

Mangawhai Shared Path Single Stage Business Case



Figure 1: A view of the existing track alongside Molesworth Drive.

Executive summary

This investment proposal is seeking \$16.8M of funding across four LTP funding periods to deliver the 8km long Mangawhai Shared Path project.

Kaipara District Council (KDC) adopted the Mangawhai Community Plan (MCP) in February 2018 following extensive community engagement. The MCP identifies the provision of a shared path (walking and cycling) network to connect the Mangawhai Village, Mangawhai Town Centre and Mangawhai Heads Beach as a number one priority. This SSBC has now been prepared to present a the case for central government investment to support the ongoing delivery of the project.

KDC has carried out a number of studies, investigations and community engagement to inform the development of this SSBC to implement the shared path network. KDC is developing a Network Operating Framework for the Mangawhai area for at least the next three LTP cycles in parallel with this business case. Community engagement will be ongoing during the implementation phases of the work presented in this SSBC.

The identified problem statements are:

Problem 1	A lack of dedicated walking and cycling facilities is a barrier to increasing the uptake of walking and cycling.
Problem 2	The existing walking and cycling facilities are not safe or fit for purpose.
Problem 3	Peak summer congestion: There is a high reliance on private vehicle use in Mangawhai due to lack of safe walking and cycling facilities, which results in congestion during peak summer periods.
Problem 4	Planning for rapid growth and providing a multi-modal approach: Without sufficient walking and cycling infrastructure growth will continue to be predominantly car based, resulting in poor environmental and land use integration outcomes for the Mangawhai area.

The expected benefits from addressing the problem statements are:

- **Benefit 1:** Improved mode shift to walking and cycling in Mangawhai; and
- **Benefit 2:** Improved safety for walking and cycling in Mangawhai.

The investment objectives are:

- **Investment objective 1:** To increase the uptake of walking and cycling in Mangawhai.
- **Investment objective 2:** To provide active modes choices as part of a multi-modal approach for future growth planning.

This will support an investment objective increasing mode shift towards walking and cycling in Mangawhai that will be developed in the Network Operating Framework.

The primary programme outcome is the greater uptake in Active Mode Transport in Mangawhai, through implementing a walking and cycling route into the communities, education facilities and recreation facilities. The programme will result in a network of off-road shared paths that will provide safe walking and cycling for commuters, school children and recreational users to their places of employment, education and recreation.

Two options have been identified to meet the investment objectives:

Work package options		
Option	Description	Cost
Do minimum.	Maintain the Status Quo.	n/a
Option 1.	2.5 m wide off-road strategic shared path route through Mangawhai.	\$7.4M
Option 2.	3.5 m wide off-road strategic shared path route through Mangawhai.	\$16.8M

Option 2 is the recommended option as:

- It best meets the overall criteria detailed in the multi criteria analysis;
- It provides the best return against the investment objectives;
- It has a Benefit Cost Ratio of 1.4 and an Incremental Benefit Cost Ratio of 1.0;
- Is affordable for KDC and NZTA; and
- Is feasible to implement with low risk.

Option 2 has a BCR of 1.4, demonstrating good value for money and has a High results alignment. An assessment profile of H/1.4 has been determined for the project.

The project team has completed a detailed review of the Option 2 work packages that are required to complete the shared path project to meet the overall project objectives. Each work package has been given a priority (High, Medium-High, Medium or Low) based on how much that work package contributes to the meeting the overall project objectives. Each work item has then been ranked in terms of the preferred order for implementation in terms of logical sequencing, ability to be implemented and the desirable order of work to meet the overall project objectives.

The ranking exercise has identified a staged implementation over four LTP 3-year periods giving consideration to an affordable level of investment for NZTA and KDC over the 2018/21 to 2027/30 3-year funding periods. This has resulted in a proposed programme of work that completes the full shared path route for Option 2 at a total cost of \$16.8M over the 3-year funding periods.

Investment levels over the 3-year funding periods		
3-year LTP period	Years	Investment
0	2018/21	\$4,465,200
1	2021/24	\$7,079,400
2	2024/27	\$2,917,550
3	2027/30	\$2,345,900
Total		\$16,808,050

All works are relatively straight forward to implement and are similar in nature to the Kamo Shared Path that the NTA has successfully implemented in the past two years.

The NTA is well prepared and placed to deliver the work packages as a continuation of previously completed works on a “business as usual” basis with minimal financial risk.

PART 1 – THE CASE FOR THE ACTIVITY

1. Background

Kaipara District Council (KDC) adopted the Mangawhai Community Plan (MCP) in February 2018 following extensive community engagement. The MCP identifies the provision of a shared path (walking and cycling) network to connect the Mangawhai Village, Mangawhai Town Centre and Mangawhai Heads Beach as a number one priority.

KDC had allocated funding of \$2M through the 2019/20 Low Cost Low Risk (LCLR) programme to commence the project. However, apart from a small amount that has already been used for the construction of a section of the path on Moir St (from Tara Rd to Leslie St), the rest of the funding has now been reprioritised to two intersection projects in Mangawhai. Therefore, this SSBC has now been prepared to present a the case for central government investment to support the ongoing delivery of the project.

1.1 Work Completed to Date

1.1.1 Previous studies and investigations

KDC has carried out a number of studies, investigations and community engagement to inform the development of this SSBC to implement the shared path network. The most relevant of these are summarised in **Table 1**.

Table 1: Work to date		
Item	Description	Discussion
Kaipara Walking and Cycling Strategy (2017).	<p>This Strategy has been prepared to provide a framework to increase walking and cycling participation in the Kaipara district. It includes initiatives to develop and expand walking and cycling networks, for both local journeys as well as long distance touring routes to support economic growth.</p> <p>The Strategy also identifies opportunities for the district to collaborate with key partners to jointly fund and connect key linkages and develop behaviour change initiatives to change attitudes to walking and cycling.</p>	<p>The Strategy identifies a 9km walking and cycling connection from Mangawhai Village and Heads, and key residential, commercial and recreational locations in between.</p> <p>This was tasked for scoping to begin in 2017/18.</p>
Mangawhai Community Plan (2018).	<p>The MCP is a document to provide guidance to Kaipara District Council in the management of growth in Mangawhai.</p> <p>This plan is confined to the roles of Council, these being; planning and regulation, and investment in services and infrastructure for transport, water supply, stormwater, wastewater, and parks and reserves.</p> <p>In mid-2016, Council set up a panel of community representatives to make recommendations for this plan. The recommendations were received by</p>	<p>The MCP identifies six “key moves”.</p> <p>Key move one is a “Slow street from school to beach” that comprises of a shared use path for cycling and walking that would follow the road carriageway for its full length with intersections arranged using roundabouts.</p> <p>Key move three is “Improve connectivity” that includes proposed walking and/or cycling connections.</p> <p>The MCP approach to transport development is to fix “pain points” in the network (notably the two</p>

Table 1: Work to date

Item	Description	Discussion
	Council in July 2017 and the plan subsequently adopted.	<p>intersections at the Village shops) but otherwise use cycling and walking to improve connectivity.</p> <p>The MCP identifies the provision of a shared path (walking and cycling) network to connect Mangawhai Village, Mangawhai Town Centre and Mangawhai Heads Beach as a number one priority for work to commence in 2018/21. KDC has included the project in the 2019/20 LCLR programme.</p>
Mangawhai Shared Path Connections Options Report (March 2018).	<p>This Options Report provides preliminary scoping and route confirmation information along with cost estimation of potential shared path routes within the wider Mangawhai area.</p> <p>The report considers the feasibility and estimated cost of the identified options for LTP budgeting. It is not intended as a Business Case nor has any consultation with any property owners or effected parties been undertaken.</p> <p>The report includes investigation of various route options, where they are available with topographical constraints.</p>	<p>The options assessment was updated in April 2019 and has identified a total cost of in the order of \$7.4M for a shared path. This was based on a path width of 2.5m and included widening existing paths rather than building new paths for significant lengths. It includes a footbridge at Insley Street / Tomarata Bridge and excludes a section on Molesworth Road that will be built as part of the Mangawhai Central development.</p> <p>Cost estimates have been updated for this SSBC, based on providing an entirely new path with a desirable minimum width of 3.5m for commuter and recreational paths. Where there are physical constraints in achieving a 3.5m width, an absolute minimum width of 2.5m has been adopted.</p>
Mangawhai Transport Strategy Compilation (October 2018).	<p>A review of the existing plans and strategies which relate to transport in Mangawhai and Mangawhai Heads. The review included the following documents:</p> <ul style="list-style-type: none"> • Mangawhai Community Plan (2017). • Kaipara Walking and Cycling Strategy (2017). • Mangawhai Village and Mangawhai Heads Infrastructure Plan – Transportation (2016). • Mangawhai Shared Path Connections Options Report (2018). • KDC Infrastructure Strategy 2018-2048 (2018). • Wood Street Report (2018). 	<p>The review identified that the main transport issues to be resolved include:</p> <ul style="list-style-type: none"> • A poor quality and unconnected sustainable transport network – in many areas the footpath network is incomplete and cycleway network is non-existent. • There is a congestion issue in Mangawhai during peak periods – summer weekends and holidays. Travel times through some junctions will deteriorate as traffic growth occurs. • Other issues highlighted include safety concerns, the use of Mangawhai as an alternative route if the state highway was blocked, and

Table 1: Work to date

Item	Description	Discussion
	<ul style="list-style-type: none"> • Mangawhai Cycleway Connection (route scoping report) (2017). • Mangawhai Transport Study (early draft) (2018). • Mangawhai & Mangawhai Heads – Review of Speed Limit Provisions (2017). 	<p>congestion at other junctions. Pedestrian safety and parking on Wood Street was also a concern.</p> <ul style="list-style-type: none"> • Of particular interest was the views of the residents in Mangawhai Community Plan, they have a desire to see slow streets, increased connectivity for pedestrians and cyclists, a sustainable environment and fixing congestion pressure points.
Mangawhai Coastal Walkway Feasibility Study (Draft: August 2019).	<p>The purpose of this document is to determine the feasibility of developing a consistent, safe and inclusively accessible walkway connection from Mangawhai Village to Mangawhai Heads.</p> <p>The proposed outcome of this feasibility study is to present a coastal path to link Mangawhai village with Mangawhai Heads and eventually Mangawhai Central. The drive for the MCW project comes out of the Mangawhai community plan key move three 'Improve Connectivity' which identifies the Mangawhai Coastal Walkway (MCW) as a priority project for the Mangawhai area.</p>	<p>KDC is about to finalise consultation on the proposal and has allocated budget to commence the project.</p> <p>Several sections of the Coastal Walkway coincide with the shared path route as part of the overall network. For these sections the study provides useful background information regarding options that have been considered and the level of community engagement.</p> <p>KDC is coordinating these projects and is seeking funding support through this SSBC for those sections of the shared path network that will also provide connections to sections of the coastal walkway.</p>
Mangawhai Community Park: Long Term Plan (Draft).	KDC is developing a long term plan for the community park alongside Molesworth Drive.	This plan includes a shared path that is being considered as an alternative off-road route for a section of the shared path considered in this SSBC.
Mangawhai Network Operating Framework (current)	KDC are currently developing a Network Operating Framework (NOF) to support the KDC Transportation Network investment options, for both current demand and future demand.	KDC has a simple network and it has been agreed with NZTA that the development of a Program Business Cases is not required to support their investment applications. It was agreed that the NOF would align to the ONRC/ONF and will pull together the strategies that support the KDC transport network improvements and investment story. It was agreed that the current strategies being developed would be supported by the NOF for the Mangawhai area for at least the next three LTP cycles (10 year look ahead).

Table 1: Work to date		
Item	Description	Discussion
Mangawhai Spatial Plan (draft March 2020).	<p>The draft Mangawhai Spatial Plan presents the preferred options for how Mangawhai could develop its town centre, commercial, housing and industrial business areas over the next 30 years.</p> <p>The draft plan was adopted for consultation by KDC on 27 May 2020.</p>	<p>The key outcomes of the Spatial Plan relating to transport include:</p> <ul style="list-style-type: none"> • Increase connectivity and ease of movement within and around Mangawhai through upgrades of roads and bridges; and • Improve walking and cycling conditions and connections. <p>Specific reference is made to the shared path that is presented in this SSBC (refer to Section 2.3.5).</p>

1.1.2 Moir Street: local shared path connection

KDC has, earlier this year, completed a 2.5m local shared path connection along a 450m length of Moir Street in Mangawhai Village in preparation for the network shared path that joins the proposed main shared path connecting Mangawhai Village environs to Mangawhai Heads Town Centre and the Mangawhai Heads Beach (refer to **Figure 2**). This work was funded as a Low Cost Low Risk improvement project in agreement with the NZ Transport Agency.



Figure 2: The new 2.5m local shared path connection along Moir Street in Mangawhai Village that was constructed in early 2019.

1.1.3 Complementarity development proposals

There are a number of development proposals along the route that present opportunities for collaborative or complementary walking and cycling facilities to complement the overall project objectives. These will be developed in parallel with pre-implementation work. The most significant of these is the current [Mangawhai Central](#) development proposal on Molesworth Drive for a mixed use development (refer to **Figure 3**). As part of this development, shared paths will be provided on both sides of a realigned Molesworth Drive along the road frontage. Negotiations over the form of

shared path and implementation are ongoing and will form part of the overall network considered in this SSBC.

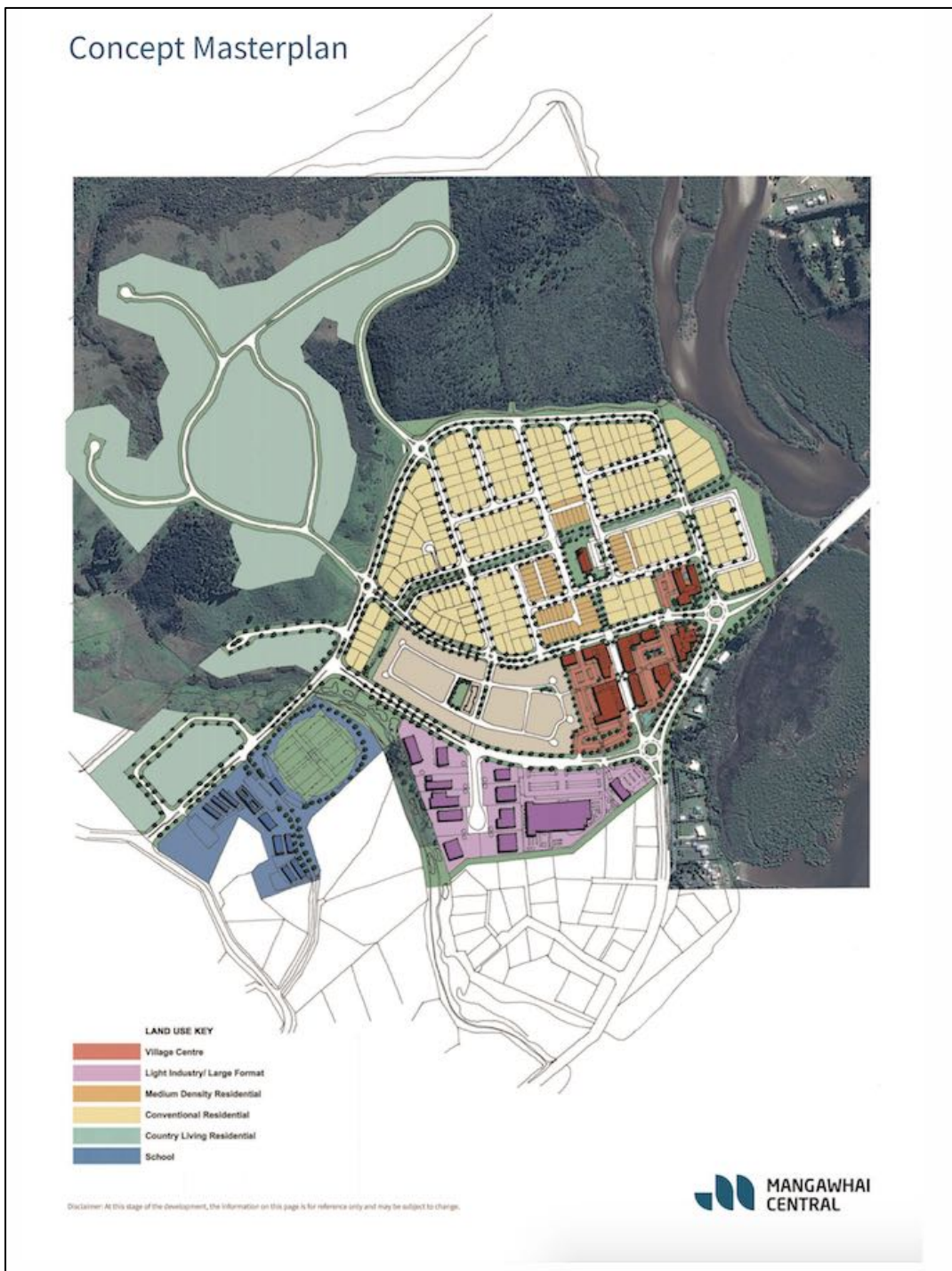


Figure 3: The [Concept Masterplan](#) for Mangawhai Central.

1.2 Project Governance

The project governance is the Mangawhai Community Plan Steering Committee, made up of:

- Jim Sephton (General Manager Infrastructure, Kaipara District Council),
- Greg Monteith (Capital Works & Procurement Manager, Northland Transport Alliance),
- Sue Davidson (GM of Sustainable Growth and Investment, Kaipara District Council), and
- Hamish Watson (Parks and Recreation Manager, Kaipara District Council).

1.3 Organisation structure

NTA Capital Works & Procurement Manager.	Greg Monteith.
Project Manager.	Tim Manning.
NTA Traffic Safety and Shared Path Design overview.	Nick Marshal and Victor Devyatov.
Designer.	TBC but paper is being put through to Council to engage Stella Consultants.
Community & Recreation Advisor.	Gail Fotheringham.
Communications Advisor.	Ruby Mitchell.
MSQA.	To be confirmed.

2 Strategic outcomes

2.1 National

The current Government Policy Statement on Land Transport (GPS), sets out 4 strategic directions as follows:

- Safety,
- Access,
- Environment, and
- Value for money.

This proposal achieves strong alignment with all four, but specifically safety and access. The shared path provides safer and better access to encourage active mode transport access to schools and other key destinations. The route will be built to a high safety standard (such as road crossing and roadside barrier protection where required).

Active transport systems reduce the impact of transport on the environment reducing car dependency for short local trips.

The Mangawhai Shared Path project has a BCR of 1.4, demonstrating good value for money and has a High results alignment (refer to **Sections 8 and 9** of this business case).

2.1.1 Te Araroa Trail

[Te Araroa](#) is New Zealand's Trail - taking in spectacular New Zealand landscapes from beaches to volcanoes to forests to cities. The 3000km route stretching from Cape Reinga in the North of New Zealand to Bluff in the South was officially opened December 3rd, 2011 by the Governor-General of New Zealand, Sir Jerry Mateparae.

The Te Araroa route overlaps with the entire length of the proposed shared path (refer to **Figure 4**). Currently trail users have poor, or no, dedicated facility through Mangawhai. The proposed shared path network will provide a high-quality off-road path for trail users, connecting the trail from the Mangawhai Heads Beach to the north to the connection to Pakiri Beach via Black Swamp Road and Pacific Beach Road.

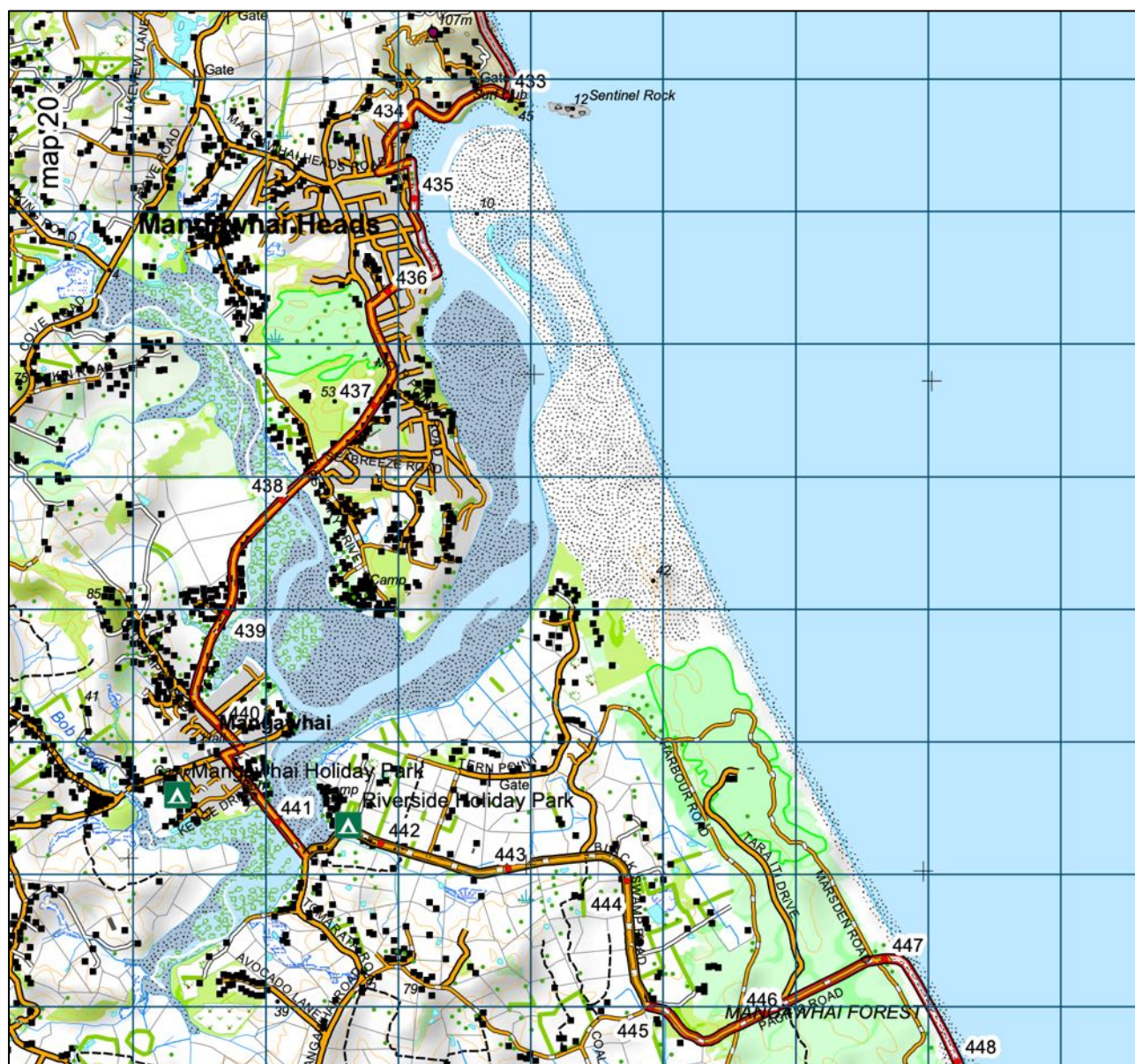


Figure 4: The route of Te Araroa through Mangawhai (reference Te Araroa web site mapping).

2.2 Regional

The [Northland Walking & Cycling Strategy](#) (August 2018) has 4 key objectives, three directly relate to creating an integrated network of shared paths in towns and cities:

- Developing appealing and cohesive walking and cycling networks that connect Northland – Very significant.
- Growing walking and cycling participation and promoting Northland's coastal point of difference – Very significant.
- Improving community wellbeing including creating economic opportunities – Significant.
- Ensuring walking and cycling infrastructure, and its use, is sustainable – Very significant.

The Northland Regional Transport Committee added the Mangawhai Shared Path to the RLTP on 5 June 2019 (refer to minutes included in **Appendix A**).

2.3 Local

2.3.1 *The Kaipara Walking and Cycling Strategy*

The Kaipara Walking and Cycling Strategy aims to achieve the vision ‘Working together to enhance walking and cycling in Kaipara’ through the implementation of three key objectives:

1. Become a walking and cycling destination to support economic growth, and provide transport and lifestyle choices;
2. Partner with key stakeholders and community to deliver walking and cycling projects and behaviour change initiatives; and
3. Develop district wide and township walking and cycling networks that are safe, enduring and connect with nature.

The Kaipara Walking and Cycling Strategy identifies the following key issues to be addressed:

- Few Transport choices;
- Safety;
- Changing demographics; and
- Funding.

The strategy identifies the following opportunities:

- Leveraging off existing routes;
- Develop safe and connected townships; and
- Collaboration and Behaviour change.

The MCP identifies that providing a shared path network will make it attractive, safer and quicker to walk, cycle or scoot to where people want to go on shared paths along main routes and connecting no exit streets. The network will provide for growth whilst meeting the overarching community values to care for nature, encourage a slow pace and active lifestyle, and retain the coastal character and history.

The Strategy identifies a 9km walking and cycling connection from Mangawhai Village and Heads, and key residential, commercial and recreational locations in between (refer to **Figure 5**). This was tasked for scoping to begin in 2017/18.

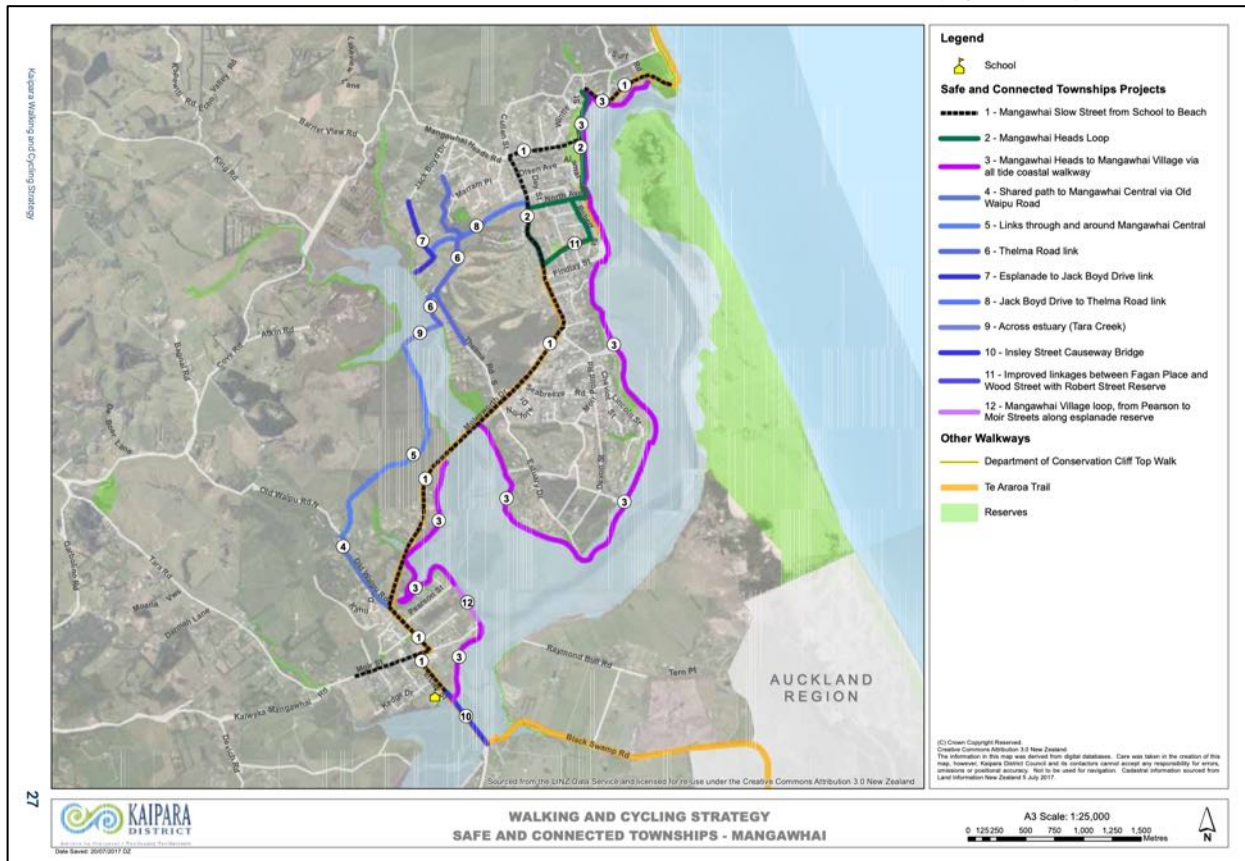


Figure 5: The KDC Walking and Cycling Strategy: Safe and Connected Townships Plan for Mangawhai.

2.3.2 Mangawhai Community Plan (MCP)

The MCP identifies the provision of a shared path (walking and cycling) network to connect Mangawhai Village, Mangawhai Town Centre and Mangawhai Heads Beach as a number 1 priority for work to commence in 2018/20 (refer to **Figures 6 and 7**). KDC has allocated funding through the 2018/21 LTP to commence design and construction works. The MCP details a staged programme of delivery of the total shared path network over four LTP cycles (refer to **Figure 7**).

Transport					Key	Priority	Intended Start
Project	Description	Priority (beginning 1 July 2018)	Cost estimate				
Stage one - slow street Mangawhai Village	Shared path and landscaping from:	P1	\$300,000		P1	one	2018-2020
	- Mangawhai School to Insley/Moir Streets intersection				P2	two	2021-2024
	- Tara Bridge to Pearson Street (including Mangawhai Domain)				P3	three	2025 -2028
	Roundabout at Insley/Moir Streets intersection	P1	\$1,000,000		P4	four	2028 onwards
	Roundabout at Moir Street/Molesworth Drive intersection.	P1	\$882,900		Please note: NZTA funding is required and not approved for some projects.		
	Review parking provisions	P1	TBC				
	Improved arrival experience from the south.	P1	Included above				
Stage two - slow street Mangawhai Community Park	Shared path and landscaping along Molesworth Drive from Moir Point Road to the southern end of the Causeway Bridge	P1	\$207,100				
Stage three - slow street Estuary Estate	Shared path and landscaping along Molesworth Drive from Pearson Street to the Causeway Bridge	P1	\$195,000				
	Two roundabouts at entrances to Estuary Estates off Molesworth Drive.	TBC	TBC				
Stage four - slow street Molesworth Drive Roundabout to Surf Club	Shared path and landscaping along Mangawhai Heads Road and Wintle Street from the Pearl Street Corner to Surf Club	P3	\$180,000				
Stage five - slow street Mangawhai Heads	Shared path and landscaping along Molesworth Drive from Moir Point Road to the Mangawhai Heads roundabout	P3	\$137,000				
	Wood Street/Molesworth Drive roundabout		\$800,000				
Cycling/walking on road shared paths (other than on "slow street")	Mangawhai Heads loop shared path (Wood Street / Robert Street / North Avenue / Alamar Crescent / camping grounds / Mangawhai Heads Road including Wood Street upgrade	P2	\$775,000				
	Mangawhai Village loop path (signage on existing esplanade) (Kainui Street / Pearson Street / coastal reserve / Moir Street)	P1	\$10,000				
Footpaths	Footpath along Alamar Crescent	P1	\$47,000				
	Pedestrian connection on Insley Street causeway and bridge	P4	\$573,750				
Future stage - cycling/ walking	Shared path to Mangawhai Central via Old Waipu Road.	P4	\$250,000				
Investigate connecting ends of Old Waipu Road as subdivision occurs	Provide an alternate route into Mangawhai and Estuary Estates from an upgraded and joined up Old Waipu Road as subdivision occurs.	P4	\$2,000,000				
Through route for through traffic	Develop an alternate route for travellers to Langs Beach and Waipu Cove to time with Warkworth to Te Hana State Highway 1 upgrade (Cove Corridor).	P4	TBC				
	Include 2m verge for cyclists refuge along Cove Rd.						
Plan for other intersection improvements as Mangawhai grows	These may include Molesworth Drive /Sail Rock Drive, Molesworth Drive /Estuary Drive / Thelma Road, Tara Road / Mangawhai-Kaiwaka Road.	P4	TBC				

Figure 6: The Mangawhai Community Plan – Connections Map.

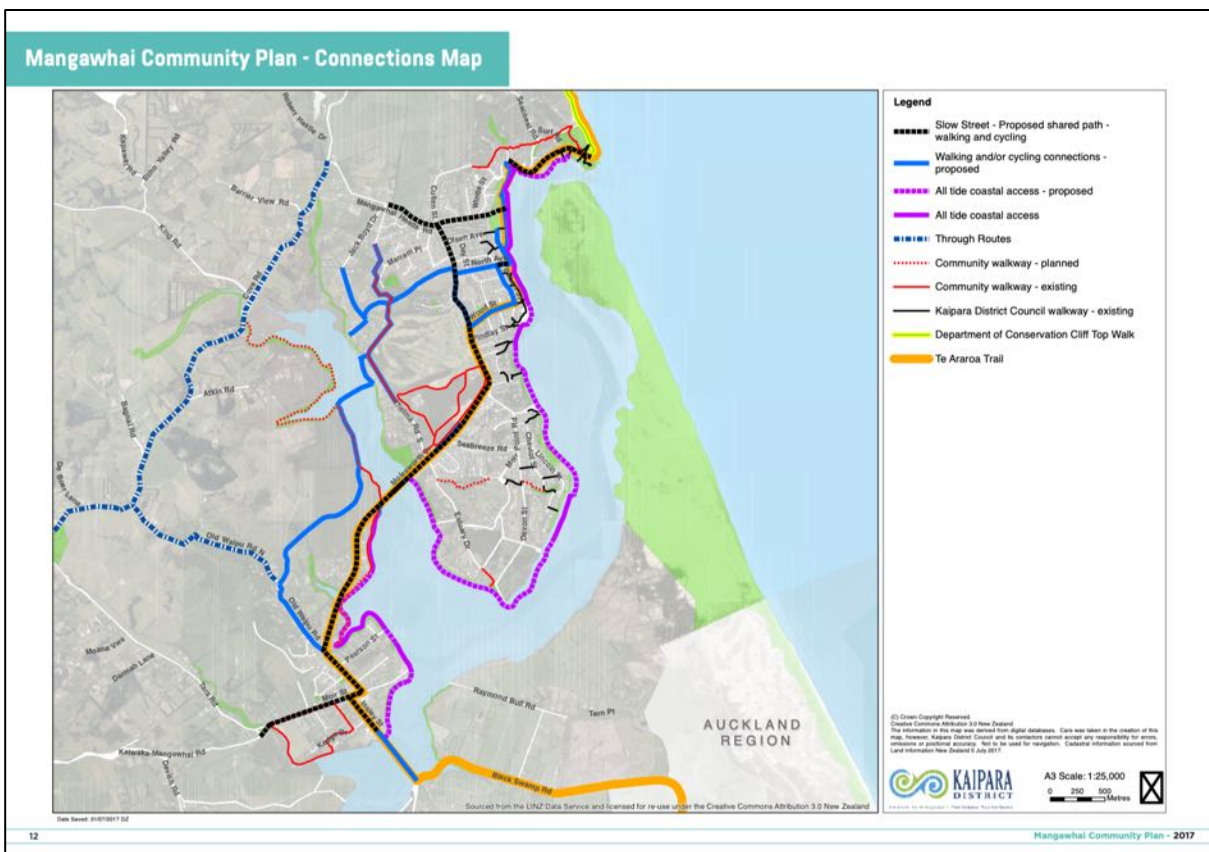


Figure 7: The Mangawhai Community Plan: Transportation Programme.

2.3.3 Network Operating Framework (NOF)

KDC and NZTA have agreed that the current KDC transport network improvements strategies being developed would be supported by a NOF for the Mangawhai area for at least the next three LTP cycles (10 year look ahead). In terms of this business case it has been agreed that KDC and NTA will complete a SSBC for the Mangawhai Shared Path and submit this to the NZTA for endorsement and investment approval. NZTA have agreed to evaluate, endorse and approve the investment needs for the Mangawhai shared path as part of the NOF.

This approach was agreed to at a meeting on 10 March 2020 (refer to the minutes in **Appendix B**).

The NOF is considered to be the best option to support the KDC Transportation Network investment options, both current demand and future demand and will account for KDC's spatial planning and NZTA's One Network Road Classification.

2.3.4 Population projections (planning for growth)

In the years 2001 – 2016 there was an increase of 1,304 houses or an average of 87 new houses each year (1,391 to 2,429, almost double). Improvements to State Highway, including the motorway extension to Warkworth currently under construction, will reduce travel times, improve safety and increase reliability and resilience for travel between Auckland and Mangawhai. The rapid growth of Auckland may create migration north in search of a better, more affordable and simpler life.

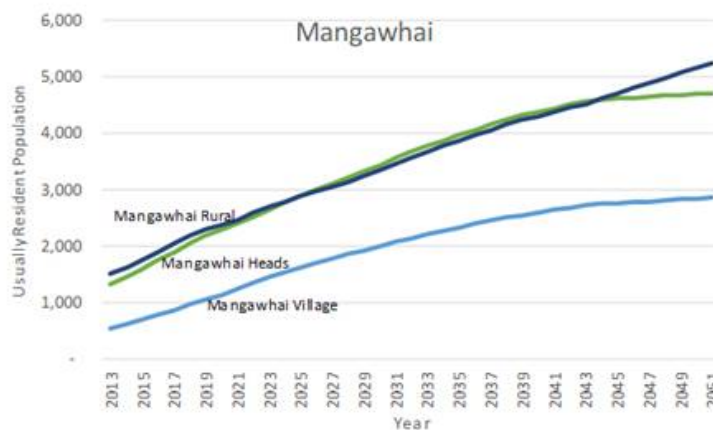
Now just under a half of housing is lived in full time. The rest are holiday/weekend homes. This creates peaks of demand and demand for different housing choices.

Northland is now officially the fastest growing region in New Zealand (18.1% increase over the past 5 years). Mangawhai is the fastest growing area in Northland (61% growth over the past 5 years). Mangawhai had a population of 3,144 people in 2013, in 2018 it increased to 5,031 (source 2013 and 2018 census data). Most of this growth was experienced in the last 3 years and has been fairly steady at ~20% per annum. The growth of dwellings is accelerating and so is the number of and size of developments in urban Mangawhai.

Current predictions by KDC based on Infometrics and Statistics NZ are that the population of Mangawhai is to grow from about 5,000 in 2019 to 9,000 by 2031 and 12,800 by 2051 (refer to **Figure 8**). This is based on a number of factors colliding, the relative cheap property price, the unique beauty of Mangawhai, the proximity to Auckland, and with commissioning of the latest section of the Motorway north from Auckland it will only seem closer.

Mangawhai

Mangawhai is projected to grow rapidly.
Will soon become our District's largest centre.
Is attracting retirees and people who can commute back to Auckland for work.
2019 population is estimated at 5,808.
Population is projected to reach 9,088 by 2031 and 12,796 by 2051.



Mangawhai's population 2013 - 2051

Figure 8: Mangawhai LTP growth projections (November 2019, draft).

2.3.5 KDC Spatial Planning

The draft Mangawhai Spatial Plan was adopted for consultation by KDC on 27 May 2020. A key outcome is to improve walking and cycling conditions and connections. The Plan includes a number of Spatial Plan Themes that have been developed to achieve the vision and to respond to the opportunities identified in the spatial planning process. Theme 7 is:

Transport: improve safe walking and cycling options, and manage vehicular traffic.

The Spatial Plan identifies a number of recommended transportation actions including progressing the walking and cycling connections identified in the MCP. This includes the shared use path identified in this SSBC (refer to **Section 2.3.2** and **Figure 9**).

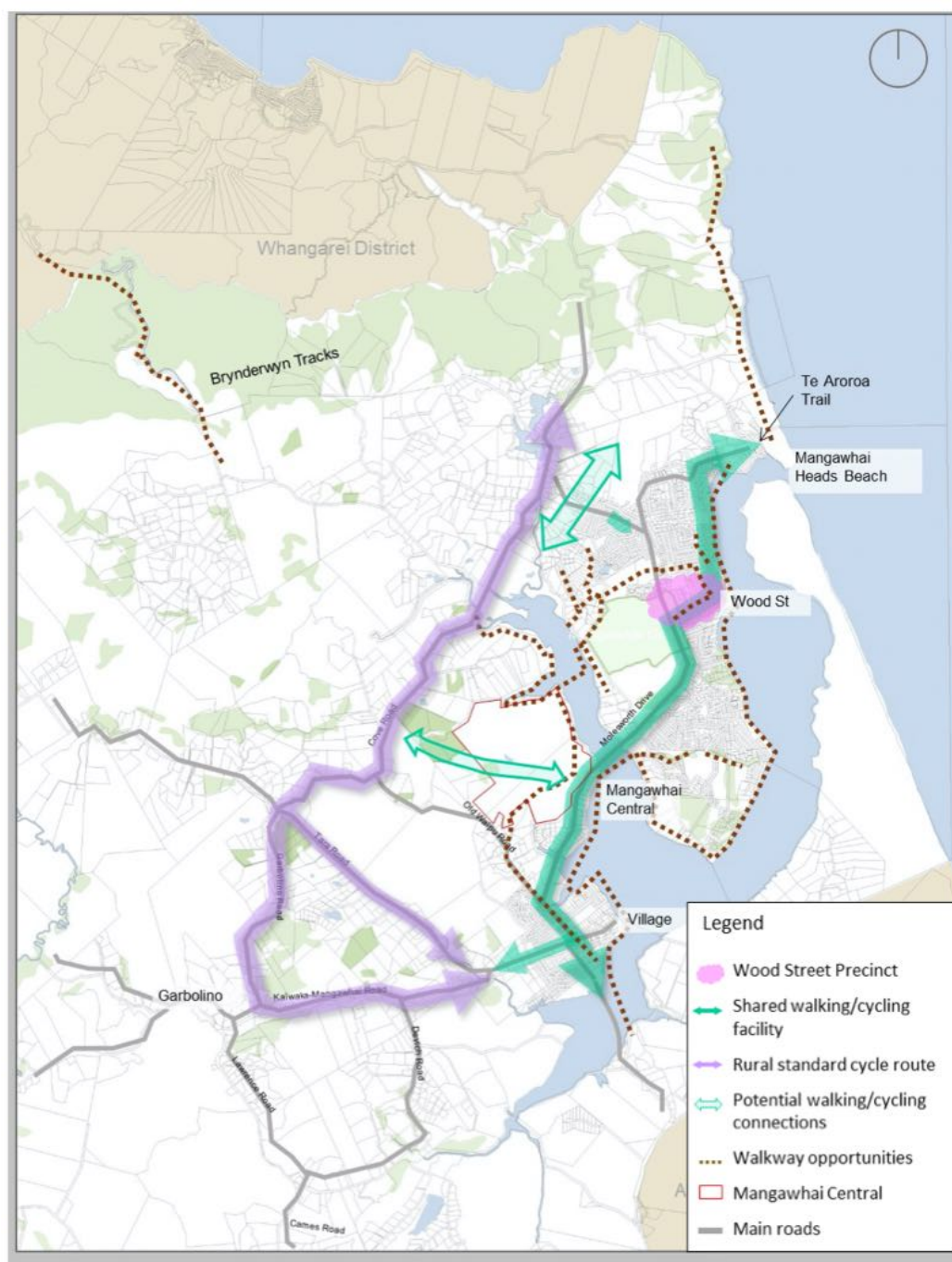


Figure 9: The proposed general pedestrian and cycling initiatives identified in the draft KDC Mangawhai Spatial Plan.

The Spatial Plan also identifies several growth options that support the population growth projections detailed in **Section 2.3.4**. **Figure 10** details the growth options considered in the draft KDC Mangawhai Spatial Plan with Options 2 and 6 preferred, with the difference between these the assumption for the number of dwellings to be provided in the Mangawhai Central development.

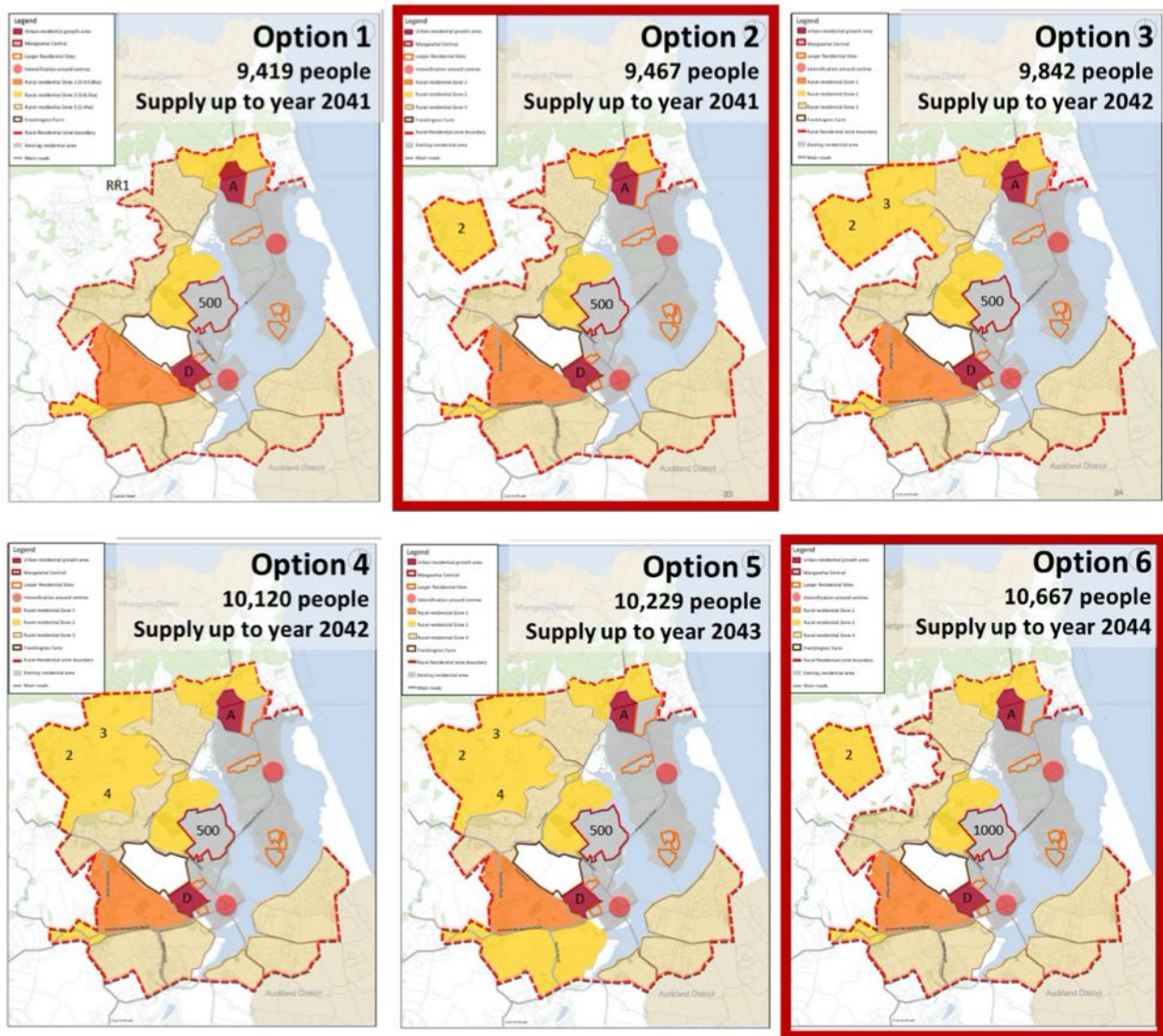


Figure 10: The growth options considered in the draft KDC Mangawhai Spatial Plan.

3 Problems, opportunities and constraints

3.1 Problems and opportunities

There are opportunities to improve safety for walking and cycling in Mangawhai, strengthening connections between Mangawhai Village, Mangawhai Town Centre and Mangawhai Heads Beach, providing for growth, changing demographics and encouraging a transition from private car use to multi-modal travel.

There are also a number of safety hotspots within the existing transport network due to the poor level of facilities for walking and cycling users with a lack of pedestrian connectivity and no dedicated cycle facilities.

The lack of dedicated walking and cycling facilities is a barrier to encouraging walking and cycling as a safe and healthy local travel option.

Mangawhai continues to face growth pressures in both urban and rural environments. Without sufficient walking and cycling infrastructure this growth will continue to be predominantly car based, resulting in poor environmental and land use integration outcomes for the Mangawhai area.

The opportunity exists to implement a high quality and safe walking and cycling network that will provide for future growth in a planned cohesive manner whilst encouraging an increased proportion of alternative multi-modal travel modes.

The existing transport network is highly road and private vehicle focused with limited public transport services operating in the area and very limited travel choices for other modes such as cycle and walking.

The lack of dedicated walking and cycling facilities reinforces a reliance on private vehicles for local journeys. There is a real opportunity to reduce greenhouse gas emissions by creating transport choice.

3.2 Problem statements

The problem statements and associated evidence for this business case are provided in **Table 1**.

Table 1: Problem statements and evidence	
Problem Statement	Evidence
Problem 1 A lack of dedicated walking and cycling facilities is a barrier to increasing the uptake of walking and cycling.	Refer to the map in Appendix C detailing the existing footpaths connecting the surf beach, town centre and the village and the missing lengths of footpath. There are currently no cycling facilities in Mangawhai. KDC carried out a community survey in December 2015 as part of the development of the MCP. The vast majority of respondents agreed that the lack of footpaths was a problem. There was a desire to see improved and extended footpaths and the provision of cycling facilities with a recommendation to prepare a master plan for walking and cycling routes. A summary of the community survey is included in Appendix D . The lack of walking and cycling in Mangawhai is demonstrated by the 2013 census data, which indicates that the number of people that walked to work was 4.0% and cycled to work was just 0.6%.

Table 1: Problem statements and evidence

Problem Statement	Evidence
	<p>There is only one school in Mangawhai and that is located in the Mangawhai Village on Insley St. This school is the Mangawhai Beach School and this has a current role of 460 students (in July 2019), which includes Year 1 to Year 8 (primary and intermediate age groups). Approximately half of these students would live in the Mangawhai Heads area which, due to lack of adequate and safe pedestrian facilities on Molesworth Drive, often rely on private vehicles or school buses to access school.</p> <p>The Te Araroa national walkway also passes through Mangawhai with approximately 1,000 visitors carrying out the 3,000km trail every year.</p>
<p>Problem 2</p> <p>The existing walking and cycling facilities are not safe or fit for purpose.</p>	<p>For a significant length of Molesworth Drive between the village and town centre there is either just a narrow gravel track, or no footpath at all. This means that cyclists are either forced to travel in the traffic lane where they conflict with vehicles, or travel on tracks where they conflict with pedestrians and other cyclists. Either situation has the potential for death and serious injury crashes for pedestrians and cyclists. Figure 11 is an example where a cyclist has chosen to use the road in preference to the track and conflicting with trucks and cars.</p> <p>In the five-year period 2014-18 there have been 2 minor injury and 2 non-injury crashes reported involving pedestrians or cyclists within the study area. Crash data is limited, as the absence of facilities that are fit for purpose are a significant barrier to these travel modes.</p> <p>KDC carried out a community survey in December 2015 as part of the development of the MCP. 37% of respondents indicated that they find it difficult to walk/cycle in Mangawhai. Submitters requested safe off-road access to Mangawhai Heads, safe cycling/walking connections between the Village and Mangawhai Heads and safe pedestrian access along the Insley Street causeway and bridge. A summary of the survey is included in Appendix C.</p> <p>The KDC Walking and Cycling Strategy (2017) details that:</p> <p><i>“Mangawhai has narrow streets including many without footpaths. While this encourages lower traffic speeds and volumes, pedestrians must often share the road with vehicles. This may be particularly challenging for more vulnerable road users such as children and the elderly. Actions identified in the Mangawhai and Kaiwaka improvement plans aim to improve accessibility through these townships.”</i></p>

Table 1: Problem statements and evidence

Problem Statement	Evidence
<p>Problem 3</p> <p>Peak summer congestion: There is a high reliance on private vehicle use in Mangawhai due to lack of safe walking and cycling facilities, which results in congestion during peak summer periods.</p>	<p>The Mangawhai Transport Strategy Compilation (October 2018) identified several main transport issues to be resolved in Mangawhai, including:</p> <p><i>“There is a congestion issue in Mangawhai during peak periods – summer weekends and holidays. Travel times through some junctions will deteriorate as traffic growth occurs.”</i></p> <p>The Strategy Compilation also notes that:</p> <p><i>“The population of Mangawhai and Mangawhai Heads has expanded rapidly in the last 10 years and is planned to expand further in the future. Mangawhai is a popular tourist destination and at peak times the population can double. Mangawhai is becoming a popular location to retire and holiday homes are increasingly being bought for permanent occupation. These population issues have led to transport issues to the extent that there is now traffic congestion in Mangawhai at peak holiday times, which is unusual for a small Northland town. The increase in population has also increased the desire to link the two settlements with suitable facilities for walkers and cyclists.”</i></p> <p>The draft Mangawhai Spatial Plan indicates that 42% of homes in Mangawhai are holiday homes that are only occupied during holidays. This contributes to significant peak summer congestion.</p> <p>KDC carried out a community survey in December 2015 as part of the development of the MCP. The vast majority of respondents agreed that traffic congestion with crowding in the summer months was a problem. A summary of the community survey is included in Appendix D.</p> <p>Current predictions by KDC based on Infometrics and Statistics NZ are that the population of Mangawhai is to grow from about 5,000 in 2019 to 9,000 by 2031 and 12,800 by 2051 (refer to Section 2.3.4 and Figure 8).</p> <p>There are a lack of safe facilities and services for alternative modes of transport in Mangawhai. The existing footpath network is incomplete, there are very limited cycleway facilities and a once a week bus service, the Bream Bay Link, which commenced in August 2019. In particular, the gravel walkway between the Mangawhai Heads and the Mangawhai Village is narrow and unsafe for cyclists resulting in a lack of active transport use between these communities.</p> <p>This is reflected in the 2013 census data which indicated that, for those surveyed who travelled to work, the percentage of each mode were as follows:</p> <ul style="list-style-type: none"> • Private Vehicle – 91.8% • Walked or Jogged – 5.9%

Table 1: Problem statements and evidence

Problem Statement	Evidence
	<ul style="list-style-type: none"> • Cycled – 0.9% • Public Transport – 0.0% <p>The two main places of employment are in the commercial area in Mangawhai Village and the Wood St and Moir Point areas of Mangawhai Heads. Due to lack of suitable and safe walking and cycling facilities, access to these areas is mainly by private vehicle.</p> <p>School children from Mangawhai Heads mostly either use a school bus or ride with their parents to the Mangawhai Beach School which is located in Mangawhai Village.</p> <p>Access to the ocean beach at Mangawhai Heads for recreation is again primarily by private vehicle due to lack of alternative transport facilities.</p>
Problem 4 Planning for rapid growth and providing a multi-modal approach: Without sufficient walking and cycling infrastructure, growth will continue to be predominantly car based, resulting in poor environmental and land use integration outcomes for the Mangawhai area.	<p>Mangawhai had a population of 3,144 people in 2013, in 2018 it increased to 5,031 (source 2013 and 2018 census data). Current predictions by KDC based on Infometrics and Statistics NZ are that the population of Mangawhai is to grow from about 5,000 in 2019 to 9,000 by 2031 and 12,800 by 2051 (refer to Section 2.3.4 and Figure 8).</p> <p>KDC carried out a community survey in December 2015 as part of the development of the MCP. The vast majority of respondents agreed that Mangawhai was in a period of growth and that the lack of footpaths was a problem. There was a desire to see improved and extended footpaths and the provision of cycling facilities. A summary of the community survey is included in Appendix D.</p> <p>The KDC Walking and Cycling Strategy (2017) indicates that there is significant potential for growth in local walking and cycling journeys due to there currently being few transport choices with a reliance vehicle for travel.</p>

The expected benefits from addressing the problem statements are:

- **Benefit 1:** Improved mode shift to walking and cycling in Mangawhai; and
- **Benefit 2:** Improved safety for walking and cycling in Mangawhai.



Figure 11: A cyclist travelling towards Mangawhai Village on Molesworth Drive.

3.3 Investment objectives

The investment objectives are:

Investment objective 1: To increase the uptake of walking and cycling in Mangawhai.

Investment objective 2: To provide active modes choices as part of a multi-modal approach for future growth planning.

This will support an investment objective increasing mode shift towards walking and cycling in Mangawhai that will be developed in the Network Operating Framework.

3.4 Benefits of investment

The primary programme outcome is the greater uptake in Active Mode Transport in Mangawhai, through implementing a walking and cycling route into the communities, education facilities and recreation facilities. The programme will result in a network of off-road shared paths that will provide safe walking and cycling for commuters, school children and recreational users to their places of employment, education and recreation.

The main project outcomes expected from this project are:

- Improved connectivity within Mangawhai for walking and cycling users;
- A more resilient transport network;
- An Integrated land-use and transport plan to ensure growth aspirations are appropriately managed, including the needs of a changing demographic;

- Improved safety for walking and cycling users in Mangawhai;
- A shared path network that provides a multimodal approach to the transport system; and
- Less reliance on private vehicle (currently around 88%).

The outcome of this business case, is a shared path route which will connect the Mangawhai Village, Mangawhai Town Centre and Mangawhai Heads Beach, with a predicted 300 total users per day upon full completion and will increase walking and cycling throughout Mangawhai.

The project will also improve the level of service in terms of user safety, community connections and amenity value.

The Insley Street connection to Tomarata Road/Black Swamp Road will also provide an off-road connection between Mangawhai Beach School and their Tsunami evacuation point on higher ground alongside Tomarata Road.

3.5 Investment performance measures

The investment performance measures related to the benefits of investment detailed above are provided in **Table 2**. These are based on the list of investment performance measures on the NZTA [Planning and Investment Knowledge Base](#).

Table 2: Investment performance measures					
Transport sector outcome	Investment benefit	Measure no.	Measure name	Measure description	Project specific measure
Economic prosperity.	Financial cost of using transport: decrease/maintain.	2	People – mode share.	Number of pedestrians, cyclists, public transport boardings, and motor vehicles (excl. public transport) TIMES number of people per vehicle, expressed as percentages.	The mode share upon completion of the path (in 2032), as measured by the travel to work census data, will be 9% for walking (up from 5.9% currently) and will be 4% for cycling (up from 0.9% currently).
Inclusive access.	Access – people: increase.	28	Access – perception.	Perception of safety and ease of walking and cycling.	A 50% increase in perceived safety and ease of walking and cycling within 2 years of the completion of all stages, measured by updating the December 2015 community survey (i.e. a reduction from 37% or respondents

Table 2: Investment performance measures

Transport sector outcome	Investment benefit	Measure no.	Measure name	Measure description	Project specific measure
					saying that it is difficult to walk/cycle in Mangawhai to less than 20%).
Inclusive access.	Access – people: increase.	32	Spatial coverage – cycle lanes and paths.	Percentage completion of the strategic cycle network.	12% of the main strategic route (Mangawhai Heads to Tomarata Road) completed by June 2021. 66% complete by June 2024. 88% complete by June 2027. 100% complete by June 2030.
Inclusive access.	Throughput – increase people.	45	People throughput (UCP).	Number of pedestrians and cyclists.	An average number of daily users on the main strategic route (Mangawhai Heads to Tomarata Road) of 300 within 2 years of the completion of all stages (2032).

User counts for the main strategic route (Mangawhai Heads to Tomarata Road) will be collected mid-year and during the summer peak using manually observed count locations at:

- Wintle Road);
- Wood Street;
- Molesworth Drive near Mangawhai Community Park; and
- Molesworth Drive bear Pearson Street.

4 Issues and constraints

There are no issues with this proposal that result in uncertainties that will impact on implementation as the project has been developed through extensive community engagement. There are no related studies or developments that the shared path is dependent on.

The main constraint to the implementation of the proposed works is overall cost and the affordability in terms of the KDC local share component and an oversubscribed NZ Transport Agency funding allocation for walking and cycling projects. This will be managed through a prioritised staged implementation programme in discussion with the NZ Transport Agency. A draft implementation and budget plan is detailed in **Section 6**.

There are a number of locations where private properties encroach into the road reserve, constraining the available space for the provision of a 3.5m wide shared path. KDC will engage with landowners in these situations to find a mutually agreeable outcome.

There are a number of locations where physical constraints (trees, buildings, power poles etc) and road boundaries limit the width available for the shared path. Where there are physical constraints in achieving a 3.5m width, an absolute minimum width of 2.5m will be provided. This will be further investigated during the pre-implementation stage.

Several sections of the shared path will be located alongside the Mangawhai Harbour. Widening into the Coastal Marine Area may be required with the appropriate resource consents. This will be further investigated during the pre-implementation stage.

The Mangawhai Shared Path Connections Options Report (March 2018) and the Mangawhai Coastal Walkway Feasibility Study (Draft: August 2019) also identify various site constraints to path width / location that will be further investigated during the pre-implementation stage.

5 Stakeholders

5.1 Consultation and communication approach

5.1.1 *Community engagement*

There has been extensive stakeholder engagement in the preparation of the various studies detailed in the Strategic Outcomes (Section 3.1). Essentially, this SSBC is a direct outcome of a community requested need that has been identified through the development of the Kaipara Walking and Cycling Strategy and the Mangawhai Community Plan (MCP).

In 2017 KDC and representatives from the Mangawhai community completed the MCP. The MCP is intended to provide guidance to KDC in the management of growth in Mangawhai. A summary of the community survey is included in **Appendix D**.

Engagement with the Mangawhai community has been an important part of the process to understand in more detail the key community aspirations for both the shared path network and the wider Mangawhai Coastal Walkway. Consultation and engagement with the Mangawhai community has primarily occurred by way of public open days and online survey.

Council funding for the project has been established through the substantive consultation framework relating to the LTP and Annual Plan Statutory requirements.

Community engagement will be ongoing during the implementation phases of the work presented in this business case and will likely comprise of:

- General overviews of the project communicated to the community through advertising in the local newspapers, in letter drops to communities neighbouring the project (generally within one block of the project) and updates on the MCP website, which also has a mailing list of approximately 350;

- On-line surveys;
- Public open events where draft designs will be available for discussion with the project team. These will present an opportunity for feedback and design refinement based on community input; and
- Meetings with Mangawhai School, community groups, local business, utility service providers, and developers as required.

All landowners adjacent to the project will be individually contacted with details of the proposed works with the opportunity for feedback and design refinement based on their feedback.

A number of landowners had encroachments into the road reserve where the route is located. These landowners will be formally written to, advising that where an encroachment needs to be addressed to construct the path, then landowners would be contacted directly to discuss a remedy.

5.1.2 Mangawhai Community Plan Liaison Group

Meetings with the Mangawhai Community Plan Liaison Group (MCPLG) have been held to keep the shared path on aligned with community needs and integrated with other MCP projects. Specific members of the MCPLG will form a Mangawhai shared path group with the intention to keep the project aligned with the wider Mangawhai community values, as well as discussing matters relevant to specific walkway alignments directly with affected local stakeholders.

5.1.3 Mana Whenua

Mangawhai has a strong Māori history. Descended from Ngāti Whātua, the hapū of Te Uri o Hau is the iwi of Kaipara. Te Uri o Hau descend from Haumoewarangi through Hakiputatomuri, who is the tribe's founding ancestor, and includes people who affiliate to nga marae tuturu: Otamatea, Waikaretu, Oruawharo, Arapaoa.

A cultural values assessment produced by Environs Holdings Ltd (Environs) specifically for the Mangawhai area has formed the basis for understanding mana whenua aspirations and key considerations within the Mangawhai area. Communication has been made with Te Uri o Hau Settlement Trust with the understanding that further engagement with mana whenua for the project will occur at the design stage for any given section of the shared path.

5.2 Professional engagement process

This SSBC case has been prepared by the Northern Transportation Alliance (NTA), which is the delivery team for the Northland District Councils for roading infrastructure. The NTA engaged the services of the Engineering Equilibrium and JAS Civil to prepare the SSBC, route plans and costs estimates. Engineering Equilibrium provides project management services for the shared path projects for Whangarei District Council (WDC) with JAS providing design and construction supervision services. These providers have completed the full delivery of 5.5kms of the very successful Kamo Shared Path and have been selected for their expertise in the delivery of complex shared path projects.

The SSBC team has worked closely with the Mangawhai Programme Delivery Manager to ensure alignment with other projects and community needs.

Preparation of the SSBC has been overviewed by the NTA Portfolio Manager for the Walking and Cycling Activity Class to ensure alignment with overall strategic goals at a local and national government level.

5.3 Stakeholder Views

KDC has a Walking & Cycling Advocacy Group, which acts as a governance group for this type of work. This proposal has been well socialised with this group and they are in support of it.

KDC has a dedicated Mangawhai Programme Delivery Manager who will coordinate all aspects of community engagement and project coordination with other projects and stakeholders.

6 Alternatives

The following five alternatives have been considered.

Alternative 1: Retain the Status Quo

Alternative 1 retains the Status Quo, using the existing footpath network for walking and road network for cycling without dedicated facilities. This is unlikely to significantly increase use and uptake or improve safety for users. Gaps in the footpath network between the town centre and the village will remain and there will be no cycling facilities.

This alternative is represented by the Do-Minimum option discussed in **Section 7**.

Alternative 2: Provide an improved main strategic footpath route (Mangawhai Heads to Tomarata Road) and provide on-road cycling facilities.

Alternative 2 is to provide an improved main strategic footpath route (Mangawhai Heads to Tomarata Road) and provide on-road cycling facilities where feasible. This will result in an improved and safer provision for walking. However, the cycle network will be limited by road constraints and the level of service will be poor for less experience cyclists and school children, presenting a barrier to the uptake of cycling as an active travel mode.

Alternative 3: Provide a shared space environment for vehicles, walking and cycling.

Alternative 3 is to provide a shared space environment for vehicles, walking and cycling through a combination of speed management (traffic calming and speed limit changes) and road rule changes. This concept is included in the MCP; however, it is incompatible with the use of Molesworth Drive as the main road connection through Mangawhai.

Alternative 4: Mangawhai Coastal Walkway

The Mangawhai Coastal Walkway Feasibility Study (Draft: August 2019) contains several sections of the Coastal Walkway that coincide with the shared path route as part of the overall network. For these sections the study provides useful background information regarding options that have been considered and the level of community engagement. In reviewing the Mangawhai Coastal Walkway against the shared path project, the project team have decided to incorporate Sections 1, S1 and most of Section 2 as the route to connect the Mangawhai Town Centre to Mangawhai Heads Beach (refer to **Figure 12**). These sections have been selected as meeting the overall project objectives for connectivity and fitness for purpose as they are aligned with user desire lines, utilise low volume local roads with wide berms and the Mangawhai harbour esplanade reserve, provide near level gradients and leverage off the high amenity values of esplanade reserve.

KDC is coordinating these projects and is seeking funding support through this SSBC for those sections of the shared path network that will also provide connections to sections of the coastal walkway



Figure 12: Sections 1, S1 and 2 of the Mangawhai Coastal Walkway Feasibility Study.

Alternative 5: Provide a dedicated off-road strategic shared path route through Mangawhai.

Alternative 5 provides a dedicated off-road shared path route through Mangawhai to maximise mode shift to walking and cycling by providing a safe facility with a high level of service.

6.1 Multi Criteria Analysis

The alternatives have been assessed using a multi criteria analysis, as detailed in **Table 3** to identify a preferred alternative. This uses ratings of low, moderate and high against the various criteria for the project.

Table 3: Multi Criteria Alternative Analysis

Criteria	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	Retain the Status Quo	Improved main strategic footpath route with on-road cycle facilities	Shared space environment for vehicles, walking and cycling	Mangawhai Coastal Walkway	Dedicated off-road strategic shared path route
Investment objective 1: To increase the uptake of walking and cycling in Mangawhai.	Low	Moderate	Low-Moderate	Moderate	High
Investment objective 2: To provide active modes choices as part of a multi-modal approach for future growth planning.	Low	Moderate	Low-Moderate	Moderate	High
Improved connectivity	Low	Moderate	Low-Moderate	Moderate	High
Level of service: safety and personal security	Low	Low-Moderate	Low	Moderate	High
Level of service: width	Low	Low	Moderate	Moderate	High
Level of service: grade	Low	Low	Moderate	Moderate	High
Implementation: feasibility	n/a	High	Low	Moderate	Moderate
Implementation: affordability	n/a	High	High	Moderate	Moderate
Stakeholders / Public	n/a	Low-Moderate	Low-Moderate	Moderate	High
Cultural and historical heritage	n/a	Low-Moderate	Low-Moderate	Moderate	Moderate
Social (schools, community facilities)	Low	Moderate	Low-Moderate	Moderate	High
Overall Rating	Low	Moderate	Low-Moderate	Moderate	Moderate-High

On the basis of the this multi-criteria assessment, Alternative 5: Provide a Dedicated Off-Road Strategic Shared Path Route was the preferred alternative with the overall highest rating at **Moderate – High**. This is largely due to the significant improvement in the level of safety and service for potential users over the other alternatives. Alternative 5 will encourage more users and best support the investment objectives to increase the uptake of walking and cycling in Mangawhai though the provision a high dedicated off-road shared path to attract the most users.

Alternative 5: has been considered further through Options 1 and 2, which are discussed and assessed in **Section 7**.

7 Options

Two options have been considered to consider the best combination of route, width and level of service to best encourage more users and hence best support the investment objectives to increase the uptake of walking and cycling in Mangawhai though the provision of attractive alternative active travel modes.

The options consider build on a route investigated in March 2018 for a 2.5m off-road path. That route has been re-evaluated as Option 1. A second Option 2 has been identified to provide a higher level of service over Option 1 through a wider (and new) path width with alternative routes in several sections along with lighting. Option 2 has been developed using experience and lessons learnt from the implementation of the first 4 stages of the Kamo Shared Path in Whangarei.

7.1 Option 1: 2.5 m wide off-road strategic shared path route through Mangawhai

This option was the subject of a detailed assessment of the route and interventions presented in the Mangawhai Shared Path Connections Options Report (March 2018). A copy of the report is provided in **Appendix E**.

The report identified a total cost of \$5.8M (March 2018) for the preferred route identified at that time. This has been updated for this business case and includes an allowance of \$0.5M to include a footbridge at Insley Street / Tomarata Bridge and the overall estimate updated to \$7.4M to allow for inflation, consents and KDC / NTA costs. This was based on a path width of 2.5m and included widening existing paths rather than building new paths for significant lengths. The annual cost to maintain this path has been estimated to be \$15,000/year.

The report evaluated a number of alternative routes along two sections:

Section 1: Mangawhai Village Environs (refer to **Figure 13**); and

Section 4: Molesworth Drive: Woods Street to Mangawhai Heads Road (refer to **Figure 14**).

The alternative routes have been assessed using the criteria detailed in **Section 7.3**.



Figure 13: Section 1: Mangawhai Village Environs options (Opus, March 2018).



Figure 14: Section 4: Molesworth Drive: Woods Street to Mangawhai Heads Road (Opus, March 2018).

7.2 Option 2: 3.5 m desirable wide (2.5m minimum at constraints) off-road strategic shared path route through Mangawhai

7.2.1 Overview

Option 2 improves the design standard that was developed for Option 1, as a 2.5m wide path (including sections of widening existing paths without grade corrections across driveways) was not considered to be adequate to provide for a safe and efficient path with an appropriate level of service to meet the investment objectives.

7.2.2 Overview: Path width

Option 2 is based on providing a new path with a desirable minimum width of 3.5m for commuter and recreational paths for the main trunk section between the town centre and the village. The section from the town centre to the surf beach is a combination of off-road and on-road cycle treatments. The sections from Mangawhai Beach school to Tomarata Road and the Thelma link road sections are proposed to be 2.5m wide. Refer to **Table 4** and the main trunk route plan in **Appendix F** for details of the node numbers.

Table 4: Option 2 path widths

Node	Treatment
1, 3 and 4	2.5m wide shared path with on-road cycle facilities.
2, 5 to 16	3.5m desirable (2.5m minimum) off-road shared path.
17 to 21	2.5m off road shared path.

The proposed 3.5m width for the main trunk section is based on the guidance provided in the NZTA Pedestrian Planning and Design Guide, Table 14.13, which details a desirable width of 3.5 m where there is an expected mix of commuter and recreational use. Mixed use is expected in Mangawhai with a demand for commuting between the town centre and the village and for recreational use between the surf beach, the town centre and the village.

The NZTA guidance also indicates a path width range of between 3.0 to 4.0m. The approach for Option 2 is to provide the desirable 3.5m width as per the NZTA guidelines, as it is an economic and affordable option and best practice is that a lower standard would only be considered if the desirable standard was unaffordable or uneconomic. Typically, the incremental cost of providing a 3.5m width over a 3.0m width is small as the majority of overall implementation cost is in the provision of the formation for the concrete path, with the additional costs largely due to the final concrete surface.

A 3.5m path width is also consistent with the Vic Roads Cycle Notes 21 that details widths of off-road shared use paths: this details that a 3.5m path provides increased clearances between path users and, as a result, provides a higher level of service for paths users.

Providing the 3.5m desirable width standard also improves the attractiveness and safety of the path, which in turn will encourage more users and best support the investment objectives to increase the uptake of walking and cycling in Mangawhai through the provision of attractive alternative active travel modes. This improved level of service and attractiveness is reflected in the assessed use uptake and economics for Option 2.

Experience from the delivery of Riverside Drive shared path between Onerahi and Whangarei is that 3.5m width of that path is the minimum required for a good and safe level of service for mixed use. The Riverside Drive path is very similar to Mangawhai as it attracts both commuting users and recreational users to and from Onerahi, which has a similar population of 6,500.

The 3.5m path width is also more closely aligned with the recommended widths detailed in Mangawhai Coastal Walkway Feasibility Study (Draft: August 2019), which details a shared path width of 3.0m and a multi-use path width of 4.0m (refer to **Figure 15**).

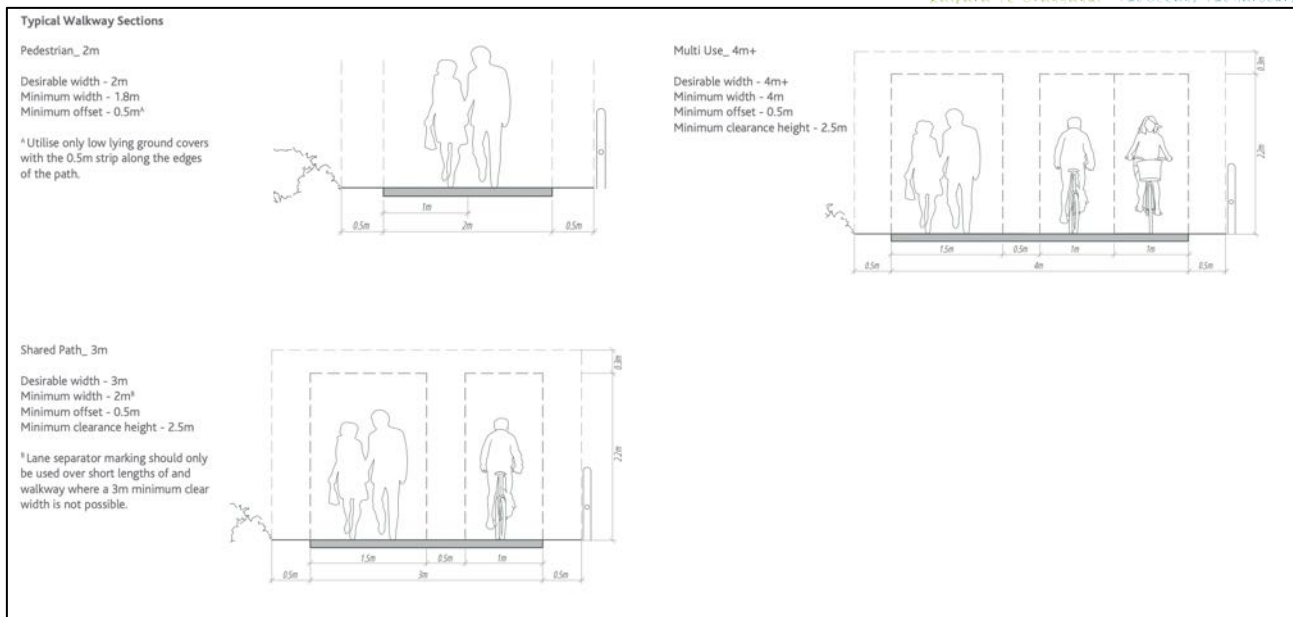


Figure 15: The Mangawhai Coastal Walkway Feasibility Study (Draft: August 2019) details a shared path width of 3.0m and a multi-use path width of 4.0m.

There are, however, likely to be sections of physical constraints along the main trunk section where a 3.5m width may not be achievable due to property constraints, utility services, large trees etc. In these situations, an absolute minimum width of 2.5m will be provided. These will be further developed during the pre-implementation stage to identify the final best combination of path widths balancing the level of service with practical design decisions and overall consistency with the adjacent environment. Vic Roads Cycle Notes 21 also provides guidance on path width selection based on the number pedestrians and cyclists using a facility. Further consideration will also be given to the selection of path widths to match the expected demand during the pre-implementation stage of the project.

7.2.3 Route alignment

The project team has reviewed the route alignment for the full length of the project. Option 2 modifies the previous Option 1 alignment to incorporate Sections 1, S1 and most of Section 2 of the Mangawhai Coastal Walkway as the route to connect the Mangawhai Town Centre to Mangawhai Heads Beach (refer to **Figure 12**).

In addition to this, two new alternative routes have been identified for further consideration during the implementation phase of the project.

The first alternative route relates to the Mangawhai Community Park: Long Term Plan (Draft). KDC is developing a long term plan for the community park alongside Molesworth Drive. This plan includes a shared path that is being considered as an alternative off-road route for a section of the shared path considered in this SSBC (refer to node 6 on **Figure 16** and the route plan in **Appendix F**). A decision on whether the off-road route is fit for purpose for the main shared path route will be made during pre-implementation phase of the project using the criteria detailed in **Section 7.3**. There is a reasonable likelihood that the community park path will be developed in advance of the shared path project under this SSBC.



Figure 16: The shared path network that is included as part of the Mangawhai Community Park: Long Term Plan (Draft).

The second alternative route relates to an option to bypass the Wood Street shops in the Mangawhai Town Centre (refer to node 4 on **Figure 17** and the route plan in **Appendix F**). This option provides an alternative roadside route on quieter side roads with higher amenity value. This option is dependent on how the Wood Street traffic calming measures are resolved. These are to be trialled as a one-way system in the 2019/20 summer period. Route selection will be finalised during the implementation phase of the project using the criteria detailed in **Section 7.3**.

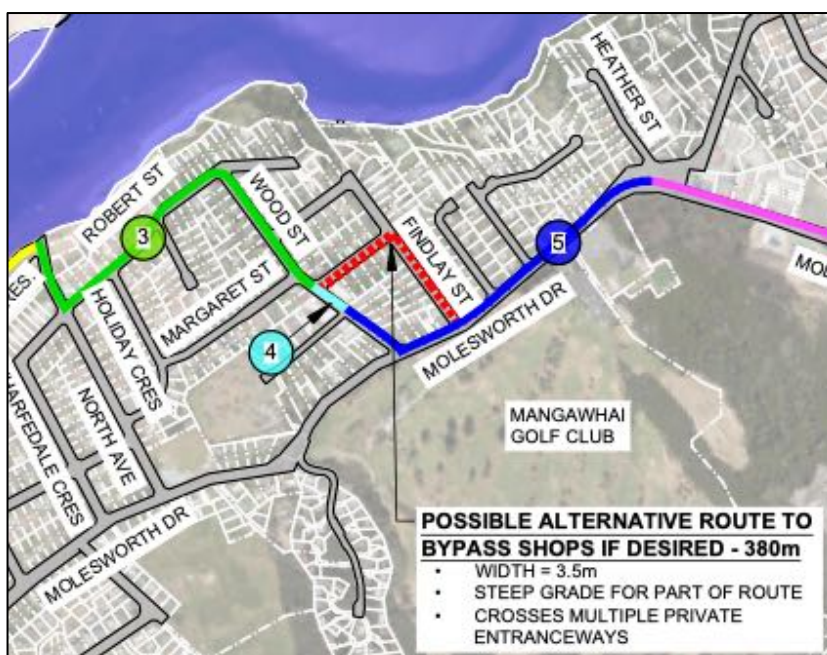


Figure 17: The option to bypass the Wood Street shops in the Mangawhai Town Centre.

7.2.4 Ranking and prioritisation of work items

The project team has completed a detailed review of which work packages are required to complete the shared path project to meet the overall project objectives for Option 2.

Each work package has been given a priority (High, Medium-High, Medium or Low) based on how much that work package contributes to the meeting the overall project objectives. Each work item has then been ranked in terms of the preferred order for implementation in terms of logical sequencing, ability to be implemented and the desirable order of work to meet the overall project objectives. Generally, the ranking is in order of:

- Connecting Mangawhai Village and the Mangawhai Town Centre;
- Addressing existing high safety risks to users;
- Completing sections where the current level of service is poor;
- Community priorities that have been developed through ongoing community engagement;
- Works that interact or complement road network upgrades and safety works that aligned with the KDC roading programme and other community projects (e.g. the Mangawhai village intersections projects and access issues at the Molesworth Drive commercial area south of Heather Street, the Mangawhai Coastal Walkway and the Mangawhai Community Park);
- Works that compliment development opportunities;
- Upgrading roadside sections that have existing useable footpaths; and
- Upgrading off-road sections with wide useable unformed surfaces.

In addition to the implementation of the shared path infrastructure allowance has been made to include 3 automated count stations to obtain real time user data to inform future investment decisions. These will comprise of a primary count station on the Molesworth Drive causeway and secondary stations near the Molesworth Drive shops and Wood Street shops. An allowance of \$15,000.00 per station has been allowed for.

In terms of lighting for the shared path, this has been allowed for as separate work packages and included in the overall estimates. This is because most of the path is located adjacent to the roads that have a low standard of lighting, or no lighting, and will likely require a design solution that incorporates both road and path lighting. Some sections adjacent to the harbour may not be suitable for lighting due to aesthetic considerations.

The ranking exercise has identified a staged implementation over four LTP 3-year periods giving consideration to an affordable level of investment for NZTA and KDC over the 2018/21 to 2027/30 3-year funding periods. This has resulted in a proposed programme of work that completes the full shared path route at a total cost of \$16.8M. **Table 5** summaries the investment levels over the 3-year funding periods.

Table 5: Investment levels over the 3-year funding periods		
3-year LTP period	Years	Investment
0	2018/21	\$4,465,200
1	2021/24	\$7,079,400
2	2024/27	\$2,917,550
3	2027/30	\$2,345,900
Total		\$16,808,050

The annual cost to maintain this path has been estimated to be \$25,000/year.

The list of work packages that are required to complete the shared path project to meet the overall project objectives and relevant treatments and shown on the drawings in **Appendix F** are detailed in the schedule in **Appendix G**

7.3 Multi Criteria Analysis: Route alternatives

The route alternatives have been assessed using a multi criteria analysis, as detailed in **Table 6** to identify the preferred routes for option. This uses ratings of low, moderate and high against the various criteria for the project.

Table 6: Multi Criteria Option Analysis: Route alternatives				
Criteria	Option 1		Option 2	
	Section 1: Mangawhai Village Environs.	Section 4: Molesworth Drive: Woods Street to Mangawhai Heads Road.	Mangawhai Community Park (node 6A).	Wood Street shops (node 4 - alternative).
Investment objective 1: To increase the uptake of walking and cycling in Mangawhai.	Moderate	Moderate	Moderate	High
Investment objective 2: To provide active modes choices as part of a multi-modal approach for future growth planning.	Moderate	Moderate	Moderate	High
Improved connectivity	Low	Low	Moderate	Moderate
Level of service: safety and personal security	Moderate	Moderate	Moderate	High
Level of service: width	Moderate	Low	High	High
Level of service: grade	Moderate	Low	High	High
Implementation: feasibility	Low	Low	High	High

The Option 1: Section 1 alternative route has now been discounted from further consideration as it does not meet the overall project objectives for connectivity and fitness for purpose as they are not aligned with user desire lines and would require significant property purchase.

The Option 1: Section 4 alternative routes have now been discounted from further consideration as they do not meet the overall project objectives for connectivity and fitness for purpose as they are not aligned with user desire lines and involve long lengths of undesirable steep gradients.

A decision on the preferred routes for nodes 4 and 6 in Option 2 will be made during pre-implementation phase of the project using the criteria detailed in **Table 6**.

7.4 Multi Criteria Analysis: Options

The options have been assessed using a multi criteria analysis, as detailed in **Table 7** to identify a preferred option. This uses ratings of low, moderate and high against the various criteria for the project.

Table 7: Multi Criteria Option Analysis: Options			
Criteria	Do Minimum	Option 1	Option 2
	Retain the Status Quo.	2.5 m wide off-road strategic shared path route through Mangawhai.	3.5 m wide off-road strategic shared path route through Mangawhai.
Investment objective 1: To increase the uptake of walking and cycling in Mangawhai.	Low	Moderate	High
Investment objective 2: To provide active modes choices as part of a multi-modal approach for future growth planning.	Low	Moderate	High
Improved connectivity	Low	High	High
Level of service: safety and personal security	Low	Moderate	High
Level of service: width	Low	Moderate	High
Level of service: grade	Low	Moderate	High
Implementation: feasibility	n/a	High	Moderate
Implementation: affordability	n/a	High	Moderate
Stakeholders / Public	n/a	Moderate	High
Cultural and historical heritage	n/a	Moderate	Moderate
Social (schools, community facilities)	Low	Moderate	High
Cost	n/a	\$7.4M	\$16.8M
Benefit Cost Ratio	n/a	1.8	1.4
Incremental Benefit Cost Ratio	n/a	n/a	1.0

Option 2 best meets the overall criteria detailed in the multi criteria analysis. It has a Benefit Cost Ratio of 1.4 and an Incremental Benefit Cost Ratio of 1.0. As the Incremental BCR is above the cut-off of 1.0, Option 2 is the preferred option. This is described in more detail in **Section 12**.

7.4 Compatibility with other modes

Pedestrians and Cycling

The project is specifically aimed increasing participation in walking and cycling as a principle transport mode.

Public Transport

The project compliments public transport by providing walking and cycling connections that integrate with the public and school bus network.

8 Recommended option

Option 2 is the recommended option as:

- It best meets the overall criteria detailed in the multi criteria analysis;
- It provides the best return against the investment objectives;
- It has Benefit Cost Ratio of 1.4 and an Incremental Benefit Cost Ratio of 1.0;
- Is affordable for KDC and NZTA; and
- Is feasible to implement with low risk.

9 Recommended option: Evaluation

9.1 Outcomes

The outcome of this business case, is a shared path route which will connect the Mangawhai Village, Mangawhai Town Centre and Mangawhai Heads Beach, with a predicted 300 total users per day upon full completion and will increase walking and cycling throughout Mangawhai.

The project will also improve the level of service in terms of user safety, community connections and amenity value.

The Insley Street connection to Tomarata Road/Black Swamp Road will also provide an off-road connection between Mangawhai Beach School and their Tsunami evacuation point on higher ground alongside Tomarata Road.

9.2 Implementability

All works are relatively straight forward to implement and are similar in nature than the Kamo Shared Path Stages 1,2, 3 and 4 that the NTA has successfully implemented in the past two years.

9.3 Constructability

All works are able to be constructed using standard techniques and traffic management layouts.

9.4 Operability

All works are standard Shared Path construction and will be operated under Council's current maintenance regimes.

9.5 Statutory requirements

A resource consent for any works within the Coastal Marine Area will be required for two sections of the shared path. Other works are relatively straight forward to implement and consent requirements (if any) will be addressed during pre-implementation.

9.6 Property impacts

There are a number of locations where private properties encroach into the road reserve, constraining the available space for the provision of a 3.5m wide shared path. KDC will engage with landowners in these situations to find a mutually agreeable outcome.

Other works have very little direct impact on adjoining properties apart from crossing isolated vehicle crossings.

No works on privately owned land are proposed.

9.7 Asset management

The proposed works do not have any significant impacts on asset management.

9.8 Wider project impacts

The project is part of a wider strategy of walking and cycling improvements within the Mangawhai urban area.

9.9 Environmental impact

There are no significant environmental impacts associated with this project. The increase in active mode use will reduce reliance on private vehicles and result in a reduction in vehicle emissions.

9.10 Social impact

The project will provide for walking and cycling opportunities through the sites and improve community connections.

9.11 Joint working

We are working collaboratively with the Mangawhai Beach School in relation to the provision of walking and cycling links between the main trunk route and the school.

9.12 Other

No other impacts have been identified.

9.13 Do-minimum option

The Do-minimum option is to continue to maintain and operate the existing footways and the completed section of the Shared Path on Moir Street.

10 Recommended option: Economic analysis

10.1 Economic Analysis

10.1.1 Outline Economic Approach

A Benefit Cost Ratio (BCR) calculation was undertaken for the proposed option according to the current NZTA Economic Evaluation Manual (EEM).

The economic analysis includes an assessment of the number of existing and new cyclists based on the route of the new shared path and the population within 400m, 800m and 1600m of the new path.

10.1.2 Population growth

Population growth predictions are based on the following:

- 5,013 people Usually resident population from 2018 census
- 9,000 people Forecast population for 2031
- 12,800 people Forecast population for 2051

This equates to annual population growth of 6.1% from 2018 to 2031 and 3.8% from 2031 to 2051.

10.1.3 Assumptions

General assumptions made for the Single Stage Business Case economic includes:

- Base date – 2020
- Time Zero – 2020
- Start of Construction – January 2021
- Discount Factor 6% over a 40-year project period
- Excludes benefits from school children using the path (only commuter benefits have been assessed as per the EEM).
- Summer increases in population have been ignored as these are likely to be visitors and not commuters. Also the Summer increases in population are likely to reduce over time as baches and holiday homes are taken over by permanent residents.
- Includes an assessment of 3 people per day using the Te Araroa walking trail.
- Assumed to have a construction period of 10 years
- Annual linear growth of pedestrians and cyclists is expected to be twice the population growth to reflect a higher uptake in walking and cycling following the construction of the shared path. This reflects modes shift to walking and cycling following the construction of the new path given that the current cycling mode is only 0.8% of trips in Mangawhai (2013 census).
- Construction cost of \$16.8M including investigation and detail design fees, consent fees and administration.
- Annual maintenance costs of \$25,000/year for the completed path.

10.1.4 Results

Based on the above methodology and assumptions a summary of the economic analysis is provided in **Table 8**.

Table 8: NPV of cost and benefits and Benefit Cost Ratio of Option

PV Benefits	Do Minimum (\$k)	Option 1 (\$k)	Option 2 (\$k)
1.0 Travel Time Benefits		\$1,117.8	\$2,078.3
2.0 Walking & Cycle Facility Benefits		\$9,982.8	\$15,917.8
3.0 Crash Benefits		\$659.0	\$792.4
TOTAL (1+2)		\$11,759.6	\$18,788.4
PV Costs	Do Minimum (\$k)	Option (\$k)	Option (\$k)
Capital Cost	\$0	\$6,410.4	\$13,551.9
Maintenance Cost	\$80.2	\$217.1	\$339.9
Total PV Costs	\$80.2	\$6,627.5	\$13,891.8
Costs (compared to Do-Min)		\$6,547.3	\$13,811.5
BENEFIT COST RATIO (compared to Do-Min)		1.8	1.4

10.1.5 Incremental assessment

The economic evaluation has been undertaken on the basis of an incremental assessment between Option 1 and Option 2, as provided in **Table 9**.

Table 9: NPV of cost and benefits and Benefit Cost Ratio of Option

Benefits	Option 1 (\$k)	Option 2 (\$k)
Benefits (compared to Do-Min)	\$11,759.6	\$18,788.4
Costs (compared to Do-Min)	\$6,547.3	\$13,811.5
BENEFIT COST RATIO (compared to Do-Min)	1.8	1.4
Incremental Benefits		\$7,028.8
Incremental Costs		\$7,264.2
INCREMENTAL BENEFIT COST RATIO		1.0

Option 2 has an incremental BCR of 1 and so is the preferred option.

10.5 Economic summary of recommended project option

Table 10 summarises the economics for the recommended option.

Table 10: Economic Summary Table

Timing	
Earliest Implementation Start Date	January 2021
Expected Duration of Implementation	10 years
Economic efficiency	
Time Zero	1 July 2020
Base date for Costs and Benefits	1 July 2020
Present Value of Total Project Cost of Do Minimum	\$80,200
Present Value net Total Project Cost of Recommended Option	\$13,811,500
Present Value net Benefit of Recommended Option (exc. WEBs)	\$18,788,400
Present Value net Benefit of WEBs of Recommended Option	Not assessed
BCR (exc. WEBs)	1.4
BCR (inc. WEBs)	Not assessed
First Year Rate of Return (FYRR)	4%

10.6 Comparison with earlier stages

There are no earlier stages of this project.

10.5 Sensitivity analysis

10.5.1 Cost/Benefit variability

A sensitivity assessment has been undertaken as shown in **Table 11**.

Table 11: Sensitivity analysis

Variable	Current Value	Lower Bound		Upper Bound	
		Change	BCR	Change	BCR
Construction Cost	\$16,808,050	+20%	1.1	-10%	1.5
New pedestrians and cyclist AADT	31	-10	1.1	+20	2.1
Crash Reduction Rate	50%	-20%	1.3	+20%	1.4
Growth Rate	9.4% average	-5%	1.0	+5%	1.8

This sensitivity analysis shows that the likely BCR range is between 1.0 and 2.1.

10.5.2 Discount rate/Evaluation period sensitivity

An assessment of the sensitivity of the project to discount rate changes has been undertaken as shown **Table 12**.

Table 12: Sensitivity to discount rate changes

Variable	Current Value	Lower Bound		Upper Bound	
		Change	BCR	Change	BCR
Discount Rate	6%	8%	1.1	4%	1.8

This sensitivity analysis shows that the likely BCR range is between 1.1 and 1.8 due to changes in discount factor.

An assessment of the sensitivity of the BCR to changes in evaluation period was not undertaken as the expected design life of the shared path is expected to be greater than 50 years which is already beyond the 40 year evaluation period used in the economic analysis.

11 Assessment profile

The project was assessed using the NZ Transport Agency Investment Assessment Framework (IAF). It is based on the accumulated strategic case, options assessment and economic case. An assessment profile of H/1.4 has been determined for the project using the Transport Agency's funding allocation process as detailed below:

Results alignment of the problem, issue or opportunity that is being addressed:	High
<p>The project supports increasing the uptake of commuters using active modes to work and children using walking and cycling especially to and from school in Mangawhai.</p> <p>The project also forms part of the Te Araroa Trail and supports connections to this national walkway.</p> <p>In addition, the project will provide a new walking and cycling bridge on Tomarata Road which will improve the safety on the route. The current road bridge is narrow and has no footpath, so forms a significant safety risk for pedestrians and cyclists.</p>	
Cost benefit appraisal of the proposed solution:	1.4
The BCR has been assessed as 1.4.	

12 Financial case

12.1 Project delivery costs

The estimated cost of the project is \$16.8M (excl GST). This includes professional service fees, minor property purchase fees, consent fees and administration. The breakdown of this cost per LTP period is shown below:

- 2018/21- \$4.5M
- 2021/24 - \$7.1M
- 2024/27 - \$2.9M
- 2027/30 - \$2.3M

The indicative anticipated annual expenditure by component is detailed in **Table 13**.

Table 13: Indicative anticipated annual expenditure by component										
Year	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30
Pre-implementation	500,000									
Implementation (incl. contingency)	3,448,000	2,230,000	1,913,000	2,013,000	900,000	1,157,000	480,000	1,012,000	512,000	515,913
Professional fees, consents, NTA fees @ 12.4%	427,552	276,520	237,212	249,612	111,600.	143,468	59,520	125,488	63,488	63,973
Administration fee @2.6%	89,648.	57,980	49,738	52,338	23,400	30,082	12,480	26,312	13,312	13,413
Total cost	4,465,200	2,564,500	2,199,950	2,314,950	1,035,000	1,330,550	552,000	1,163,800	588,800	593,300
NLTF share at 61% FAR	2,723,772	1,564,345	1,341,969	1,412,119	631,350	811,635	336,720	709,918	359,168	361,913
Local share at 39%	1,741,428	1,000,155	857,980	902,830	403,650	518,914	215,280	453,882	229,632	231,387

12.2 Ongoing maintenance and operations costs

The ongoing maintenance and operations costs are expected to be \$25,000 per annum following completion of the path. These costs will be covered through Council's roading maintenance programme, which is updated as new walking and cycling projects are completed.

12.3 Project revenues

There are no project revenues.

12.4 Funding options

The project is expected to be funded through the NLTP using Work Category 452 Cycling Facilities.

12.5 Financial risk

The financial risk is moderate to high because the project is yet to have funding confirmed in the 2021/24 NLTP and the KDC 2021/31 Long Term Plan which are both still to be developed. However, this project has been identified to be included in these.

PART 2 – READINESS AND ASSURANCE

13 Commercial analysis

13.1 Introduction

Most of the works are relatively straight forward to implement and are similar in nature to the Kamo Shared Path that the NTA have successfully implemented in the past two years. There are also two pedestrian/cyclist bridges that require construction as part of the work, which are similar in nature to the bridge replacement work that is undertaken regularly by the NTA across the region. Therefore, the NTA is well prepared and placed to deliver the work packages as a continuation of the previously completed works on a “business as usual” basis.

13.2 Output-based specification

The specification uses NZTA and KDC standard specifications and industry best practice.

13.3 Implementation Strategy

All significant work packages (>\$100,000.00) will be openly tendered through Tender Link. Tenderers will need to have NZTA 4C or higher Construction Pre-Qualification. The tender evaluation method will be Price Quality Method with 40% weighting on non-price attributes in accordance with WDC’s Procurement Strategy.

Minor work packages (<\$100,000.00) will be issued as variations to existing project and/or maintenance contracts.

13.4 Contract management

The contract is expected to be managed using locally based resources both within the NTA and using external consultants. The personnel to be used in the management of the contract are described in **Section 14** below.

13.5 Schedule

The majority of works in the LTP 2021/24 and 2024/27 periods can be implemented immediately on funding approval. Some sections, such as the causeway works and bridges will require resource consents.

14 Management Case

14.1 Project roles

The contract is expected to be managed by the following personnel:

Role	Staff
Project Sponsor.	Jim Sephton (General Manager Infrastructure, Kaipara District Council).
Engineer to Contract.	Greg Monteith (Capital Works & Procurement Manager, Northland Transport Alliance, Whangarei District Council).
MSQA Consultant.	To be appointed.
Client Programme Manager.	Greg Monteith (Capital Works & Procurement Manager, Northland Transport Alliance, Whangarei District Council).
Project Manager.	Tim Manning (Mangawhai Programme Delivery Manager).
Communications and Engagement	Ruby Mitchell (Communications Advisor Kaipara District Council).

14.2 Risk register

The main project risks are and mitigations are summarised in **Table 14**.

Table 14: Main project risks			
Risk	Severity (high, medium, low)	Likelihood (high, medium, low)	Issue and mitigation
Cost increase	High	Medium	<p>Preliminary project estimate completed based on recent costs from similar projects in Whangarei and Mangawhai. Particular reference has been made to the costs of Stages 3 and 4 of the Kamo Shared Path in Whangarei, that was completed in 2019, along with the previously completed Stages 1 and 2, and the Raumanga and Riverside Drive Shared Paths. Comparative rates for current footpath construction in both Whangarei and Mangawhai have been used.</p> <p>Detailed cost estimates and contingencies to be identified during pre-implementation.</p>
Project funding: KDC local share	High	Medium	<p>The KDC local share component for the proposed 2018/21 programme of work has been identified. However, the project is yet to be confirmed in the KDC 2021/31 Long Term Plan, but has been identified for inclusion.</p>

Table 14: Main project risks

Risk	Severity (high, medium, low)	Likelihood (high, medium, low)	Issue and mitigation
Programme delivery	Medium	High	The quantum of work for the proposed 2018/21 programme of work may not be able to be delivered within the available timeframe and resource capability. A management plan to address this will need to be developed during pre-implementation.
Property encroachments	Low	Medium	A number of landowners had encroachments into the road reserve where the route is located. These landowners will be formally written to, advising that where an encroachment needs to be addressed to construct the path, then landowners would be contacted directly to discuss a remedy.
Ground conditions	Medium	Low	A geotechnical engineer will need to be engaged to carry-out ground investigations to inform design and construction issues. This will be developed during pre-implementation.
Consents	Medium	Medium	Consents may be required for Nodes 7, 8, 9 and 12 where works are required at causeways. These will be further considered during pre-implementation as part of the design development for the treatments through these sections.
Underground services	Medium	Medium	Determine location of services and requirements for protection.
Section 6 (Molesworth Drive to Estuary Drive)	High	Medium	KDC propose replacing the shared path with a footpath along the main route on the estuary side of the road and move the cycle route to the opposite side of Molesworth Drive as an interim arrangement in 2018/21 until 2024/27 (i.e. between 1 and 4 years). This reduces the level of service and safety of the overall route for several years and also requires two crossing points on Molesworth Drive. Issue to be referred to the safety auditors for review during pre-implementation.
Main construction risks	Medium	Medium	Project risk register to developed during pre-implementation. Project risks will be managed through the standard WDC construction management processes, including the WDC Project Management Framework Guidebook (July 2009)

Table 14: Main project risks

Risk	Severity (high, medium, low)	Likelihood (high, medium, low)	Issue and mitigation
			and the requirements of the Northland Transport Alliances delivery of transportation projects.

14.3 Constraints

This proposal is broken up into 20 discrete nodes, or sections. These vary from simple sections of work through to a moderate or high levels of complexity. Higher levels of complexity involve retaining walls and cantilevered sections of path off existing road bridges.

There are no physical, property or legal constraints to the implementation of any of the proposed works.

14.4 Timeline

Design work will commence on approval of the pre-implementation phase, with the following milestones:

- Design commencement: June 2020, subject to the approval of this business case;
- Tender for construction and award of first construction package: November 2020; and
- Construction work packages will be implemented from January 2021, subject to funding.

14.5 Issues and risk escalation policy

The project sponsor (usually a group or department manager) is the principal 'owner' of the project. Key accountabilities include resolving issues and managing risks escalated by the project manager.

The project sponsor for this project is Jeff Devine, as detailed above.

14.6 Guidelines Standards

The following guidelines and standards have been adopted for this project:

- NZTA Cycle Network Guidance Portal;
- NZTA Pedestrian Planning and Design Guide;
- TCD Part 9: level crossings;
- RTS 14 – Guidelines for facilities for blind and vision impaired pedestrians;
- NZ Building code;
- KDC Environmental Engineering Standards; and
- Austroads Guide to Road Design Part 6a -Pedestrian and Cyclist Paths.

14.7 Peer review

A peer review has been carried out by Commute, and is included in **Appendix G**. This has been annotated detailing the changes made to this SSBC as a result of the review along with several comments.

14.8 Safety audits

Safety Audits will be carried out at the concept design, preliminary design, detailed design and post construction stages of the project. KDC have engaged Commute to undertake the concept design stage safety audit and this is due for completion by 31 July 2020.

15 Lessons learned and post-implementation monitoring

15.1 Lessons learned

A review of the project will be undertaken at the end of the project involving the Client Project Manager and MSQA Consultant to determine any lessons to be learned for future projects.

15.2 Post-implementation monitoring: approach and schedule

The work packages will be monitored by the Client Project Manager in the 6-12 months following completion to determine whether the level of service has been achieved and whether any adjustment of the signal phasing is required.

16 APPENDICES

Appendix A: Minutes of Northland Regional Transport Committee meeting 5 June 2019

Regional Transport Committee Minutes

Meeting held in the Council Chamber
36 Water Street, Whangārei
on Wednesday 5 June 2019, commencing at 10.00am

Present:

Chairman, Councillor John Bain
Deputy Chairman, Councillor Paul Dimery – Arrived at 10.17am
FNDC Councillor Ann Court
KDC Councillor Julie Geange
WDC Councillor Greg Martin
NZTA Representative Jacqui Hori-Holt

In Attendance:

NRC Chairman – Bill Shepherd
NRC Chief Executive – Malcolm Nicolson (Arrived at 10.10am)
GM - Customer Service - Community Resilience – Tony Phipps
Meeting Secretary – Evania Arani
Media – Kirsten Edge
NTA – Calvin Thomas
NRC - Michael Payne
NRC/NTA – Dean Mitchell
NRC/NTA – Sharlene Selkirk
NRC/NTA – Ian Crayton Brown
NRC/NTA – Chris Powell
Police – Senior Sargent Wayne Ewers and Detective Sargent Renee O’Connell
KDC Councillor – Del la Varis Woodcock
FNDC – Andy Finch
WDC – Jeff Devine
KDC – Bernard Petersen

Members of the Public

The Chair declared the meeting open at 10.00am

Secretarial note: It has been brought to our attention that the photo of the SH1 Matakohē Bridges Realignment on page 61 in the RTC Agenda dated Wednesday 5 June 2019 was incorrect. Please see the correct photo on the following page.



Apologies (Item 1.0)

Moved (Bain /Geange)

That the apologies from NZTA representative, Steve Mutton for non-attendance be received

Carried

Declarations of Conflicts of Interest (Item 2.0)

It was advised that members should make declarations item-by-item as the meeting progressed.

Confirmation of Minutes - 03 April 2019 (Item 3.1)

ID: A1193362

Report from Evania Arani, Executive Assistant Customer Services - Community Resilience

Moved (Court/Bain)

That the minutes of the Regional Transport Committee meeting held on 03 April 2019, be confirmed as a true and correct record.

Carried

Northland Regional Land Transport Plan 2018 - 2021 Funding Uptake (Item 4.1)

ID: A1194655

Report from Chris Powell, Transport Manager - Northland Transport Alliance

Moved (Martin/Geange)

That the report 'Northland Regional Land Transport Plan 2018 - 2021 Funding Uptake' by Chris Powell, Transport Manager - Northland Transport Alliance and dated 20 May 2019, be received.

Carried

Secretarial note: The chair requested that a paper be tabled at the next meeting on what is available for the disabled community in Northland. Mr Powell advised that there is an upcoming investigation into the availability of transport for the disabled in the region and work will commence within the next couple of months. Cr Bain asked that this work try to be brought forward and reported on.

Northland Regional Road Safety Update (Item 5.1)

ID: A1195192

Report from Ian Crayton-Brown, Transport Projects Officer

Moved (Bain/Geange)

1. That the report 'Northland Regional Road Safety Update' by Ian Crayton-Brown, Transport Projects Officer and dated 21 May 2019, be received.
2. That the RTC hold a Road Safety Workshop on 12 June 2019 to agree on a road safety vision and priorities for action to achieve that vision for inclusion in a Northland RTC submission on the Northland Road Safety Strategy.

Carried

Secretarial note: Councillor Court requested that roadside drug testing be added to the agenda for the 12 June Regional and National Road Safety workshop. She queried if the committee needs to be putting the questions to the crown on the correlation of roadside deaths relating to drugs and where the legislation might be heading.

New Zealand Transport Agency Update (Item 5.2)

ID: A1197872

Report from Steve Mutton, NZTA - Director Regional Relationships Upper North Island

Moved (Dimery/Geange)

That the presentation 'New Zealand Transport Agency Update' by Steve Mutton, NZTA - Director Regional Relationships Upper North Island and dated 30 May 2019, be received.

Carried

Secretarial note: NZTA has estimated 87% of speed limits on NZ roads are too high. Cr. Geange requested that NZTA provide the committee with the data around this and where we sit as a region?

Discussion from the committee around the Northland Land Transport Plan – 12 million dollars' worth of projects being cut in Northland. The NZTA rep advised that project cuts have been made all throughout the country and not just Northland. Cr Geange requested the data on the total figure of projects removed from the list for the entire country.

Provincial Growth Fund Applications for Funding for Land Transport Related Projects. (Item 5.3)

ID: A1195606

Report from Chris Powell, Transport Manager - Northland Transport Alliance

Moved (Dimery/Geange)

That the report 'Provincial Growth Fund Applications for Funding for Land Transport Related Projects.' by Chris Powell, Transport Manager - Northland Transport Alliance and dated 23 May 2019, be received.

Carried

Secretarial note: Cr Court requested that a centralised database be put together which captures all the RCA workstreams in Northland and that the data contains the buckets of money in play, projects in play and where we might aim. It has also been requested that the data captures what applications have been put forward, what's been approved and what hasn't as well as the projects that have been considered. This is to be tabled at the next committee meeting.

Request to Vary the Northland RLTP 2015/21 – Northland Transport Alliance PGF Projects (Item 6.1)

ID: A1195091

Report from Calvin Thomas, Northland Transport Alliance Manager

Moved (Martin/Geange)

1. That the report 'Variation to the 2015/2021 Regional Land Transport Programme – Northland Transport Alliance – Mangawhai Shared Path and Robert/Walton Intersection Improvements' by Calvin Thomas – Northland Transport Alliance Manager, dated 14 May 2019 be received
2. That the Regional Transport Committee approves the request to vary the Regional Land Transport Plan 2015/21 to make the following changes:

Kaipara District Council

- Include the Mangawhai Shared Path project with a 2018/21 budget of \$1,550,000.
- Reduce the Low Cost/Low Risk programme for 2018/21 by \$1,550,000

Whangarei District Council

- Include the Robert Street/Walton Street Intersection Improvements project with a combined budget of \$1,613,660.
- Remove the Bank Street/Dent Street Intersection Improvements project with a combined budget of \$1,613,660.

Carried

Conclusion

The meeting concluded at 11.32am

Appendix B: Minutes regarding the Network Operating Framework

1. Minutes - NTA and NZTA Mangawhai POE and BC discussion Tuesday 10/03/2020

Minutes of the Conference call meeting between the NTA Alliance held in the Totara Room, NTA Roding, Walton Plaza, Whangarei on Tuesday 10/03/2020 at 2.30pm.

Present:

Jeff Devine, Mark Seakins, Andy Brown, Dawn Spence, Martin Taylor

By Conference Call:

Tim Manning, Tony Innes, Alicia Taylor, Rafael Furtado, Matt Barnes, Wayne Wallace

Apologies:

Greg Monteith, Gail Fotheringham, Jim Sephton, Jon Weyeth.

Background

First and foremost, thank you all for taking time out from your busy schedules to discuss KDC and NTA's point of entry and business case documents and requirements for the Mangawhai network improvement works, the Mangawhai Community Plan and the significant projects within Mangawhai that will be included next AMP (2021-24) and LTP.

This meeting was called to determine where the point of entry and business case development work had progressed to and what are the next steps needed by all parties to enable current program investment approval and future work direction for the upcoming LTP and AMP.

Minutes

Discussed in the meeting are the current Shared Path project needs, the Wood Street Development project and continuation of the Mangawhai Community Plan forward works planning and investment profile development.

Initially all the BC and POE works had been discussed with Ella Kay and the NTA, this was handed over to Alicia Taylor who is now handing the project to Rafael Furtado.

Matt Barnes is leading the optimisation team from the NZTA for evaluation of the KDC investment supporting evidence.

Projects are waiting for NZTA's evaluation and endorsement of the Point of Entry documents to progress into their next stages. It was agreed that NZTA would evaluate these as a matter of urgency and it is expected they will be endorsed within 3 weeks.

A Network Operating Framework was agreed as KDC's best option to support the KDC Transportation Network investment options, both current demand and future demand.

KDC has a simple network and it was agreed that development of Program Business Cases was not required to support their investment story. It was agreed that the NOF would align to the ONRC/ONF and will pull together the strategies that support the KDC transport network improvements and investment story. It was agreed that the current strategies being developed would be supported by the NOF for the Mangawhai area for at least the next three LTP cycles (10 year look ahead).

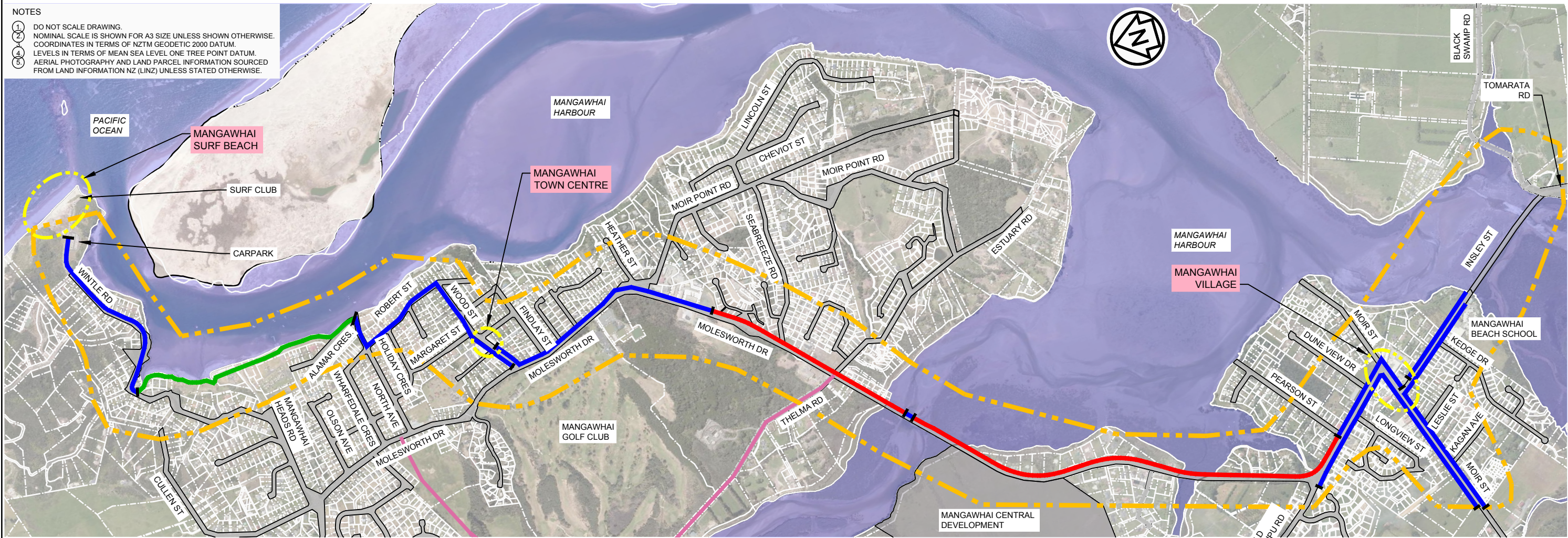
Wood Street funding application is to be made under Low Cost Low Risk.

These are the actions agreed at the meeting close:

Actions			
Item	Action	Who	Date
Mangawhai Network Operating Framework (NOF) POE	- KDC and NTA to revise current Mangawhai Transport Strategy PBC POE and change this to an application for a NOF. Then submit to NZTA	NTA S & P	March 2020
Mangawhai NOF POE evaluation	- NZTA to evaluate the POE for the Mangawhai NOF and endorse	NZTA	April 2020
Network Operating Framework	- KDC and NTA to develop a NOF aligned with KDC and NTA Strategies, KDC's spatial planning and NZTA's One Network Road Classification	NTA S & P	June 2020
Shared Path POE evaluation	- NZTA to evaluate and endorse the POE	NZTA	April 2020
Single Stage BC MCP Shared Path	- KDC and NTA to complete a SSBC for the Mangawhai Shared Path and submit to the NZTA for endorsement and investment approval	NTA S & P	April 2020
Shared Path SSBC Evaluation and investment approval	- NZTA to evaluate, endorse and approve the investment needs for the Mangawhai shared path	NZTA	June 2020
Wood Street investment	- KDC to apply to NZTA for low cost low risk cost scope adjustment funding increase	NTA	May 2020
	-		
	-		

Meeting closed at 3.30pm

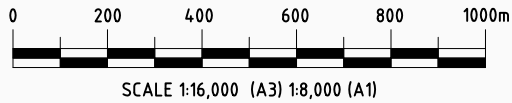
Appendix C: Plan of the existing footpath provision along the main route





PLAN
SCALE 1:16,000 (A3), 1:8,000 (A1)


KEY:

- EXISTING FOOTPATH
- EXISTING GRASS ESPLANADE
- EXISTING NARROW UNFORMED PATH
- STUDY AREA BOUNDARY



				BY	CHECKED	DATE	<div>ENGINEERING EQUILIBRIUM <small>INTEGRATIVE PROFESSIONAL ENGINEERING.</small> JAS CIVIL LTD</div> <div>CLIENT<div>KAIPARA DISTRICT <small>Kaipara ke Orangaki - Te Ōkaiwi Te Hāpori</small></div></div>	TITLE MANGAWHAI TRUNK SHARED PATH - BUSINESS CASE SCHEDULE OF EXISTING FOOTPATHS & TRACKS WITHIN STUDY AREA PLAN				
			DESIGN									
			DRAWN	BWP	5.20							
			SURVEYED									
			APPROVED									
1 PRELIMINARY			21.5.20	COPYRIGHT: This drawing must not be copied stored or reproduced by any means without the written permission of JAS CIVIL Ltd. Do not scale drawing. Check all dimensions on site before construction				STATUS BUSINESS CASE		LOCAL AUTHORITY REF:		
								SCALE SHOWN	PLOT DATE	JOB 1923-BC	SHEET 03	REVISION 1

Appendix D: Summary of the Mangawhai Community Plan Consultation



The background features a stylized illustration with a large orange sun in the top left, a white cloud in the upper center, and two palm trees on the right. The bottom of the image shows a wavy teal line representing water, with a dark blue bush on the bottom left and an orange ground area at the very bottom.

MANGAWHAI COMMUNITY PLAN

SUMMARY DOCUMENT 2019

Background

The Mangawhai Community Plan (MCP) is a community led and designed document to provide guidance to Kaipara District Council in the management of growth in Mangawhai. This plan is confined to the roles of Council, these being; planning and regulation, and investment in services and infrastructure for transport, water supply, stormwater, wastewater, and parks and reserves.

In mid-2016, Council set up a panel of community representatives to make recommendations for Mangawhai. Their Mangawhai Town Plan recommendations were received and approved by Council in July 2017.

The Town Plan was received by Council at its 20 January 2018 meeting, and renamed by Council to Mangawhai Community Plan (MCP).

The MCP was adopted by Council at its 28 February 2018 meeting. Moved by Geange/Wethey, carried.

The Priority One projects identified have been provisioned for in the Kaipara District Council's Long Term Plan.

Council Decisions:

14 August 2017

6.2 Mangawhai Community Plan Draft for Approval

Moved Gent/Del la Varis-Woodcock

That Kaipara District Council:

1. Receives the Policy Manager's report 'Mangawhai Community Plan Draft for Approval' dated 31 July 2017; and
2. Believes it has complied with the decision-making provisions of the Local Government Act 2002 to the extent necessary in relation to this decision; and in accordance with the provision of s79 of the Act determines that it does not require further information prior to making a decision on this matter; and
3. Appoints a sub-committee of Councillors Peter Wethey, Anna Curnow, Jonathan Larsen and Julie Geange, and that the sub-committee will consult with Belinda Vernon and report back to the September Council meeting.

Carried

28 February 2018

5.3 Mangawhai Community Plan Final:

Adoption

[Secretarial Note: 'Funding options for the first three years' were tabled at the meeting, to replace 'Options for funding' table on page 31 of the Mangawhai Community Plan (Supplementary Items Vol.1, p.94).]

Moved Wethey/Curnow

That Kaipara District Council:

1. Receives the Policy Analyst's report 'Mangawhai Community Plan Final: Adoption' dated 12 February 2018; Confirmed Council minutes 28 February 2018, Dargaville 1601.
2. Believes it has complied with the decision-making provisions of the Local Government Act 2002 to the extent necessary in relation to this decision; and in accordance with the provision of s79 of the Act determines that it does not require further information prior to making a decision on this matter; and
3. Adopts the Mangawhai Community Plan (circulated as Attachment 1 to the above-mentioned report) as a source document for the Consultation Document for the Long Term Plan 2018/2028, with the following amendments:
 - Replace 'Options for funding' table (Supplementary Items Vol.1, p.94) with 'Funding options for the first three years' tabled at this meeting (28 February 2018), with narrative from the Consultation Document (Item 5.5, Attachment 1 of the agenda 28 February 2018), and with 'per unit of demand' added to headings for Development Contributions; and

'Sources of Information' to be reduced to list of document names only (Supplementary Items Vol.1, p.95); and Minor formatting changes.

Carried

Mangawhai Town Plan community survey December 2015

181 responses to the survey:

66% live in Mangawhai permanently;
48% live in Mangawhai Heads;
31% on a lifestyle block;
88% drive around Mangawhai as their main mode of transport; and
Primary travel routes are between place of residence and Wood Street/Village.

Respondents were positive in their approach to the likes about Mangawhai question:

86% strongly liked the harbour and beaches;
72% strongly liked landscape and views;
16% strongly liked available land and housing;
and
24% strongly liked shops and restaurants.

Respondents put harbour views and beach views in front regarding which landscapes and views they value the most.

Respondents chose the Mangawhai Village market and Wood Street as the obvious meeting places/social spaces.

The vast majority of respondents agreed that traffic congestion, crowding in the summer months, weeds and unkempt roadsides, lack of footpaths and lack of parking were problems.

Mangawhai Village evoked the strongest response when respondents were asked to choose suggested improvements for the Village, Mangawhai Heads Beach, Wood Street shops and Alamar Crescent.

Mangawhai Village:

More parking;
Improve traffic/parking controls around market;
Improve/extend footpaths;
More public amenities;
Improve traffic flow; and
Provide cycling facilities.

Wood Street:

Better management of parking;
Improve/extend footpaths;
More public amenities; and
Improve traffic flow.

Alamar Crescent:

Extend public reserve;
Better management of parking;
More public amenities; and
Design controls for new buildings and subdivision on the harbour fringe.

Mangawhai Heads Beach:

Better management of parking;
More trees and dune planting;
Provide cycling facilities; and
Allow more stalls on Council reserve.

The following figures combine the 'agree' and 'strongly agree' responses to the growth statements:

95% agree Mangawhai is in a period of growth;
56% are concerned about the appearance of Mangawhai;
68% support growth of housing and services;
43% agree existing housing is good quality and plentiful;
66% agree that better Council services are needed to support growth;
23% are happy with Mangawhai as it is and do not want change;
79% agree that parking is a problem;
64% agree there are good parks and reserves in Mangawhai;
37% find it difficult to walk/cycle;
31% believe Mangawhai needs more housing;
77% agree Mangawhai an attractive town;
52% think Mangawhai is still affordable in terms of housing/land;
62% agree Mangawhai needs more young people and families;
60% agree to more shops and services;
66% are for more permanent residents;

42% agree rubbish and litter are a problem;
and
20% agree we need a town water supply.

Infrastructure demand and lack of funding to
pay for it,
Traffic and parking congestion and
Preservation of open space.

The main challenges facing Mangawhai that
were selected are:

About the Community Advisory Panel

While the [Mangawhai Programme Document](#) is ultimately the view of the Panel, through the engagement with community at Open Days and through spending time reviewing numerous technical reports – it is expected that the Panel's recommendations reflect a broad consensus from the community.

Furthermore, as per the Mangawhai Programme Document, the Panel acted on the understanding that the resulting MCP would be publicly consulted upon, enabling the community to engage directly with Council on the MCP as developed by Council.

Community Advisory Panel (the Panel) purpose

The prime purpose of the Mangawhai Town Plan Community Advisory Panel (the Panel) is to provide a vehicle through which Council can receive cohesive and representative community input and advice on a range of factors to be addressed in the future planning of Mangawhai's development framework.

Responsibilities of the Community Advisory Panel

The Panel agreed to the following functions and responsibilities:

Voice of the community

- Participate in and facilitate community engagement and consultation processes related to the future development of the Mangawhai Town Plan.
- Provide local knowledge and advice on any community concerns relating to the future development of the Mangawhai Town Plan.

Expert input and professional judgment.

- Provide knowledge and input into any key areas where Panel members may have expertise. For example, urban design or engineering skills.
- Provide recommendations to Council taking into account findings from consultation and own knowledge.

Panel member profiles

(At time of appointment September 2016)

Belinda Vernon (chair)

David Wingate

Ian Greenwood

Joanna Roberts

Kelli Sullivan

Richard Gunson

Schedule of panel meetings

DATES	SUBJECT MATTER	TYPE
19/09/2016	Introductory meeting, familiarisation	Meeting
10/10/2016	Transport, Water, Stormwater, Urban Design	Meeting
7/11/2016	Land development & density, Open Spaces	Meeting
7/11/2016	Met with MRRA	Group
5/12/2016	Transport, Stormwater, Open Day planning	Meeting
5/12/2016	Met with Mangawhai Museum and Historical Society; Mangawhai Domain Society	Group
10/12/2016	Open Day at The Club	Open Day
2/01/2017	Open Day at Gala	Open Day
9/01/2017	Feedback on Open Days, Estuary Estates, Developers discussion	Meeting
7/02/2017	Open Spaces, District Plan, Water	Meeting
13/02/2017	Chair update to Councillors	Council
6/03/2017	Wood St, Alamar Cres	Meeting
24/03/2017	Transport, Stormwater	Meeting
13/04/2017	Growth Projections	Meeting
24/04/2017	Planning Report, Growth Projections	Meeting
26/04/2017	Met with MCPG	Group
1/05/2017	Stormwater	Meeting
22/05/2017	Cultural Impact Assessment	Meeting
2/06/2017	Financial Modelling, Viranda, Draft Plan	Meeting
19/06/2017	Draft recommendations	Meeting
1/07/2017	Open Day - Report back	Open Day
7/07/2017	Finalisation of report	Meeting

MCP Panel consultation process



Community

The Panel invited the community to contribute their ideas on what should be included in a Mangawhai Town Plan (MTP) through Open Days held at The Club (December 2016) and Gala (January 2017), and by email.

At each Open Day posters outlined the process being followed to develop a draft MCP and identified the three key objectives and guidelines for the project as previously developed by the Steering Committee. Posters also identified key issues and possible solutions and sought community input on these.

Both Open Days attracted interest from the community and feedback, both verbal and written, was received. In addition to comments made at the Open Days to the Panel members, more than 100 submissions were received by email, either responding to the questionnaire provided at the Open Days or in free form. While there was a diversity of opinion on many issues there were also common themes, with these being:

- The community places high value on amenity, lifestyle and the environment;
- While there is a range of views on whether growth is good or bad, there is unanimity that growth needs to be managed;
- There is concern about the pace of growth and that this will adversely impact the things that make Mangawhai special;

- There is a strong view that large scale subdivisions need to focus on creating liveable spaces rather than maximising density. This does not mean they are mutually exclusive;
- The geography of Mangawhai creates issues for transport and getting around. Connectivity between subdivisions and key transport routes, places of interest, beach and public space is essential. There have been many examples in recent years where connectivity (in spite of being clearly articulated in the District Plan) appears to have been ignored.

Meetings were also held with the following groups:

- Mangawhai Ratepayers and Residents Association
- Mangawhai Community Planning Group
- Mangawhai Domain Society
- Mangawhai Museum and Historical Society

Iwi

The Panel welcomed Te Uri o Hau representatives at its meetings over the period of review. This engagement enabled workstream reports to be considered together, helping a shared understanding of the content of the reports.

Te Uri o Hau prepared a Cultural Impact Assessment (CIA) for Council to consider in its

preparation of the draft MTP which has been shared with the Panel.

The Te Uri o Hau CIA details Te Uri o Hau cultural values, interests and associations with Mangawhai, assesses the potential effects of the MTP on Tangata Whenua Environmental, Cultural, Social and Economic wellbeings and recommends culturally appropriate ways to manage growth.

The Panel believed the findings and recommendations of the Panel's report are consistent and aligned with the values and vision of iwi as reflected in the CIA.

As well as expressing views on aspects of the MTP, the CIA highlights the importance of Mangawhai to Te Uri o Hau and tells their story and links to Mangawhai in a very compelling way.

Recognition of Te Uri o Hau's connections – past, present and future – to Mangawhai is an essential part of Mangawhai going forward.

List of formal submitters

Feedback from the community ranged from a few words on a post-it note to comprehensive written submissions on the issues of importance to particular individuals and groups.

Some of the issues raised were out of scope of the 'infrastructure' and 'Council controlled' focus of the MTP but nonetheless assisted the panel in understanding the issues that are important to the community. The following is a list of those who contacted the Panel by email.

Name



Aaron Kemp
Alan Godfrey
Alvin Browne
Annie Kitchener
Barbara Pengelly
Mangawhai Ratepayers and Residents Association
Bill McKenzie
Brenda Coleman
Bruce Lusty
Bryan James
Christian Simon
Christina George
Christine Bygrave
Mangawhai Museum and Historical Society
Christine Silvester
Clive Craymer
Corinne Callinan
Darryl Reardon




Donna Flavell
Duncan Chisholm
Emma Gray
Faye Shewan
Gareth Lane
Gillian Wharfe
Gordon Hosking
Mangawhai Tracks Charitable Trust
Gordon Pryor
Helen George
Jackson Worsfold
James Andrews
Jan Hargreaves
Jeannette Forde
Jerry Pilmer
Jim Wintle
John Dickie
Karen White
Kathy Newman
Mangawhai Domain Society
Lloyd Redfern
Mangawhai Boating and Fishing Club
Lynda Sampson
Mangawhai Community Planning Group
Lynn Middleton
Mark Farnsworth
Mark Rowbotham
Matt Rowe
Mangawhai Football Club
Megan Mace
Michele Booth
Mike Howard
Neville Chandler
Paul Dougan
Paul Hendrick

Philip Scothern
Rex McCarthy
Robert de Koning
Sadra Saffari
Sarah C Design
Sarikha Paikea
Shane Hartley
Sharon Adamson
Steve Green
Steve Lay
Sue Blinks
Thijs de Koning
Tim and Nadja Parker
Tom Smith
Trish Whyte
Vaughan and Margaret Sampson
Wendy Averill

**KDC also holds an active mailing list of 250+ businesses and residents who have registered their interest in the MCP via attending open days, contacting Council informally or signing up to the MCP mailing list via our website.

Panel consultation history

Event / Media	What?	Date	Attendees / Participants	Feedback / Responses	Further Information / Source / Details
Workshop	Community Planning Team workshops with business and residents in Wood Street area and Mangawhai Village.	22/07/2014	17		LTP funding approved for 2019/20 and 2020/21. This project is programmed in MCP within the Open Spaces and transport Priority Two (2021-2024) and Three Phase (2025-2028).
Online Survey	Survey Monkey - initial thoughts on growth and planning for facilities/infrastructure around Mangawhai.	December 2015 and January 2016	181	60	 Survey Monkey Summary 271017.pdf *copy available upon request
Mangawhai Focus	http://www.mangawhaifocus.co.nz/Archives/8th+February+2016/Positive+response+to+planning+survey.html	8/02/2016			Positive response to planning survey - A Kaipara District Council survey of Mangawhai residents has provided valuable feedback for the Council, which is considering what will be needed for the town's long term development.
Open Day	Annual Plan Consultation - A brief description of the MTP was outlined in the consultation document, and an Open Day was held displaying further information. Potential options and ideas were displayed, as well as six maps showing contextual information such as the layout of building and subdivision consents across Mangawhai.	May 2016	60		What do you think of a shared walking and cycling path for Mangawhai?  Annual Plan Round Table Feedback.docx *copy available upon request
Mangawhai Focus	http://www.mangawhaifocus.co.nz/Archives/23rd+May+2016/Town+plan+meeting+gives+lots+of+options.html	23/05/2016			The Mangawhai Town Plan Project addresses options around infrastructure and policies, as staff and consultants review what is currently in place and potential new policies for managing the town's growth.
Community Advisory Panel Established	To review and provide feedback on each of the separate workstreams.	Sep 2016			

Mangawhai Focus	http://www.mangawhaifocus.co.nz/Archives/September+19th+Issue/Your+questions+Answered+-+Mangawhai+Town+Plan+exercise+underway.html	19/09/2016			To guide investment in public infrastructure, to support the wellbeing of the community, and to ensure that those parts of Mangawhai that have sensitive natural environments are protected, a Council led and community informed Mangawhai Town Plan exercise is underway.
Northern Advocate	https://www.nzherald.co.nz/roads/news/article.cfm?c_id=309&objectid=11716102	26/09/2016			The Panel charged with facilitating community input to the Council's draft Mangawhai Town Plan is holding an Open Day on Saturday December 10 at the Mangawhai Club from 11am-3pm.
Stakeholder Interviews	Interviews with key community stakeholders, gaining their perceptions on growth and planning for the future.	2016	20		Email feedback from Community Groups to initial feedback request (Oct 2016).  Feedback to Panel 7.12.16.docx *copy available upon request
Mangawhai Focus	http://www.mangawhaifocus.co.nz/Archives/7th+November+Issue/Panel+seek+input+for+town+plan.html	7/11/2016			The Panel is asking the community for its views on the key issues to be addressed in the Mangawhai Town Plan.
Mangawhai Focus	http://www.mangawhaifocus.co.nz/Archives/7th+December+2016+Issue/Town+plan+Have+your+say.html	7/12/2016			Town plan: Have your say - The Panel charged with facilitating community input to the Council's draft Mangawhai Town Plan is holding an Open Day on Saturday 10 December at the Mangawhai Club from 11am-3pm.
Open Day	Public day at Mangawhai Club - Run by MTP Panel.	10/12/2016		70	 Open Day Feedback 101216.xlsx *copy available upon request
Gala Day	Display at Mangawhai Domain Gala Day - Run by MTP Panel.	2/01/2017		152	 Open Day -Gala Day Handout.docx *copy available upon request

Mangawhai Focus	http://www.mangawhaifocus.co.nz/Archives/January+9th+2017+Issue/Community+offers+to+wn+plan+feedback.html	9/01/2017			Visitors to the Panel's stall at the gala showed lots of interest in the issues raised, drawing in people keen to offer suggestions on what's special, what needs to be protected and what needs to improve. Access to beaches and the estuary were top of mind. Safe off-the-road walking access to the Heads, improved facilities at public spaces near harbour beaches and a round-the-estuary walkway were repeatedly raised.
Letters	<p>The Panel - Written to community groups to ask them if they wanted to meet, or send written feedback.</p> <p>Old Waipu Road Property Owners Wood Street/Fagan Place Business and Property Owners Fagan Place Social Housing Residents Senior Citizens Hall Village Business and Property Owners Mangawhai Golf Club Mangawhai Domain Committee Friends of Mangawhai Community Park Mangawhai Central Developers Mangawhai Artists Association (Art Gallery) Mangawhai Tracks Charitable Trust Mangawhai Harbour Restoration Society Mangawhai Boating & Fishing Club Mangawhai Boating & Fishing Club Tika Whai Te Uri o Hau (via Environs Ltd)</p>	August to September 2017			<p>Letters to property owners informing them of draft MCP and proposal (individualised for them). Include map showing aerial of 'paper' road (now 'unformed' road) route and property boundaries.</p> <p>Provide contact details if you wish to ring and discuss with staff member.</p> <div data-bbox="1527 667 1590 730" data-label="Image"> </div> <p>MCP Directly Affected Stakeholders: *copy available upon request</p>

Open Day	Announcing Mangawhai Community Plan (MCP) recommendations from the Panel's MTP.	1/07/2017			 <p>Mangawhai Community Plan Open Day Saturday 1 July 2017 Pop in anytime between 2 - 4pm Mangawhai Club, Molesworth Drive Come along to hear the recommendations from the Community Advisory Panel. Further information can be found at www.kaipara.govt.nz</p>
Local Matters	https://m.localmatters.co.nz/news/17274-kaipara-releases-mangawhai-plan.html	18/09/2017			<p>Kaipara releases Mangawhai Community Plan - Local residents can view the draft plan and its proposed recommendations at the Mangawhai Club in Molesworth Drive on the next two Saturdays, 30 September and 07 October, with presentations starting at 2pm sharp.</p>

Panel recommendations

Planning

- Put in place processes to support the application of the District Plan in a consistent and appropriate way, such as the development of practice notes, guidance and increased oversight.
- Monitor and enforce resource consent conditions consistently.
- Analyse as part of the Efficiency and Effectiveness Review resource and land use consent (and other relevant) data to understand the reasons for the number of non-complying and land use consents. Use this to identify and inform potential Plan Changes.
- Prioritise a Plan Change to give effect to the Regional Policy Statement 2016 (coastal environment boundary) and, as part of the Plan Change, review the overlays applicable to Mangawhai to assess if streamlining is recommended.
- Apply the Coastal Environment boundary to limit any proposed increase in density (i.e. no increase in density in land within the coastal environment boundary).
- Undertake a S32 assessment to determine the adequacy of the existing land use zones to accommodate future growth.
- As part of the S32 assessment consider a Rural Residential zone, supported by

Objectives, Policies and Rules to achieve the outcomes identified in the District Plan and the Structure Plan.

- As part of the S32 assessment, consider extending the current Residential Zone to match the Mangawhai Community Wastewater Scheme (MCWWS) drainage zone as a minimum.
- As part of the S32 assessment, consider increasing density around the key nodes of the Village and Wood Street, subject to NPS coastal environment boundary.
- Apply a walkability criteria when considering a medium density/mixed use zone.
- Protect character and amenity by supporting an increase in density with clear Performance Standards and Assessment Criteria for Development Controls (e.g. lot sizes, impermeable surface areas, set-backs, site coverage, etcetera.)
- Consult with the community on the increased density proposals in the Wood Street Revitalisation Plan.

Open Spaces

- Provide safe cycling/walking connections between the Village and the Heads.
- Complete the following connections.
- Mangawhai Heads to Mangawhai Village walkway – this is broken down into sections and includes upgrading of

existing pathways. Refer to Transport section.

- Mangawhai Heads to Village via an all tide coastal walkway, including the Estuary(camp ground) to Heads connection.
- Walkway/cycleway at Causeway bridge near Estuary Estates/Back Bay.
- Pedestrian/cycleway bridge between Estuary Estates and Jack Boyd Drive to provide an alternative to Molesworth Drive, connecting with shared path to Heads.
- Strategically acquire missing esplanade links through future subdivision consents.
- Be proactive in reclaiming/resolving esplanade encroachments by private landowners to ensure the coastal esplanade is accessible to all.
- Encourage walking and cycling through improved walking and cycling connections to the Heads, in particular a walkway/boardwalk from the camp ground to the Heads as part of the all tidal round the harbour walkway and as an alternative to Wintle Road footpath access.
- Promote awareness of alternative beaches such as Pacific Beach and Forestry Beach.
- Consider a public transport (bus) service from the Village to the Heads over the holiday period.
- Consider realigning the proposed path across Alamar Reserve to provide more

open space between the walkway and adjoining properties.

- Consider other changes at Sellars and Alamar Reserves to improve connectivity, traffic management and facilities to improve this space for public enjoyment.
- Improve facilities (e.g. toilets/cycle stands/kayak/paddle board storage) at high use reserves, tailored for site and usage (Lincoln Street, Robert Street, Kainui and Pearson Streets Reserves).
- Encourage coordination and collaboration between community spaces at the Domain, School, Estuary Estates/Mangawhai Central and Mangawhai Activity Zone (MAZ) to avoid unnecessary duplication and encourage complementary use.

Transportation

- Implement the Moir Street/Molesworth Drive and Insley Street/Moir Street intersection improvements.
- Adopt roundabouts as the preferred form of managing intersections.
- Investigate and discuss with NZTA the potential for Cove Road to be an alternative State Highway 1 bypass route and plan for long term upgrade of two one-way bridges on Cover Road (in conjunction with NZTA).
- Adopt a 'slow street' philosophy within Mangawhai.

- Retain unformed (paper) roads and develop policy/strategy for use.
- Investigate viability of forming unformed road between Old Waipu Road/Old Waipu Road North as either road or pedestrian connection.
- Complete the Village (School) to Heads shared path including separation from main road where possible.
- Provide safe pedestrian access along Insley Street causeway and bridge.
- Ensure new developments provide for pedestrian/cycling connectivity as provided for in the District Plan.
- Develop a master plan for walking and cycling routes.

Stormwater

- Adopt the use of environmentally sustainable (low impact design) solutions to stormwater management where it is practical to do so.
- Investigate the use of wetlands for the collection and management of stormwater, including Mangawhai Community Park, the Golf Course and Fagan Place (with appropriate consultation).
- Reduce the number of stormwater outflows into the estuary to the east of Wood Street.
- Develop and provide guidance on additional requirements in the KDC

Engineering Standards in order to support the use of low impact design stormwater management systems.

- Include stormwater infrastructure provisions and constraints in the development of urban design standards to be applied to future development, in particular relating to impermeable or impervious surfaces.
- Increase investment in stormwater management and network.
- Improve data on stormwater infrastructure.
- Prioritise legacy issues and address in staged way.
- Where new stormwater systems have been recommended that consideration first is given to assessing the viability of alternative low impact options.

Urban Design

- Review policy and practice to ensure that the Mangawhai Design Guidelines in the District Plan are given due weight when assessing resource consent applications and any conditions applied are enforced.
- Protect character and amenity by supporting any changes in land use or density in the District Plan, with clear Urban Design Guidelines (e.g. fences, location of garages, design of paved areas, location of above-ground water tanks) that will be enforced and effective.

- Review the Mangawhai Design Guidelines and their effectiveness as part of the Efficiency and Effectiveness Review.
- Include stormwater infrastructure provisions and constraints in urban design standards.

KDC - Confirmed Waters Projects – by priority

Project	Description
Priority One 2018 - 2020	
Install new systems at current pain points.	<p>Pain points exist in sections of:</p> <p>Quail Way</p> <p>Eveline Street</p> <p>Reduction of outflow pipes into the estuary from North Avenue to Mangawhai Heads Road.</p>
Overland flowpath/ponding location and protection.	<p>Develop a stormwater bylaw that allows intervention in areas where legacy issues require resolution.</p> <p>Use easements to protect existing overland flow not effected by development (or re-direct to the road corridor if possible).</p> <p>Formalise and protect overland flowpaths within roads and incorporate overland flow function into the road corridor as part of future road upgrading works.</p>
Investigate and develop where appropriate wetlands/ponding to collect stormwater in the Mangawhai Heads area that would otherwise go directly into the harbour.	<p>Re-water the original wetlands within Mangawhai Community Park from overland flowpaths.</p> <p>Look to create wetlands as public parklands on land around the Mangawhai Golf Course and Mangawhai Community Park.</p> <p>Improve outlets and operation of stormwater to Mangawhai Golf Course wetlands.</p>
Engineering standards revision.	<p>Revise engineering standards to include:</p> <p>Testing, design, construction, monitoring and maintenance of soakage systems (biofiltration).</p> <p>Protection of overland flows from development.</p> <p>Protection of amenity and character.</p>
Priority Two 2021 - 2024	
Improve knowledge and remodel performance (Catchment management plan)	<p>Identify more clearly existing overland flowpaths.</p> <p>Gather accurate information of current infrastructure and systems.</p> <p>Understand soakage capacity including effects of groundwater levels and soil types.</p> <p>Complete downstream assessments.</p> <p>Gather and log as-built information in GIS.</p> <p>Identify new or improvements to stormwater system and implement them.</p>

KDC - Confirmed Transport Projects– by priority

Project	Description
Priority One 2018 - 2020	
Stage one – slow street Mangawhai Village	Shared path and landscaping from: Phase One: Mangawhai School to Insley/Moir Streets intersection. Phase Two: Tara Bridge to Pearson Street (including Mangawhai Domain). Roundabout at Insley/Moir Streets intersection. Roundabout at Moir Street/Molesworth Drive intersection. Review parking provisions Improved arrival experience from the south.
Stage two – slow street Mangawhai Community Park	Shared path and landscaping along Molesworth Drive from Moir Point Road to the southern end of the Causeway Bridge.
Stage three – slow street Estuary Estate	Shared path and landscaping along Molesworth Drive from Pearson Street to the Causeway Bridge.
Cycling/walking on road shared paths (other than on “slow street”)	Mangawhai Village loop path (signage on existing esplanade) (Kainui Street / Pearson Street / coastal reserve / Moir Street).
Footpaths	Footpath along Alamar Crescent.
Priority Two 2021 - 2024	
Cycling/walking on road shared paths (other than on “slow street”)	Mangawhai Heads loop shared path (Wood Street / Robert Street / North Avenue / Alamar Crescent / camp grounds / Mangawhai Heads Road including Wood Street upgrade.
Priority Three 2025 - 2028	
Stage four – slow street Molesworth Drive Roundabout to Surf Club	Shared path and landscaping along Mangawhai Heads Road and Wintle Street from the Pearl Street Corner to Surf Club.
Stage five – slow street Mangawhai Heads	Shared path and landscaping along Molesworth Drive from Moir Point Road to the Mangawhai Heads roundabout. Wood Street/Molesworth Drive roundabout.

Priority Four 2028 onwards	
Footpaths.	Pedestrian connection on Insley Street causeway and bridge.
Future stage – cycling/walking.	Shared path to Mangawhai Central via Old Waipu Road.
Investigate connecting ends of Old Waipu Road as subdivision occurs.	Provide an alternate route into Mangawhai and Estuary Estates from an upgraded and joined up Old Waipu Road as subdivision occurs.
Through route for through traffic.	Develop an alternate route for travellers to Langs Beach and Waipu Cove to time with Warkworth to Te Hana State Highway 1 upgrade (Cove Corridor). Include 2m verge for cyclists refuge along Cove Road.
Plan for other intersection improvements as Mangawhai grows.	These may include Molesworth Drive / Sail Rock Drive, Molesworth Drive / Estuary Drive / Thelma Road, Tara Road / Mangawhai-Kaiwaka Road.




KDC - Confirmed Open Spaces Projects – by priority

Project	Description
Priority One 2018 - 2020	
Lincoln Road biofiltration demonstration on stormwater management.	Create a demonstration area on Lincoln Reserve as a model for using biofiltration (rain gardens, wetlands, retention ponds and biodiverse plantings) to clean stormwater.
Non-motorised sea craft storage and launching on coast.	Provide spaces for craft storage by launching places, to reduce need to drive craft to beach, at Alamar Reserve and Eveline Street.
Picnic and barbecue spots along the coast.	Establish barbecues at Alamar and Lincoln Reserves. Provide more seats at Lincoln, Pearson, Moir, Jordan and Robert reserves.
Improved access to and use of beaches.	Increase public use of Pacific Beach through improved signage. Bike stands at key locations. Public toilets at Lincoln Reserve and Mangawhai Heads Road by beach.
Connecting no exit streets with walking and cycling tracks.	Esplanade to Jack Boyd Drive link. Jack Boyd Drive to Thelma Road link.
Continuous Coastal walkway.	Initial stage - Head Beach to Pearl Street.
Urban Forest.	Develop a landscape/planting plan and programme for public streets and parks to enhance amenity and biodiversity that also provides guidance for people wishing to plan appropriate trees on their own properties and street berms.
Historic Village/Museum Hub.	Complete landscaping and car parking at this hub.
MAZ/St Johns Hub.	Complete landscaping and car parking at this hub.
Walkways/service lanes.	Establish through routes to MAZ and the Museum from the Club, with improved planting and signage.

Community Development.	Facilitate more collaboration between community groups with similar aspirations.
Priority Two 2021 - 2024	
Wood Street.	Work with business and property owners to redevelop the parking provision, and pedestrian access within the business centre.
Improved access to and use of beaches.	Review increased parking availability at Heads. Enhance overflow parking by the Police units at Alamar Crescent. This may require reconfiguration of the camp ground boundary. Improve car parking at Pearson Reserve.
Continuous Coastal walkway.	Future Stages to Mangawhai Village.
Priority Three 2025 - 2028	
Connecting no exit streets with walking and cycling tracks.	Thelma Road to Thelma Road link.
Wood Street.	Provide public toilets.
Another all tide boat ramp.	Investigate a second all tide boat ramp.
Continuous Coastal walkway.	Future Stages to Mangawhai Village.
Priority Four 2028 onwards	
Connecting no exit streets with walking and cycling tracks.	Across estuary (Tara Creek). Tracks through Estuary Estate.
Continuous Coastal walkway.	Future Stages to Mangawhai Village.

Ongoing	
Off-road walking and cycling recreation tracks.	Work with the Tracks Trust or developers to extend and improve tracks, using unformed roads if possible and connecting new subdivisions. * See Connecting no exit streets with walking and cycling tracks.
Historic placemaking	Protection and celebration of sites of significance to Maori e.g. Te Whai Pa, Two Whai Pa and middens on Mangawhai Heads Reserve, Small coastal Pa and middens on Pearson Reserve, Telling the story of the history through interpretation signage on walking tracks.
Cultural placemaking.	Include stories of Iwi history through the pioneer village and Park signage in association with the Museum.
As subdivision occurs	
Complete the network of esplanade reserves along the residential coast.	Create, as they become available through subdivisions, the missing links to the network. Remove private encroachment onto public esplanade reserves.

Project Implementation - consultation register

DATE	TIME	EVENT	Document
20 March 2019		Letter to adjacent or close neighbours to the first stage of walkway - Sellars Reserve to Wintle Street (Near Pearl) inviting to Q&A onsite.	 Residents letter stage 1 Final.docx
25 March 2019	10:00	Resident Q&A onsite - South end of Sellars Reserve	 Incident Report 25032019.docx  Sign in sheet 25 March 2019.docx

Appendix E: Opus Mangawhai Shared Path Connections Options Report (March 2018)



Mangawhai Shared Path Connections Options Report

March 2018



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Contents

Management Summary	2
1. Introduction	4
2. Project Scope	5
3. Route Sections	5
4. Route Scope: Options and Alternatives.....	7
4.1. Section One - Mangawhai Village Environs.....	7
4.1.1. Introduction; Option 1	7
4.1.2. Option Considerations and Constraints.....	8
4.1.3. Additional Route Options.....	13
4.1.4. Cost Estimates	16
4.2. Section Two – Molesworth Drive; Pearson Street to Estuary Dive including Tara Creek Bridge.....	17
4.2.1. Introduction; Option 1	17
4.2.2. Option Constraints.....	18
4.2.3. Summary Estimate Section Two	22
4.3. Section Three – Molesworth Drive; Estuary Drive to Wood Street	22
4.3.1. Introduction.....	22
4.3.2. Option 1.....	23
4.3.3. Option Constraints.....	24
4.3.4. Summary Estimate Section Three.....	26
4.4. Section Four – Molesworth Drive; Wood Street to Mangawhai Heads Road; with additional side routes to Mangawhai Heads Town Centre and Mangawhai Estuary.....	26
4.4.1. Introduction.....	26
4.4.2. Section Four; Option 1.....	27
4.4.3. Section Four A; Option 1	28
4.4.4. Section Four B; Option 1	30
4.5. Section Five – Mangawhai Heads Road; Molesworth Drive RAB east to Mangawhai Heads Holiday Park and Molesworth Drive RAB west to Jack Boyd Drive.....	31
4.5.1. Introduction.....	31
4.5.2. Mangawhai Heads Road East Options.....	32
4.5.3. Option Constraints - Northern Side.....	32
4.5.4. Option Constraints -South Side	33
4.5.5. Mangawhai Heads Road West Options.....	36
4.6. Section Six – Wintle Street; Molesworth Drive East to Mangawhai Heads Beach Carpark	38
4.6.1. Introduction.....	38
4.6.2. Wintle Street Options.....	38
4.6.3. Option Constraints.....	39
5. Conclusions and Recommendations	43
6. Project Cost Estimates	45
6.1. Introduction.....	45
6.2. Estimate Worksheets for Section One; Option 1	45
6.3. Estimate Worksheets for Section One; Option 2 Alternative Route Options.....	49
6.4. Estimate Worksheets for Section Two.....	52
6.5. Estimate Worksheets for Section Three	53
6.6. Estimate Worksheets for Section Four, Four A and Four B.....	54
6.7. Estimate Worksheets for Section Five A and Five B	57
6.8. Estimate Worksheets for Section Six.....	59

Management Summary

Opus have completed this Preliminary Options Report for the implementation of shared path routes within the greater Mangawhai area, broadly connecting Mangawhai Village, Mangawhai Heads Town Centre and Mangawhai Heads Beach. These locations are shown on Figure 2, page 6. The options for shared paths and connections between these points was initially developed in the MWH report of June 2016, Mangawhai Village and Mangawhai Heads Infrastructure Plan – Transportation.

The study area has been subdivided into Six Sections and these have been investigated individually in a North to South direction from Mangawhai Village towards Mangawhai Heads Beach. The order of investigation does not reflect on any order of priority but is only to provide structure for the process.

The report considers the feasibility and estimated cost of the identified options and is not intended as a Business Case nor has any consultation with any property owners or effected parties been undertaken.

A number of options and alternatives were considered and reported for the Mangawhai Village environs but the preferred location for a shared path connection along Molesworth Drive between Mangawhai Village and Mangawhai Heads is along the right hand side of the existing road. This side of the road has been preferred as it provides the greatest connectivity with the developed urban areas and although there are a number of constraints to constructing the path, resolving them will provide longer term benefits for users.

Areas of more intensive development and constraint require further and detailed investigation and design to confirm the scope of the works required and estimated costs:

- Mangawhai Village area;
- Insley Street Four Square Carpark to Mangawhai Heads School;
- Mangawhai Heads light industrial area;
- Mangawhai Heads Town Centre;

Shared path facilities may not be appropriate for the intensive commercial areas but provision to connect to and transit through these areas for pedestrians and cyclists still needs to be addressed. Additionally there are a number of issues on Mangawhai Heads Road East and West and Wintle Street where additional investigation and design is required to confirm the scope of the works required and estimated costs.

The costs for each Section, Subsection or alternative option as appropriate, are summarised on the table below.

Section	Option	Road Name	Link	Side	Estimated Cost
Section 1	1	Moir Street	Mangawhai Domain to Insley Street	Right	\$418,879
		Moir Street	Opposite Hall to Molesworth Drive	Left	\$69,207
		Insley Street	Moir Street to Mangawhai School	Right	\$61,496
		Molesworth Drive	Moir Street to Pearson Street	Both	\$173,637
	TOTAL SECTION One_Option 1				\$723,220
Section 1; Alternatives	2a	Moir Street	Tara Street Pedestrian Bridge to Crossing Point Opposite Hall	Left	\$628,616
	2b	Mangawhai Domain	Moir Street to Kedge Drive Walkway		\$91,056
	2b	Kedge Drive	Walkway to Insley Street	Left	\$156,845
	2b	Kedge Drive	Walkway to Insley Street	Right	\$104,370
	2c	Drainage Reserve	Moir Street to Longview Street		\$55,091
	2c	Longview Street	Drainage Reserve to Molesworth Drive	Left	\$47,116
	TOTAL SECTION One_Alternative Options				\$1,083,094

Section	Option	Road Name	Link	Side	Estimated Cost
Section 2	Option 1	Molesworth Drive	Pearson Street to Estuary Drive	Right	\$894,348
Section 3	Option 1	Molesworth Drive	Estuary Drive to Wood Street	Right	\$1,366,706
Section 4	Option 1	Molesworth Drive:	Wood Street to Mangawhai Heads Road	Right	\$450,952
Section 4A	Option 1	Wood Street	Molesworth Drive to Robert Street	Right	\$466,652
Section 4A	Option 1	Robert Street	Wood Street to North Avenue	Right	\$90,300
Section 4B	Option 1	Wood Street	Molesworth Drive to Mangawhai Estuary	Right	\$191,089
Section 5A	Option 1	Mangawhai Heads Road East:	Molesworth Drive to Mangawhai Estuary	Right	\$373,959
Section 5B	Option 1	Mangawhai Heads Road West:	Jack Boyd Drive to Molesworth Drive	Right	\$559,763
Section 6A	Option 1	Wintle Street:	Mangawhai Heads Road East to Beach Access 10	Right	\$ 704,475
Section 6B	Option 1	Wintle Street:	Beach Access 10 to Mangawhai Heads Carpark	Right	\$1,059,060

Detailed cost estimate work sheets for each Section or Subsection are included under Heading 6 and have also been summarised at the end of each Section.

Further observations of peak summer cycle and pedestrian activity are planned to be completed during 2017-18 holiday period to assist with the determination of priorities, desire lines, crossing points and to confirm some assumptions in the draft report. Opus are currently undertaking the Mangawhai Traffic Study commission for KDC that is looking at the capacity of specific road intersections and, as part of this study, pedestrian counts have been completed at Mangawhai Heads School, and observations have been carried out at the close of school day on two occasions during November. These observations have highlighted a significant traffic problem related to egress from the school which will be further exacerbated as the school grows and a specific site study and consultation with the Mangawhai Beach School is recommended.

There are a number of areas where the two reports may overlap and they will need to be considered together to develop synergies and eliminate possible duplications or conflicts.

1. Introduction

The Mangawhai Town Infrastructure Plan identified the requirement to implement a Cycle/Walk strategy and associated network of paths and routes connecting Mangawhai Village environs to Mangawhai Heads Town Centre and the Mangawhai Heads Beach providing direct, easy and safe routes for both residents and visitors. Mangawhai is a rapidly growing area with several large subdivision developments underway. The Plan population forecast will see the existing 3,000 resident community more than triple to a 2027 population forecast of close to 10,000 residents. Additionally, the town's population can increase by over 200% with summer visitors.

While routes had previously been identified at a concept level, there is now a requirement to undertake further investigation and assessment, to ensure that the routes can practically be constructed at reasonable cost and to assist in the decision process to finalise the location and priority of these routes.

This Options Report provides preliminary scoping and route confirmation information along with cost estimation of potential shared path routes within the wider Mangawhai area, see Figure 1 below.



Figure 1 : Project Location

2. Project Scope

Opus was commissioned to develop a report which identifies practicable engineering options, with associated cost estimates, for the development of shared path infrastructure throughout the greater Mangawhai area but particularly focussing on the connections between Mangawhai Village, Mangawhai Heads Town Centre and the Mangawhai Heads Beach.

This scope of this commission is:

- Confirmation of the brief in terms of client's vision, objectives, risks and constraints and refinement of these in consultation with the client;
- Reviewing and confirming the physical scope and constraints of the proposed shared path alignments and whether the desired level of service is achievable;
- Reviewing information: current planning proposals, required engineering standards and traffic data for pedestrians and cyclists;
- Conducting site investigations, observations of existing pedestrian/cycle activity and demand to assist with the determination of priorities and desire lines for crossing places
- Development of practicable and technically feasible preliminary design options with identified constraints and assumptions;
- Development of cost estimates for the identified feasible design options;
- Development of an Options Report presenting the recommended options and supported by a Management Summary;
- Providing project management and quality assurance services;

Where shared paths are proposed a 2.5m width has been adopted, in accordance with Kaipara District Councils Engineering Standards.

3. Route Sections

Opus was issued with the Mangawhai Village and Mangawhai Heads Infrastructure Plan – Transportation (Prepared for KDC by MWH in June 2016) as an information input. This report outlines a number of Sections that make up the Cycle/Walk route that will link Mangawhai Village, Mangawhai Heads Town Centre and Mangawhai Heads Beach. Opus' task was to investigate the feasibility of the routes identified in the above report, identify any other practicable alternatives or opportunities, whether they be a shared path, on road cycleway, existing pathways or shared space.

These Sections identified are listed below in South to North order which is no indication of their priority.

- Section One - Mangawhai Village Environs: with routes on Moir Street, Insley Street and Molesworth Drive linking the existing shared path bridge on Moir Street north of Tara Road with Mangawhai Domain, Mangawhai Village Centre, Mangawhai Beach School and Before Six early childhood education centre on Molesworth Drive at Pearson Street.
- Section Two - Molesworth Drive; Pearson Street to Estuary Drive
- Section Three - Molesworth Drive; Estuary Drive to Wood Street
- Section Four - Molesworth Drive; Wood Street to Mangawhai Heads Road
- Section Four A- side route off Mangawhai Heads Road; Wood Street to Mangawhai Heads Town Centre, with Robert Street as a connection to North Avenue.
- Section Four B- side route off Mangawhai Heads Road; North Avenue to Mangawhai Estuary and Mangawhai Heads Holiday Park.
- Section Five - Mangawhai Heads Road; East from Molesworth Drive RAB to Mangawhai Heads Holiday Park and West from Molesworth Drive RAB to Jack Boyd Drive.
- Section Six – Wintle Street: North East from Mangawhai Heads Road East to Mangawhai Heads Road Carpark

Opus has investigated the practicality of constructing shared paths on the routes illustrated in Figure 2 below and provided estimates for those that were considered feasible and any alternatives identified during the site inspections.



Figure 2: Mangawhai Shared Path Study Sections



Schools Out; Insley Street RHS.



Schools Out; Insley Street LHS.

4.1.2. Option Considerations and Constraints

The following considerations and constraints were identified on this section:

- Overhead utility poles;
- Driveways, building and property boundary locations;
- Incomplete formation of Moir Street and drainage issues;
- The Four-Square carpark on the left hand side of Insley Street;
- Incomplete formation of the left hand of Insley Street and drainage issues;
- Mangawhai Heads School Parking
- Number and location of road crossings points;
- Future intersection upgrading projects.

Overhead Utility Services

There are three power and one telephone service poles located adjacent to the existing footpath that create pinch points and constraints for widening on the proposed Option 1 route along the left side of Moir Street and Insley Street.



Figure 4: Section One- Mangawhai Village; Service Pole Constraints

The two power poles on Moir and first (telephone) pole on Insley are not significant installations and could be relocated at reasonable costs. North Power estimated the cost to relocate the power pole on Insley Street to the boundary at \$20,000. This cost was not considered necessary when it is also possible to trim the hedge back to the boundary and widen around the inside of the pole with only minor loss of service.



Insley Street: RHS; Power pole Moir Street end



Insley Street: RHS; School end

Driveways, building and property boundary locations

There are a large number of existing driveways along the route and the narrow area of berm, side slopes and hedges that generally preclude the widening of the existing path towards the property boundary. The steps of the Community hall on Moir Street also project out to the existing footpath edge but these may be able to be reconstructed to be parallel to the footpath which would then provide space to widen the existing path. The property boundaries

on Molesworth Drive from Moir Street to Longview Street may preclude significant widening. However it is expected that these issues will need to be resolved as an outcome of the Mangawhai Traffic Study.



Moir Street; Existing RHS footpath is below kerb level



Moir Street, Mangawhai Hall steps encroach onto footpath



Moir Street Molesworth Drive intersection constraints



Molesworth Drive

Incomplete formation of Moir Street and drainage issues

Moir Street currently only has kerb and channel in a number of discrete locations and stormwater is collected from a roadside swale via grated manhole structures. The efficiency of the stormwater collection system has been compromised by the construction of drive ways across it and the existing path is generally lower than the adjacent seal edge. Prior to the construction of any new paths or widening to existing paths on Moir Street it is recommended that the final design widths and levels be completed so that paths can be sited at the appropriate offsets and grades that complement future works. It is desirable that the road widening and drainage works such as kerb and channel be completed in conjunction with any path works and estimates have been prepared on this basis.



Moir Street: North side berm drainage



Moir Street: South side incomplete formation

Four Square Carpark Insley Street

There is no provisions for pedestrians for the first 65m of the left hand side of Insley Street as the road reserve is occupied by a carparking area outside of the Four-Square supermarket.



Insley Street: LHS; Footpath ends at entranceways and carpark.



Insley Street: LHS; Carpark and manoeuvring outside Four Square.

The carparking area is extremely busy with vehicles accessing from Moir Street, the service lane behind the shops, forklift manoeuvring from the Four Square delivery area and the extended vehicle crossings from the car parking area and service accessing Insley Street. **This area needs to be assessed for safety improvements to provide safe passage for pedestrians as a priority as it is beyond the scope of both this Report and the Mangawhai Traffic Study.**

Incomplete formation of Insley Street and drainage issues



Insley Street: RHS existing footpath but no kerb and channel or provision for parking in front of business.

Insley Street currently only has kerb and channel on the RHS and there is no kerb and channel, or pavement widening on the LHS. Stormwater is collected from a roadside swale via grated manhole structures and the efficiency of the stormwater collection system has been compromised by the construction of drive ways across it and the existing path is generally lower than the adjacent seal edge. Prior to the construction of any new paths or widening to existing paths on Insley Street it is recommended that a full survey and design is completed so that road final design widths and levels are established and that carriageway space is allocated appropriately to through traffic, turning traffic, parking traffic and pedestrians and cyclists.

Mangawhai Heads School Parking



Insley Street: LHS; Parking opposite Mangawhai Beach School



Insley Street: RHS; Parking opposite Mangawhai Beach School

Observations at closing time at the Mangawhai Heads School during November identified a significant issue with parking. In excess of 30 vehicles were parked opposite the school and the onsite parking at the school was also at capacity.

This situation will be exacerbated as the school role grows and needs to be considered as a separate safety issue as it is beyond the scope of both this Report and the Mangawhai Traffic Study.

Location of Road Crossing Points

A number of road crossing points will be required throughout this Section. Four have been provided in the estimates but the final number and location of the crossing points will need to be confirmed during the detailed design process and once the final arrangements for the future intersection treatments have been determined.

Mangawhai Traffic Study

The Mangawhai Traffic Study is currently in progress and includes three intersections within Section One. The outcomes of this provision of shared paths, Four Square Carpark issues, Mangawhai Heads School parking and suitable crossing places for pedestrians and cyclists in this congested area will be revisited in conjunction with this report.

4.1.3. Additional Route Options

As the investigations progressed, it became clear that the feasibility of alternative options that avoid the busy intersections at Moir/Insley and Moir/Molesworth and the congestion of Mangawhai Village may be desirable. These additional routes are shown in Figure 5 below. Council staff also requested that the scope of the study be extended west on Moir Street to connect the existing pedestrian cycle bridge that is immediately east of Tara Road.



Figure 5: Section One- Mangawhai Village Environs _ Additional Route Options

- These alternative route options provide an additional opportunity for linking the existing Moir Street shared path bridge north of Tara Road, Mangawhai Domain, Mangawhai Beach School, The Hub and the Before Six early education centre. However, these alternative routes would not be in keeping with the concept of developing a 'slow street' as outlined in the Mangawhai Community Plan (MCP), as walking and cycling access would be away from the main streets. Walking & cycling access, roading improvements and landscaping in the MCP were all intended to create the 'slow street' environment on the main roads.

Option 2a Moir Street Left Hand Side

There is currently no formed pathway on the left hand side of Moir Street between the Tara Road bridge and Bennet's which provides a blank canvas with few constraints for the construction of a shared path. Crossing points would be required to be established to access the Mangawhai Domain. This would be assisted by the relocation west of the current 50 km/hr speed restriction. Additionally, the comments regarding completing the final design and drainage for Moir Street as detailed in 4.12 above apply to this section.



Moir Street, existing foot bridge east of Tara Road and North side berm

Option 2b Mangawhai Domain and Kedge Drive

There is an opportunity for an alternative connection to Mangawhai School via Mangawhai Reserve and Kedge Drive. The construction of a path across the north eastern boundary of the reserve is relatively straight forward and this would connect to an existing walkway to Kedge Drive. This walkway is a constraint as it is 1.6m wide but it is relatively short and open length that is unlikely to cause conflict.



Mangawhai Domain from Moir Street

Mangawhai Domain walkway ay Kedge Drive

Kedge Drive is a fully developed local cul-de-sac with existing footpath on the northern side and presents a number of sub options:

- Do minimum and utilise the existing road carriageway for cycling as a shared space and carry out any traffic calming works if required.
- Widen the existing footpath to 2.5m which would require the relocation of 8 street light columns.
- Create a new shared path on the south side of the road which is a green fields situation with no constraints.



Kedge Drive; existing footpath on northern side

Estimates have been provided for the two shared path options.

Option 2c Moir Street to Molesworth Drive via Longview Street

There is an existing drainage reserve overland stormwater flow path that provides a direct connection between Moir Street and Longview Street. This connection could readily be developed into a shared path link as it would be a very rare occurrence for stormwater to be flowing. Longview Road has an existing foot path on the south side of the road and as there are no constraints to widening the path to 2.5m then this option is preferred to a shared space street.



Moir Street - Longview Street stormwater reserve connection, view to Moir.



Moir Street - Longview Street stormwater reserve connection, view to Longview



Longview Street

4.1.4. Cost Estimates

Cost estimates are detailed for each link under Heading 6 of this report and are summarised below.

4.1.4.1. Summary Estimate Section One: Option 1

Road Name	Link	Side	Estimated Cost
Moir Street	Mangawhai Domain to Insley Street	Right	\$418,879
Moir Street	Opposite Hall to Molesworth Drive	Left	\$ 69,207
Insley Street	Moir Street to Mangawhai School	Left	\$351,198
Insley Street	Moir Street to Mangawhai School	Right	\$ 61,496
Molesworth Drive	Moir Street to Pearson Street	Both	\$173,637
TOTAL SECTION One, Option 1			\$1,074,418

4.1.4.2. Summary Estimate Section One: Option 2; Alternative Route Options

Note these options have not been summed as they may be considered in isolation or as alternate links.

Road Name	Link	Side	Estimated Cost
Moir Street	Tara Street Pedestrian Bridge to Crossing Point Opposite Hall	Left	\$628,616
Mangawhai Domain	Moir Street to Kedge Drive Walkway		\$ 91,056
Kedge Drive	Walkway to Insley Street	Left	\$156,845
Kedge Drive	Walkway to Insley Street	Right	\$104,370
Drainage Reserve	Moir Street to Longview Street		\$ 55,091
Longview Street	Drainage Reserve to Molesworth Drive	Left	\$ 47,116

4.2. Section Two – Molesworth Drive; Pearson Street to Estuary Drive including Tara Creek Bridge

4.2.1. Introduction; Option 1

Section Two of the proposed shared path is located on Molesworth Drive between Pearson Street and Estuary Drive. It is currently an 80km/hr speed zone and also includes the existing separate pedestrian and cycle bridge over Tara Creek.



Figure 6 Section Two – Molesworth Drive; Pearson Street to Estuary Drive

There is a formed but unsurfaced pathway on the right hand side of Molesworth Drive for the full length of this section that can be readily widened to provide a shared path of 2.5m. This will require a considerable amount of shallow cuts and fills along the existing berm and minor retaining structures where the width is constrained on estuary embankments to achieve the required formation width.



Molesworth Drive: Section Two; Pearson to Estuary Drive; typical view of existing path

4.2.2. Option Constraints

The following specific constraints were identified on Section Two:

- Old Waipu Road Intersection Upgrading
- Existing guardrail;
- Driveways;
- Tara Creek Foot Bridge approach embankments.
- Tara Creek Foot Bridge width.

Old Waipu Road Intersection

This intersection is included in Mangawhai Traffic Study and while a Roundabout was confirmed as the future design treatment, the detailed design was not included within the Traffic Study scope. For the purposes of this report it is assumed that there will be no further widening on the right hand side of Molesworth Drive but this assumption will need to be revisited once the detailed design for this intersection is completed.

Existing Guardrail

RP 500 to 600 and RP 900 to 1100

There is approximately 100m of W section guardrail on the right hand side of Molesworth Drive, RP 500-600 opposite Old Waipu Road Intersection. The guard rail is currently supported on wooden posts and blocks and the formation for gravel path behind the rail is retained by a single height of Massblocks.

To provide the width for a 2.5m shared path it is proposed to;

- replace the existing wooden guardrail posts/blocks with Nu-Guard type posts and reset the rail closer to the seal edge and raise it to the correct height relative to the seal edge,
- provide a structural section of concrete path on top of the Massblocks that will also overhang the outer edge of the Massblocks and,
- provide a handrail on the outer edge of the shared path.

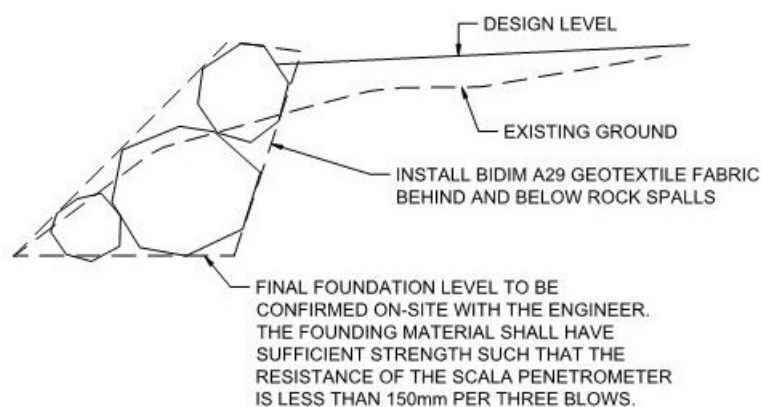


Molesworth Drive RP 500



Molesworth Drive; RP1000

Between RP 900 to 1100 there is a similar guard rail supported by wooden posts and blocks and the path width is constrained by the embankment to the adjacent estuary. Replacing the posts with Nu-Guard type posts would provide an additional 0.5m of available width and the remaining width could be achieved by steepening the existing batter with rock spalls as detailed below.



ROCK SPALL BATTER STEEPENING DETAIL

SCALE: 1:25

Note: it is not proposed to provide a handrail where the height of the batter steepening is less than 1.0m.

Vehicle Crossings

There are a discrete number of existing vehicle crossings that are likely to require significant reconstruction due to their steep grade that will not conform with the new widened path crossfalls, such as the example at RP1150 below. It is noted that localised crossfalls of up to 1:12 are permitted and the extent of works will need to be confirmed during the detailed design.



Molesworth Drive RP 1150

Tara Creek Bridge Approach Embankments

Tara Creek bridge approaches are constructed on an embankment fill across the Tara creek estuary. There is a section of guardrail supported by wooden posts and blocks on the southern approach to the bridge between RP 1980 and RP 2220. It is proposed that this section would be treated similarly to the RP 900 to 1100 section by way of Nu-guard posts and steepening the existing batter with rock spalls so that the existing foot print does not extend any further into the Coastal Marine Area.



Tara Creek Bridge Approach Embankment; South Side

To the north of the bridge there is only a short section of approach terminal. As this is an 80km/hr speed zone it is recommended that a new guard rail be installed to the driveway at RP 2490, to provide separation of the traffic from the shared path and protection from the embankment fill to the estuary. The edge of the formation will also require steepening of the existing batter with rock spalls. There is also a need to relocate a power pole and to remove some of the amenity plantings from along the upper edges of the batter with the lower branches of the Norfolk Pine trees that overhang the shared path formation requiring pruning.



Tara Creek Bridge Approach Embankment; North Side

Tara Creek Pedestrian Bridge

The existing Tara Creek pedestrian bridge between RP 2220 and RP 2275 has a useable width of 1.5m. It is considered that this width is adequate for the foreseeable future but as the popularity of this route grows then pedestrian/cyclists clashes will require the width to be increased. A feasibility/estimate for widening the bridge is being prepared and will be included when available.



Tara Creek foot bridge

4.2.3. Summary Estimate Section Two

Cost estimates are detailed under Heading 6 of this report and are summarised below and currently does not include for any upgrading of the Tara Creek pedestrian bridge.

Road Name	Link	Side	Estimated Cost
Molesworth Drive	Pearson Street to Estuary Drive	Right	\$894,348

4.3. Section Three – Molesworth Drive; Estuary Drive to Wood Street

4.3.1. Introduction

Section Three of the shared path continues along Molesworth Drive, now a 50km/h speed zone, to Wood Street passing and connecting socially significant locations such as the Mangawhai Museum, Mangawhai Skate Park, Mangawhai Activity Zone and Mangawhai Heads light industrial area. Improvements to this section are considered a High Priority due to the destinations it provides access to, the lack of facilities for both pedestrians and cyclists and the confusion and hazards in the Mangawhai Heads light industrial area. Due to forecast traffic growth, other intersection and roading improvements are likely to be required in this section and this needs to be considered when undertaking the detailed design of the shared path.



Figure 7: Section Three- Molesworth Drive; Estuary Drive to Wood Street

4.3.2. Option 1

While there are destinations on the western side of Molesworth Drive the conclusion of the study team is that for the long term it is of greater benefit to retain and upgrade the shared path on the eastern side of Molesworth and address the constraints encountered rather than detour the path to the western side of Molesworth for discrete sections. This decision was principally driven by the fact that the urban development and therefore trip generation is occurring on the eastern side of Molesworth and although there are destinations on the western side these may readily be accessed by existing and new crossing points.

There is an existing narrow gravel track immediately adjacent to the eastern carriageway edge between Estuary Drive and the Mangawhai Heads light industrial area. This track could be readily widened to create a shared path by the provision of kerb and channel, minor bank trimming and some vegetation removal, including Norfolk Pine trees. The kerb and channel is particularly relevant where turning lanes have been constructed for side roads.

There is an existing narrow gravel track immediately adjacent to the eastern carriageway edge between Estuary Drive and the Mangawhai Heads light industrial area. This track could be readily widened to create a shared path by the provision of kerb and channel, minor bank trimming and some vegetation removal, including Norfolk Pine trees. The kerb and channel is particularly relevant where turning lanes have been constructed for side roads.



Molesworth Drive; View north from Estuary Drive

A concrete foot path commences at the Mangawhai Heads light industrial area at RP 3140 with an existing pedestrian crossing place at RP 3170. It is proposed to widen the existing path to 2.5 m and address the specific site constraints which are discussed in section 4.3.3 below. The recommended widening for the carriageway and path may require removal of vegetation and parking from the western side of Molesworth Drive.

Once passed the Mangawhai Heads light industrial area, the Moir Point Road to Wood Street length is relatively straight forward to widen the existing path although there is one power pole to relocate and some discrete sections of 0.75m to 1.5m high retaining wall required to support bank cutting on the boundaries or utility poles.

4.3.3. Option Constraints

The following specific constraints were identified on Section Three:

- Mangawhai Heads light industrial area;
- Vegetation;
- Utility poles
- Retaining structures;
- Crossing Points.

Mangawhai Heads light industrial area

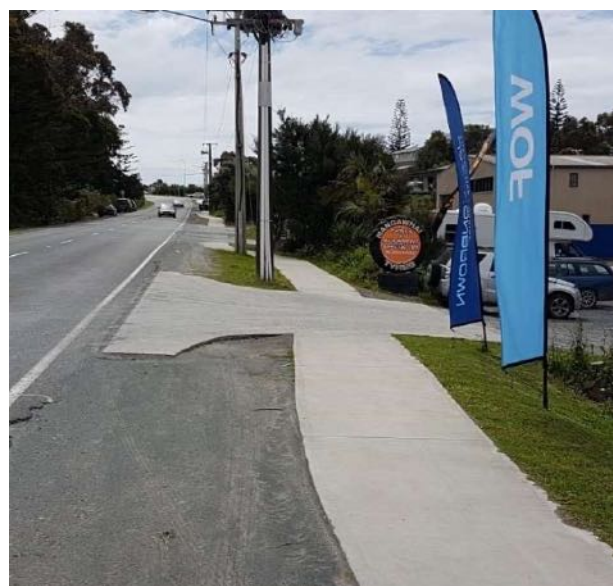
The Mangawhai Heads light industrial area is the greatest constraint within this section. Development within this area appears to have been haphazard and unplanned and presents a number of hazards and safety concerns.



Molesworth Drive; RP 3140, foot path starts



RP 3170, Existing crossing place to Activity Centre



Molesworth Drive; RP 3200, existing footpath fronting light industrial area

It is a view of the study team that a site specific design is required through the Mangawhai Heads light industrial area to address the following issues:

- Provide sufficient carriageway width for a central flush median to assist turning traffic movements.
- Formalise or prohibit parallel parking on the eastern roadside and prohibit parking on the western road side.
- Provide kerb and channel along eastern road side to manage stormwater (this has been an historical area of flooding) and prevent vehicles parking on the path.
- Relocate or consider undergrounding of power reticulation.
- Provide a minimum of 2.5m shared path throughout the area.
- Upgrade lighting particularly for the crossing place at RP 3175

Vegetation

Discrete sections of vegetation and some more mature Norfolk Pine trees will require removal to facilitate the path construction

Utility Poles

In addition to the utility poles at Mangawhai Heads light industrial area the power pole near the Wood Street Intersection will need to be relocated to the boundary.



Molesworth Drive; Power Pole at RP 4025

Retaining

Three lengths totalling some 40m of this section will require retaining such as in the situation above where the batter needs to be cut back, pole relocated and property boundary retained. In these constrained sections, a timber retaining wall is preferred due to its smaller footprint.

Location of crossings points

Additional crossing points will need to be constructed for access to Mangawhai Museum and Mangawhai Heads Information Centre.

4.3.4. Summary Estimate Section Three

Cost estimates are detailed under Heading 6 of this report and are summarised below. They are based on a number of assumptions and provisional sums through the Mangawhai Heads light industrial area. Additional design information is required for this area to provide more certainty for the estimate.

Road Name	Link	Side	Estimated Cost
Molesworth Drive	Estuary Drive to Wood Street	Right	\$1,366,706

4.4. Section Four – Molesworth Drive; Wood Street to Mangawhai Heads Road; with additional side routes to Mangawhai Heads Town Centre and Mangawhai Estuary

4.4.1. Introduction

Section Four is shown in Figure 8 below and continues the direct route along Molesworth Drive to Mangawhai Heads Road.

There are also two side routes:

- Section Four A- side route via Wood Street to Mangawhai Heads Town Centre, with Robert Street as a connection to North Avenue.
- Section Four B- side route via North Avenue to Mangawhai Estuary and Boat Launching Ramp.



Figure 8: Section Four, Four A and Four B– Molesworth Drive; Woods Street to Mangawhai Heads Road with connections to Mangawhai Heads Town Centre and Mangawhai Estuary

4.4.2. Section Four; Option 1

There is an existing 1.5m footpath on the eastern side of Molesworth Drive between Wood Street and Mangawhai Heads Road. It is relatively straight forward to widen this path to a 2.5m shared path. There are minor constraints as detailed below:

- Power pole stay and lighting pole;
- Retaining structures;
- Driveways.

Utility Poles

There is a lighting column at RP 4290, opposite Greenview Drive and a power pole stay at RP4360 that will require relocation but neither are significant items.

Retaining Structures

Three lengths of retaining wall will be required to widen the path to a 2.5m shared path. These lengths are located at RP 4270 to 4360 and RP 4177 to 4215 and the replacement of the existing retaining wall at RP 4955 to 4995. As in the previous section, timber retaining walls are preferred to support property boundaries due to their reduced footprint.



Molesworth Drive: the existing retaining wall RP 4955 to 4995 to be replaced with 2.5m height wall to provide for the proposed 2.5m shared path

Driveways

There are a discrete number of driveways that will need to be reconstructed to conform with a widened shared path.

4.4.2.1. Summary Estimate Section 4

Cost estimates are detailed under Heading 6 of this report and are summarised below.

Road Name	Link	Side	Estimated Cost
Molesworth Drive	Wood Street to Mangawhai Heads Road	Right	\$450,952

4.4.3. Section Four A; Option 1

Section Four A provides a route to and from the Mangawhai Heads Town Centre via Wood Street and then connects to North Avenue via Robert Street. However the options for pedestrians and cyclists through the Town Centre itself needs further study.

Wood Street

The southern side of Wood Street has been selected as it provides a less cluttered approach to, and through, the Town Centre. There are a number of constraints to widening the existing foot path on the southern side of Wood Street between Molesworth Drive and the Town Centre including the location of the existing property boundary at #2 and #4, a utility pole and driveway. Additionally, retaining of the property boundary will be required between RP 10 and 45.



Wood Street; view west through property boundary constraint



Wood Street property boundary plan, #2 and #4 boundaries are close to the existing footpath

The length though the Town Centre requires more detailed planning and design to establish the optimal use and sharing of the available or acquired road reserve, between through traffic, parking traffic, amenity planting, pedestrians and cyclists. Currently vehicles are parking randomly on the berms and behind kerbs obstructing and compromising the safety of pedestrians.



Mangawhai Heads Town Centre vehicle parking issues

East of the Town Centre there is an existing footpath on the northern side of the street. However, it is not feasible to widen this path due to power reticulation infrastructure and the southern side of the road presents a blank canvas for the installation of a shared path, although a section of retaining will be required and this would then continue directly along the eastern side of Robert Street.



Wood Street; North side



Wood Street; South side

There is a further section of timber retaining wall required to construct a shared path from RP 220 to 265.

Robert Street

There is an existing footpath on the eastern side of Robert Street for its full length to North Avenue. There are no issues with widening for the first section to Pinewood but from Pinewood to North Avenue there are 6 poles to be relocated.



Robert Street East side; Wood Street to Pinewood



Robert Street East side; Pinewood to North Avenue

The western berm along Robert is a greenfield situation with no constraints but would require a crossing at Wood Street and the crossing of two side roads. The eastern side is considered the best long term option however a shared space option is also worthy of consideration, as an interim measure, providing that traffic volumes are low during the summer period.

4.4.3.1. Summary Estimate Section Four A

Cost estimates are detailed under Heading 6 of this report and are summarised below. There are a number of assumptions and provisions included in the Wood Street estimate and more detailed design information is required to resolve the Mangawhai Heads Town Centre issues and determine the allocation of carriageway space, optimise parking and confirm the estimate.

Road Name	Link	Side	Estimated Cost
Wood Street	Molesworth Drive to Robert Street	Right	\$466,652
Robert Street	Wood Street to North Avenue	Right	\$ 90,300

4.4.4. Section Four B; Option 1

Section Four B provides a direct route from Molesworth Drive via North Avenue to Mangawhai Estuary and Boat Launching Ramp. There is an existing footpath on the southern side and green fields berm on the northern side. A Slow Street Shared Space option was not considered for North Street as it provides access to the boat ramp and is likely to be heavily trafficked over summer. In addition, the steep drop down to the foreshore is considered to require a separate cycle space from the trafficked carriageway.

Widening of the existing footpath is the study teams preferred option as it:

- Does not require a crossing point west of Robert Street.
- Connects directly with the Robert Street link.
- Widening on the southern side is the most practical method of traversing the hill down to the Mangawhai Estuary and foreshore.

There is an existing 1.5m footpath on the southern side of North Street for its entire length. It is relatively straight forward to widen this path to a 2.5m shared path, however there are a number of constraints as detailed below.

- The existing footpath is below the level of the kerb and channel with driveways constructed to match the existing footpath levels.
- Retaining Structure.



North Avenue, existing height of foot path precludes widening towards kerb



North Avenue; hill section to foreshore retaining of property boundary required to widen path

Existing Footpath Levels

The existing foot path has been constructed at a lower level than the kerb and channel between RP 35 to 130 and RP 175 to 340. As most of the driveways have already been formed it will be problematic to widen the path towards the kerb and tie into the driveways and there are power poles between the path and boundary for most of its length. The proposed solution is to uplift the existing path between the positions identified above and re-construct at a higher level that ties into the kerb and channel along with reconstructing the 13 affected driveways to match the new levels. However, the ability of the road stormwater system to cope with the additional stormwater runoff needs to be assessed before committing to this option.

Retaining Structure

A 35 metre long timber retaining wall has been allowed along the North Avenue frontage of 1 Robert Street to retain the property frontage.

4.4.4.1. Summary Estimate Section Four B

Cost estimates are detailed under Heading 6 of this report and are summarised below.

Road Name	Link	Side	Estimated Cost
North Avenue	Molesworth Drive to Mangawhai Estuary	Right	\$191,089

4.5. Section Five – Mangawhai Heads Road; Molesworth Drive RAB east to Mangawhai Heads Holiday Park and Molesworth Drive RAB west to Jack Boyd Drive

4.5.1. Introduction

Section Five comprises two separate links of Mangawhai Heads Road from the Molesworth Drive Roundabout as shown on Figure 9 below. The East link provides access to Mangawhai Heads Holiday Park while the West link provides access to Jack Boyd Drive.

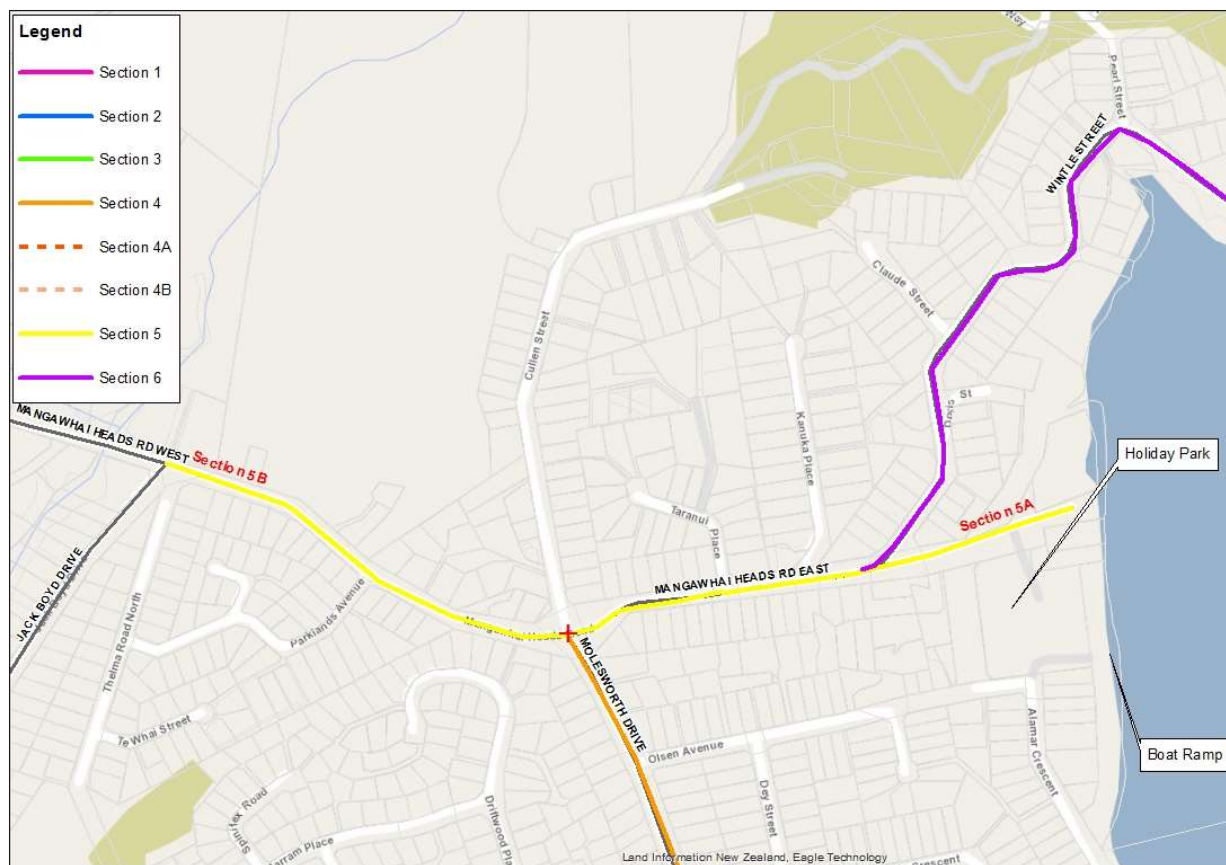


Figure 9 Section Five_ Mangawhai Heads Road East and West Links

4.5.2. Mangawhai Heads Road East Options

Section 5A, Mangawhai Heads Road East, has an existing 1.5 metre footpath along the northern side from Molesworth Drive to Wintle Street. This foot path is on the uphill side of Mangawhai Heads Road and on the wrong side for providing direct access to the foreshore. There are a number of constraints to widening this path to 2.5m which would require significant modification of existing driveways, a section of retaining wall as well as a number side road crossings. There are a number of significant challenges to overcome to widen the northern side footpath to 2.5m and at this stage without a survey and detailed design the northern side has been discarded in favour of the southern side. However, when undertaken the final design for the shared path both options should be considered.

The Southern side of the road provides a direct route to the foreshore but also has a number of constraints involving driveways and utility poles. The road is considered too busy and hilly for a shared space and whichever side of the road is finally selected for a shared path, the drainage upgrades at RP250 and RP 490 need to be addressed.

4.5.3. Option Constraints - Northern Side

The development of the footpath on the northern side of the road to Wintle Street to 2.5m is constrained by the existing driveways that ramp down to crossing places. There are four that are particularly steep, two of which are shown below. A comprehensive survey, including the private property would need to be carried out and detailed design works completed before it could be determined if it is feasible to widen the existing path as the works could extend well into private property



Existing crossing place to #24



Existing crossing place to #26

Over steep vehicle crossing places to the existing footpath at #24 and #26 Mangawhai Heads Road East. Note scraping on concrete of existing #26 crossing place.

East of Wintle Street intersection on the north side of Mangawhai Heads Road East, there is a further crossing place that could not be accommodated within any shared path construction due to the close proximity of the adjacent garage.



RP 435 LHS, existing driveway and garage

4.5.4. Option Constraints -South Side

There is currently no footpath on the southern side of Mangawhai Heads Road East and the following constraints were identified to construction a shared path on this alignment.

- Drainage
- Utility Poles
- Retaining;

Drainage

The existing kerb and channel terminates at RP 250 on the southern side of the road where there is a 900mm size culvert crossing. The existing foot path bridges this culvert on the northern side but the culvert can be extended on the southern end by one pipe length to provide sufficient width for a shared path. A similar situation exists at RP 490 where there is an existing 1200mm culvert.



RP 250, 900mm culvert to be extended



RP 490, 1200mm culvert to be extended

It is also proposed to extend the kerb and channel on the south side from RP 250 to RP 430.

Utility Poles

There are 7 service poles that will be required to be relocated on the southern berm to provide space for a shared path.



Utility Pole obstructions on the southern side of Mangawhai Heads Road East

Retaining Structures

Three lengths of retaining wall will be required to widen the path to a 2.5m shared path. These lengths are located at RP 50 to 80, RP 270 to 285 and RP 390 to 415. As in the previous sections, timber retaining walls are preferred to support property boundaries due to their reduced footprint.



Retaining wall required RP 390 to 415

4.5.4.1. Summary Estimate Section Five A: Mangawhai Heads Road East

Cost estimates are detailed under Heading 6 of this report and are summarised below. An estimate has not been developed for the possible development of the existing footpath on the northern side of the road to Wintle Street as at this stage it is not considered to be feasible.

Road Name	Link	Side	Estimated Cost
Mangawhai Heads Road East	Molesworth Drive to Mangawhai Estuary	Right	\$373,959

4.5.5. Mangawhai Heads Road West Options

Section 5B, Mangawhai Heads Road West, has an existing 1.5 metre footpath along the southern side of the road from Molesworth Drive to Jack Boyd Drive. The foot path is sited immediately behind the kerb and although it is on the side of the road on which urban development is occurring it cannot be easily widened towards the boundary due to conflicts with, utility poles, power boxes, driveways, Pohutukawa trees and property boundaries.



Mangawhai Heads Road West: South side constraints to widening existing foot path

The northern side of the road has not been developed to an urban standard and there is an opportunity to address the constraints of the southern side by developing the northern side of the road.



Mangawhai Heads Road West: North side view

It is not proposed that a shared path be developed on the north side of the road but should a stormwater reticulation system and kerb and channel be provided along this side then it is likely to create sufficient width to allow the kerb and channel on the northern side of the road to be relocated into the existing carriageway to provide width for the shared path. This option would also allow the recessed cesspits that currently restrict the width of the existing path to be rectified.

Only a provisional estimate has been completed for this report and to progress this option with any certainty additional survey and design work will be required to confirm geometrics, stormwater design and costs.

It was also noted that the Pohutukawa trees are constraining the available width of the foot path as shown in the photo below. As any improvements to the footpath width are likely to be expensive and some time away it is important to ensure that the maximum useable width of foot path is available for users and a Pohutukawa tree pruning programme should be implemented immediately along with the plating over of the recessed cesspits.



Mangawhai Heads Road West: Pohutukawa Tree encroaching existing footpath width.

4.5.5.1. Summary Estimate Section Five B: Mangawhai Heads Road West

Cost estimates are detailed under Heading 6 of this report and are summarised below. There are a number of assumptions and provisional sums included in this estimate and Survey, As-built and detailed design information is required to confirm that the option and estimate is viable.

Road Name	Link	Side	Estimated Cost
Mangawhai Heads Road West	Molesworth Drive to Jack Boyd Drive	Right	\$559,763

4.6. Section Six – Wintle Street; Molesworth Drive East to Mangawhai Heads Beach Carpark

4.6.1. Introduction

Section Six has been divided into two separate links of Wintle Street, from Mangawhai Heads East Road to Beach Access 10 and Beach Access 10 to the Mangawhai Heads Beach Carpark.

It is noted that the MCP does not identify the shared path link along the beach frontage between Mangawhai Heads Road and Beach Access 10 (Pearl Street), as it is anticipated that there will be walking and cycling access along the coastal edge that will link up to both of these points of the shared path under a separate Parks and Reserves project.

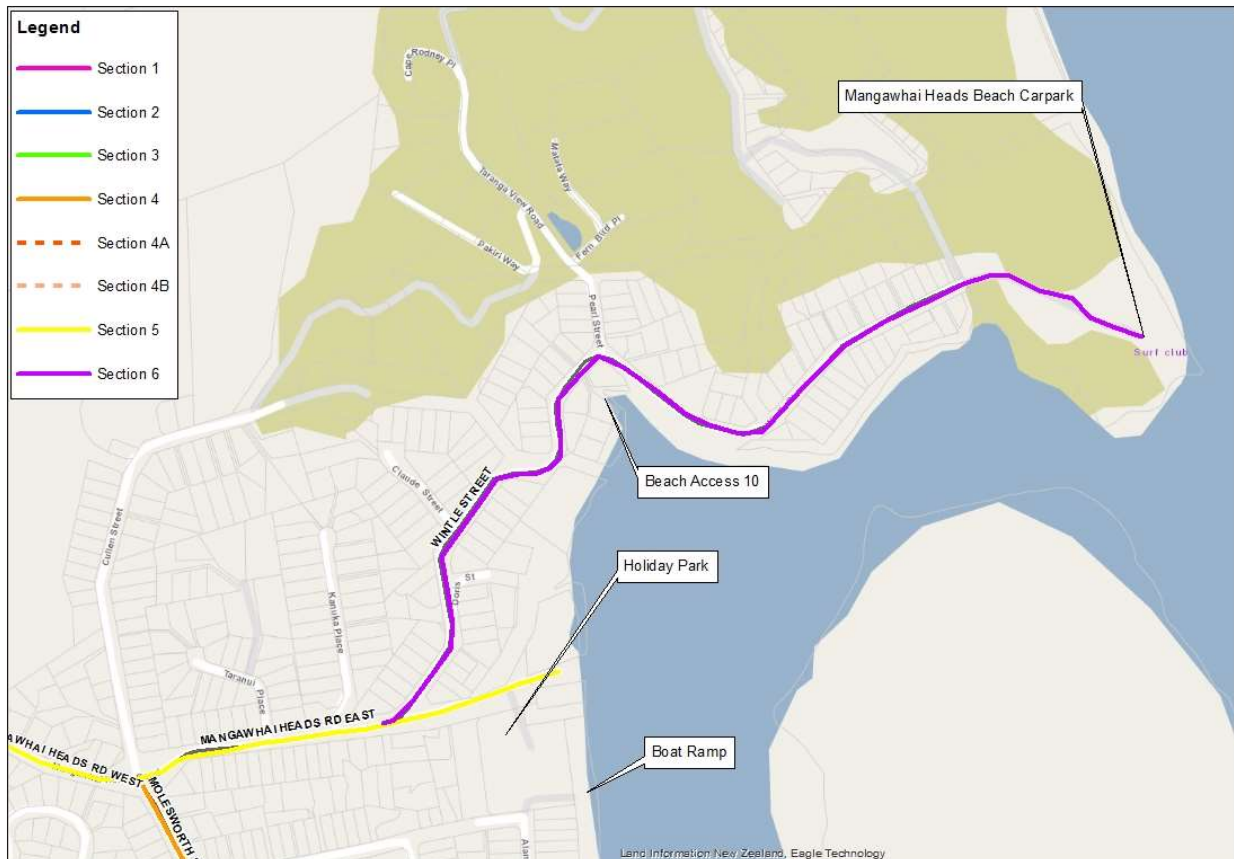


Figure 10 Section Six - Wintle Street

4.6.2. Wintle Street Options

Section 6, Wintle Street, has an existing foot path on the eastern of right hand side of the carriageway. This foot path is generally 1.5m wide but there are some discrete sections that have been widened in conjunction with retaining works to 2.5m. The Wintle Street carriageway is fully formed with kerb and channel each side. The carriageway width varies from 10 to 6 metres and no parking lines have been installed on both sides of the carriageway for its entire length.

There are a number of significant constraints to widening the existing path to 2.5m however the installation of a new path on the western or left hand side of the road has even greater constraints. The eastern side road reserve property frontages have been significantly developed and planted and there appears a number of situations where the property boundary is also close to or over the existing footpath. It is considered that a reduction in carriageway width may be the least impact method of achieving the width for a shared path and the specifics are discussed in constraints below. However, detailed survey, investigation

and design work will be required to confirm property boundaries and the viability of the proposed option.

Beach Access 10 is located approximately halfway along Wintle Street on the eastern side at RP 620. There is an existing concrete path 75m long and 1.5m wide that provides direct access at a flat grade to the foreshore reserve. The existing path is mostly in poor condition and should be replaced as part of any widening programme.



Wintle Street RP 620; Beach Access 10 to foreshore

There is a further Beach Access, 7, at RP 1235, Wintle Street, it has a grass formation and only provides access to the estuary and at a steep grade.

4.6.3. Option Constraints

The significant constraints in widening the existing footpath on the eastern side of Wintle Street from Mangawhai Heads Road East to Mangawhai Heads Beach carpark are detailed below:

- Property boundaries
- Vegetation and property frontages
- Power poles and lighting pole
- Retaining structures
- Driveways,

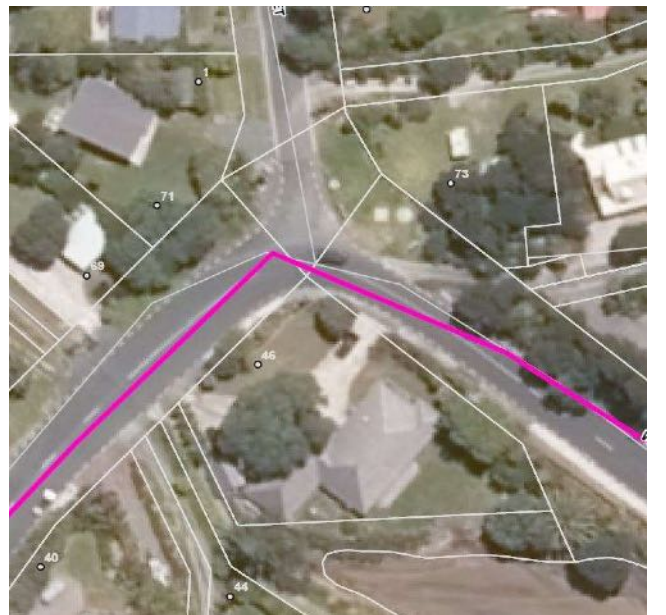
Property Boundaries

There are lengths along Wintle Street where the property boundary overlay maps indicate that the property boundary is very close to the back of the foot path such as at #34 Wintle Street. At #46 Wintle Street, opposite Pearl Street, the boundary appears to be within the existing carriageway.

At these and other locations a reduction in carriageway width is likely to be the least cost option to relocating power poles, acquiring land and removing vegetation and adjusting driveway along with the associated property compensation works.



#34 Wintle Street frontage, where garage would appear to be on the property boundary



#46 Wintle Street, possible boundary encroachment

Vegetation and property frontages

There are a number of locations along Wintle Street where the road reserve has been planted to the back of the footpath, within the road reserve and this vegetation is a constraint to both the current path width and any future widening. There is a significant amount of native vegetation including Pohutukawa, that will need to be pruned back or removed and a survey will be required to confirm the location of boundaries before committing this work, as the vegetation is providing privacy screening for the properties.



Wintle Street ; Vegetation encroachment onto footpath



Wintle Street ; vegetation plantings on property frontages

Power Poles and Lighting Pole

There are a number of power poles on the eastern side of the footpath that will need to be relocated to widen the existing path. The number of poles and complexity of the relocations will be minimised, if the road carriageway can be reduced in width at discrete locations. However, a survey will be required to confirm the practicality of this proposal as well as confirming the boundary locations so that lines do not encroach into private property. There are locations, such as RP800 in photo below, where it is desirable to relocate the existing pole to the western side of the road and Aerial Bundled Conductor may be required to minimise tree issues.



Wintle Street; Power pole at RP80



Wintle Street; Power pole at RP800

Additionally there is a standalone street light column at RP 210 between Doris and Claude Streets that will require relocation.

Retaining Structures

There are a number of existing retaining structures throughout this section, The retaining wall between RP 232 and 300 appears well constructed and the footpath between RP 232 and 275 is already at 2.5m width. It has been assumed that the footpath between RP 275 and 300 can also be widened with only minor works to the existing footpath and handrail structure. The existing retaining wall at Doris Street intersection, RP170, is a constraint and there will need to be significant modification through this area to achieve a widened path.



Wintle Street; retaining wall and footpath RP300



Wintle Street/Doris Street; lighting pole at RP80

There is also an existing retaining structure between RP760 to 790 that has failed during recent cyclone events. This structure is being repaired under a separate contract but an

allowance has been made to increase the width of the existing footpath to 2.5m and install handrailing as required.

Driveways

There are a significant number of driveways that ramp up to the vehicle crossing from the property below. While this will involve considerable design and reinstatement works, there were no driveways identified that cannot be accommodated into a widened footpath footprint.



Wintle Street, Typical driveway profile.

4.6.3.1. Summary Estimate Section Six: Wintle Street

Cost estimates are detailed under Heading 6 of this report and are summarised below. There are a number of assumptions and provisional sums included in this estimate and Survey, As-built and detailed design information is required to confirm that the selected option and estimate is viable.

Road Name	Link	Side	Estimated Cost
Wintle Street	Mangawhai Heads Road East to Beach Access 10	Right	\$ 704,475
Wintle Street	Beach Access 10 to Mangawhai Heads Beach Carpark	Right	\$1,059,060

5. Conclusions and Recommendations

The investigations undertaken for this report confirm that it is feasible to construct shared pathways connecting Mangawhai Village, Mangawhai Town Centre and extending to Mangawhai Heads Beach Car Park. The assumptions in this report need to be considered in conjunction with the Mangawhai Traffic Study that is currently in progress.

Observations during a site visit during the term three school holidays, and recorded in the photograph below that there was a significant increase in walking and cycling activity during the summer and school holiday months and that there are significant risk and safety issues for pedestrians and cyclists within the study area that need to be addressed.



Additionally observations at the close of the school day at Mangawhai Heads School identified a potential issue with parking congestion.

There are areas with more intensive development and constraints that are not included within the Mangawhai Traffic Study scope that require further and more detailed investigation and design to confirm the scope of the works required and estimated costs:

- Mangawhai Village area, and particularly the existing Four Square Car Park on Insley Street;
- Mangawhai Heads School;
- Mangawhai Heads light industrial area (shown above);
- Mangawhai Heads Town Centre;

Additionally, there are a number of issues on Mangawhai Heads Road East and West and Wintle Street, where additional survey investigation and design is required to confirm the scope of the works required and estimated costs

It is recommended that before any works are commissioned detailed design work is carried out to ensure that future requirements and considerations are incorporated

6. Project Cost Estimates

6.1. Introduction

These estimates have been prepared based on the observations of experienced field staff on the ground utilising current Northland contract unit rates with no reference to detailed survey information as-built plans for utilities etc. Therefore estimates have only been prepared for what has been observed and to address this issue a 20% allowance has been made for contractors Provisional and General costs along with a 30% contingency for unknown items. 12% to 20% has also been provided for detailed design and contract supervision, depending on the complexities of each section.

There are additional recommendations for the collection of more detailed information in a number of areas to confirm the scope of the works and estimate.

6.2. Estimate Worksheets for Section One; Option 1

Section 1				
Moir Street: Mangawhai Domain to Insley Street_RHS				
	RP start	265	RP end	870
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	500	\$ 500.00
Site preparation	LS	1	500	\$ 500.00
Cut	m ³	60	25	\$ 1,500.00
Fill	m ³	120	45	\$ 5,400.00
Drainage				
Manholes (1050mm)	No	3	4800	\$ 14,400.00
Sumps	No	6	1300	\$ 7,800.00
Sump Lead	m	15	250	\$ 3,750.00
Kerb and channel	m	605	90	\$ 54,450.00
Power pole minor	ea	2	5,000	\$ 10,000.00
Pavement widening	m ²	1200	85	\$ 102,000.00
Standard Footpath	m ²	605	55	\$ 33,275.00
Remove, reconstruct vehicle crossings	m ²	44	70	\$ 3,080.00
Sub-Total				\$ 236,655
Provisional & General	%		20	\$ 47,331
Contingency	%		30	\$ 70,997
Design and Construction Management	%		18	\$ 63,897
Total				\$ 418,879

Section 1				
Moir Street: Opposite Hall to Molesworth Drive_LHS				
	RP start	880	RP end	1000
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	1000	\$ 1,000.00
Site preparation	LS	1	500	\$ 500.00
Cut	m ³	40	25	\$ 1,000.00
Fill	m ³	10	45	\$ 450.00
Drainage				
Manholes (1050mm)	No	1	4800	\$ 4,800.00
Sumps	No	2	1300	\$ 2,600.00
Sump Lead	m	5	250	\$ 1,250.00
Kerb and channel	m	20	90	\$ 1,800.00
Pavement widening	m ²	40	85	\$ 3,400.00
Standard Footpath	m ²	120	55	\$ 6,600.00
Remove, reconstruct vehicle crossings	m ²	10	70	\$ 700.00
Crossing Points	No	1	15000	\$ 15,000.00
Sub-Total				\$ 39,100
Provisional & General	%		20	\$ 7,820
Contingency	%		30	\$ 11,730
Design and Construction Management	%		18	\$ 10,557
Total				\$ 69,207

Section 1				
Insley Street: Moir Street to Mangawhai School_RHS				
	RP start	0	RP end	380
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	500	\$ 500.00
Site preparation	LS	1	500	\$ 500.00
Cut	m ³	40	25	\$ 1,000.00
Fill	m ³	30	45	\$ 1,350.00
Drainage				
Sumps	No	1	1300	\$ 1,300.00
Sump Lead	m	2	250	\$ 375.00
Kerb and channel	m	30	90	\$ 2,700.00
Telecom pole	ea	1	3000	\$ 3,000.00
Standard Footpath	m ²	384	55	\$ 21,120.00
Remove, reconstruct vehicle crossings	m ²	68	70	\$ 4,760.00
Sub-Total				\$ 36,605
Provisional & General	%		20	\$ 7,321
Contingency	%		30	\$ 10,982
Design and Construction Management	%		12	\$ 6,589
Total				\$ 61,496

Section 1				
Insley Street: Moir Street to Mangawhai Heads School_LHS				
	RP start	0	RP end	415
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	1500	\$ 1,500.00
Site preparation	LS	1	1000	\$ 1,000.00
Cut	m ³	40	25	\$ 1,000.00
Fill	m ³	30	45	\$ 1,350.00
Drainage				
Sumps	No	5	1300	\$ 6,500.00
Sump Lead	m	10	250	\$ 2,500.00
Kerb and channel	m	350	90	\$ 31,500.00
Pavement widening	m ²	900	85	\$ 76,500.00
Standard Footpath	m ²	700	55	\$ 38,500.00
Remove, reconstruct vehicle crossings	m ²	68	70	\$ 4,760.00
accomodation works at Four Square carpark	LS	1	20,000	\$ 20,000.00
Pavement marking removal/reinstatement	LS	1	10000	\$ 10,000.00
Crossing Points	No	1	15000	\$ 15,000.00
Sub-Total				\$ 195,110
Provisional & General	%		20	\$ 39,022
Contingency	%		30	\$ 58,533
Design and Construction Management	%		20	\$ 58,533
Total				\$ 351,198

Section 1				
Molesworth Drive: Moir Street to Pearson Street				
	RP start	0	RP end	340
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	1000	\$ 1,000.00
Site preparation	LS	2	500	\$ 1,000.00
Cut	m ³	30	25	\$ 750.00
Fill	m ³	30	45	\$ 1,350.00
Drainage				
Manholes (1050mm)	No	1	4800	\$ 4,800.00
Sumps	No	3	1300	\$ 3,900.00
Sump Lead	m	6	250	\$ 1,500.00
Kerb and channel	m	140	90	\$ 12,600.00
200x 50mm timber edge	m	50	26	\$ 1,300
Power pole Intermediate	ea	1	15,000	\$ 15,000.00
Pavement widening	m ²	200	85	\$ 17,000.00
Standard Footpath	m ²	340	55	\$ 18,700.00
Remove, reconstruct vehicle crossings	m ²	60	70	\$ 4,200.00
Crossing Points	No	1	15000	\$ 15,000.00
Sub-Total				\$ 98,100
Provisional & General	%		20	\$ 19,620
Contingency	%		30	\$ 29,430
Design and Construction Management	%		18	\$ 26,487
Total				\$ 173,637

6.3. Estimate Worksheets for Section One; Option 2 Alternative Route Options

Section 1_Option 2a				
Moir Street: Pedestrian Bridge to Crossing Point by Hall_LHS				
	RP start	80	RP end	880
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	1000	\$ 1,000.00
Site preparation	LS	1	1500	\$ 1,500.00
Cut	m ³	100	25	\$ 2,500.00
Fill	m ³	750	45	\$ 33,750.00
Drainage				
Manholes (1050mm)	No	4	4800	\$ 19,200.00
Sumps	No	8	1300	\$ 10,400.00
Sump Lead	m	18	250	\$ 4,500.00
Kerb and channel	m	600	90	\$ 54,000.00
200x 50mm timber edge	m	50	26	\$ 1,300
Pavement widening	m ²	1200	85	\$ 102,000.00
Standard Footpath	m ²	2000	55	\$ 110,000.00
Crossing Points	No	1	15000	\$ 15,000.00
Sub-Total				\$ 355,150
Provisional & General	%		20	\$ 71,030
Contingency	%		30	\$ 106,545
Design and Construction Management	%		18	\$ 95,891
Total				\$ 628,616

Section 1_Option 2b				
Mangawhai Domain; Moir Street to Kedge Drive Walkway				
	RP start		RP end	
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	1000	\$ 1,000.00
Site preparation	LS	1	500	\$ 500.00
Cut	m ³	85	25	\$ 2,125.00
Fill	m ³	85	45	\$ 3,825.00
Drainage				
Standard Footpath	m ²	850	55	\$ 46,750.00
Sub-Total				\$ 54,200
Provisional & General	%		20	\$ 10,840
Contingency	%		30	\$ 16,260
Design and Construction Management	%		12	\$ 9,756
Total				\$ 91,056

Section 1_Option 2bi				
Kedge Drive: Walkway to Insley Street_LHS				
	RP start	575	RP end	0
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	500	\$ 500.00
Site preparation	LS	1	500	\$ 500.00
Cut	m ³	100	25	\$ 2,500.00
Fill	m ³	100	45	\$ 4,500.00
Drainage				
Standard Footpath	m ²	1440	55	\$ 79,200.00
Remove, reconstruct vehicle crossings	m ²	88	70	\$ 6,160.00
Sub-Total				\$ 93,360
Provisional & General	%		20	\$ 18,672
Contingency	%		30	\$ 28,008
Design and Construction Management	%		12	\$ 16,805
Total				\$ 156,845

Section 1_Option 2bii				
Kedge Drive: Walkway to Insley Street_RHS				
	RP start	575	RP end	0
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	500	\$ 500.00
Site preparation	LS	1	500	\$ 500.00
Cut	m ³	50	25	\$ 1,250.00
Fill	m ³	50	45	\$ 2,250.00
Drainage				
Lighting pole	ea	9	2500	\$ 22,500.00
Standard Footpath	m ²	575	55	\$ 31,625.00
Remove, reconstruct vehicle crossings	m ²	50	70	\$ 3,500.00
Sub-Total				\$ 62,125
Provisional & General	%		20	\$ 12,425
Contingency	%		30	\$ 18,638
Design and Construction Management	%		12	\$ 11,183
Total				\$ 104,370

Section 1_Option 2c				
Drainage Reserve: Moir Street to Longview Street				
	RP start		RP end	
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	2500	\$ 2,500.00
Site preparation	LS	1	10,000	\$ 10,000.00
Cut	m ³	50	25	\$ 1,250.00
Fill	m ³	50	45	\$ 2,250.00
Drainage				
Standard Footpath	m ²	275	55	\$ 15,125.00
Sub-Total				\$ 31,125
Provisional & General	%		20	\$ 6,225
Contingency	%		30	\$ 9,338
Design and Construction Management	%		18	\$ 8,404
Total				\$ 55,091

Section 1_Option 2				
Longview Street: Drainage Reserve to Molesworth Drive				
	RP start	395	RP end	0
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	500	\$ 500.00
Site preparation	LS	1	500	\$ 500.00
Cut	m ³	40	25	\$ 1,000.00
Fill	m ³	40	45	\$ 1,800.00
Drainage				
Standard Footpath	m ²	395	55	\$ 21,725.00
Remove, reconstruct vehicle crossings	m ²	36	70	\$ 2,520.00
Sub-Total				\$ 28,045
Provisional & General	%		20	\$ 5,609
Contingency	%		30	\$ 8,414
Design and Construction Management	%		12	\$ 5,048
Total				\$ 47,116

6.4. Estimate Worksheets for Section Two

Section 2				
Molesworth Drive : Pearson Street to Estuary Drive				
	RP start	340	RP end	2580
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	7500	\$ 7,500
Site Preparation	LS	1	6000	\$ 6,000
Cut	m ³	300	25	\$ 7,500
Fill	m ³	150	45	\$ 6,750
Drainage				
200x50mm timber edge	m	1000	26	\$ 26,000
<1m Rock Spall batter steepening	m ³	300	120	\$ 36,000
Power pole Intermediate	ea	1	15,000	\$ 15,000
Barrier, Replace existing with Nu guard posts	m	540	130	\$ 70,200
Barrier _New	m	220	150	\$ 33,000
Handrail _wooden	m	100	110	\$ 11,000
Standard Footpath	m ²	5200	55	\$ 286,000
Structural Footpath	m ²	250	90	\$ 22,500
Remove, reconstruct vehicle crossings	m ²	70	70	\$ 4,900
Sub-Total				\$ 532,350
Provisional & General	%		20	\$ 106,470
Contingency	%		30	\$ 159,705
Design and Construction Management	%		12	\$ 95,823
Total				\$ 894,348

6.5. Estimate Worksheets for Section Three

Section 3				
Molesworth Drive:Estuary Drive to Wood Street				
	RP start	2590	RP end	4040
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	15000	\$ 15,000.00
Site preparation	LS	1	5000	\$ 5,000.00
Cut	m ³	1500	25	\$ 37,500.00
Fill	m ³	500	45	\$ 22,500.00
Drainage				
Manholes (1050mm)	No	2	4800	\$ 9,600.00
Sumps	No	6	1300	\$ 7,800.00
Sump Lead	m	24	250	\$ 6,000.00
Kerb and channel	m	850	90	\$ 76,500.00
<0.8m Key stone wall	m ²	16	250	\$ 4,000
<1m Timber wall	m ²	30	230	\$ 6,900
<2m Timber wall	m ²	50	275	\$ 13,750
Power pole major	LS	1	150,000	\$ 150,000.00
Power pole Intermediate	ea	1	15,000	\$ 15,000.00
Power pole stay	ea	2	2000	\$ 4,000.00
Pavement widening	m ²	2200	85	\$ 187,000.00
Standard Footpath	m ²	2800	55	\$ 154,000.00
Remove, reconstruct vehicle crossings	m ²	180	70	\$ 12,600.00
Crossing Points	No	3	15000	\$ 45,000
Sub-Total				\$ 772,150
Provisional & General	%		20	\$ 154,430
Contingency	%		30	\$ 231,645
Design and Construction Management	%		18	\$ 208,481
Total				\$ 1,366,706

6.6. Estimate Worksheets for Section Four, Four A and Four B

Section 4				
Molesworth Drive: Wood Street to Mangawhai Heads Road				
	RP start	4040	RP end	5030
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	10,000	\$ 10,000.00
Site preparation	LS	1	2000	\$ 2,000.00
Cut	m ³	600	25	\$ 15,000.00
Fill	m ³	300	45	\$ 13,500.00
Drainage				
200x 50mm timber edge	m	200	26	\$ 5,200
<1m Timber wall	m ²	15	230	\$ 3,450
<2m Timber wall	m ²	215	275	\$ 59,125
<3m Timber wall	m ²	100	350	\$ 35,000
Power pole major	ea	1	25,000	\$ 25,000
Power pole stay	ea	1	2000	\$ 2,000
Lighting pole	ea	1	2000	\$ 2,000
Handrail_wooden	m	50	110	\$ 5,500
Standard Footpath	m ²	1000	55	\$ 55,000
Remove, reconstruct vehicle crossings	m ²	100	70	\$ 7,000.00
Crossing Points	No	1	15000	\$ 15,000
Sub-Total				\$ 254,775
Provisional & General	%		20	\$ 50,955
Contingency	%		30	\$ 76,433
Design and Construction Management	%		18	\$ 68,789
Total				\$ 450,952

Section 4A				
Wood Street: Molesworth Drive to Robert Street				
Wood Street				
	RP start	0	RP end	370
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	3,000	\$ 3,000.00
Site preparation	LS	1	800	\$ 800.00
Cut	m ³	200	25	\$ 5,000.00
Fill	m ³	200	45	\$ 9,000.00
Drainage				
Manholes (1050mm)	No	1	4800	\$ 4,800.00
Sumps	No	2	1300	\$ 2,600.00
Sump Lead	m	10	250	\$ 2,500.00
Kerb and channel	m	170	90	\$ 15,300.00
200x 50mm timber edge	m	20	26	\$ 520
<1m Timber wall	m ²	45	230	\$ 10,350
<2m Timber wall	m ²	45	275	\$ 12,375
Pavement widening	m ²	340	85	\$ 28,900
Standard Footpath	m ²	1000	55	\$ 55,000
Remove, reconstruct vehicle crossings	m ²	50	70	\$ 3,500
Crossing Points	No	2	15000	\$ 30,000
Town Centre Issues	LS	1	80,000	\$ 80,000.00
Sub-Total				\$ 263,645
Provisional & General	%		20	\$ 52,729
Contingency	%		30	\$ 79,094
Design and Construction Management	%		18	\$ 71,184
Total				\$ 466,652

Section 4A				
Robert Street: Wood Street to North Avenue				
	RP start	0	RP end	370
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	1,000	\$ 1,000.00
Site preparation	LS	1	1000	\$ 1,000.00
Cut	m ³	20	25	\$ 500.00
Fill	m ³	20	45	\$ 900.00
Drainage				
Power pole minor	ea	6	5,000	\$ 30,000
Standard Footpath	m ²	370	55	\$ 20,350
Sub-Total				\$ 53,750
Provisional & General	%		20	\$ 10,750
Contingency	%		30	\$ 16,125
Design and Construction Management	%		12	\$ 9,675
Total				\$ 90,300

Section 4B				
Wood Street: Molesworth Drive to Mangawhai Estuary				
	RP start	0	RP end	500
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	2,000	\$ 2,000.00
Site preparation	LS	1	2000	\$ 2,000.00
Cut	m ³	80	25	\$ 2,000.00
Fill	m ³	150	45	\$ 6,750.00
Drainage				
<3m Timber wall	m ²	75	350	\$ 26,250
Handrail_wooden	m	30	110	\$ 3,300
Standard Footpath	m ²	900	55	\$ 49,500
Uplift existing footpath	m	270	8	\$ 2,160
Remove, reconstruct vehicle crossings	m ²	200	70	\$ 14,000
Sub-Total				\$ 107,960
Provisional & General	%		20	\$ 21,592
Contingency	%		30	\$ 32,388
Design and Construction Management	%		18	\$ 29,149
Total				\$ 191,089

6.7. Estimate Worksheets for Section Five A and Five B

Section 5 A				
Mangawhai Heads Road East: Molesworth Drive to Mangawhai Estuary				
	RP		0 RP	530
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	2500	\$ 2,500.00
Site preparation	LS	1	2500	\$ 2,500.00
Cut	m ³	100	25	\$ 2,500.00
Fill	m ³	100	45	\$ 4,500.00
Drainage				
Sumps	No	3	1300	\$ 3,900.00
Sump Lead	m	10	250	\$ 2,500.00
Kerb and channel	m	180	90	\$ 16,200.00
900mm pipe and headwall	LS	1	6700	\$ 6,700.00
1200mm pipe and headwall	LS	1	13300	\$ 13,300.00
200x 50mm timber edge	m	30	26	\$ 780
<1m Timber wall	m ²	15	230	\$ 3,450.00
<2m Timber wall	m ²	55	275	\$ 15,125.00
Power pole minor	ea	7	5,000	\$ 35,000.00
Handrail_wooden	m	30	110	\$ 3,300.00
Pavement widening	m ²	250	85	\$ 21,250.00
Standard Footpath	m ²	1350	55	\$ 74,250.00
Sub-Total				\$ 207,755
Provisional & General	%		20	\$ 41,551
Contingency	%		30	\$ 62,327
Design and Construction Management	%		20	\$ 62,327
Total				\$ 373,959

Section 5 B				
Mangawhai Heads Road West: Molesworth Drive to Jack Boyd Drive				
	RP	1220	RP	730
Rate Table				
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	2500	\$ 2,500.00
Site preparation	LS	1	5000	\$ 5,000.00
Cut	m ³	200	25	\$ 5,000.00
Fill	m ³	400	45	\$ 18,000.00
Drainage				
Manholes (1050mm)	No	2	4800	\$ 9,600.00
Sumps	No	8	1300	\$ 10,400.00
Sump Lead	m	16	250	\$ 4,000.00
Kerb and channel	m	800	90	\$ 72,000.00
375mm pipe	m	100	350	\$ 35,000.00
600mm pipe	m	45	450	\$ 20,250.00
Power pole minor	ea	1	5,000	\$ 5,000.00
Pavement widening	m ²	1000	85	\$ 85,000.00
Standard Footpath	m ²	500	55	\$ 27,500.00
Remove, reconstruct vehicle crossings	m ²	100	70	\$ 7,000.00
Remove andRemark road marking	LS	1	10000	\$ 10,000.00
Sub-Total				\$ 316,250
Provisional & General	%		20	\$ 63,250
Contingency	%		30	\$ 94,875
Design and Construction Management	%		18	\$ 85,388
Total				\$ 559,763

6.8. Estimate Worksheets for Section Six

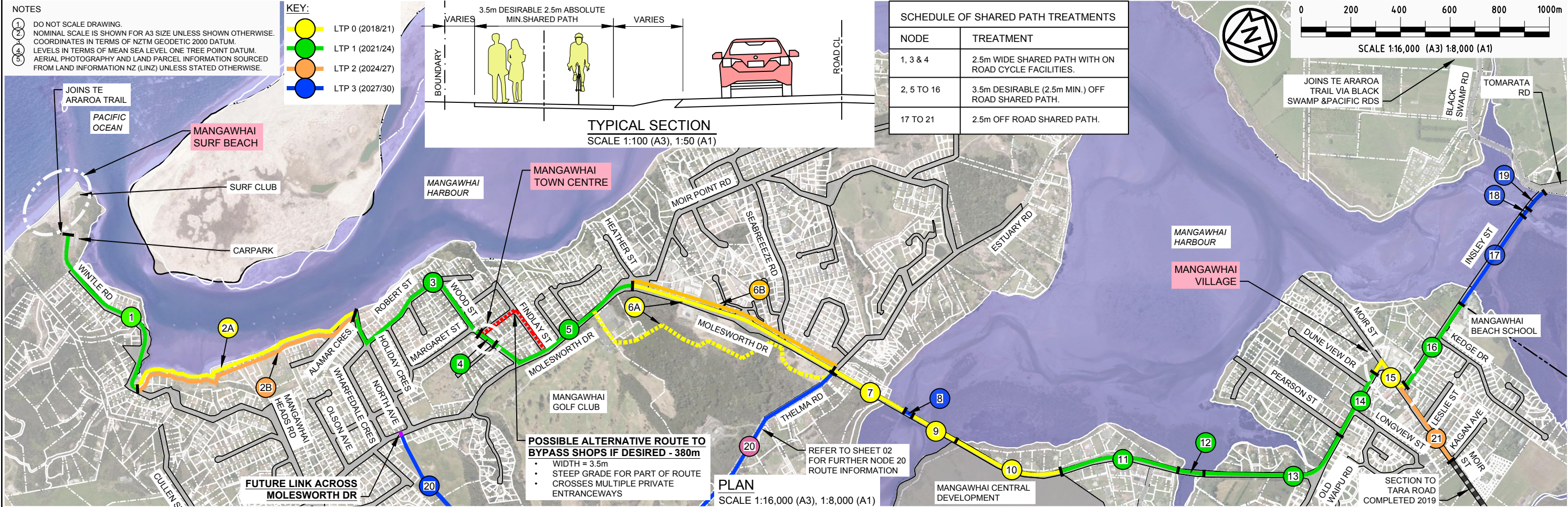
Section 6				
Wintle Street				
Mangawhai Heads Road East to Beach Access 10				
	RP start	0	RP end	620
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	15000	\$ 15,000.00
Site preparation	LS	1	25000	\$ 25,000.00
Cut	m ³	300	40	\$ 12,000.00
Fill	m ³	200	45	\$ 9,000.00
Drainage				
Sumps	No	2	1300	\$ 2,600.00
Sump Lead	m	2	250	\$ 500.00
Kerb and channel	m	250	130	\$ 32,500.00
Retaining				
200x 50mm timber edge	m	120	26	\$ 3,120
<0.8m Key stone wall	m ²	100	250	\$ 25,000.00
<2m Timber wall	m ²	100	275	\$ 27,500.00
Utility relocation				
Power pole major	ea	1	25,000	\$ 25,000.00
Power pole Intermediate	ea	2	15,000	\$ 30,000.00
Power pole stay	ea	1	2000	\$ 2,000.00
Lighting pole	ea	1	2000	\$ 2,000.00
Handrail_wooden	m	100	110	\$ 11,000.00
Pavement widening	m ²	100	85	\$ 8,500.00
Standard Footpath	m ²	1000	55	\$ 55,000.00
Structural Footpath	m ²	250	90	\$ 22,500.00
Remove, reconstruct vehicle crossings	m ²	250	70	\$ 17,500.00
Doris Street Intersection	LS	1	50,000	\$ 50,000.00
Property accomodation works	LS	1	50,000	\$ 50,000.00
Sub-Total				\$ 375,720
Provisional & General	%		20	\$ 75,144
Contingency	%		30	\$ 112,716
Design and Construction Management	%		20	\$ 140,895
Total				\$ 704,475

Section 6				
Wintle Street				
Beach Access 10 to Mangawhai Heads Beach Carpark				
	RP start	620	RP end	1270
Item	Units	Quantity	Rate	Total
Vegetation removal & clearing	LS	1	40,000	\$ 40,000.00
Site preparation	LS	1	35,000	\$ 35,000.00
Cut	m ³	150	40	\$ 6,000.00
Fill	m ³	200	45	\$ 9,000.00
Drainage				
Manholes (1050mm)	No	2	4800	\$ 9,600.00
Sumps	No	4	1300	\$ 5,200.00
Sump Lead	m	6	250	\$ 1,500.00
Kerb and channel	m	150	130	\$ 19,500.00
Retaining				
200x 50mm timber edge	m	60	26	\$ 1,560
<0.8m Key stone wall	m ²	180	250	\$ 45,000.00
<1m Rock Spall batter steepening	m ³	60	120	\$ 7,200.00
<1m Timber wall	m ²	70	230	\$ 16,100.00
<2m Timber wall	m ²	180	275	\$ 49,500.00
Utility relocation				
Power pole major	ea	2	25,000	\$ 50,000.00
Power pole Intermediate	ea	1	15,000	\$ 15,000.00
Handrail_wooden	m	300	110	\$ 33,000.00
Pavement widening	m ²	75	85	\$ 6,375.00
Standard Footpath	m ²	700	55	\$ 38,500.00
Structural Footpath	m ²	150	90	\$ 13,500.00
Remove, reconstruct vehicle crossings	m ²	190	70	\$ 13,300.00
Pearl Street Intersection	LS	1	50,000	\$ 50,000.00
Property accomodation works	LS	1	100,000	\$ 100,000.00
Sub-Total				\$ 564,835
Provisional & General	%		20	\$ 112,967
Contingency	%		30	\$ 169,451
Design and Construction Management	%		20	\$ 211,813
Total				\$ 1,059,066



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Appendix F: Main trunk route plans




SCHEDULE OF PROPOSED WORKS

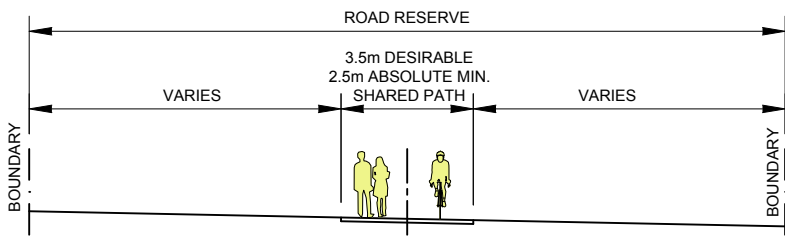
NODE		PRTY	RNK	LTP	NODE		PRTY	RNK	LTP	NODE		PRTY	RNK	LTP	NODE		PRTY	RNK	LTP
1	SURF BEACH CAR PARK SOUTH BDY TO BEACH ACCESS NO 10 - 800m LONG: <ul style="list-style-type: none">ENGINEER ROAD LANE WIDTHS TO 3.0 - 3.5m.PLACE NEW K&C WHERE REQUIRED (70% OF LENGTH).NEW RETAINING WALL BACK TOWARDS BDY- ALLOW 1.5m HIGH WITH FENCE (70% OF LENGTH).	H	7	1	6B	MOIR POINT RD TO ESTUARY DR - 890m LONG - STAGE 2: <ul style="list-style-type: none">K&C ROAD EDGE.WIDEN/PLACE NEW PATH IN BERM.NUMEROUS COMMERCIAL ENTRANCE WAY TO CROSS WITH DIFFICULT GRADIENTS AND LIMIT SIGHT LINES.UP TO 3 ROAD CROSSING TREATMENTS REQUIRED.RETAINING WALL UP TO 1.5M HIGH MAY BE REQUIRED FOR 20% OF THE ROUTE.CONSIDERATION TO EXISTING ABOVE AND BELOW GROUND SERVICES REQUIRED.MAY REQUIRE LARGE TREE REMOVAL.MAY LOSE MINOR OFF STREET PARKING.	H	17	2	9	BRIDGE TO MANGAWHAI CENTRAL DEVELOPMENT - 210m LONG: <ul style="list-style-type: none">REQUIRES CANTILEVERED PATH WITH HAND RAIL (PREVENT IMPLICATIONS FILLING INTO THE ESTUARY).240m OF GUARD RAIL.TRIMMING AND ROCK PROTECTION OF EXISTING CAUSE WAY BATTER.	H	4	0	15	MANGAWHAI VILLAGE COMMERCIAL AREA - 210m LONG: <ul style="list-style-type: none">SPECIFIC DESIGN REQUIRED.DESIGN TO CATER FOR NEEDS OF SHOPPERS, PEDESTRIANS, CYCLISTS AND MOTORISTS USING THE AREA.CONSIDERATION TO EXISTING ABOVE AND BELOW GROUND SERVICES REQUIRED.	H	6	0
2A	BEACH ACCESS NO 10 TO NORTH AVE - 1000m LONG - STAGE 1: <ul style="list-style-type: none">DEVELOPED UNDER KDC COASTAL WALKWAY PROJECT AS AN UNFORMED PATH.	H	1	0						10	MANGAWHAI CENTRAL DEVELOPMENT - 460m LONG: <ul style="list-style-type: none">IMPROVEMENTS BY OTHERS.	H	5	0	16	MANGAWHAI VILLAGE COMMERCIAL AREA TO SCHOOL - 410m LONG: <ul style="list-style-type: none">WIDEN/PLACE NEW PATH IN BERM.410m NEW K&C.1 ROAD CROSSING TREATMENT.14 PRIVATE DRIVEWAYS.CONSIDERATION TO EXISTING ABOVE AND BELOW GROUND SERVICES REQUIRED.	M	15	1
2B	BEACH ACCESS NO 10 TO NORTH AVE - 1000m LONG - STAGE 2: <ul style="list-style-type: none">CONCRETE PATH TO BEACH THEN SUREPAVE OR SIMILAR SOFT/PERVIOUS TREATMENT (WILL NEED EDGING).ACCESS AROUND BOAT RAMP AREA MAY NEED A HARD SURFACE TREATMENT.KEEP PATH ALIGNMENT BACK UP THE DUNE FORMATION AS FAR AS POSSIBLE TO LIMIT RISK OF EROSION.	H	16	2	7	ESTUARY DR TO BRIDGE - 330m LONG: <ul style="list-style-type: none">60% REQUIRES K&C ROAD EDGE.WIDEN/PLACE NEW PATH IN BERM.40% REQUIRES CANTILEVERED PATH WITH HAND RAIL (PREVENT IMPLICATIONS FILLING INTO THE ESTUARY).100M OF GUARD RAIL.POTENTIALLY 7-8 PRIVATE ACCESS WAYS WHICH MAY HAVE GRADIENT IMPLICATIONS.MAY REQUIRE LARGE TREE REMOVAL.TRIMMING AND ROCK PROTECTION OF EXISTING CAUSE WAY BATTER.	H	3	0	11	MANGAWHAI CENTRAL DEVELOPMENT TO CAUSE WAY - 490m LONG: <ul style="list-style-type: none">IN BERM HARD UP AGAINST PROPERTY BDY'S.MAY REQUIRE REPOSITION/MODIFICATION OF ROAD SIDE WATER TABLE DRAIN.1 PRIVATE ENTRANCE WAY.	M/H	11	1	17	SCHOOL TO BRIDGE - 440m LONG: <ul style="list-style-type: none">REDUCE LANE WIDTHS.PLACE NEW K&C AND GUARD RAIL ON CAUSE WAY.ROCK PROTECTION OF BATTER TO TIDAL ZONE.	M	19	3
3	NORTH AVE TO WOOD ST COMMERCIAL AREA - 790m LONG: <ul style="list-style-type: none">WIDEN/PLACE NEW PATH IN BERM.UP TO 30++ PRIVATE ENTRANCE CROSSINGS.UP TO 3 ROAD CROSSING TREATMENTS REQUIRED.CONSIDERATION TO EXISTING ABOVE AND BELOW GROUND SERVICES REQUIRED.	H	8	1						12	CAUSE WAY - 110m LONG: <ul style="list-style-type: none">110m ACROSS CAUSE WAY.200m OF CANTILEVERED PATH WITH HAND RAIL OVER CAUSE WAY.ROCK PROTECTION OF BATTER TO TIDAL ZONE.	M/H	12	1	18	BRIDGE - 40m LONG: <ul style="list-style-type: none">NEW FOOT BRIDGE CANTILEVERED OFF EXISTING OR NEW SINGLE SPAN?	M	20	3
4	WOOD ST (MANGAWHAI TOWN CENTRE) - 80m LONG: <ul style="list-style-type: none">SPECIFIC DESIGN REQUIRED.DESIGN TO CATER FOR NEEDS OF SHOPPERS, PEDESTRIANS, CYCLISTS AND MOTORISTS USING THE AREA.CONSIDERATION TO EXISTING ABOVE AND BELOW GROUND SERVICES REQUIRED.	H	9	1	8	BRIDGE - 40m LONG: <ul style="list-style-type: none">NEW GUARD RAIL/FENCE ON ROAD SIDE.NEW HANDRAIL/SAFETY FENCE SPLAYED FOR MAX ROOM 1.4m HIGH.POSSIBLE WIDENING TO A BETTER USABLE WIDTH?	L	22	3	13	CAUSE WAY TO PEARSON ST - 630m LONG: <ul style="list-style-type: none">IN BERM HARD UP AGAINST PROPERTY BDY'S.MAY REQUIRE REPOSITION/MODIFICATION OF ROAD SIDE WATER TABLE DRAIN.7-8 PRIVATE ENTRANCE WAYS.50-70m CANITLEVERED PATH WITH HANDRAIL ON CORNER BEFORE PEARSON ST.	M/H	13	1	19	BRIDGE TO TOMARATA RD INTERSECTION - 100m LONG: <ul style="list-style-type: none">REDUCE LANE WIDTHS.PLACE NEW K&C AND GUARD RAIL ON CAUSE WAY.ROCK PROTECTION OF BATTER TO TIDAL ZONE.INTERSECTION IMPROVEMENTS.	M	21	3
5	WOOD ST COMMERCIAL AREA TO MOIR POINT RD - 690m LONG: <ul style="list-style-type: none">WIDEN/PLACE NEW PATH IN BERM.UP TO 25 + PRIVATE ENTRANCE CROSSINGS.UP TO 3 ROAD CROSSING TREATMENTS REQUIRED.CONSIDERATION TO EXISTING ABOVE AND BELOW GROUND SERVICES REQUIRED.	H	10	1		KEY: M = MEDIUM PRIORITY H = HIGH PRIORITY M/H = MEDIUM HIGH PRIORITY L = LOW PRIORITY				14	PEARSON ST TO MANGAWHAI VILLAGE COMMERCIAL AREA- 300m LONG: <ul style="list-style-type: none">WIDEN/PLACE NEW PATH IN BERM.290M NEW K&C.3 ROAD CROSSING TREATMENTS.7-8 COMMERCIAL AREA ACCESS WAYS AND SIMILAR NUMBER OF PRIVATE ACCESS WAYS.CONSIDERATION TO EXISTING ABOVE AND BELOW GROUND SERVICES REQUIRED.	M/H	14	1	21	MOIR ST: KAGAN AVE TO INSLEY ST - 320m LONG: <ul style="list-style-type: none">PROPOSED WORK ITEMS - AS PER WSP 2019 DESIGN.REPLACE EXISTING CONCRETE PATH WITH NEW 2.5m WIDE CONCRETE PATH.	M/H	18	2
6A	MOIR POINT RD TO ESTUARY DR - 890m LONG - STAGE 1: <ul style="list-style-type: none">BRING SHARED PATH UP TO EXISTING FOOTPATH ON MOLESWORTH DR (OUTSIDE ITM), BUT KEEP THE REST AS FOOTPATH & HAVE A CROSSING POINT INTO THE THE COMMUNITY PARK RED HATCH ROUTE.THERE WILL BE NEED TO BE 2 CROSSING POINTS - AT THE START OF SEABREEZE RD & POSSIBLY AT ITM.NOTE: THE BALANCE OF THE ROUTE ALONG MOLESWORTH DR WILL BE DONE AT LTP 2.	H	2	0															

	BY	CHECKED	DATE
DESIGN	SG/MS		11.19
DRAWN	BWP		11.19
SURVEYED			
APPROVED	MBS		30.6.20
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1 APPROVED ISSUE	30.6.20
AMENDMENT	APPRVD DATE

ENGINEERING EQUILIBRIUM INTEGRATIVE PROFESSIONAL ENGINEERING.	
JAS CIVIL LTD	
CLIENT	

TITLE		MANGAWHAI TRUNK SHARED PATH BUSINESS CASE	
PLAN			
STATUS	BUSINESS CASE	LOCAL AUTHORITY REF:	
SCALE	SHOWN	PLOT DATE	JOB
			1923-BC
SHEET	01	REVISION	1



TYPICAL SECTION
SCALE 1:200 (A3), 1:100 (A1)

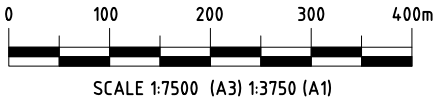
NOTES

- DO NOT SCALE DRAWING.
- NOMINAL SCALE IS SHOWN FOR A3 SIZE UNLESS SHOWN OTHERWISE.
- COORDINATES IN TERMS OF NZTM GEODETIC 2000 DATUM.
- LEVELS IN TERMS OF MEAN SEA LEVEL ONE TREE POINT DATUM.
- AERIAL PHOTOGRAPHY AND LAND PARCEL INFORMATION SOURCED FROM LAND INFORMATION NZ (LINZ) UNLESS STATED OTHERWISE.

SCHEDULE OF SHARED PATH TREATMENTS	
NODE	TREATMENT
20	2.5m WIDE OFF ROAD SHARED PATH

1 APPROVED ISSUE		30.6.20
AMENDMENT	APPROVED	DATE

PLAN
SCALE 1:7,500 (A3), 1:3,750 (A1)



SCHEDULE OF PROPOSED WORKS

20	JACK BOYD DR TO MOLESWORTH DR - URBAN SHARED PATH - TO BE DEVELOPED IN CONJUNCTION WITH SUBDIVISIONS - 2900m LONG:		PRTY	RNK	STG
	3.5m WIDE SHARED PATH GENERALLY WITHIN EXISTING ROAD RESERVE BOUNDARY		L	23	3

	BY	CHECKED	DATE
DESIGN	SG/MS		11.19
DRAWN	BWP		11.19
SURVEYED			
APPROVED	MBS		30.6.20
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ENGINEERING EQUILIBRIUM
INTEGRATIVE PROFESSIONAL ENGINEERING

JAS CIVIL LTD

KAIPARA DISTRICT

TITLE			
MANGAWHAI TRUNK SHARED PATH - BUSINESS CASE SHARED PATH TO BE DEVELOPED IN CONJUNCTION WITH SUBDIVISIONS			
PLAN			
STATUS	BUSINESS CASE	LOCAL AUTHORITY REF:	
SCALE	SHOWN	PLOT DATE	JOB
			1923-BC
		SHEET	REVISION
		02	1

Appendix G: Works schedule and estimates

Mangawhai Shared Path - Business Case - Construction Estimate

Mangawhai Shared Path - Business Case - Construction Estimate				Mangawhai Shared Path SSBC: Estimate, treatments, staging, priorities and rankings										Cumulative by 3-years					LTP Year	Priority	Ranking
Node	Location	Length m	Treatment	Construction Rate/m	Cost	Lighting Rate	Lighting cost	Total Physical works	Professional fees, consents, NTA fees @ 15%	Total	Cummulative Total	2018/21	2021/24	2024/27	2027/30	2030/33					
	Pre-implementation: Professional services.											LTP 0	LTP 1	LTP 2	LTP 3	LTP 4					
2A	Beach Access No 10 to North Ave.	1000	This will be formed in two stages. The first stage will be developed under the KDC coastal walkway project as an unformed path.	\$ 300.00	\$ 300,000.00		\$ -	\$ 300,000.00	\$ 45,000.00	\$ 345,000.00	\$ 500,000.00 \$ 845,000.00	\$ 500,000.00 \$ 845,000.00	\$ 500,000.00 \$ 845,000.00					0	High	1	
6A	Moirs Pt Rd to Estuary Dr.	890	Bring the shared path up to the existing footpath on Molesworth (outside the ITM), but keep the rest as footpath and have a crossing point into the Community Park red hatched route. There will need to be a couple of crossing points, i.e. at the start at Seabreeze and possibly at the ITM. Note the balance of the route along Molesworth for section 6 will be done at the LTP 2.	\$ 1,000.00	\$ 890,000.00	\$ 300.00	\$ 267,000.00	\$ 1,157,000.00	\$ 173,550.00	\$ 1,330,550.00	\$ 2,175,550.00	\$ 2,175,550.00						0	High	2	
7	Estuary Dr to Molesworth Drive Bridge.	330	60% requires K&C road edge, widen/place new path in berm. 40% requires cantilevered path with hand rail (prevent implications filling into the estuary)100m of guard rail. Potentially 7-8 private access ways which may have gradient implications. May require large tree removal. Trimming and rock protection of existing cause way batter.	\$ 2,000.00	\$ 660,000.00	\$ 300.00	\$ 99,000.00	\$ 759,000.00	\$ 113,850.00	\$ 872,850.00	\$ 3,048,400.00	\$ 3,048,400.00						0	High	3	
9	Molesworth Drive Bridge to Mangawhai Central development.	210	Requires cantilevered path with hand rail (prevent implications filling into the estuary)210m of guard rail. Trimming and rock protection of existing cause way batter.	\$ 2,000.00	\$ 420,000.00	\$ 300.00	\$ 63,000.00	\$ 483,000.00	\$ 72,450.00	\$ 555,450.00	\$ 3,603,850.00	\$ 3,603,850.00						0	High	4	
10	Mangawhai Central development.	460	By others.	\$ 350.00	\$ 161,000.00	\$ 300.00		\$ 161,000.00	\$ 24,150.00	\$ 185,150.00	\$ 3,789,000.00	\$ 3,789,000.00						0	High	5	
15	Mangawhai Village.	210	Specific design required to interface with pedestrians and vehicle movements through this area.	\$ 2,500.00	\$ 525,000.00	\$ 300.00	\$ 63,000.00	\$ 588,000.00	\$ 88,200.00	\$ 676,200.00	\$ 4,465,200.00	\$ 4,465,200.00						0	High	6	
1	Mangawhai Heads Beach car park south boundary Beach Access No 10	800	Engineer road lane widths to 3.0 - 3.5m, place new K&C where required(70% of length), new retaining wall back towards bdy- allow 1.5m high with fence (70% of length).	\$ 1,500.00	\$ 1,200,000.00	\$ 300.00	\$ 240,000.00	\$ 1,440,000.00	\$ 216,000.00	\$ 1,656,000.00	\$ 6,121,200.00		\$ 1,656,000.00					1	High	7	
3	North Ave to Wood St commercial area.	790	Widen/place new path in berm. Up to 30+ private entrance xings, up to 3 road crossing treatments required. Consideration to existing above and below ground services required.	\$ 700.00	\$ 553,000.00	\$ 300.00	\$ 237,000.00	\$ 790,000.00	\$ 118,500.00	\$ 908,500.00	\$ 7,029,700.00		\$ 2,564,500.00					1	High	8	
4	Wood St commercial area.	80	Specific design required to interface with pedestrians and vehicle movements through this area.	\$ 2,500.00	\$ 200,000.00	\$ 300.00	\$ 24,000.00	\$ 224,000.00	\$ 33,600.00	\$ 257,600.00	\$ 7,287,300.00		\$ 2,822,100.00					1	High	9	
5	Wood St commercial area to Moirs Pt Rd.	690	Widen/place new path in berm. Up to 25+ private entrance xings, up to 3 road crossing treatments required. Consideration to existing above and below ground services required.	\$ 1,000.00	\$ 690,000.00	\$ 300.00	\$ 207,000.00	\$ 897,000.00	\$ 134,550.00	\$ 1,031,550.00	\$ 8,318,850.00		\$ 3,853,650.00					1	High	10	
11	Mangawhai Central development to Cause Way.	490	In berm hard up against property bdy's. May require reposition/modification of road side water table drain. 200m across cause way. 1 private entrance way.	\$ 800.00	\$ 392,000.00	\$ 300.00	\$ 147,000.00	\$ 539,000.00	\$ 80,850.00	\$ 619,850.00	\$ 8,938,700.00		\$ 4,473,500.00					1	Medium - High	11	
12	Molesworth Drive Causeway.	110	Requires cantilevered path with hand rail (prevent implications filling into the estuary)110m of guard rail. Trimming and rock protection of existing cause way batter.	\$ 2,000.00	\$ 220,000.00	\$ 300.00	\$ 33,000.00	\$ 253,000.00	\$ 37,950.00	\$ 290,950.00	\$ 9,229,650.00		\$ 4,764,450.00					1	Medium - High	12	
13	Cause way to Pearson St.	630	In berm hard up against property bdy's. May require reposition/modification of road side water table drain. 7-8 private entrance ways. 50-70m cantilevered path with handrail on corner before Pearson St.	\$ 1,300.00	\$ 819,000.00	\$ 300.00	\$ 189,000.00	\$ 1,008,000.00	\$ 151,200.00	\$ 1,159,200.00	\$ 10,388,850.00		\$ 5,923,650.00					1	Medium - High	13	
14	Pearson St to Mangawhai Village.	300	Widen/place new path in berm. 3 road crossing treatments and 7-8 commercial area access ways and similar number of private access ways. Consideration to existing above and below ground services required.	\$ 1,000.00	\$ 300,000.00	\$ 300.00	\$ 90,000.00	\$ 390,000.00	\$ 58,500.00	\$ 448,500.00	\$ 13,910,150.00		\$ 6,372,150.00					1	Medium - High	14	
16	Mangawhai Village to Mangawhai Beach School.	410	Widen/place new path in berm. 410m new K&C. A number of private access ways. Consideration to existing above and below ground services required.	\$ 1,200.00	\$ 492,000.00	\$ 300.00	\$ 123,000.00	\$ 615,000.00	\$ 92,250.00	\$ 707,250.00	\$ 11,096,100.00		\$ 7,079,400.00					1	Medium	15	
28	Beach Access No 10 to North Ave.	1000	Concrete path to beach then Surepave or similar soft/pervious treatment (will need edging), access around boat ramp area maybe a hard surface treatment. Keep path alignment back up the dune formation as far as possible to limit risk of erosion.	\$ 600.00	\$ 600,000.00	\$ 300.00	\$ 300,000.00	\$ 900,000.00	\$ 135,000.00	\$ 1,035,000.00	\$ 12,131,100.00			\$ 1,035,000.00				2	High	16	
68	Moirs Pt Rd to Estuary Dr.	890	K&C road edge, widen/place new path in berm. Numerous commercial entrance way to cross with difficult gradients and limited sight lines, up to 3 road crossing treatments required. Retaining wall up to 1.5m high may be required for 20% of the route. Consideration to existing above and below ground services required, may require large tree removal and may also loose minor off street parking.	\$ 1,000.00	\$ 890,000.00	\$ 300.00	\$ 267,000.00	\$ 1,157,000.00	\$ 173,550.00	\$ 1,330,550.00	\$ 13,461,650.00			\$ 2,365,550.00				2	High	17	
21	Moir Street: Kagan Avenue to Inisley Street	320	As per WSP 2019 design. Replace existing path with new 2.5m concrete path.	\$ 1,200.00	\$ 384,000.00	\$ 300.00	\$ 96,000.00	\$ 480,000.00	\$ 72,000.00	\$ 552,000.00	\$ 14,462,150.00			\$ 2,917,550.00				2	Medium - High	18	
17	School to Tomarata Bridge.	440	Reduce lane widths, place new K&C and guard rail on cause way. Rock protection of batter to tidal zone.	\$ 2,000.00	\$ 880,000.00	\$ 300.00	\$ 132,000.00	\$ 1,012,000.00	\$ 151,800.00	\$ 1,163,800.00	\$ 15,625,950.00					\$ 1,163,800.00		3	Medium	19	
18	Tomarata Bridge.	40	New foot bridge. Cantilevered off existing or new single span.		\$ 500,000.00	\$ 300.00	\$ 12,000.00	\$ 512,000.00	\$ 76,800.00	\$ 588,800.00	\$ 16,214,750.00					\$ 1,752,600.00		3	Medium	20	
19	Tomarata Bridge to Tomarata Rd Intersection.	100	Reduce lane widths, place new K&C and guard rail on cause way. Rock protection of batter to tidal zone. Intersection improvements.	\$ 2,000.00	\$ 200,000.00	\$ 300.00	\$ 30,000.00	\$ 230,000.00	\$ 34,500.00	\$ 264,500.00	\$ 16,479,250.00					\$ 2,017,100.00		3	Medium	21	
8	Molesworth Drive Bridge.	40	New guard rail/fence on road side, new handrail/safety fence splayed for max room 1.4m high. Possible widening to a better usable width.	\$ 2,500.00	\$ 100,000.00	\$ 300.00	\$ 12,000.00	\$ 112,000.00	\$ 16,800.00	\$ 128,800.00	\$ 16,608,050.00					\$ 2,145,900.00		3	Low	22	
20	Contribution to Jack Boyd Dr connection.		To be developed in conjunction with subdivisions, to link the Jack Boyd Drive suburb with Mangawhai, via a urban standard shared path, which will generally follow the existing Legal Unformed Roads (paper roads).					\$ 173,913.04	\$ 26,086.96	\$ 200,000.00	\$ 16,808,050.00					\$ 2,345,900.00		3	Low	23	
Totals				10230			\$ 11,376,000.00		\$ 2,631,000.00	\$ 14,180,913.04	\$ 2,127,136.96	\$ 16,808,050.00		\$ 4,465,200.00	\$ 7,079,400.00	\$ 2,917,550.00	\$ 2,345,900.00	0			

Preliminary project estimate completed based on recent costs from similar projects in Whangarei and Mangawhai. Particular reference has been made to the costs of Stages 3 and 4 of the Kamo Shared Path in Whangarei, that was completed in 2019, along with the previously completed Stages 1 and 2, and the Raumanga and Riverside Drive Shared Paths. Comparative rates for current footpath construction in both Whangarei and Mangawhai have been used.

Detailed cost estimates and contingencies to be identified during pre-implementation.

Anticipated expenditure													
	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30			
Pre-implementation	\$ 500,000.00												
Implementation (incl. contingency)	\$ 3,448,000.00	\$ 2,230,000.00	\$ 1,913,000.00	\$ 2,013,000.00	\$ 900,000.00	\$ 1,157,000.00	\$ 480,000.00	\$ 1,012,000.00	\$ 512,000.00	\$ 515,913.04			
Professional fees, consents, NTA fees @ 12.4%	\$ 427,552.00	\$ 276,520.00	\$ 237,212.00	\$ 249,612.00	\$ 111,600.00	\$ 143,468.00	\$ 59,520.00	\$ 125,488.00	\$ 63,488.00	\$ 63,973.22			
Administration fee @2.6%	\$ 89,648.00	\$ 57,980.00	\$ 49,738.00	\$ 52,338.00	\$ 23,400.00	\$ 30,082.00	\$ 12,480.00	\$ 26,312.00	\$ 13,312.00	\$ 13,413.74		Check	
Total cost	\$ 4,465,200.00	\$ 2,564,500.00	\$ 2,199,950.00	\$ 2,314,950.00	\$ 1,035,000.00	\$ 1,330,550.00	\$ 552,000.00	\$ 1,163,800.00	\$ 588,800.00	\$ 593,300.00		\$ 16,808,050.00	
NLTF share at 61% FAR	\$ 2,723,772.00	\$ 1,564,345.00	\$ 1,341,969.50	\$ 1,412,119.50	\$ 631,350.00	\$ 811,635.50	\$ 336,720.00	\$ 709,918.00	\$ 359,168.00	\$ 361,913.00			
Local share at 39%	\$ 1,741,428.00	\$ 1,000,155.00	\$ 857,980.50	\$ 902,830.50	\$ 403,650.00	\$ 518,914.50	\$ 215,280.00	\$ 453,882.00	\$ 229,632.00	\$ 231,387.00			
Full programme	\$ 16,808,050.00												
2018/24 programme								\$ 11,544,600.00					
Pre Imp consultancy fees	Pro-rata	Base	Cont	Total	Funding Risk				Cont	Total	Funding Risk		
NZTA costs	\$ 413,333.33	\$ 359,420.29	\$ 53,913.04	\$ 413,333.33	\$ 71,884.06				\$ 413,333.33	\$ 359,420.29	\$ 53,913.04	\$ 413,333.33	\$ 71,884.06
	\$ 86,666.67	\$ 75,362.32	\$ 11,304.35	\$ 86,666.67	\$ 15,072.46				\$ 86,666.67	\$ 75,362.32	\$ 11,304.35	\$ 86,666.67	\$ 15,072.46
Imp Consultancy Fees	\$ 1,758,433.22	\$ 1,529,072.36	\$ 229,360.85	\$ 1,758,433.22	\$ 382,268.09				\$ 1,190,896.00	\$ 1,035,561.74	\$ 153,324.26	\$ 1,190,896.00	\$ 258,890.43
IMP NZTA costs	\$ 368,703.74	\$ 320,611.95	\$ 48,091.79	\$ 368,703.74	\$ 80,152.99				\$ 249,704.00	\$ 217,133.91	\$ 32,570.09	\$ 249,704.00	\$ 54,283.48
Environmental Compliance	5%	\$ 709,045.65	\$ 616,561.44	\$ 92,484.22	\$ 709,045.65	\$ 61,656.14			\$ 480,200.00	\$ 417,565.22	\$ 62,634.78	\$ 480,200.00	\$ 41,756.52
Earthworks	14%	\$ 1,985,327.83	\$ 1,726,372.02	\$ 258,955.80	\$ 1,985,327.83	\$ 258,955.80			\$ 1,344,560.00	\$ 1,169,182.61	\$ 173,377.39	\$ 1,344,560.00	\$ 173,377.39
Ground Improvements	0%	\$ -	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	\$ -	\$ -
Drainage	3%	\$ 425,427.39	\$ 369,936.86	\$ 55,490.53	\$ 425,427.39	\$ 36,993.69			\$ 288,120.00	\$ 250,539.13	\$ 37,580.87	\$ 288,120.00	\$ 25,053.91
Pavement and Surfacing	16%	\$ 2,268,946.09	\$ 1,972,996.60	\$ 295,949.49	\$ 2,268,946.09	\$ 295,949.49			\$ 1,536,640.00	\$ 1,336,208.70	\$ 200,431.30	\$ 1,536,640.00	\$ 200,431.30
Bridges	0%	\$ -	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	\$ -	\$ -
Retaining Walls	18%	\$ 2,552,564.35	\$ 2,219,621.17	\$ 332,943.18	\$ 2,552,564.35	\$ 554,905.29			\$ 1,728,720.00	\$ 1,506,234.78	\$ 225,465.22	\$ 1,728,720.00	\$ 375,806.70
Traffic Services	20%	\$ 2,836,182.61	\$ 2,466,245.75	\$ 369,936.86	\$ 2,836,182.61	\$ 246,624.57			\$ 1,920,800.00	\$ 1,670,260.87	\$ 250,539.13	\$ 1,920,800.00	\$ 167,026.09
Service Relocations	7%	\$ 992,663.91	\$ 863,186.01	\$ 129,477.90	\$ 992,663.91	\$ 129,477.90			\$ 672,280.00	\$ 584,591.30	\$ 87,688.70	\$ 672,280.00	\$ 87,688.70
Landscaping	7%	\$ 992,663.91	\$ 863,186.01	\$ 129,477.90	\$ 992,663.91	\$ 129,477.90			\$ 672,280.00	\$ 584,591.30	\$ 87,688.70	\$ 672,280.00	\$ 87,688.70
Traffic Management and TW	5%	\$ 709,045.65	\$ 616,561.44	\$ 92,484.22	\$ 709,045.65	\$ 92,484.22			\$ 480,200.00	\$ 417,565.22	\$ 62,634.78	\$ 480,200.00	\$ 62,634.78
Preliminary and General	5%	\$ 709,045.65	\$ 616,561.44	\$ 92,484.22	\$ 709,045.65	\$ 92,484.22			\$ 480,200.00	\$ 417,565.22	\$ 62,634.78	\$ 480,200.00	\$ 62,634.78
Check	100%	\$ 16,808,050.00	\$ 14,615,695.65	\$ 2,192,354.35	\$ 16,808,050.00			\$ 11,544,600.00	\$ 10,038,782.61	\$ 1,505,817.39	\$ 11,544,600.00		

Project Estimate - Form C

DBE

Project Name: Mangawhai Shared Path - Full Programme

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	-	-	-
B	Project Development Phase			
	- Consultancy Fees		-	
	- NZTA Managed Costs		-	
B	Total Project Development	-	-	
C	Pre-implementation Phase			
	- Consultancy Fees	359,420	53,913	71,884
	- NZTA Managed Costs	75,362	11,304	15,072
C	Total Pre-implementation	434,783	65,217	86,957
	Implementation Phase			
	Implementation Fees			
	- Consultancy Fees	1,529,072	229,361	382,268
	- NZTA Managed Costs	320,612	48,092	80,153
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	1,849,684	277,453	462,421
	Physical Works			
	1 Environmental Compliance	616,561	92,484	61,656
	2 Earthworks	1,726,372	258,956	258,956
	3 Ground Improvements	-	-	-
	4 Drainage	369,937	55,491	55,491
	5 Pavement and Surfacing	1,972,997	295,949	197,300
	6 Bridges	-	-	-
	7 Retaining Walls	2,219,621	332,943	554,905
	8 Traffic Services	2,466,246	369,937	246,625
	9 Service Relocations	863,186	129,478	-
	10 Landscaping	863,186	129,478	86,319
	11 Traffic Management and Temporary Works	616,561	92,484	92,484
	12 Preliminary and General	616,561	92,484	92,484
				-
	Sub Total Base Physical works	12,331,229	1,849,684	1,646,219
D	Total for Implementation Phase	14,180,913	2,127,137	2,195,597
E	Project Base Estimate (A+C+D)	14,615,696		
F	Contingency (Assessed/Analysed) (A+C+D)		2,192,354	
G	Project Expected Estimate (E+F)		16,808,050	
Nett Project Property Cost Expected Estimate				
Project Development Phase Expected Estimate				
Pre-implementation Phase Expected Estimate				
Implementation Phase Expected Estimate				
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			2,195,597
I	95th percentile Project Estimate (G+H)			19,003,647
Nett Project Property Cost 95th percentile Estimate				
Project Development Phase 95th percentile Estimate				
Pre-implementation Phase 95th percentile Estimate				
Implementation Phase 95th percentile Estimate				

Date of Estimate	6-Jul
Estimate prepared by	S Gwilliam
Estimate internal peer review by	M Seakins
Estimate external peer review by	n/a
Estimate accepted by NZTA	

Note: (1) These estimates are exclusive of escalation and GST.
(2) Project Development Phase Estimates are set to Nil as these are now sunk costs.

Project Estimate - Form C

DBE

Project Name: Mangawhai Shared Path - 2018/24 Programme

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	-	-	-
B	Project Development Phase			
	- Consultancy Fees		-	
	- NZTA Managed Costs		-	
B	Total Project Development	-	-	
C	Pre-implementation Phase			
	- Consultancy Fees	359,420	53,913	71,884
	- NZTA Managed Costs	75,362	11,304	15,072
C	Total Pre-implementation	434,783	65,217	86,957
	Implementation Phase			
	Implementation Fees			
	- Consultancy Fees	1,035,562	155,334	258,890
	- NZTA Managed Costs	217,134	32,570	54,283
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	1,252,696	187,904	313,174
	Physical Works			
	1 Environmental Compliance	417,565	62,635	41,757
	2 Earthworks	1,169,183	175,377	175,377
	3 Ground Improvements	-	-	-
	4 Drainage	250,539	37,581	37,581
	5 Pavement and Surfacing	1,336,209	200,431	133,621
	6 Bridges	-	-	-
	7 Retaining Walls	1,503,235	225,485	375,809
	8 Traffic Services	1,670,261	250,539	167,026
	9 Service Relocations	584,591	87,689	-
	10 Landscaping	584,591	87,689	58,459
	11 Traffic Management and Temporary Works	417,565	62,635	62,635
	12 Preliminary and General	417,565	62,635	62,635
				-
	Sub Total Base Physical works	8,351,304	1,252,696	1,114,899
D	Total for Implementation Phase	9,604,000	1,440,600	1,515,030
E	Project Base Estimate (A+C+D)	10,038,783		
F	Contingency (Assessed/Analysed) (A+C+D)		1,505,817	
G	Project Expected Estimate (E+F)		11,544,600	
Nett Project Property Cost Expected Estimate				
Project Development Phase Expected Estimate				
Pre-implementation Phase Expected Estimate				
Implementation Phase Expected Estimate				
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			1,515,030
I	95th percentile Project Estimate (G+H)			13,059,630
Nett Project Property Cost 95th percentile Estimate				
Project Development Phase 95th percentile Estimate				
Pre-implementation Phase 95th percentile Estimate				
Implementation Phase 95th percentile Estimate				

Date of Estimate	6-Jul
Estimate prepared by	S Gwilliam
Estimate internal peer review by	M Seakins
Estimate external peer review by	n/a
Estimate accepted by NZTA	

Note: (1) These estimates are exclusive of escalation and GST.
(2) Project Development Phase Estimates are set to Nil as these are now sunk costs.

Appendix H: Peer Review and response

Mangawhai Shared Path SSBC

Peer Review

8 June 2020





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Project: Mangawhai Shared Path
Report title: Peer Review
Document reference: J001586
Date: 8 June 2020

REPORT STATUS	PREPARED BY	REVIEWED BY	APPROVED BY
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TABLE OF CONTENTS

Peer Review Findings.....	2
1 Introduction.....	3
1.1 Purpose.....	3
1.2 Review Guidelines.....	3
2 General.....	4
2.1 Overview.....	4
2.2 Strategic Case.....	4
2.3 Option Selection.....	4
2.4 Project Affordability.....	5
2.5 Next Steps (Management Case).....	5
3 Specific Peer Review Topics.....	6
3.1 Conformity.....	6
3.2 Credibility.....	6
3.3 Choice of do-minimum.....	7
3.4 Identification and selection of alternatives and options.....	7
3.5 Strategic fit rating.....	7
3.6 Effectiveness rating.....	7
3.7 Cost estimate(s).....	7
3.8 Benefit and cost appraisal and rating.....	7
3.9 Risk assessment, analysis and mitigation.....	8
3.10 Sensitivity analysis.....	8
4 Conclusion.....	9

PEER REVIEW FINDINGS

Based on the review undertaken the following conclusions are made:

- The SSBC generally covers the elements expected for a project of this scale and at the SSBC phase. The document is easy to understand and at a commensurate level of detail given the scale and complexity of the project.
- The economics have been appropriately calculated.
- The recommended option is well considered and appropriate based on the assessment undertaken.

There is currently pressure on funding within the NLTF and therefore the following suggestions are proposed for consideration to potentially strengthen the investment case for investors:

- Greater explanation of the opportunity for a very high active mode share in Mangawhai given its scale, terrain and coastal population
- The option assessment and subsequent conclusions could be strengthened with greater description of the reason for selection of the preferred option
- Greater description of the outcomes achieved by the recommended option, including increased safety and also what levels of mode share are predicted
- Increased confidence in the project costs could be provided through comparative analysis with similar projects
- Greater breakdown of the costs by project stage, including design, consenting (if any), construction and client costs

The final recommendation from the peer review is that the investor not only be given the proposed 10 years staging, but also is provided with a much shorter continuous implementation option. This is considered important, as whilst there are potential affordability challenges at present, the option of full investment should at least be offered as this will deliver stronger and more immediate benefits to the community and users.

1 INTRODUCTION

1.1 PURPOSE

The following report summarises the findings of an independent peer review of the Mangawhai SSBC undertaken by Kaipara District Council.

The review has been based on the Waka Kotahi business case peer review guidelines and based upon the following documentation:

- Mangawhai Shared Path Single Stage Business Case – Revision v6, June 2020

The review was undertaken by Tony Innes from Commute.

1.2 REVIEW GUIDELINES

The Waka Kotahi business case peer review guidelines¹ have been used as the basis of this review. These peer review guidelines set out:

...the factors that must be taken into account, at a minimum, when undertaking a peer review of improvement projects. The peer review must include at least a review of the:

- *conformity*
- *credibility*
- *choice of do-minimum*
- *identification and selection of alternatives and options*
- *strategic fit rating*
- *effectiveness rating*
- *cost estimate(s)*
- *benefit and cost appraisal and rating*
- *risk assessment, analysis and mitigation*
- *sensitivity analysis.*

These topics have been used as the basis of the structure for this report.

¹ <https://www.nzta.govt.nz/planning-and-investment/planning-and-investment-knowledge-base/pikb-archive/2015-18-nltp/2015-18-nltp-assessment-framework/ensuring-robust-assessment/peer-review-of-improvement-projects/>.

2 GENERAL

2.1 OVERVIEW

In general, the SSBC is clearly written, easy to follow and understand how the different conclusions have been made. The following high-level review comments are provided to provide focus to the peer review:

- The case for the project is clearly articulated and supported by regional policy, planning documents, good transport practise, the emerging Network Operating Framework and the community.
- Whilst the selected option makes sense, there could be enhanced justification for its selection - Further details on Option 2 have been added to Section 7.2.
- The affordability of the project is an area of focus as the incremental BCR is 1.0
- Greater clarity could be provided with regard to the next steps Further design development issues have been added to Section 7.2 for the preferred option.

The recommendation of the SSBC is sound and is supported by the peer reviewer.

2.2 STRATEGIC CASE

The SSBC clearly outlines the case for the project, bringing together existing documentation and policy that sets out the historical case for the project. There is also recent specific evidence on the identified problems and investment objectives. There is a demonstrated need for the project that is consistent with local policy and planning documents as well as there being strong support for the project from the community.

2.3 OPTION SELECTION

A two-step option assessment (MCA) process has been used, with Alternative 5 selected as the preferred, being a dedicated shared path. Two 'sub-options' of this shared path (2.5m vs 3.5m) were then considered in more detail.

Whilst it makes sense that Alternative 5 was the appropriate option to select at the first stage, further commentary and justification is recommended. Additional explanation has been added to Section 6.1.

Section 7 outlines the second assessment step. It is recommended that an explanatory paragraph on this process is included to make it clearer to the reader. As with Alternative 5, the reviewer agrees with the outcome of this assessment, however more justification is recommended. Additional explanation has been added to the introduction to Section 7.

It is also noted that Table 5 may need to be amended as it currently reads that Option 1 performs worse than Alternative 5 in Table 3, which doesn't seem right unless Alternative 5 assumed Option 2?

This was an error and has been corrected, Alternative 5 should have read Option 2.

Option 2 as the preferred option, whilst more expensive, is better aligned with the Waka Kotahi guidelines and provides a higher level of service which will be important for a location such as Mangawhai where seasonal differences can be significant. Further explanation for the 3.5 width has been added to Section 7.2.

It is also recommended that there is more discussion on the outcomes that will be delivered by the project (or forecast to be as per the KPIs) as the potential mode share and safety outcomes (particularly in summer) should be highlighted more to the investor. An additional investment performance measure has been added to Table 2 for mode share. Safety outcomes will be a function of good design and will be covered through the road safety auditing procedures.

The above comments are suggested improvements to enhance the story as the conclusion of the assessment process is considered appropriate.

2.4 PROJECT AFFORDABILITY

The recommended option (3.5m off road shared path) has a forecast cost of \$16.8M. This is an order of magnitude greater than the 2.5m off road shared path option.

It appears that the costings have been based on metre rates which is quite high level for a SSBC. It is therefore considered important that greater certainty of the final cost is provided in the SSBC. It is recommended that this is done through a cost comparison with other cycle way projects delivered by Northland Transportation Alliance (NTA). Whilst a detailed cost estimate review has not been undertaken this cost does not seem inappropriate and the use of different rates for different sections make good sense. Greater certainty of these costs could however be provided through comparison with other projects in the region². Further explanation has been added to the estimate spreadsheet in Appendix E and risk register in Table 12.

The peer reviewer would also suggest breaking the costs down into the more traditional project phases, including design, consenting, property and capital cost as well as contingency and client managed costs in the main body of the report as this will provide useful information for the investor decision makers. This has been added to Section 12.1 and the estimate spreadsheet in Appendix E.

Details on the economic review can be found in Section 3.8.

The SSBC outlines part of the reason for staging the project over the next 10 years is due to potential affordability requirements. The peer reviewer is not as close to these affordability constraints as the SSBC team, however suggests that the investor (decision maker) is at least given the option of approving the full expenditure as this project will provide good benefit to the community and users and improve active mode share and safety in the area and the sooner this project is in place in its entirety the sooner these full benefits are going to be realised. The current staging is based on advice provided by KDC around the affordability of the local share. The benefits of earlier delivery are acknowledged.

2.5 NEXT STEPS (MANAGEMENT CASE)

Whilst it is acknowledged that this is a relatively straight forward project to implement, further discussion is recommended to consider:

- Confirming if consents are required and if so, how will this be done - added to Table 12 as a risk.
- Confirming earlier indications in the SSBC on how the design will be developed - added to Section 7.2.
- Outline how the contracts will be structured in relation to staging - this is yet to be determined by the NTA.
- Inclusion of communications and engagement strategy for the works and the importance of this. Particularly in relation to the property issues in the road reserve which could generate some interesting situations that will require careful management. - this is outlined in principle in Section 5.1.1 and will be developed further during the pre-implementation stage.

The above suggestions are outlined to enhance the Part 2 section.

² Peer reviewer has access to costs that are for Auckland based urban shared paths and as such not considered to be comparable to this project.

3 SPECIFIC PEER REVIEW TOPICS

3.1 CONFORMITY

The project is a walking and cycling project which clearly sits within the walking and cycling improvement activity class.

3.2 CREDIBILITY

The guidelines indicate that the peer review must check the credibility of the business case as per the following.

To check credibility, the reviewer must:

- *Ensure the transport issue, priority or opportunity has been identified, is reasonable and is adequately described.*
- *Critically assess the results of each stage of the project's economic efficiency evaluation, avoiding unnecessary detail where possible. The test as to the level of detail to consider is whether the conclusion reached in the report is a reasonable and a credible result from the information and data used in the analysis.*
- *Assess the costs estimated for the project and consider how realistic these are, taking into account current market rates.*
- *Identify the key benefits and determine whether they are realistic (e.g. are the travel time savings realistic or are excessive delays being forecast under congested conditions in the do-minimum?). Some quick 'back-of-the-envelope' calculations are necessary to check the level of forecast benefits.*
- *Identify the factors or assumptions - particularly forecasted estimates that have a major influence on the evaluation. Describe each of these factors/assumptions and include a commentary on the sensitivity of the evaluation to each factor or assumption.*
- *Highlight any significant areas of risk for costs and benefits*

The SSBC clearly outlines the case for the project, bringing together existing documentation and policy that sets out the historical case for the project. There is also recent specific evidence on the identified problems and investment objectives. There is a clear need for the project that is consistent with local policy and planning documents as well as there being strong support for the project from the community.

As outlined in the previous section, the MCA has outlined the option selection which is considered appropriate. Increased justification could be detailed, however the option selected makes sense and has justification. **See comments @ 2.3.**

The cost estimates are considered likely to be appropriate, however a comparison of other non-urban projects is recommended to provide increased confidence. **Further explanation has been added to the estimate spreadsheet in Appendix E and risk register in Table 12.**

The level of benefits forecast seem appropriate for the project proposed.

Mangawhai is an area of high growth and this could impact on the forecast usage of the project. This growth and the assumption that the patronage will grow at a rate double the growth rate are important assumptions. However these are not considered by the reviewer to be inappropriate..

Additional information on the spatial planning for Mangawhai has been added to Section 2.3.5. As outlined previously in this report, there are a couple of implementation risks. One such risk, is related to existing property owners occupying the current road reserve. It is considered that this could be managed through communication and engagement strategies. **Agreed, added as a risk to Table 12.**

Another key implementation issue relates to the potential risk of benefits being reduced due to the staged implementation of the project. The full project provides a much greater facility, a greater ability to change travel behaviour and provide a safe environment for users. As such it is recommended that the full (non-staged) option should also be provided to investors for consideration. **The current staging is based on advice provided by KDC around the affordability of the local share. The benefits of earlier delivery are acknowledged.**

3.3 CHOICE OF DO-MINIMUM

The 'Do Minimum' of no project being in place is appropriate.

3.4 IDENTIFICATION AND SELECTION OF ALTERNATIVES AND OPTIONS

As outlined in the previous sections an appropriate level of option development and assessment has been undertaken to identify the recommended option.

3.5 STRATEGIC FIT RATING

The peer reviewer agrees that the project meets the criteria for a **HIGH** rating, meeting the criteria related to:

- School Access
- Mode shift

3.6 EFFECTIVENESS RATING

Not applicable with new NLTP Results Alignment approach.

3.7 COST ESTIMATE(S)

The cost estimate appears to be of the appropriate order of magnitude, however further comparison with similar projects would assist with confidence in the cost levels. **Further explanation has been added to the estimate spreadsheet in Appendix E and risk register in Table 12.**

3.8 BENEFIT AND COST APPRAISAL AND RATING

An independent review of the project economics has been undertaken as part of this review. This included reviewing the detailed economic spreadsheets provided by the project team and undertaken by Mark Seakins. The outcome of this review is as follows:

- The spreadsheets provided were easy to follow and clearly set out, with assumptions able to be checked efficiently
- The application of the discounting has been applied correctly
- The calculation of the travel time, health and safety benefits have been calculated correctly and using the correct factors from the EEM
- The apportionment of these benefits based on completed length of project is considered appropriate, however this is based on the assumption that the project will be open as sections are completed. This is considered appropriate; however a full year of benefits is assumed in year one, which is likely to overstate the benefits as the construction will not be instantaneous in the first year.
- The safety benefits have assumed 40% and 50% accident savings for the two options which are considered appropriate.
- The demands upon which the benefits are based are based on population predictions and forecast growth rates. The assumption that the active mode share will grow at twice this growth rate is not considered inappropriate. The resultant demands forecast are not considered excessive. In fact we consider that the demands upon which the economics are

based are quite conservative as they do not take account of the summer peak which for a coastal community such as Mangawhai could be significant.

- Costs have been spread over a number of years
- The sensitivity tests undertaken are considered appropriate and correctly applied
- The BCR and incremental BCR have been calculated correctly

Overall, it is considered that the application of the EEM methods and calculations has been done appropriately. There is likely to be a slight over estimation in the benefits in Year 1 based on how the benefits have been applied to Year 1 at the same time as costs, however this over estimate is more than compensated for by the likely underestimate in the scale of the benefits as a result of not including the known summer peak. **Agreed. Unfortunately historical sessional traffic counts are not available and are now being tasked for collection.**

3.9 RISK ASSESSMENT, ANALYSIS AND MITIGATION

There has been limited risk assessment undertaken, however this is appropriate for a project of this scale and complexity. No substantive risks apart from those already outlined are envisaged. Whilst this project will have some implementation challenges, particularly related to fitting within the existing road reserve, this can be addressed through good design and implementation management which NTA have done recently on the Kamo shared path. **Table 12 has been updated to include the additional risks raised in this peer review.**

3.10 SENSITIVITY ANALYSIS

It is not considered that there are any particularly critical assumptions that required detailed sensitivity testing. The economics has undertaken appropriate sensitivity tests.

4 CONCLUSION

Based on the review undertaken the following conclusions are made:

- The SSBC generally covers the elements expected for a project of this scale and at the SSBC phase. The document is easy to understand and at a commensurate level of detail given the scale and complexity of the project.
- The economics have been appropriately calculated.
- The recommended option is well considered and appropriate based on the assessment undertaken.

There is currently pressure on funding within the NLTF and therefore the following suggestions are proposed for consideration to potentially strengthen the investment case for investors:

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- Increased confidence in the project costs could be provided through comparative analysis with similar projects
- Greater breakdown of the costs by project stage, including design, consenting (if any), construction and client costs

The final recommendation from the peer review is that the investor not only be given the proposed 10 years staging, but also is provided with a much shorter continuous implementation option. This is considered important, as whilst there are potential affordability challenges at present, the option of full investment should at least be offered as this will deliver stronger and more immediate benefits to the community and users.