-Fleet-Graphs-2016-Web3*.; 2016.



5.2.4 Investment Objective Alignment and Benefit-Cost Ratio

Project	Safety	Access and Connectivity	Social and Economic Opportunity	PV Cost	PV Benefits	BCR
Kaipātiki Bridge Upgrades	✓			\$2.0m	\$15.7m	8.0
Crossing Improvements at Taumārere	✓			WEBs only (TBC)		
Improve Bus Connections in Tai Tokerau		✓	✓	\$7.2m	\$17.2m	2.4
Mobile Facility for Driver Licensing, Registration and WoFs				Captured at programme level		
Te Karuwā Parade Upgrades			✓	\$1.9m	-\$8.0m	0.0
Tirohanga Stream Bridge Replacement	✓			\$20.2m	\$3.3m	0.16
Implement Carpooling and Rideshare Services		✓	✓	WEBs only (TBC)		
Paihia Town Centre Upgrades			✓	\$13.7m	-\$10.4m	0.0
Stormwater Upgrades			✓	WEBs only (TBC)		



5.3 Long-term Projects (5 years+)

Long-term Projects
Ruapekapeka Road Improvements
SH11/10 – Puketona Roundabout
Cycle Safety Measures
New Paihia to Waitangi Shared Use Path
Town Centre Surface Treatments
Improve Destination Facilities for Cyclists
Resilience Improvements (Paihia to Kawakawa)
Improve Access to Waitangi Treaty Grounds
Haruru Falls Road Improvements
Seal Bayly Road

A map depicting the location of each of these projects can be found on the next page, followed by a summary of each project in turn.



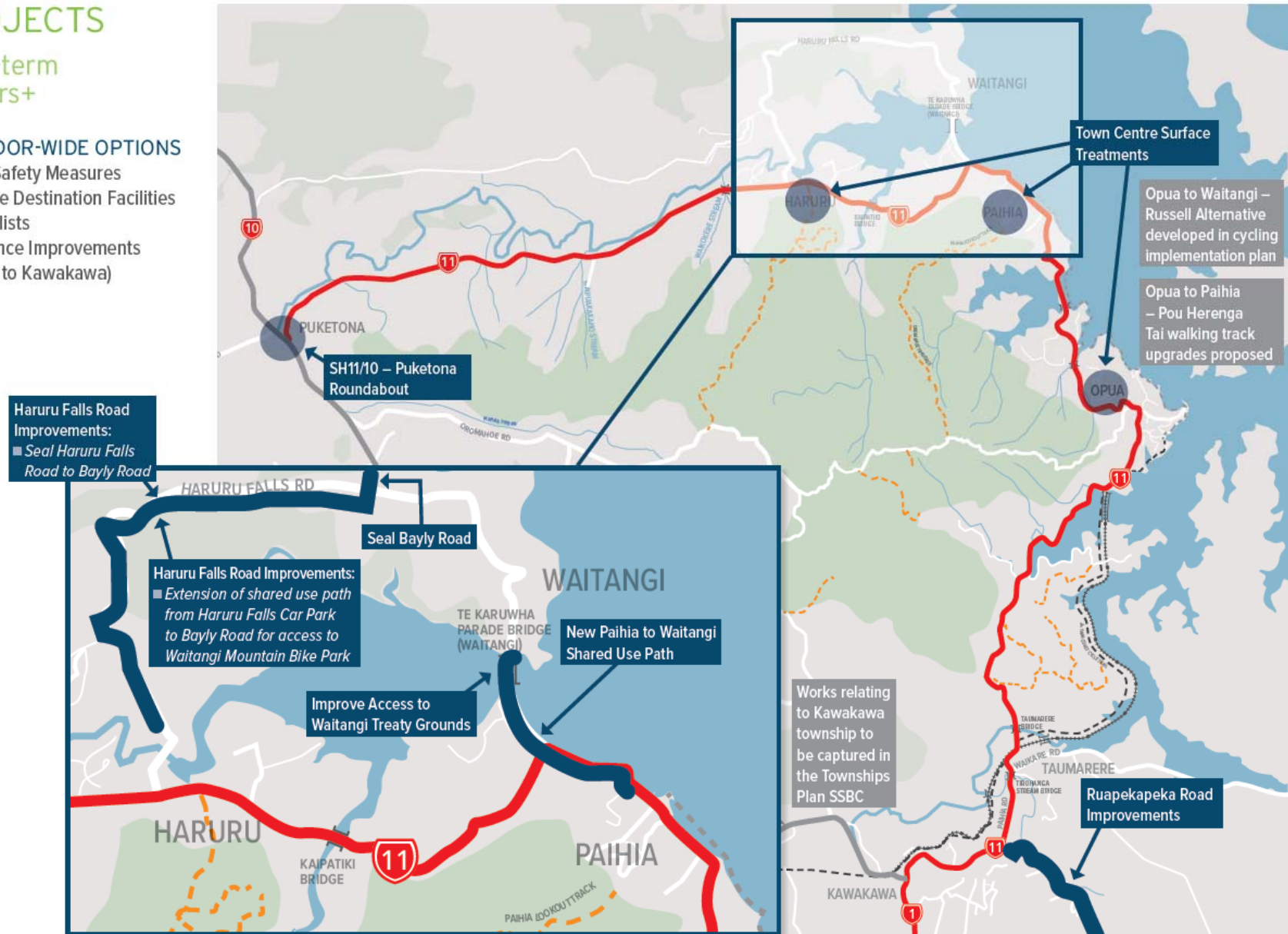
5.3.1 Map of long-term projects

PROJECTS

Long-term
5 years+



CORRIDOR-WIDE OPTIONS

- Cycle Safety Measures
- Improve Destination Facilities for Cyclists
- Resilience Improvements (Paihia to Kawakawa)






5.3.2 Project Descriptions

Ruapekepeka Road Improvements							
Project description:	<p>This project involves sealing and upgrading Ruapekepeka Road. At the time of writing, discussions are underway within the Transport Agency regarding a classification system for official State Highway detour routes. It is likely that Ruapekepeka Road will be upgraded to meet the requirements for an official detour route for SH1.</p>						
	<p>This road also provides access to Ruapekepeka Pā, an important and well developed historical site and tourist attraction. The road is currently used as an unofficial detour for traffic should SH1 be closed (e.g. due to accidents). The road is currently not suitable for heavy traffic due to its width and alignment.</p>						
	<p>By realigning and upgrading the road to the level required for an official detour for SH1, resilience will be significantly improved for both SH1 and SH11. This includes traffic for all vehicle types including HCVs and rental vehicles. Sealing the road will also reduce vehicle wear and tear and associated maintenance costs, thereby providing a benefit to local communities. As part of the upgrade, access to historic sites and improved storytelling along the corridor could be provided to better reflect the cultural significance of the road.</p>						
High level estimate:	\$9m - \$13m	PV Costs:	\$8.5m	PV Benefit:	\$5.9m	BCR:	0.7
Rationale for inclusion in recommended option:	<p>Improves safety by widening the road and reducing conflict points. Improves connectivity to Ruapekepeka Pa, thereby also increasing economic opportunity at that site and along the road. This project will provide a resilient connection for SH1, a critical national road and lifeline.</p>						
Interdependencies:	<p>This project will also require coordination with the Northland Rest Area Strategy and Implementation Plan, since travellers stop at Ruapekepeka Pa to break up their journey. Planned visitor centre at the Pa site will attract ore visitors, therefore coordination with the planned development of this project is required as it will be practical to seal the road before construction vehicles damage it considerably and cause dust nuisance.</p>						
Risks and constraints:	<ul style="list-style-type: none"> • The road is outside of the Transport Agency's designation (Far North District Council designations). • Sections may require widening to facilitate two-way traffic. Treatment of embankments will vary depending on the slope. • High archaeological risk 						
Performance against	---	--	-	0	+	++	+++
<i>Investment Objectives</i>					✓		
<i>Feasibility Criteria</i>					✓		
Funding recommendation:	<p>This project appears to be in alignment with the PGF investment objectives of enabling Māori to realise their aspirations, given its connection to the Ruapekepeka Pā site and planned development. It also appears to be in alignment with the PGF investment objective of improving the resilience of SH1, a critical strategic road link that is currently used as an unofficial detour route when SH1 is closed; however, it is not suitable for many vehicle types and State Highway-equivalent volumes of traffic. As such, initial assessments suggest that this project may be strongly aligned to PGF funding.</p>						
Likely project leadership	<p>This project will likely be delivered by FNDC as it currently is, and will stay, a local road. The Transport Agency will be an investment partner.</p>						
Pathway to implementation:	<p>The SH11 SSBC has not determined the detailed requirements for the corridor. Next steps in delivery of this project would include:</p> <ul style="list-style-type: none"> • Workshop with Iwi, DoC, FNDC to understand staging of proposed development at Ruapekepeka Pa and transport infrastructure requirements including sealing the first section SH1 to the Pa site and intersection treatment at a SH1 / Ruapekepeka Road junction. • Undertake Archaeological Screen. • Undertaking field investigations including survey, geotechnical and environmental investigations in order to assess existing alignment of Ruapekepeka Road and understand the current conditions. • This will determine the requirements for the corridor and identify specific areas where widening is required and a concept design developed to support a consent application(s). • These inputs would likely be incorporated into a dedicated Detailed Business Case to assess different options for this project and determine recommended solution and delivery staging. 						
References:	N/A						




SH11/SH10 – Puketona Roundabout							
Project description:	<p>This project includes the construction of a new roundabout at the SH11 / SH10 intersection at the end of Puketona Road. The existing road structure is a T-junction that has raised many safety concerns for locals and visitors over the years. From 2008-2018, the Northland Transport Alliance Risk Mapping tool shows that there have been five crashes at or nearby the Puketona intersection and local communities and hapū have repeatedly expressed concern for the safety of road travellers with the existing road design. A rural intersection activated warning sign has also been installed on SH10 at approach to the intersection in circa 2013. This has been monitored and initial indications suggest this has reduced the number of crashes. It is recommended that the safety impact of this intervention is reviewed during the investigations stage of this project, to assess whether the additional safety offered by a roundabout represents best value for money.</p> <p>A detailed design for this roundabout was completed circa 2013 by Northern Civil. It is intended that this design be used as a basis for the project's inclusion in the SH11 SSBC following which the design will be reviewed and updated in order to meet current design standards and project requirements.</p>						
High level estimate:	\$6.5m - \$7.5m	PV Costs:	\$5.3m	PV Benefit:	\$18.2m	BCR:	3.4
Rationale for inclusion in recommended option:	<p>Improves safety by reducing severity of crashes due to roundabout design, and by reducing excessive speed and foreign driver crash factors. Importantly, there have been several serious and fatal crashes near this junction on SH10, which do not contribute to the risk ratings on SH11, but which may be partially caused by the design of the junction. Improves resilience by increasing road clearance above flood levels meaning reduced closures due to flooding, and improves connectivity by providing new cycling provisions if built to current standards. The roundabout design may also support Māori by incorporating cultural exposition elements and storytelling.</p> <p>There was particularly strong public support for this project at community events, with respondents providing feedback on the lack of adherence to the reduced speed limit and poor visibility of the speed advisory speed signs due to vegetation overgrowth.</p>						
Interdependencies:	N/A						
Risks and constraints:	<ul style="list-style-type: none"> • Access restrictions and partial road closures likely over the duration of construction works as it is at a major intersection of two state highways • Design may need to be updated to consider flood risk • Land acquisition for the roundabout took place in 2010 - unlikely that further acquisition will be required. • Medium risk associated with land contamination at site • Works may require resource consent from NRC; within designation, requiring Outline Plan to FNDC. 						
Performance against Investment Objectives	---	--	-	0	+	++	+++
Feasibility Criteria				✓			
Funding recommendation:	This project aligns with the 'Safety' goals under the GPS 2018 strategic direction and with a BCR of 4.6, is likely to be included in the in the NLTP, therefore it may be eligible for NLTF funding.						
Likely project leadership	This project will be delivered by the Transport Agency if it meets investment assurance criteria. Other investment partners may include NRC; from a river management perspective, if there is a catchment benefit.						
Pathway to implementation:	<p>The SH11 SSBC has not reviewed the existing detailed design. The Transport Agency is undertaking monitoring of the intersection following installation of rural intersection activated warning signs at this intersection.</p> <p>Next steps in delivery of this project would include:</p> <ul style="list-style-type: none"> - An assessment to re-confirm if a roundabout is the right solution - Review and updated of the existing design (as required) in order to meet current design standards and project requirements following outcomes of monitoring activity. - validation of required approvals under the resource management and progression of acquiring identified approvals. 						
References:	<p>Appendix Q - SH11/SH10 – Puketona Roundabout Q1 - SH11/SH10 Puketona Intersection Improvements, Northern Civil Consulting Engineers, 2010</p>						



Cycle Safety Measures							
Project description:	<p>This project involves implementing measures to improve safety for cyclists along the corridor. These include (but are not limited to):</p> <ul style="list-style-type: none"> - Wider shoulders over hilly sections (if currently <1.5m) to allow cyclists more room - New cycle lanes along SH11 where appropriate 						
	<p>Locations for improved signage to warn motorists to expect cyclists have been recommended as part of the scope of the Corridor-wide Safety Improvements Technical Note (504164-2000-TEQ-JJ-1023) and therefore have been excluded from the cost estimate for this project.</p> <p>The scope of this project and location of widening will be defined at later stages and will likely be coordinated with other projects happening along the corridor</p> <p>PV Costs, PV Benefits and BCR have been calculated cumulatively for the Shared Use Path Extension and Slip Repair at Haruru, Haruru Falls Road SUP (to Bayly Road) Destination Facilities for Cyclists and Cycle Safety Measures.</p>						
High level estimate:	\$1.5m - \$2.5m	PV Costs:	\$11.6m	PV Benefit:	\$12.3m	BCR:	1.1
Rationale for inclusion in recommended option:	<p>Improves safety by reducing conflict points between cyclists and vehicles, and improves access and connectivity through provision of cycling infrastructure. The need for a cycling connection between Opuia and Paihia for residents and commuter riders (i.e. not Po Herenga Tai Trail riders) was a common theme at the public engagement sessions. Positive score against PGF objectives of Environmental Sustainability for encouraging cycling, and Resilience for diversifying the economy by encouraging cycling tourism.</p>						
Interdependencies:	<p>Consider tying works relating to slip remediation or sloop stabilisation between Paihia and Kawakawa in with the widening of shoulders proposed under this project.</p>						
Risks and constraints:	<ul style="list-style-type: none"> • Installation of new cycle lanes limited by current available space, which is very limited through the hill sections between Paihia and Kawakawa and therefore may not be achievable in parts without retaining. • Project is dependant on other measures such as reduced speed limits and traffic calming to make cycling on road, even with the widened shoulders a viable option for many users. 						
Performance against	---	--	-	0	+	++	+++
<i>Investment Objectives</i>					✓		
<i>Feasibility Criteria</i>					✓		
Funding recommendation:	<p>This project appears to be in alignment with the 'Safety' goals under the GPS 2018 strategic direction and, therefore, may be aligned to NLTF funding.</p> <p>This project also appears to be in alignment with the PGF investment objectives of sustainable economic growth, social inclusion and participation, and environmental sustainability. As such, initial assessments suggest improvements to trail facilities off the state highway may be aligned to PGF funding.</p>						
Likely project leadership	<p>This project will be delivered by the Transport Agency as improvements will occur within the road corridor</p>						
Pathway to implementation:	<p>The SH11 SSBC has not determined exact locations where new or improved safety measures are required. Next steps in delivery of this project would include identification of where and how widening can be accommodated in particular between Paihia and Opuia. Following confirmation of project scope and design, procurement of planning approvals would be required.</p>						
References:	<p>Appendix K - Corridor wide Safety Improvements K1 - Corridor wide Safety Improvements Technical Note, Aurecon, 2019 (504164-2000-TEQ-JJ-1023)</p>						



Paihia to Waitangi Shared Use Path							
Project description:	<p>This project includes a new shared use path from Paihia Town Centre to Waitangi along the coastal edge. This will support the increase in cyclists expected in the region and provide an attractive cycle route and pedestrian walkway along the coast to accommodate the high number of tourists travelling to and from the town centre (approximately 2km in length).</p> <p>Currently, the existing Pou Herenga Tai Twin Coast Cycle Trail (TCCT) links Kawakawa to Opua. This is proposed to be extended from Opua to Paihia under the Northland Integrated Cycling Implementation Plan. Once this connection is completed, the shared use path will form part of the TCCT.</p> <p>It will also service the pedestrian demand from cruise ships which has averaged to 90,000 passengers per year on average since 2015. It will also facilitate the activation of the waterfront, with an opportunity to include information panels to describe the area's rich history and provide a direct route for tourists to the Waitangi Treaty Grounds.</p> <p>The installation of a shared use path between Paihia and Waitangi will create a direct link between the two centres for active transport modes.</p> <p><i>*This cost for this project has been captured with Paihia Town Centre Improvements and Te Karuwā Parade Upgrades due to the overlap of works therefore making it challenging to separate out project costs. Similarly the benefits have been jointly aggregated including a portion of the PV Costs, PV Benefits and BCR calculated cumulatively for the cycling projects.</i></p>						
							
High level estimate:	\$19.4m*	PV Costs:	\$17.3m*	PV Benefit:	-\$16m*	BCR:	WEBS (TBC)*
Rationale for inclusion in recommended option:	<p>Improves connectivity by creating new walking and cycling infrastructure, and by creating increased options for travel between town centres and/or tourist destinations. Also provides increased opportunities for tourist spend and dispersal, thereby providing economic benefits to the wider area. There is strong stakeholder support for this project given it will provide strong positive tourist outcomes from servicing the pedestrian traffic from cruise ships. High support received for this project at community events.</p>						
Interdependencies:	<p>This project will link to the new Opua to Paihia cycleway link and the Waitangi to Kerikeri cycleway link to be delivered under the Northland Integrated Cycling Implementation Plan.</p> <p>This project is interlinked with the Paihia Town Centre Upgrades as well as the upgrades to Te Karuwā Parade.</p> <p>Installation of the SUP will reduce the number of car parking spaces available on Te Karuwā Parade and also impact the number of vehicles along this route. The overall car parking strategy for the Paihia / Waitangi must take this into consideration.</p> <p>Project will also require coordination with the Paihia Town Centre Improvements and upgrading Te Karuwā Parade projects to ensure consistent urban design treatment is applied and construction staging is considered.</p>						
Risks and constraints:	<ul style="list-style-type: none"> • Potentially complex design solutions required around the knoll between Paihia and Waitangi require some removal of vegetation including pohutukawa trees. • Design likely to require widening around the knoll between Paihia and Waitangi which is likely to have constructability, safety and cost impacts. • Medium risk associated with land contamination resulting from previous uncontrolled filling in the area. • The project spans across two different road controlling authorities designations, maintenance requirements would need to be considered • Widening of the footpath will require removal of existing car parking along Te Karuwā Parade. • Given the underlying cultural landscape of the area and given the majority of the surrounding land is 'Māori Owned Land', hapū may have some underlying interest 						
Performance against	---	--	-	0	+	++	+++
Investment Objectives							
Feasibility Criteria	✓						
Funding recommendation:	<p>This project appears to align with PGF investment objectives demonstrating significant tourism benefits associated with providing upgraded facilities for cruise passengers, extending the planned Twin Coast Cycle Trail from Paihia to Waitangi, encouraging cycling tourism and providing an opportunity to better reflect the cultural stories and history through urban design and information panels.</p> <p>It will provide more transport choice for those people travelling between Paihia and the popular tourist attraction and New Zealand Landmark, the Waitangi Treaty Grounds, as well as on to the Waitangi Mountain Bike Park.</p> <p>This project appears to align with the 'Safety' goals under the GPS 2018 strategic direction - specifically, priorities around improving walking and cycling - and, therefore, may be a candidate for NLTF funding. However, initial assessments suggest that this project may be more strongly aligned with PGF funding.</p> <p>Bundling the application with the Paihia Town Centre Improvements and Te Karuwā Parade projects may be suitable given its interdependency on these projects for waterfront space.</p>						



Likely Project Leadership	This project will likely be delivered by FNDC, given its interdependencies with the Paihia Town Centre improvements and Te Karuwhā Parade Upgrade. Other investment partners may include NZTA and FNHL.
Pathway to implementation:	<p>Under the SH11 SSBC, a concept design has been developed for the Paihia to Waitangi SUP. The design also incorporated the upgrades to Te Karuwhā Parade and Paihia Town Centre improvements.</p> <p>Following completion of the concept design the recommended next steps to progress this project (together with the Te Karuwhā Parade Upgrades and Paihia Town Centre improvements) through to pre-implementation are:</p> <ul style="list-style-type: none"> • Establishment of a Project Steering Group made up of FNDC/ FNHL/ NZTA/ Iwi. Agree the functions of this group, the roles and responsibilities, the project scope and decision making powers. • Develop a Funding Strategy to commission pre-implementation activities including early investigations, a detailed business case and stakeholder engagement. • Commission a combined Detailed Business Case with early deliverables focusing on preliminary environmental investigations and the development of a Communications and Engagement Strategy. • The Preliminary Environmental Assessments will identify fatal flaws/ key risks and constraints and be detailed enough to inform subsequent optioneering. Analysis should include heritage built environment and archaeological assessments, ecological assessment, Māori cultural values assessment etc, and traffic impact assessment to assess constraints of the existing transport network and the impacts of the proposed development. • Acquisition of required planning approvals.
References:	<p>Appendix O - Te Karuwhā Parade / Paihia Town Centre / Paihia to Waitangi SUP</p> <p>O1 - Te Karuwhā Parade / Paihia Town Centre / Paihia to Waitangi SUP Technical Note, Aurecon, 2019 (504164-2000-TEQ-JJ-1024)</p> <p>O2 - Te Karuwhā Parade / Paihia Town Centre / Paihia to Waitangi SUP Infracore Model, Aurecon, 2019</p> <p>Appendix U - Road Safety Audits</p> <p>U2 - SH11 Paihia to Waitangi – Shared Use Path Concept Stage Safety Audit Report, Urban Connection, 2019</p>



Town Centre Surface Treatments							
Project description:	<p>Population Centres such as Opuā, Paihia and Haruru will be investigated to determine the best methods of implementation for surface treatments. These treatments would be applied to encourage lower speeds for road users, thereby improving safety for the general public occupying those population centres. Treatments will also be considered which provide skid resistance at the approaches to the pedestrian crossings along the corridor.</p> <p>Coordination required with Fulton Hogan (the NOC Contractor) who carry out operational maintenance requirements of the road surfaces in Tai Tokerau. Investigations will be undertaken to determine the specific areas in need of treatment within those population centres.</p>						
High level estimate:	\$75k - \$125k	PV Costs:	\$70.5k	PV Benefit:	\$1.1m	BCR:	15
Rationale for inclusion in recommended option:	Improves safety by reducing crash factors including excessive speed through the town centres. Safety is a priority for hapū.						
Interdependencies:	Coordination required with other projects taking place in the town centres so as not to overlay surface treatment then change the road for another project the following year. Likely be influenced by the outcomes of the Township Plans. Proposed speed limit reductions through Paihia Town Centre as part of the Town Centre Improvements Project and through Haruru as proposed in the Corridor-wide safety improvements project would interface this project as colour surface treatments help define to drivers that they are entering a lower speed environment						
Risks and constraints:	<ul style="list-style-type: none"> • Low implementation risk. • Higher OPEX costs associated with more frequent repair and resurfacing required of coloured pavement 						
Performance against	---	--	-	0	+	++	+++
<i>Investment Objectives</i>	✓						
<i>Feasibility Criteria</i>	✓						
Funding recommendation:	This maintenance project appears to be in alignment with the 'Safety' goals under the GPS 2018 strategic direction. As such, this project may be aligned to funding by the Safe Network Programme in the NLTP. In this case, funding would be likely to come from existing operations and maintenance budgets for SH11 (tbc).						
Likely project leadership	This project will likely be delivered by the Transport Agency and/or the NTA.						
Pathway to implementation:	The SH11 SSBC has not determined the exact locations and extent of treatment. Typically will be applied with gating signs (speed and wayfinding) on approach into a township. Next steps in delivery of this project would be to coordinate with the Corridor Wide Safety Improvements Project and Wayfinding Signage Implementation Plan to determine specific areas and requirements.						
References:	N/A						



Improve Destination Facilities for Cyclists								
Project description:	<p>This project includes installation of facilities and equipment for cyclists at 'destination' points along the corridor. This will include (but is not limited to):</p> <ul style="list-style-type: none"> - Cycle racks - Storage lockers - Maintenance stands - E-Bike Charging points - Changing facilities 							
	<p>Exact locations have not been determined at this stage. However, suitable locations may include:</p> <ul style="list-style-type: none"> - Waitangi Treaty Grounds (racks, lockers) - Paihia Bus Station (racks, lockers, changing room / toilets, e-bike charging) - Colenzo Triangle (being developed under another piece of work) - Kawakawa Town Centre (racks, lockers). - Haruru falls carpark <p>There is opportunity to incorporate information boards and storytelling at select destinations to increase cultural exposition along the corridor.</p>							
High level estimate	\$200k - \$600k	Estimated Benefit:	WEBs only (TBC)	BCR:	WEBs only (TBC)			
Rationale for inclusion in recommended option:	<p>Improves connectivity and access by upgrading cycling infrastructure and increasing options for travel between town centres. Also expands social and economic opportunities by increasing opportunities for both story-telling and spending.</p> <p>Initial assessment suggests it scores well against PGF criteria, particularly Job Creation, through jobs created associated with cycling tourism at new facilities, and Social Benefit, through providing improved access to people without cars, and improving community cycling infrastructure.</p>							
Interdependencies:	<p>As this project is looking at improvements in destination facilities for cyclists, it will need to consider the recommendations of the Northland Integrated Cycling Implementation Plan and Township Plans given there is a potential of scope overlap.</p>							
Risks and constraints:	<ul style="list-style-type: none"> • Locations typically [redacted] outside of the designation of the Transport Agency's designation. 							
Performance against	---	--	-	0	+	++	+++	
<i>Investment Objectives</i>				✓				
<i>Feasibility Criteria</i>						✓		
Funding recommendation:	<p>Initial assessment suggests this project appears to be more strongly aligned with the PGF given its role in enabling and encouraging cycling as a mode of transport, cycling tourism and associated social benefits, as well as job creation associated with new services at the destination facilities.</p> <p>Private sources of funding may be considered at those sites which are outside of FNDC or FNHLs property boundaries.</p>							
Likely project leadership	<p>This project will likely be led by FNDC with potential investment partners being the property owners at each location.</p>							
Pathway to implementation:	<p>The SH11 SSBC has not determined exact locations where new or improved facilities are required.</p> <p>Next steps in delivery of this project is to complete a gap analysis of existing facilities and identify suitable areas for installation of cycling infrastructure and the facilities required at each site.</p> <p>Project is to be delivered in coordination with the new Paihia to Waitangi Shared Use Path.</p>							
References:	N/A							




Resilience Improvements (Paihia to Kawakawa)							
Project description:	<p>This project has been scoped at a high level with further design definition to be undertaken in subsequent stages following completion of this business case. It includes various resilience improvements along the section from Paihia to Kawakawa and surroundings. Improvements fall into either slope stabilisation or flood resilience improvements.</p> <p>Slope stabilisation To date, a number of issues have been identified through the Preliminary Geotechnical Appraisal Report, Aurecon, 2019 and in the Opus Resilience List including which should be reviewed and considered once finalised. It is likely this project will be divided into smaller, more specific interventions addressing specific geographical areas.</p> <p>There have been no works carried out to date at these sites beyond the regular operational road maintenance by Fulton Hogan (the NOC Contractor). Lemon's Hill is the only exception which had significant works undertaken in 2018 following a large slip which closed the state highway. This site is currently being monitored to determine if further stabilisation work is required. Further investigation and geotechnical testing will be necessary to determine the scope of the slope stabilisation interventions at each site.</p> <p>Flood improvements To reduce the flood risk from Kawakawa River flood events, improvements to SH11 at Taumāreere are proposed. A Kawakawa Options Flood Mitigation Study (2019) was undertaken by Ewaters New Zealand Limited which recommended that the improvements will likely include a 50m wide floodway, raising of SH11 (Paihia Road) by approximately 1.3m (raised from 2.2mOTP to 3.5mOTP), and a viaduct approx. 30m long under the raised SH11. This will provide for resilience for up to the 10-year ARI event, which the high level estimate is based on.</p> <p>To provide resilience for the 50-year ARI event, Paihia Road needs to be raised by approximately 1.8m (raised from 2.2mOTP to 4.0mOTP) and a 80m wide viaduct be provided (this has not been included in the assumptions for cost and benefit at this stage but could be considered at the next optioneering stage.</p> <p>Flooding at the Refuse centre was reported during public consultation as a key issue. This section of the state highway lies within a flood prone environment with flooding occurring across the southbound lane during spring tides.</p> <p>Slope stability work has not yet been costed, but the cost of the work has been estimated at \$5m. The large cost range price represents the high level of uncertainty associated with the Resilience Improvements project.</p>						
High level estimate:	\$35m - \$45m	PV Costs:	\$26.3m	PV Benefit:	\$21.4m	BCR:	0.8
Rationale for inclusion in recommended option:	Improves resilience by reducing the likelihood of slips or floods closing the road either in part or full and maintaining a critical transport connection for communities along the corridor.						
Interdependencies:	Consider tying works relating to slip remediation or slop stabilisation between Paihia and Kawakawa in with the widening of shoulders proposed under the Cycle Safety Measures project under this SSBC.						
Risks and constraints:	<ul style="list-style-type: none"> • There are currently two sites within this zone with medium slip risk and several sections with medium flood risk as determined by the PGAR. Risks are still largely unknown and required geotechnical testing to more accurately predict risk levels • Flood mitigation works involve diversion of flood Ewaters, and has the potential to increase flooding in other properties. Further flood modelling is required to confirm impacts to properties and other mitigation requirements during consenting. • There are potential environmental impacts and consenting risks associated with construction of the floodway in the existing river. Consultation with Mana Whenua and other interested stakeholders is required during subsequent phases. • Approximately 2/3 of the cost is associated with the floodway (river excavation to increase flood storage). This is based on Ewaters Ltd recommendation to provide a 50m wide, 1.5m deep floodway, which extends approximately 3km total, both upstream and downstream of existing Paihia Road Bridge. As recommended in the Ewaters report, there is an opportunity to refine the depth of the floodway in subsequent phases to minimise the earthworks required. • The proposed options will impact existing flood levels at Paihia Road Bridge. Option refinement in subsequent stages need to consider the balance of flows through the proposed viaduct and existing Paihia Road Bridge. • Additional mitigation works may be required to accommodate changes to the flooding on private land adjacent to the road (e.g. additional stock underpasses). • Solution will require acceptance of departures including the accepted ARI the solution is designed to be resilient against according to NZTA's P46 State Highway Stormwater Specifications. 						
Performance against	---	--	-	0	+	++	+++
Investment Objectives	✓						
Feasibility Criteria	✓						
Funding recommendation:	This project appears to be in alignment with the PGF investment objective of resilient critical infrastructure. Some of the stages may appear in alignment for PGF funding, such as the improvements at Taumāreere to prevent flooding, whilst some of the slope stabilisation works may appear in alignment for funding from the NLTF or through existing maintenance contracts. Optimal funding recommendations may evolve once scope is further developed and staging confirmed.						
Likely project leadership	This project will be led by the NZ Transport Agency For the delivery of the Kawakawa River flood resilience improvements, NRC will likely be an investment partner given that a large component of the project involves improvements within the river floodway itself.						



<p>Pathway to implementation:</p>	<p>Continue monitoring medium and high risk sections to assess ground movement Undertake detailed research and field investigations in order to assess more specific slip sites of concern and scope the proposed remediation.</p> <p>Investigate flooding issues on SH11 just north of Rigden Road and undertake a risk assessment of the potential associated risks, outage times and environmental impacts and determine whether it qualifies for a Resilience project and/or what an appropriate intervention is.</p> <p>The outcomes of the Preliminary flood modelling have been used to inform the likely solutions to improve resilience through this section. Next steps in delivery of this project would include:</p> <ul style="list-style-type: none"> • present findings of flood modelling to Taumārere Flood Management Working Group, NRC and Hapū to seek initial feedback on the recommended solution. • further flood modelling to investigate options for floodway sizing and/or viaduct length and other mitigation options to manage flood impacts. • development of a separate Flood Resilience Detailed Business Case to assess the options against other criteria such as constructability, cost, environmental effects etc.
<p>References:</p>	<p>Appendix R - Resilience Improvements (Paihia to Kawakawa) R1 - Preliminary Geotechnical Appraisal Report, Aurecon, 2019 R2 - Flood Modelling Results, Ewaters Ltd, TBC</p>



Improve Access to Waitangi Treaty Grounds							
Project description:	<p>With Waitangi Bridge reaching 85 years old and visitor numbers to the Waitangi Treaty Grounds predicted to grow by 10% by 2030, there is a need to improve access to this National Landmark. The Waitangi Treaty Grounds are reportedly one of the most significantly under pressure tourist sites in New Zealand.</p> <p>Optioneering has not been undertaken as part of this SSBC. It is recommended that various options for improvements and reconfiguration of the existing Waitangi Bridge are considered in a subsequent stage as part of a separate Detailed Business Case. Options to be considered include (but are not limited to):</p> <p>i) Minor enhancements to existing bridge e.g. installation of better lighting and permanent traffic signals. ii) Reconfiguration of Waitangi Bridge access; including consideration to closing Waitangi Bridge to some vehicles (detour via Haruru Falls Road). Bridge to be pedestrian / cycling only with access for light vehicles (such as golf buggies) and restricted access for buses. Hapū have a strong interest in this alternative. iii) Full replacement of current bridge with two-way bridge.</p> <p>The below cost estimates, BCR, performance against the assessment criteria, and risks and constraints are based on progressing with the full replacement option but noting that other options may be recommended by the DBC with a lower cost.</p>						
	High level estimate:	\$20m - \$40m	PV Costs:	\$19.0m	PV Benefit:	\$1.6m	BCR:
Rationale for inclusion in recommended option:	<p>Very high priority for hapū. Specific rationale for inclusion will depend on which option is chosen, but all options will improve safety, and the medium and high investment alternatives will also improve access and connectivity, and support the facilitation of increased social and economic opportunity. The medium and high investment alternatives also score well against several PGF criteria.</p> <p>This project has the potential to be transformational for the Bay of Islands and the tourism industry</p>						
Interdependencies:	<p>There is a need to coordinate this project to ensure safe and resilient access to Landmark and heritage sites such as Waitangi and to protect the 'icon' and tapu of Te Tii marae.</p> <p>This project will also need to consider the Te Karuwā Parade Improvements, Paihia to Waitangi SUP and the Haruru Falls Road Improvements projects.</p> <p>This project will likely interface with developments planned by the Waitangi National Trust.</p>						
Risks and constraints:	<ul style="list-style-type: none"> • Complex stakeholder involvement and interests with the project reportedly being explored at present by other parties who have lodged a PGF application for funding already. Risk to project ownership, scope definition and programme. • Project is of high interest to Waitangi National Trust and Waitangi residents and hence will require extensive and comprehensive engagement with all project partners and stakeholders including hapū, councils, Te Tii Marae, Heritage New Zealand etc. Wider consultation with iwi groups may be required given historical significance of existing bridge. • [REDACTED] Given the underlying cultural landscape of the area and given the majority of the surrounding land is 'Maori Owned Land', hapū will have a strong interest; may add programme delays. • Several listed archaeological sites within vicinity of the area including Waitangi Treaty Monument and Te Karaka Tapu o Ngapuhi, Wahi Tapu Site. Potential for works to impact listed heritage places located immediately south of the bridge. • Potential for significant adverse environmental effects during construction as a result of disturbance to the CMA, mobilisation of sediment, potential vegetation clearance and archaeology. • Copthorne Hotel located directly north of the bridge. Any temporary / partial closure of the bridge and construction activities will impact operations and access for the hotel and their clients. • Sire located in hazard zone for flooding, coastal erosion and inundation, and tsunamis. • Further risks are identified in the risk register. 						
Performance against	---	--	-	0	+	++	+++
Investment Objectives	✓						
Feasibility Criteria	✓						
Funding recommendation:	<p>This project appears to be in alignment with the PGF investment objectives of sustainable economic growth and enabling Māori to realise aspirations and with the 'Safety' and 'Access' goals under the GPS 2018 strategic direction. Therefore indicative assessments suggest either fund may be suitable depending on the recommended solution.</p> <p>Depending on the level of investment chosen, different sources of funding may be available. Given the large potential tourism, historical and cultural benefits with Waitangi Treaty Grounds' listing as an NZ Landmark, the first round of funding to develop a detailed business case to assess options to improve access may be aligned with a funding source such as the PGF.</p> <p>Funding for implementation of the outcomes of this business case will likely come separately from this and will be subject to assessment against the criteria for the NLTF.</p>						




<p>Likely project leadership</p>	<p>This project will likely be delivered by FNDC in partnership with Hapū. Other investment partners likely to include NZTA and NRC. The DBC will likely be led by FNDC with the outcomes its the Commercial, Management and Financial Cases determining the leadership of the subsequent delivery phases.</p>
<p>Pathway to pre-implementation / implementation:</p>	<p>The SH11 SSBC has not advanced the optioneering for this project. The recommended next steps to progress this project through to pre-implementation are:</p> <ul style="list-style-type: none"> • Establish a Project Steering Group made up of FNDC / Iwi / NZTA. Agree the functions of this group, the roles and responsibilities, the project scope and decision making powers. • Develop a Funding Strategy to commission pre-implementation activities including early investigations, a detailed business case and stakeholder engagement. • Commission early investigations in the form of a Preliminary Environmental Screen - to identify fatal flaws/ key risks and constraints. This would be detailed enough to inform subsequent preliminary environmental assessments as part of the DBC as well as to inform likely scope for the DBC. Analysis should include built heritage (including historic value of wider setting, trees and plantings) assessment, archaeological assessment, landscape assessment (including visitor experience), ecological assessment, Māori cultural values assessment etc, and traffic analysis of the existing access corridors to determine the capacity of each connection to handle increased traffic volumes, that would have otherwise travelled along Te Karuwhā Parade and potential construction traffic. Specialists advice would also inform the development of a consenting strategy. • Undertake preliminary stakeholder sweep and develop initial Communications and Engagement Strategy • Engage supplier to develop Access to Waitangi Detailed Business Case. Alternatively the early investigations and comms strategy activities may be the early focus of the DBC engagement. It is recommended that this business case will incorporate the Haruru Falls Road Improvements and Te Karuwhā Parade Upgrades projects, alternatively these may be developed separately.
<p>References:</p>	<p>N/A</p>



Haruru Falls Road Improvements							
Project description:	<p>This project involves sealing Haruru Falls Road as far as Bayly Road. This section is approximately 4.7km, with 3.5km unsealed. Notably, Tau Henare Drive, from Bayly Road to Waitangi Bridge is already sealed.</p> <p>Implementation of the upgrades will provide a better link to Waitangi, especially during Waitangi Day when the bridge is closed to traffic. This project will include provision of cycling infrastructure to provide improved access to the Waitangi Mountain Bike Park - a separated shared path facility is recommended, but on-road cycle lanes or wide shoulders could also be considered.</p> <p>Improving this route and making it more attractive for tourist vehicles could lower traffic volumes across the Waitangi bridge during busy periods.</p> <p>Waitangi is the first addition to a newly established Landmark list established in 2014 and now administered by Heritage NZ. Being part of this list comes with a gold standard expectation of preservation and conservation of all heritage values present-wahi tapu cave, buildings monuments, plantings (an avenue of cabbage trees (ti kouka) and camellias and recent native trees planted by visiting dignitaries.), remnants of early vineyard and ploughing furrows etc. This will affect any changes to roading, parking, visitor approaches, future public amenity provision etc. Sealing the Haruru Falls Road will provide more resilient access through to this NZ Landmark however will also increase traffic volumes through here.</p> <p>PV Costs, PV Benefits and BCR have been calculated cumulatively for the Shared Use Path Extension and Slip Repair at Haruru, Haruru Falls Road SUP (to Bayly Road) Destination Facilities for Cyclists and Cycle Safety Measures. The PV Cost for the and PV Benefits for sealing the road only is \$1.1m and \$2.6 respectively</p>						
High level estimate:	\$7.5m - \$10.5m	PV Costs:	\$1.1m	PV Benefit:	\$1.6m	BCR:	1.5
Rationale for inclusion in recommended option:	<p>Improves safety by widening the road, and upgrading the road surface. Significantly improves access by providing new cycling infrastructure and heightened connectivity between towns and tourist destinations. Also empowers Māori by improving access to Waitangi Treaty Grounds.</p> <p>Initial assessments suggest it scores well against PGF criteria, particularly Social Benefits by providing a walking route which will encourage social participation, Māori Aspirations by helping the Waitangi Historic Trust to achieve their aspirations at Waitangi, and Environmental Sustainability by promoting walking and cycling through an improved road surface.</p> <p>Strong community appetite for this project during public consultation</p>						
Interdependencies:	<p>This project is dependant on the Improve Access to Waitangi Treaty Grounds project which is to assess options for the Waitangi Bridge. This project may not progress if the outcomes of the Access to Waitangi Treaty Grounds project recommends replacing the bridge.</p> <p>Likely to be delivered in conjunction with sealing Bayly Road.</p> <p>There may be a need to advance this project in the programme should development commence on the Waitangi National Trusts site which will generate considerable construction traffic which may not be suitable for Waitangi Bridge.</p>						
Risks and constraints:	<ul style="list-style-type: none"> The road is outside of the Transport Agency's designation (FNDC local road), works therefore being subject to the Far North District Plan. Sections may require widening to facilitate shared use path to Bayly Road. High stakeholder engagement risks associated with many people with a vested interest in this project including all the tourism owners, operators, iwi, residents, the Waitangi golf club etc. 						
Performance against	---	--	-	0	+	++	+++
Investment Objectives							✓
Feasibility Criteria							✓
Funding recommendation:	<p>This project appears to be in alignment with the PGF investment objectives of sustainable economic growth and enabling Māori to realise their aspirations given its connection to the Waitangi Mountain Bike Park and Waitangi Treaty Ground. Both these sites have further development plans, and upgrading Haruru Falls Road will provide an opportunity to ensure the infrastructure is in place prior to this land-use development.</p>						
Likely project leadership	<p>This project will likely be delivered by FNDC. The Transport Agency who maintain the section of road owned by Waitangi National Trust, NRC and the Waitangi National Trust are likely to be project partners in the delivery of this project due to the potential environmental effects and wider potential benefits to tourism and development.</p>						
Pathway to implementation:	<p>The SH11 SSBC has not undertaken any further analysis for this project.</p> <p>It is recommended that this project is incorporated into a Detailed Business Case for improving Access to Waitangi Treaty Grounds. See recommended 'pathway to implementation' in Access to Waitangi project.</p>						
References:	N/A						



Seal Bayly Road							
Project description:	This project involves sealing Bayly Road from Tau Henare Drive to the Waitangi Mountain Bike (MTB) Park (approximately 1km).						
	Sealing this section of road would allow for more convenient access to a key tourist destination, and help encourage more active forms of transport. It would cut down the journey time for the Mountain Bike Park shuttles which transport riders from the back of the course, back to the start.						
	It will provide a consistent surface treatment for people travelling between Paihia, Waitangi and the Waitangi Mountain Bike Park.						
High level estimate:	\$400k - \$600k	PV Costs:	\$0.3m	PV Benefit:	\$0.2m	BCR:	0.8
Rationale for inclusion in recommended option:	Improves safety by reducing conflict points and providing a safer road surface. Improves access by making cycling to Waitangi Mountain Bike park more appealing, which increases travel options. Supports Māori by improving access to Waitangi, thereby also expanding economic opportunities for businesses around the site. Initial assessments suggest it scores well against several PGF objectives including Social Benefits by improving access enabling people to cycle to the mountain bike park Environmental Sustainability by improving the appeal of cycling, and Resilience by diversifying the economy through the promotion of cycle tourism.						
Interdependencies:	The Waitangi MTB Park are looking to provide an off-road trail for cyclists from the start of Bayly Road down to the MTB Park, therefore reducing the need to provide for cyclists on-road, and the subsequent road width required when sealing. The Waitangi to Kerikeri cycle trail is planned to start from Bayly Road, at the MTB Park and run through to Kerikeri. This is being delivered through the Northland Integrated Cycling Implementation Plan, coordination with this project is required.						
Risks and constraints:	<ul style="list-style-type: none"> The road is outside of the Transport Agency's designation (Far North District Council local road). Low feasibility risk. Archaeology risk is currently being investigated by the Waitangi MTB trust developing the off-road cycle link. 						
Performance against	---	--	-	0	+	++	+++
Investment Objectives					✓		
Feasibility Criteria					✓		
Funding recommendation:	<p>This project appears to be in alignment with the PGF investment objective of sustainable economic growth as it provides safer access to Waitangi Mountain Bike Park for cyclists, vehicles and park shuttles, as well as increases accessibility to adjacent areas, including a planned cafe site at Wairoa Bay.</p> <p>This project may align with the 'Safety' goals under the GPS 2018 strategic direction, however given its low BCR it may not be included in the NLTP and therefore not eligible for NLTf funding.</p>						
Likely project leadership	This project will likely be delivered by FNDC. There is a keen interest in this project from the Waitangi MTB Park Trust who would be keen to see it brought forward in the programme and would be a key delivery stakeholder.						
Pathway to implementation:	The SH11 SSBC has not determined the detailed requirements for this road project. Next steps in delivery of this project would include undertaking field investigations in order to understand current road surface conditions and existing alignment. These investigations may be undertaken as part of a Detailed Business Case, which would also cover the sealing of Haruru Falls Road and Access to Waitangi. This process will determine the requirements for this section in order to commence with concept design. following concept design, review of planning approvals and acquisition of approvals would be required.						
References:	N/A						



5.3.3 Benefits and Outcomes

The earlier long-term projects (those due to be completed in years 6 and 7) have a strong safety focus. The intersection at Puketona will be upgraded with a safe system approach, installing a new roundabout, which will reduce DSIs at this intersection. The roundabout, which will also incorporate Māori cultural design elements and be a gateway into the Bay of Islands from the Northern end of SH11. Surface treatments such as skid resistance and coloured pavement treatments through town centres Haruru, Paihia and Opuā will encourage lower driving speeds and improve safety for vulnerable users such as pedestrians and cyclists. All of these interventions will bring SH11 into closer alignment with the Transport Agency's high-risk rural roads guide.

With the ever growing popularity of electric bicycles, cyclists will benefit from wider shoulders between Opuā and Paihia making it safer to navigate the hilly terrain, along with a new shared use path between Paihia and Waitangi which will facilitate more trips by bike. This kind of investment in cycling has yielded major benefits in nearby Kaikohe; the recent completion of the Pou Herenga Tai Twin Coast Cycle Trail precipitated investment of \$1.7m in a new accommodation block, which aims to serve the cycling market. The creation of these kinds of opportunities in the Bay of Islands will be facilitated by positive investment in cycling infrastructure.

Access will be further improved by sealing Haruru Falls Road, Bayly Road and Ruapekapeka Road reducing dust pollution, improving travel times and providing resilience for the state highway network. The latter two will make major cultural and historical sites at Waitangi and Ruapekapeka more accessible supporting tourism outcomes for visitors to travel further and stay longer. Widespread resilience improvements from Paihia to Kawakawa, including Lemon's Hill, will help to keep the road open with the ever changing climate, maintaining access to both social and economic opportunities and destinations for locals and visitors alike.



5.3.4 Investment Objective Alignment and Benefit-Cost Ratio

Project	Safety	Access and Connectivity	Social and Economic Opportunity	Median Cost	Benefits	BCR
Ruapekapeka Road Improvements		✓		\$8.5m	\$5.9m	0.7
SH11/10 – Puketona Roundabout	✓			\$5.3m	\$18.2m	3.4
Cycle Safety Measures*	✓			\$11.6m*	\$12.3m*	1.1*
New Paihia to Waitangi Shared Use Path*	✓	✓		\$11.6m*	\$12.3m*	1.1*
Town Centre Surface Treatments	✓			\$70.5k	\$1.1m	15
Improve Destination Facilities for Cyclists			✓	WEBS only (TBC)		
Resilience Improvements (Paihia to Kawakawa)		✓		\$26.3m	\$21.4m	0.8
Improve Access to Waitangi Treaty Grounds (High Investment)		✓	✓	\$19.0m	\$1.6m	0.08
Haruru Falls Road Improvements**		✓	✓	\$1.1m**	\$1.6m**	1.5**
Seal Bayly Road			✓	\$0.3m	\$0.2m	0.8

*PV Costs, PV Benefits and BCR have been calculated cumulatively for the Shared Use Path Extension and Slip Repair at Haruru, New Paihia to Waitangi Shared Use Path, Haruru Falls Road SUP (to Bayly Road) and Cycle Safety Measures.

**PV Costs, PV Benefits and BCR have been calculated for the sealing of Haruru Falls Road only.



SH11 in 2030

A family drives from their home in Whangārei for a day trip to the Bay of Islands on a summer weekend. After a brief sightseeing stop at Kawakawa's Hundertwasser Toilets, they continue north on SH11. The bells sound as they approach Taumāreke and they stop, and people wave from the Vintage Railway train as it rolls past, while cyclists on their final day of the Pou Herenga Tai Twin Coast Cycle Trail cross in front of their car.

They pass over Parengarenga and through Opuā, stopping at Te Haumi Flats to admire the pou, and reading the information boards they learn about how seafood has been gathered at this site for generations. Grabbing an ice-cream from the newest food truck at the Flats, they continue onwards, heading for Paihia.

Parking near the centre of town, they follow the noise of the crowd to where a local band is tuning up on the waterfront. After watching for a while, they notice a nearby pop-up stand offering e-bikes for hire. They choose one each and set off towards Waitangi along the shared use path on the old Te Karuwā Parade, which has recently been decorated with pāua shells as part of a local primary school project.

They cross Waitangi Bridge, and spend two hours exploring the Treaty Grounds in the sunshine, learning about the role the Bay of Islands has played in shaping the nation's history. One of the tour guides tells them they have to see Haruru Falls while they're in the area, and explains that they can get there on their bikes via Haruru Falls Road.

Although they had previously been told by family members that this road is dusty and dangerous for cyclists, they find it has been recently sealed. They enjoy one of the most picturesque rides in the country, past the golf course and the turning to the nationally-renowned mountain bike park, and on through the native bush before reaching Haruru Falls. They stop to take photos, before completing their loop back to Paihia on the SH11 shared use path.

In town, people are drifting home after the day's festivities, and the family see a local group catch the bus back to Kawakawa as they drop off their bikes. As they drive back through Opuā, they hear on the radio that there's heavy traffic on SH1 south of the Kawakawa roundabout. They decide to take Ruapekapeka Road instead, taking the opportunity to enjoy a change of scenery. As they pass Ruapekapeka Pa, they notice that the new museum is just closing for the day, and they decide to come back to the Bay of Islands later in the year to visit Ruapekapeka and the Kawiti Caves.



6 Recommended Investment Programme

Table 6-1 illustrates the recommended investment programme for SH11. It should be noted that this programme is indicative only, and that in practice the delivery of projects will likely be driven by:

- Funding approvals. Some projects may be brought forward or pushed out subject to the funding approval process.
- Prioritisation at the wider TCDR programme level. The SH11 SSBC is one of seven business cases, all of which will recommend projects within their scope, along with a recommended investment programme. Overarching commercial, financial and management cases are being developed by the Transport Agency for all business cases within the TCDR programme. Although unlikely to change the order of activities, these may suggest some prioritisation or coordinated implementation between the business cases. For example: implementing the Wayfinding and Signage upgrades region wide.
- Actions taken and decisions made by the project owners and investment partners. Several projects in the recommended option will likely be owned by the Far North District Council or Northland Regional Council, rather than the Transport Agency, and as such the actual order of project delivery may diverge from the recommended investment programme.



SH11 SSBC Recommended Investment Programme												
Indicative cost estimate	Key:											
	Short-Term (0-2yrs)		Medium Term (3-5yrs)			Long-Term (5yrs+)					Total Indicative Cost	
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10		
SH1/SH11 - Kawakawa Roundabout (including new pedestrian connection)												\$ 4,180,000
Shared Use Path Extension and Slip Repair at Haruru												\$ 1,500,000
Wayfinding and Signage Upgrades												\$ -
Undertake Parking Strategy												\$ 200,000
Te Haumi Flats Safety and Beautification Improvements												\$ 1,500,000
Bus Stop Improvements												\$ 250,000
Corridor wide Safety Improvements												\$ 13,500,000
Kaipātiki Bridge Upgrades												\$ 2,156,000
Crossing Improvements at Taumārere												\$ 660,000
Improve Bus Connections in Tai Tokerau												\$ 700,000
Mobile Facility for Driver Licensing, Registration and WoFs												\$ -
Te Karuwā Parade Upgrades												\$ -
Paihia Town Centre Upgrades												\$ 19,417,000
New Paihia to Waitangi Shared Use Path												\$ -
Tirohanga Stream Bridge Replacement												\$ 25,000,000
Implement Carpooling and Rideshare Services												\$ 600,000
Stormwater Upgrades												\$ 10,000,000
Ruapekapeka Road Improvements												\$ 11,000,000
SH11/10 – Puketona Roundabout												\$ 7,000,000
Cycle Safety Measures												\$ 2,000,000
Town Centre Surface Treatments												\$ 100,000
Improve Destination Facilities for Cyclists												\$ 400,000
Resilience Improvements (Paihia to Kawakawa)												\$ 40,000,000
Improve Access to Waitangi Treaty Grounds												\$ 30,000,000
Haruru Falls Road Improvements												\$ 9,000,000
Seal Bayly Road												\$ 500,000
Total												\$179,663,000

Table 6-1 Recommended Investment Programme



Project Snapshot - Paihia

Paihia is the epicentre of tourist activity in the Bay of Islands. The recommended option includes three projects in or around Paihia:

- Paihia town centre upgrades
- New Paihia to Waitangi shared use path
- Te Karuwhā Parade Upgrades.

Together, these three projects will transform the user experience of Paihia's waterfront. Concept designs have been completed for a large-scale redevelopment of this waterfront area. This development will significantly improve Paihia's destination appeal, thereby encouraging more visitors to come to the Bay of Islands, and will also create new social and economic opportunities in the redeveloped communal space.

Meanwhile, the new shared use path will also provide new and improved access for cyclists and pedestrians from Paihia to Waitangi Bridge. Currently the linkage between these two key tourist destinations is narrow and unsuitable for the large numbers of visitors Paihia receives during the summer. The implementation of this project is dependent on the town centre redevelopment and the upgrades to Te Karuwhā Parade, since both of these projects will create space along the waterfront for the shared use path to be installed.

Restricting access along Te Karuwhā Parade and converting it into a green/way/ bicycle boulevard will have an important resilience benefit, through reduced vehicle movements and reducing the effects of damage to the seawall, when or if it occurs. Redirecting private vehicles via Te Kemara Avenue will help prevent further damage. The reallocation of road space along the waterfront to facilitate walking, cycling and other forms of active transport leaves the user feeling a greater connection with the surrounding land and sea, which was previously interrupted by the continual traffic flows nearby.

These projects are considered transformational for the Bay of Islands, and warrant a more detailed examination through their own DBC.



Project Snapshot – Access to Waitangi

As New Zealand’s most important cultural and historical site, the Waitangi Treaty Grounds are a high priority for hapū. In particular, the Waitangi Bridge has been identified as being in need of reconfiguration during the development of this SSBC. The bridge is over 80 years old, and been closed for repairs several times in recent years. Its single lane and vertical curvature make it difficult to see if vehicles are approaching in the opposite direction, causing problems for traffic.

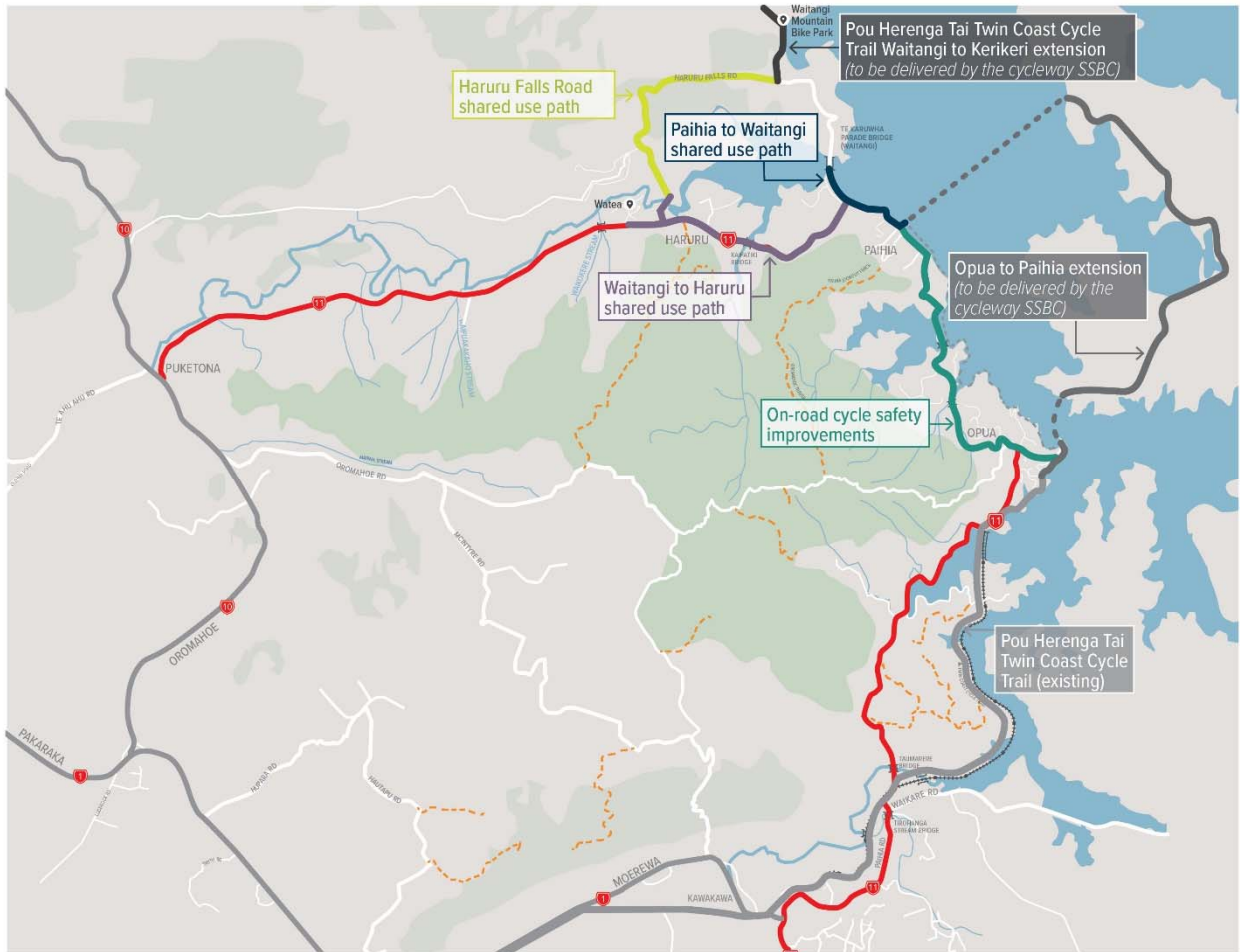
A number of possible solutions have been identified over the course of this business case, including:

- Minor enhancements to the existing bridge, such as installing better lighting and traffic signals
- Reconfiguration of access to Waitangi, involving the closing of Waitangi Bridge to vehicles, which would be diverted via Haruru Falls Road, which is being sealed as far as Bayly Road as a separate project in the recommended option. The bridge would remain open to pedestrians and cyclists.
- Installation of a new bridge.

The Waitangi Treaty Grounds make up a significant part of New Zealand’s cultural identity. The site is referred to as Te Pitowhenua, which highlights the physical and symbolic connection people have with their whenua (land). It also pinpoints the Treaty Grounds as the birthplace of the nation.

The Waitangi bridge acts as the link between those that exist in the present and a place that captures a significant part of New Zealand’s past. Local hapū see this as an opportunity to explore the symbolism of this bridge and how it acts as one of the main pathways that lead people to the birthplace of New Zealand. Strengthening this link will be a component to connecting those from tāwāhi (people from all over the world) to the Waitangi Treaty Grounds, driving economic potential and growth alongside other improvements in the area.

The Waitangi Treaty Grounds hold mana as a landmark, which naturally draws the potential for economic opportunities. It also indicates the stakeholder complexities involved and highlights the need for different approaches for each stakeholder group. As a result, it is considered that this project warrants a dedicated Detailed Business Case which will ensure a full examination of the possible options.



Cycling on the SH11 corridor

As discussed in Section 2.6.4, cycling is booming across the country. In the last three years, 9% of visitors to New Zealand participated in a cycling activity. The Bay of Islands is perfectly positioned to take advantage of this trend, with the recently-opened TCCT stretching from Horeke on the west coast of Tai Tokerau to Opua in the Bay of Islands. This route has already precipitated a \$1.7m investment in Kaikohe in the form of new accommodation aimed at cyclists.

The recommended option aims to bring these benefits to the SH11 corridor. 25km of new and improved cycling infrastructure will be delivered, together with 22km of newly-sealed road, both of which will significantly improve the safety and appeal of cycling in the Bay of Islands. These benefits are expected to generate 38 new cyclists per day, and will increase the draw of Tai Tokerau as a destination for cycle tourism. The Northland Integrated Cycling Implementation Plan will provide the critical link in the network between Opua and Paihia, which will allow TCCT cyclists easier access to Paihia and its new cycling infrastructure.



7 Programme Risks

Risks associated with each individual project are captured in the Programme Risk Register (see D3 – Risk Register). Notable risks identified which are associated with the programme as a whole are defined below:

7.1 Reputational risk associated with non-delivery

Numerous project partners and stakeholders have been engaged by Aurecon as part of the engagement for this SSBC. It is likely that this process will have generated a level of expectation among communities along the SH11 corridor in relation to the delivery of improvements on the route. There is therefore a risk that the local reputation of the Transport Agency would suffer if delivery of the project was below the standard expected by stakeholders (that is, if some and not all of the recommended projects were delivered).

Delivering several projects within the first two years, as recommended by this business case, would also be an important step towards mitigating this risk, and giving local communities confidence.

7.2 Resourcing risk associated with technical projects

The recommended option includes several projects which will require skilled technical resources to construct. These resources are limited in Tai Tokerau, and with several other SSBCs recommending other projects simultaneously within the region, there is a risk that it will not be possible to resource all of these projects.

The Transport Agency may be able to mitigate this risk through appropriate programming at the regional level. On the SH11 corridor, projects have been staged over 10 years, with technical resources scarcity being an important input to the programming. For example, the three bridge projects (Kaipātiki, Tirohanga and Waitangi) have been staged so that their construction phases do not overlap.

7.3 Complexities associated with possible Treaty of Waitangi settlements

The Ngāpuhi settlement process has been ongoing for several years and is yet to reach resolution. There is a risk that a settlement (or, alternatively, no settlement) in the near future could create a change in priorities for hapū, which in turn may change hapū support for certain projects in the recommended option.

This risk can be mitigated through regular communication with relevant groups, to ensure that hapū, as the Transport Agency's other project partners, are consistently well-informed about the aims and actions of all projects.

7.4 Appearance of over-investment in Paihia

Paihia is a relatively affluent part of the SH11 corridor, and several projects in the recommended option will be implemented in or near Paihia. Given that there are other sections of the route which are less prosperous, there is a risk that stakeholders could view the recommended option as being unfairly weighted towards Paihia.

This risk can be mitigated by ensuring that good lines of communication with stakeholders are maintained at the programme level. Improvements to Kawakawa, the most deprived location on the SH11 corridor (as determined by various statistical measures – see Section 2.3.2 of Part A for more details), will be recommended by the Township Plans, which is why they have not been included in this SSBC (with the exception of the roundabout and the footpath to Bay of Islands College).

Furthermore, it has been determined that Paihia has certain features, such as its waterfront position, which mean that it is likely to remain as SH11's tourist hub, regardless of where along the corridor improvements are recommended. The approach of this SSBC has therefore been to encourage more visitors to come to Paihia and provide them with the necessary access and connectivity improvements which will allow them to travel further beyond Paihia to Haruru and Kawakawa, so that less affluent sections of the route can benefit from their arrival.

7.5 Underappreciation of non-quantifiable programme benefits

Many of the projects contained within the recommended option do not deliver sufficient quantifiable benefits, in terms of monetised benefits under the EEM, to justify their costs. Since this is made clear by the benefit-



cost ratios (BCRs) included in the project descriptions in Section 5, there is a risk that funding agencies will not wish to invest in these projects.

This risk can be mitigated by emphasising the fact that infrastructure projects in rural areas frequently do not have a BCR of over 1, simply because the user base is not large enough. The same is true of the SH11 corridor. Although there are not many people living on the SH11 corridor, sections of the route feature some of the most deprived communities in the country, and these communities require the kind of investment described in the recommended option to improve their standard of living.

Furthermore, there are a number of benefits which will only be realised at the programme level, both across the SH11 programme and the TCDR programme. For example, the Paihia Town Centre upgrades will yield certain benefits, as will the various access improvements around Paihia. However, there are additional benefits which will be derived when visitors drawn by Paihia's new town centre then choose to travel to Waitangi as a result of the new shared use path between the two. This kind of benefit has not been quantified as part of this SSBC, and it should therefore be stressed to funding agencies that there will be unquantified cumulative benefits yielded by the size and breadth of the recommended option. This risk has been partially mitigated for the Mobile facility for driver licensing, registrations and WoFs project which, although identified in the SH11 SSBC and included in the recommended investment programme, the costs and benefits have been elevated to the TCDR programme level.

At the regional level the wider economic benefits achieved have been calculated as a result of the TCDR programme as a whole, noting that expectations regarding further wider economic benefits and programme level need to be managed.

7.6 Project funding in the event of cost overruns

The majority of projects in the recommended option have not yet undergone site investigations or detailed design. As such, broad cost ranges have been given for each project, which will be subject to change until the exact specifications of each project are better understood. Since the PGF does not provide budget for cost overruns on its funded projects, there is a risk that if a particular project was approved for funding by the PGF and the project's costs subsequently increased, additional funding would have to be secured from elsewhere in order to complete the project.

7.7 Negative user experience associated with programme delivery

The recommended option consists of 26 projects staged over 10 years. Cumulatively, this will mean a significant amount of work on SH11. There is a risk that the disruption caused by this work will negatively impact the user experience of the road, which may engender negative feelings towards the project as a whole. It will be important to mitigate this risk by scheduling roadworks so that overall disruption is minimised. It will also be important to maintain strong lines of communication with both local communities and visitors, so that disruption is anticipated by all ahead of time, and so that the purpose and benefits of the work can be emphasised.

7.8 Project Cost Escalation

Many of the projects in the preferred option have not yet undergone site investigations, optioneering or detailed design. As such there is a risk that when more detailed work is completed the project costs could increase (e.g. due to ground conditions). As such broad cost ranges have been given for each project which will be subject to change until the exact specifications of each project are better understood.

8 Economic Evaluation

8.1 Summary

The combined benefit cost ratio (BCR) for the total programme is 0.9. This figure includes only those conventional travel benefits assessed against the Economic Evaluation Manual (EEM). Not all projects were assessed against the EEM, as a number of projects had benefits for which the EEM did not cater. The BCR for those projects which were assessed is 1.0.

The BCR excluding WEBs is likely to understate benefits of the programme due to the large amount of benefits falling outside of the conventional EEM procedures. A number of the individual projects do not have an EEM benefit estimate as they do not have any impact on the core elements of vehicle operating costs, travel time costs, crash costs, and emissions costs or impact on resilience. In addition, a number of projects have been assessed against these aspects, but their full benefits may not have been captured.

- As an example, when we exclude two projects with large transport dis-benefits and a high likelihood of significant benefits uncaptured by EEM procedures, we get an overall BCR of 1.2.

There are 26 projects in the recommended option with a total discounted cost of \$146.2m NPV. Of these, two did not have costs pertaining to the SH11 cost profile, these are the 'Wayfinding and signage upgrades' and 'Mobile driver licensing facility' projects. 20 were assessed against the EEM with a total discounted cost of \$135.3m NPV. These were grouped into 17 projects for the purposes for combined analysis where the high-level nature of existing designs required it.

	Benefits	Costs	BCR
Assessed Projects	\$129.7m	\$135.3m	1.0
Total Programme	\$129.7m	\$146.2m	0.9

Table 3: Benefits and Costs, NPV, Discounted 40 years at 6%

8.2 Wider Economic Benefits

The Wider Economic Benefits (WEBs) of the SH11 programme of works were assessed in a separated business case. In total, \$108.6m NPV of WEBs were estimated for the SH11 programme, giving a BCR of 1.8 for the whole programme.

The method used in the WEBs case to estimate the WEBs value was driven by the availability of data. Due to the constraints imposed by data availability, the WEBs were only estimated for the entire SH11 programme of works. A second activity was undertaken by the WEBs team to estimate WEBs at the project level, however due to the interconnectedness of the programme and the lack of appropriate data, this could only be estimated at the level of the township programme.

This programme includes the Paihia Town Centre Upgrades, Pedestrianising Te Karuwhā Parade, Waitangi Access (Medium Investment), the Paihia-Waitangi Shared Use Path, and the Parking Study.

	Benefits (incl WEBs)	Costs	BCR
Total Programme	\$238.3m	\$135.3m	1.8
Road Programme*	\$70.1m	\$92.2m	0.8
Town Programme**	\$77.4m	\$43.2m	1.8

* Excludes Paihia Town Centre Upgrades, Pedestrianising Te Karuwhā Parade, and Waitangi Access (Medium Investment)

** Consists of Paihia Town Centre Upgrades, Pedestrianising Te Karuwhā Parade, Waitangi Access (Medium Investment), Paihia-Waitangi SUP

Table 4: Benefits with WEBs, NPV, Discounted 40 years at 6%



8.3 Cost Estimation

High level cost estimates have been provided which form the basis for the BCR calculations. The assumptions made in preparation of these estimates have been captured in the Recommended Investment Programme in Appendix E and have been reviewed by a number of technical specialists. For many projects the uncertainty around scope has resulted in a higher cost range. This is the case for the projects in the medium to long term of the programme.

For the early improvements' projects Te Haumi Flats Safety and Beautification Improvements, Corridor Wide Safety Improvements and Shared Use Path Extension and Slip Repair at Haruru, p50 and p95 estimates were undertaken, see Appendix F.

An external peer review of the cost estimates was completed. A memorandum documenting the review and reconciliation with the SSBC's costs is also provided in Appendix F.

8.4 Key Assumptions

Due to the high-level nature of the designs at the time of conducting this analysis, a number of assumptions were made to attempt to capture the likely effects of each project. This allowed estimates to be made of the transport benefits and dis-benefits for inclusion into a BCR for each project, as well as the programme as a whole.

Key assumptions used in the economic evaluation were:

- Do-minimum
 - The do-minimum option was assumed to be no change to the current road state. As a result, all the assessed projects were evaluated against the current state of the road and its current level of traffic.
- Growth
 - The assessment used a 2.2% growth estimate. This was an average of the past 10 years of changes in AADT along SH11 as measured by three tracking stations. The historical average was used as it was conservative in light of tourism growth forecasts from the MBIE New Zealand Tourism Forecast. This estimates a 4% annual growth in tourist numbers through to 2025, which makes a 0% growth scenario unlikely.
- Road Sealing
 - For most projects, detailed designs were not available at the time the analysis was conducted. To overcome this, for most of the projects a likely end state was assumed, which was then tested against the EEM benefits. Particular examples include the safety improvements (detailed below) and the sealing of roads. For the latter, given a lack of data on the roughness of the road, average measures for various road types and states in the International Roughness Index (IRI) were obtained from *Robbins and Tran, 2015*. These measures were used to infer a likely VOC benefit of sealing the road. In addition, we assumed that sealing the road would include widening to at least 7m, increasing the capacity of the road and further increasing the speed environment, yielding travel time savings.
- Safety Improvements
 - Prior to any detailed design being carried out, a potential basket of interventions was developed based on on-site inspections by the senior road safety engineers. Then, using the Crash Estimation Compendium, the likely reduction in crashes as a result of these safety improvements was estimated. This was applied across the entire corridor, the reasoning being that the safety interventions proposed were not based on specific crash hot spots but rather safety engineering best practise across the entire corridor.
- Improved Bus Connections
 - The analysis primarily focused on those benefits quantifiable through the EEM. The methods in the EEM for evaluating public transport were designed for larger urban centres, and transferring this



method to the rural setting of SH11 may result in an inaccurate estimating of benefits, though whether this is and under or over estimation is not clear.

■ Bridge Widening

- For improvements along bridges, it was assumed that increased widths increased speed environments. In particular, the Waitangi one-way bridge and the Tirohanga Stream one-way bridge.

■ Resilience Improvements

- The resilience improvements were assessed based on an assumption of an 80% reduction in the probability of road closures. The 80% reduction in delay is linked to a high-level slope risk assessment undertaken in the Aurecon Preliminary Geotechnical Appraisal Report (Appendix R1 - ref 504164-1000-REP-GG-4070), as follows:
 - A relatively small portion of high-risk areas along the entirety of SH11 (refer Maps to red areas) where remediation will likely take time i.e. temporary road closure while design and construction gets underway.
 - A larger portion of SH11 being considered low to medium risk where remediation is relatively quick i.e. a digger to clear out debris.
 - Northland generally being more prone to landslides therefore anything lower than 80% would be overly optimistic.

Assumptions used for specific projects are detailed in Appendix G4.

8.5 Projects Assessed

Each project was initially assessed to ascertain whether any of the core EEM components applied – Vehicle Operating Costs (VOC), Travel Time Costs (TTC), Crash Costs, Emissions, and benefits/disbenefits to pedestrians, cyclists and commuters. The results are detailed in Table 8-5. Only those projects which had significant or measurable impacts on the EEM components were included in the economic assessment. For those projects that are not assessed, it is important that the WEBs assessment, being conducted at the programme level, pays consideration to these.

Project Name	VOC	TTC	Crash Cost	Emissions	Pedestrian, Cyclist, Commuter	Assessed
Paihia Town Centre Upgrades	✓	✓	✓	✓	–	Yes
Te Karuwā Parade Upgrades	✓	✓	✓	✓	–	Yes
Resilience Improvements	–	✓	–	–	–	Yes
Corridor Wide Safety Improvements	–	–	✓	–	✓	Yes
Ruapekapeka Road Improvements	✓	–	✓	–	–	Yes
Seal Bayly Road	✓	–	✓	–	–	Yes
Haruru Falls Road Improvements	✓	–	✓	–	–	Yes
SH1/SH11 - Kawakawa Roundabout	✓	✓	✓	✓	–	Yes
SH11/SH10 - Puketona Roundabout	✓	✓	✓	✓	–	Yes
Kaipātiki Bridge Upgrades	✓	✓	✓	✓	–	Yes
Tirohanga Stream Bridge - Double Lane & Realign	✓	✓	✓	✓	–	Yes
Access to Waitangi (High Investment)	✓	✓	✓	✓	–	Yes
Access to Waitangi (Medium Investment)	✓	✓	✓	✓	–	Yes
Surface Treatment	✓	✓	✓	–	–	Yes



Project Name	VOC	TTC	Crash Cost	Emissions	Pedestrian, Cyclist, Commuter	Assessed
	Shared Use Path Improvements	☐	☐	☐	☐	☑
BOIC Footpath	☐	☐	☐	☐	☑	Yes
Improved Bus Connections	☐	☐	☐	☐	☑	Yes
Te Haumi Flats Improvements	☐	☐	☑	☐	☐	Yes
Parking Review	☐	☐	☐	☐	☐	No
Crossing Improvements at Taumāreere	☐	☐	☑	☐	☑	No
Signage and Wayfinding Strategy	☐	☐	☐	☐	☐	No
Commuting Services	☐	☐	☐	☐	☐	No
Stormwater Upgrades	☐	☐	☐	☐	☐	No
Mobile driver licensing and vehicle services	☐	☐	☐	☐	☐	No

Table 8-5 Project Assessments

Notes on assessed projects:

- The BCR uses the Waitangi Access (High Investment) scenario.
- The SH1/SH11 Kawakawa roundabout and new pedestrian connection project has been assessed as two projects, with the first focusing on the roundabout, and the second focusing on the footpath connection to Bay of Islands College.
 - A SIDRA model was used to assess the Kawakawa roundabout. Refer to Appendix P3 - SP5 Sheets - Kawakawa Roundabout for specific worksheets.
- The Paihia Town Centre Upgrades and the Te Karuwā Parade Upgrades projects have also been excluded, due to the vast majority of benefits falling outside of those assessed in the EEM.
- Due to the lack of a crash history and a crash rate prediction model, improvements to the rail crossing at Taumāreere were not assessed and have been excluded from the BCR.
- Due to the high-level nature of available designs and this analysis, all resilience projects have been jointly assessed on the basis of an 80% reduction in road closures due to natural incidences.
- The Corridor Wide Safety Improvements have been assessed on the basis of a hypothetical basket of safety interventions. This is due to detailed designs being unavailable at the time of analysis.

8.6 Project Level Summary

Project Name	PV Benefits	PV Costs	BCR
Paihia Town Centre Upgrades	-\$10.4m	\$13.7m	0.0
Te Karuwā Parade Upgrades	-\$8.0m	\$1.9m	0.0
Resilience Improvements (Paihia to Kawakawa)	\$21.4m	\$26.3m	0.8
Corridor wide Safety Improvements	\$14.2m	\$12.5m	1.1
Ruapekapeka Road Improvements	\$5.9m	\$8.5m	0.7
Seal Bayly Road	\$0.2m	\$0.3m	0.8
Haruru Falls Road Improvements (seal only)	\$1.6m	\$1.1m	1.5



SH1/SH11 - Kawakawa Roundabout	\$29.8m	\$4.0m	7.5
SH11/10 – Puketona Roundabout	\$18.2m	\$5.3m	3.4
Kaipātiki Bridge Upgrades	\$15.7m	\$2.0m	8.0
Tirohanga Stream Bridge Replacement	\$3.3m	\$20.2m	0.16
Access to Waitangi (High Investment)	\$1.6m	\$19.0m	0.08
Access to Waitangi (Medium Investment)	-\$38.3m	n/a	0.0
Town Centre Surface Treatments	\$1.1m	\$0.1m	15
Te Haumi Flats Beautification	\$1.2m	\$1.4m	0.9
Shared Use Path Improvements	\$12.3m	\$11.6m	1.1
New SH11 Footpath Connection at Kawakawa	\$4.3m	\$0.2m	21
Improve Bus Connections in Tai Tokerau	\$17.2m	\$7.2m	2.4
TOTAL*	\$148.1m	\$119.8m	1.2
TOTAL**	\$129.7m	\$135.3m	1.0

Table 8-6 Project PV Benefits, Costs and BCRs, NPV, Discounted 40 years at 6%

* Excludes Paihia Town Centre Upgrades, Te Karuwā Parade Upgrades, and Waitangi Access (Medium Investment)

**Excludes Waitangi Access (Medium Investment)

The total PV benefits (excluding Waitangi Access (Medium Investment)) of \$135.3m is broken down by benefit type in Table 8-7.

Benefit Types	VOC	TTC	Crash Cost	Emissions	Pedestrian, Cyclist, Commuter
Total*	\$32.4m	\$10.9m	\$51.6m	\$0.8m	\$33.8m

*Excludes Waitangi Access (Medium Investment)

Table 8-7 Total benefits broken down by type, NPV, Discounted 40 years at 6%

Final cost estimates for the Paihia Town Centre Upgrades, Te Karuwā Parade Upgrades, and the New Paihia to Waitangi Shared Use Path (jointly assessed with other shared use paths) have been completed jointly. The resulting cost is \$19.4m, which given the cost profile of the three projects is discounted to \$17.3m. The combined benefits of the three projects are the sum of the dis-benefits of the first two projects, and 1/5th of the benefits of the combined shared use path benefit estimate.

Project	PV Benefits	PV Cost	BCR
Combined Paihia TC, Te Karuwā Pde, and Paihia-Waitangi SUP	-\$16.0m	\$17.3m	0.0

Table 8-8 Costs and benefits for Paihia projects, NPV, Discounted 40 years at 6%

8.7 Sensitivity

A number of sensitivity tests were conducted to check the stability of each project BCR.

- ±20% change in costs or high and low range values
- Discount rates of 4% and 8%
- ±20% change in benefits
- Traffic growth rates of 4.4% and 0%
- 40% Resilience



– This is testing the 80% reduction in road closures assumption in the Resilience Improvements project

The graph below summarises the results of this sensitivity testing across the assessed projects.

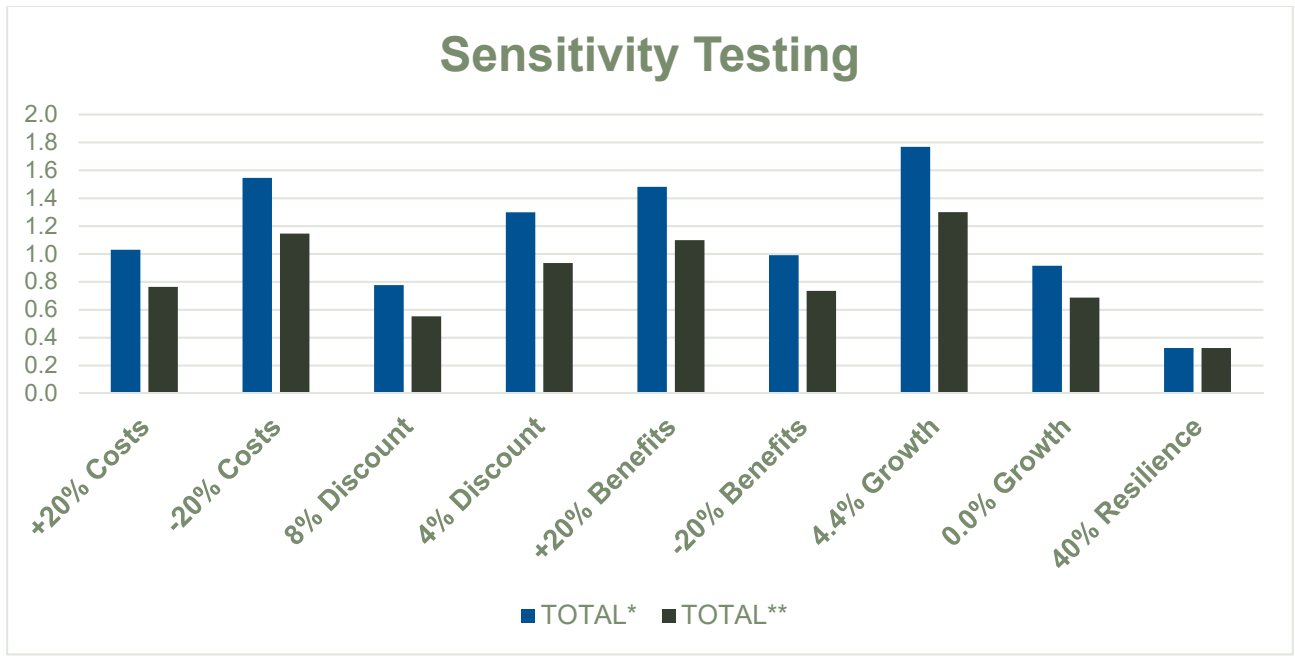


Figure 8-1 Sensitivity Testing

* Excludes Paihia Town Centre Upgrades, Te Karuwā Parade Upgrades, and Waitangi Access (Medium Investment)
 **Excludes Waitangi Access (Medium Investment)

8.8 Beyond the EEM

This analysis was limited in scope to looking at purely those core EEM benefits identified in each project. As a result, a number of projects were not assessed, and a number had only part of their impact assessed. A separate economic evaluation looking at WEBs has been conducted which captured those benefits not assessed in this analysis.

- Appendix G3 - Commute Data Request Table contains a table of information provided to the WEBs analysis to ensure continuity.

In addition, a qualitative analysis using the Treasury Living Standards Framework has been included. The intent of this is to provide some indication of the types of WEBs that may play an important factor in the real impact of these projects.

8.8.1 Treasury Living Standards Framework

The Treasury Living Standards Framework has four components, or “capitals”. These are natural, social, human, and physical/financial capital. In addition, the framework has an important focus on resilience.

Table 8-9 indicates some of the effects each project will have from the perspective of the framework. The pie chart indicates an assessment on the possible impact on each of the four capitals *beyond* what would be expected from a reduction in the cost of travel. Projects which have an impact on the cost of travel will impact all four capitals. Where the framework is particularly useful is understanding where a transport dis-benefit could be outweighed by a non-transport benefit.

Project Name	Natural	Social	Human	Physical/Financial
Paihia Town Centre Upgrades				



Project Name	Natural	Social	Human	Physical/Financial
Te Karuwā Parade Upgrades				
Resilience Improvements (Paihia to Kawakawa)				
Corridor Wide Safety Improvements				
Ruapekepeka Road Improvements				
Seal Bayly Road				
Haruru Falls Road Improvements				
SH1/SH11 Kawakawa Roundabout				
SH11/SH10 Puketona Roundabout				
Kaipatiki Bridge Upgrades				
Tirohanga Stream Bridge Replacement				
Access to Waitangi (High Investment)				
Surface Treatment				
Shared Use Path Improvements				
New SH11 Footpath Connection at Kawakawa				
Cycle Safety Measures				
Improved Bus Connections				
Te Haumi Flats Improvements				
Parking Strategy				
Crossing Improvements at Taumāre				
Signage and Wayfinding Strategy				
Commuting Services				
Stormwater Upgrades				
Increased access to vehicle services				

Impact: - High - Significant - Moderate - Little

Table 8-9 SH11 Projects against the Treasury Living Standards Framework



8.8.2 Natural Capital

A number of the projects within the programme have a negative impact on natural capital through emissions. This is balanced out through reductions in other projects, with a net \$800k quantified emissions reduction benefit over the assessed projects. These externalities, air pollution, can negatively affect natural capital, both its productive value and intrinsic value. For example, research conducted by the NZ Transport Agency (Research Report 016, 1993) found that dust from unsealed roads can have a negative impact on agricultural and horticultural output. In addition, this can get into waterways, having a negative effect on water quality.

From an economic perspective, decreasing the cost of travel can increase the ability of people to travel to areas of significant natural beauty, such as the Bay of Islands. This enhances the productivity of otherwise unproductive natural landscapes and can be considered an increase in the productivity of natural capital. Whilst natural landscapes may have intrinsic value, generating real value without converting the land into another form of productive capital, like farmland, can only be done by opening access to tourists who will pay to see the landscape in question. With similar logic, pollution can be viewed as a negative flow reducing the stock of natural capital.

8.8.3 Social Capital

It is important to remember that capitalist economies are built on a bedrock of trust. While the rule of law, in particular contract law, creates the ideal environment for commerce, trust can never be fully substituted for. A large part of social capital is trust, and trust is built on human connections and networks. Transport has a large part to play in enabling and facilitating the creation and sustenance of human networks. With lower costs of travel, people are better able to visit distant relatives, form new relationships with people in other geographic areas, and sustain those relationships over time. The transport projects in this programme will lower the cost of transport, enabling just this. From this perspective, these projects could be considered as contributing to the social capital of the region and the nation.

8.8.4 Human Capital

Human capital encompasses the skills and knowledge of each person and is a major determinant of what employment people are able to seek, their subsequent wages, as well as the social circles they are likely to move in, the relationships they are likely to form, and even their life expectancy. The cost of transport does have a role to play as it can determine what education opportunities are open to individuals. To take an extreme example, if there were no transport links into and out of Tai Tokerau, the people there would be severely limited in their ability to seek new skills. With even a single road to, say, Auckland, a huge variety of educational opportunities would be opened. With increases in the number of transport links, and reductions in the cost and time traversing these links takes, the potential for human capital to grow would be significantly increased.

Health and physical wellbeing is another component of human capital. In a very similar way to education, people are restricted in the kinds of healthcare they can seek by the costs of transport. With better transport infrastructure, people are able to seek out better health care options, including going to a larger, better equipped hospital should the need arise.

8.8.5 Physical/Financial Capital

The cost of travel is a consideration in the production and investment choices of firms and the decisions households make about spending and saving. For firms, production choices include how much to produce, how many people to hire, and how much they can pay for workers. Where the cost of transport is reduced, *ceteris paribus*, a relative increase in these factors is expected. This can include an increase in investment in the physical capital used in the production of goods and services. From the consumers perspective, a reduction in the cost of transport can be considered an increase in real income. This is particularly true as the modern economy is built around the decoupling of production and consumption, which means that almost anything people consume has been transported from somewhere else. An increase in real income is likely to lead to an increase in both consumption and savings, with the latter directly leading to an increase in financial and physical capital.



8.8.6 Resilience

Resilience is the ability of a system, in this case a transport network, to withstand and recover from some form of negative impact. Given the criticality of transport in peoples' consumption decisions, and firms production decisions, a resilient transport network contributes to a resilient economy. The primary way that this is affected is through cost expectations. The expected cost of travel is based on peoples and firms' assessment of the likely cost of their journey. If the road is frequently closed, then people and firms will increase their expectations of the cost of travel above what it is when the road is functioning as usual. This means that regardless of what the actual cost is at any given point, people and firms will act as though the cost is higher. Reducing the frequency of road closures will reduce these cost expectations, which will function in a similar manner to an actual decrease in transport costs. This in turn, can have many of the same effects described in the previous section.

8.9 A Project Level View

8.9.1 Paihia Town Centre Improvements

The Paihia Town Centre Improvements is part of a broader upgrade of the town centre with an aim toward pedestrianisation, improved public amenities, and greater urban character. The aim of this upgrade is to make the centre, already a hub of tourism in the region, a more attractive and safer destination which will create social and economic opportunities. The upgrade has the potential to increase foot traffic through the town, with a subsequent increase in commercial activity. More attractive destinations are also better able to compete for slots in cruise ship destination schedules.

The improvement of the area will likely attract more visitors to the Bay of Islands. If productivity of natural capital is treated as a function of the utility derived from people who visit any given natural feature, then it can be argued that increasing the capacity of the Bay of Islands to accommodate tourism will increase the productivity of natural capital in the Bay of Islands. Care will need to be taken to ensure that increased visitor numbers doesn't not lead to any significant increase in pollution – particularly salient forms such as water pollution or littering.

8.9.2 Te Karuwā Parade Upgrades

The intention of limiting vehicle access to Te Karuwā parade is to improve links between Paihia Beach at Te Tii bay and Te Tii Marae, as well as improve links to the upper Marae at Waitangi. Both Te Tii Marae and Waitangi are of high cultural significance among Māori as well as the history of New Zealand. Come Waitangi Day, the Nation's Birthday, the beach is a site of high activity, and closing Te Karuwā parade will activate the waterfront, increasing the connection between the Marae and the ocean. The project also seeks to highlight the significance of the area through signage such as storyboards and information panels. At the north end of the parade is the entrance to Waitangi. A component of this project is the upgrade of this entrance into something of prominence, both visually and culturally, the intent of which is to empower Māori communities.

Whilst this project will have conventional economic and safety benefits, the focus is cultural. Enhancing the cultural significance of the area can help to reinforce a sense of identity among Māori, particularly regarding their status as a Treaty Partner.

8.9.3 Access to Waitangi Bridge

This project has very similar intent and impact to the closure of Te Karuwā Parade to private vehicles. An upgrading of infrastructure can have benefits beyond the cost of transport, such as creating a sense that local communities are sharing in the prosperity of the nation. This is particularly important at a key cultural site like Waitangi, where a negative perception of governing institutions can only be reinforced by poor infrastructure and a lack of investment.



8.9.4 Te Haumi Flats Improvements

Improvements to rest area at Te Haumi flats are intended to create an attractive site from which to safely enjoy the surrounds, reduce driver fatigue, and add cultural elements. In a similar fashion to the Paihia Town Centre upgrade, this project can increase the capacity of existing infrastructure to bring people closer to the natural beauty of the Bay of Islands, i.e. increase the productivity of natural capital.

8.9.5 Stormwater Upgrades

The protection of waterways has a direct contribution to the stock of natural capital. When many of these projects are considered in terms of their interaction with natural capital, that is, bringing people into the Bay of Islands to enjoy its natural beauty, then it is the productivity of the existing stock of natural capital that is being examined. The other side of this equation is to pay consideration to that existing stock of natural capital, and how it will change. Increased numbers of people into an area beyond what existing infrastructure can handle will likely lead to an increase in negative environmental externalities.

If these externalities are treated as a negative flow of the stock of natural capital, then a counteracting positive flow to offset the impact is required. Though flows can't be treated as homogenous, as decreasing littering will not, in reality, compensate for pollution of another sort. This particular project looks at enhancing the storm water system in the area. Doing so increases the capacity of the system to deal with storms without discharging effluent into rivers and oceans. Such attempts to reduce pollution are as important in realising benefits from otherwise unproductive natural capital as those that reduce the cost of transport.

8.10 Peer Reviews

Throughout the development of the business case, input and feedback from the Transport Agency's IQA team has been actively sought and received.

An external peer review of the business case and the economics evaluation have been undertaken and is included in Appendix H.

8.11 Assessment Profile

An assessment of the projects which make up the recommended option against PGF and NLTF criteria has been undertaken as part of this business case. These assessments are indicative only, intended to assist in progressing funding options. However, any applications to either the NLTF or the PGF will be subject to normal funding application and assessment processes by the NZ Transport Agency or the Provincial Development Unit, respectively.

The project and its various activities have been assessed using the latest Transport Agency 2018–21 NLTP Investment Assessment Framework (IAF).

The assessment considers two ranking factors – results alignment of the proposal with the GPS 2018/19 – 2027/28 and the CBA.

The project has an assessment profile of **High (results alignment), Low (BCR 0.9) and 5 (prioritisation for public transport improvements, walking and cycling improvements, regional, local and state highway improvements) excluding** wider economic benefits and, **Low (BCR 1.8) and prioritisation of 5 including** wider economic benefits.

The project has been rated as High for results alignment because it:

- Addresses safety issues presenting a high crash risk, affecting communities subject to high safety risk (pedestrians, cyclists and motorists)
- Enables a significant regional economic development opportunity in approved RED programme
- Addresses significant impediment to access to nationally important social and economic connections (Waitangi Treaty Grounds, Paihia urban area etc)
- Makes best use of key corridors that prioritise national freight (SH1 through Kawakawa Roundabout Project) and tourism (SH11)



- Addresses significant resilience risk to continued operation of SH11 and SH1 corridors
- Addresses significant reductions in harm to the environment and people, from land transport-related air pollution, water quality and biodiversity.

At the individual activity level, an assessment profile has also been undertaken for the six early improvements projects as well as the six projects recommended for advancing to Single Stage Business Case in the short or medium term either individually or bundled together.

The longer-term projects will need to be reassessed against the GPS priorities at the time, when the activity is reviewed in the future.

ACTIVITY	STRATEGIC PRIORITY		COST RATIO		FUNDING PRIORITY	URGENCY
	Rating	Rationale	BCR	Rating		
6 Priority projects						
SH1/11 Kawakawa Roundabout	High	Provides significant operational efficiencies to reduce the costs of meeting appropriate levels of service without impacting benefits adversely. Improves safety on a national scale as well as relevant to local communities, as well as resilience on a nationally significant route.	7.5	High	3	3
Shared Use Path Extension and Slip Repair at Haruru	High	High perceived safety risk to use the mode. Addresses a significant problem with the ability to use existing facilities Connection to the NZ Te Araroa Trail, and proposed extension of Twin Coast Cycle Trail a premium tourism trail.	0.9*	Low	5	3
Undertake Parking Strategy	Medium	Facilitates growth and success of other projects by more efficiently allocating space within an already constrained urban realm. Provides significant operational efficiencies to reduce the costs of meeting appropriate levels of service without impacting benefits adversely.	- (precursor to Paihia Town Centre and Waitangi projects, benefits captured under these projects)	-	- (Although no priority ranking - this project is a precursor to the Paihia Town Centre and Waitangi projects).	3
Te Haumi Flats Safety and Beautification Improvements	High	Combines improvements to cultural awareness and social interactions (of importance to Māori communities) with addressing issues pertaining to high crash risks. Improvements to Part of Te Araroa Trail where currently no path exists.	0.9	Low	5	3
Bus Stop Improvements	High	Low cost low risk – improves safety for direct users and other road users and promotes the use of and access to public transport modes. Enhances actual and perceived safe use of and access to public transport.	- (WEBs only)	-	- (Although no priority ranking this project will facilitate mode shift through improved user experience)	3
Corridor wide Safety Improvements	High	Corridor wide safety improvements identified in consultation with local community. Promotes system user awareness of significant safety issues and risks.	1.1	Low	5	3-10



6 Activities to advance to SSBC stage						
Te Karuwā Parade Upgrades	High	Activates the Te Karuwā Parade waterfront and targets the use of active travel between Paihia and Waitangi. Reduces safety hazards for active mode users and opens economic opportunities for the area. Improvements to Part of Te Araroa Trail.	WEBs only	Low	No Priority ranking	3 ²⁹
Paihia Town Centre Improvements	High	Enables significant regional economic development opportunity for tourism in an approved RED programme. Improves safety and encourages active modes by activating the Paihia beach front and town centre as a community space.				
Paihia to Waitangi Shared use Path	High	Addresses gap for access to nationally significant site important to tourism and community. Safety improvements. Enables significant regional economic development for tourism.				
Tirohanga Stream Bridge Replacement	High	Safety and resilience improvements for route important to tourism (bridge prone to flooding) promoting travel through to the Bay of Islands area and safe travel for locals.	0.2	Low	5	3 ²⁹
Ruapekapeka Road Improvements	High	Addresses significant resilience gap / access on nationally important social and economic connections - Pa site which is an important tourist attraction currently impeded for some access due to unsealed road.	0.7	Low	5	3 ²⁹
Access to Waitangi Treaty Grounds	High	Addresses safety and access to a nationally significant site. Enables significant regional economic development opportunity for tourism in an approved RED programme	0.1 + WEBS	Low	No Priority ranking	5

* Note the BCR value for "Shared Use path Extension and Slip Repair at Haruru" activity is an approximation due to the nature of the economic analysis approach which calculated an aggregated economic benefit value for four walking and cycling improvements projects. BCR is therefore based on proportion of infrastructure created.

The wayfinding and signage activity will be delivered within the Wayfinding Signage Implementation Plan implementation schedule. The Mobile Facility for Driver Licensing will be delivered as a region-wide initiative.

8.12 Summary of Outcomes of Recommended Investment Programme

If implemented, the 26 activities prioritised from the SH11 Kawakawa to SH10 SSBC are expected to deliver the following programme outcomes:

- Safety:
 - Reduction of 1.1 DSIs along the corridor per year
 - Improved safety for pedestrians, cyclists and motorists on SH11
- Improved resilience with:
 - Estimated 80% reduction in road closures caused by natural disaster type disruptions e.g. slips and flooding
 - Sealing three key roads (Ruapekapeka Road, Bayly Road and Haruru Falls Road) to provide alternatives to SH1 and improved access to key tourist destinations
- Increased visitor spend of \$110M (NPV)
- Improved walking and cycling infrastructure including:
 - 11km of new or improved walking infrastructure

²⁹ Urgency rating related to development of investigation phase for each project of project (e.g. urgency to undertake investigation) not construction of project.



- 13km of new or improved cycling infrastructure
- New shared use path between Paihia and Waitangi. This will connect two proposed cycleways from the TCDR Integrated Cycling Implementation Plan (Waitangi to Kerikeri and Opua to Paihia) along the TCDR
- Improved access to Waitangi Treaty grounds
- Improved access to social and economic opportunities through initiatives such as upgrading SH11 at the Paihia urban area, improved bus connections in Tai Tokerau, enhanced parking facilities, upgrades of Te Karuwhā Parade and Te Haumi flats & way finding signage on the corridor

The activities contained within the programme represent a balanced provision of interventions which will deliver against the investment outcomes identified in the ILM, and collectively align with the objectives of the Government Policy Statement on Land Transport.

The recommended option delivers significantly improved safety for locals and visitors. It also expands access and connectivity throughout the corridor, by both building physical infrastructure and by implementing services improving travel choice. The impact of these projects will be to increase dispersal of visitors, which will spread the benefits derived from tourism, while also allowing locals to travel more often and further to take advantage of social and economic opportunities.



9 Next Steps

This SSBC outlines the recommended investment programme to address the problem statements identified in the ILM and deliver the benefits sought. A “pathway to implementation” has been laid out for each project in Section 5, which provides the recommended next steps for project owners and investment partners to take forward.

All projects are subject to funding and will require funding to be made available to progress with all subsequent stages of investigation, design and implementation. Assessments of the recommended option against PGF and NLTF criteria has been undertaken as part of this business case. These assessments are indicative only, intended to assist in progressing funding options. However, any applications to either the NLTF or the PGF will be subject to normal funding application and assessment processes by the NZ Transport Agency or the Provincial Development Unit, respectively.

Applications for funding could be made to the Provincial Growth Fund or the Tourism Infrastructure Fund where appropriate. All projects should also be put forward for inclusion in the next Regional Land Transport Plan update.

The projects within the early improvements package can be progressed through to implementation quickly once funding is made available. This is because they are lower in cost and risk, have received stakeholder support, as well as having undergone more detailed investigations and concept designs. Delivery of these projects would amount to a package of “early improvements” to enhance stakeholder confidence in the SH11 project and the wider TCDR programme, and to deliver an early array of benefits.

Five projects were considerably large and required significant optioneering to assess options and alternatives, which was not undertaken as part of this business case. These projects will each require a detailed business case to further develop and assess the options within them. In some instances, the recommended detailed business case incorporates two or more projects from the recommended option with a similar geographic location or which are proposing to achieve related outcomes. These projects are:

- **Access to Waitangi Detailed Business Case** - the single lane bridge to Waitangi is nearing the end of its design life and causes traffic congestion in peak season. To assess the transport infrastructure requirements to improve access to the site and accommodate growth in visitor numbers to the Waitangi Treaty Grounds and surrounding area. This DBC will also include the Haruru Falls Road improvements project as one of the options assessed.
- **Paihia Town Centre Improvements Detailed Business Case** - there are a number of projects planned for the Paihia Town Centre and waterfront. A business case is required to coordinate these projects and the project partners so that they are not being delivered in isolation. The interface between the projects, and their reliance on each other, in particular for waterfront space, requires an integrated approach to assessment of the options. The projects the DBC could capture the Paihia Town Centre Upgrade, Paihia to Waitangi Shared Use Path and Te Karuwā Parade Improvements.
- **Tirohanga Stream Bridge Replacement Detailed Business Case** - this project will require assessment of the different alignment options to replace the existing bridge and its approaches. This project was previously identified for delivery as part of the Northland Bridges Programme.
- **Ruapekapeka Road Improvements Detailed Business Case** - this project is high-cost and high-risk compared to other unsealed road projects due to its complex geography and rich archaeological history. It requires a Detailed Business Case to recommend the best solution which may consider sealing the existing road in situ or realignment options.
- **Flood Resilience Detailed Business Case** - to assess the different options at Taumāre to improve SH11's ability to remain open following high rainfall events, a DBC is required, supported by flood modelling, which considers options and alternatives. This project may interface with the Taumāre Stream Bridge Replacement, depending on how far the approach realignment extends, and therefore these two projects could assess in one business case.

For the medium- and long-term projects within the recommended option, the next steps will be driven significantly by the outputs of a review at the TCDR Programme level of all seven business cases. This process will set the recommendations of each business case in the context of wider regional and national priorities. As a result, the investment programme recommended in this SSBC may suggest some



prioritisation or coordinated implementation between the business cases. For example: implementing the Wayfinding and Signage upgrades region wide.

Similarly, the eventual programme will to some extent be driven by the actions of the project owners, and the relative speed with which they take projects forward for funding applications. For this reason, an important next step will be to establish responsibility for ownership of the projects within the recommended option. It is also recommended that a Memorandum of Understanding is set up between Hapū groups and project partners to agree terms of engagement and develop a strategy to ensure a collaborative approach is taken in delivery across the entire programme of works. Clear designations of this kind will help the programme move forward more smoothly.