

# SANDSPIT ROAD UPGRADE – RECOMMENDED OPTION

## RECOMMENDED OPTION



- 24m corridor with dedicated cycling facilities in both directions
- 20m corridor with dedicated cycling facilities in both directions
- Active mode boardwalk to the south of the existing road

### INTERDEPENDENCES

- Hill Street Intersection Design
- New Sandspit Link Road
- Asset renewal of the western culvert ~30 years

### RISKS

- Topographically challenging construction environment.
- Timing and integration with Hill Street Upgrades
- Sensitive ecological receiving areas ( QEII covenanted area

### OPPORTUNITIES

- The boardwalk is an interim (20-30 year) solution able to respond to planned land use changes. Integration of active mode facilities can be delivered when stormwater infrastructure upgrades occur (30+ years)

## PROJECT ALIGNMENT

Investment Objectives		Alignment
Access	Improve access to economic and social opportunities by providing an integrated multi-modal corridor along Sandspit Road	Existing rural corridor is upgraded to a multimodal urban arterial. The new walking and cycling paths will improve access for the future residential zoning to the Warkworth Town centre helping to reduce the need for private vehicle trips for short distances.
Travel Choice	Enable transformational mode share in Puhinui Warkworth by providing a high quality, low carbon transport network.	Provision of a contiguous active mode facility to connect into the wider Warkworth active mode network and directly access Warkworth Town Centre by active mode.
Safety	Provide improvements on Sandspit Road that contribute to a transport network that is free from deaths and serious injuries.	Improved active mode safety through dedicated facilities.
Integration	Provide corridor protection to support planned growth and flexibly enable future land use and transport integration	Intersection upgrades to support active mode permeability across the corridor. Integrates with planned/ constructed projects at Hill Street.
Contribution to climate change response		
Climate Change	Supporting transformation to a low carbon transport system by connecting the new growth areas to the core active mode networks and support travel choice to Warkworth Town Centre.	

## Project 8





# NEW WESTERN LINK ROAD NORTH – PRELIMINARY ASSESSMENT

## PROJECT #8



## GAP ANALYSIS

- Warkworth DBC reconfirms need for IBC Indicative Transport Network alignment. Further route refinement required for alignment.

## LAND USE



- Future Urban Zone
- Business – Local centre zone
- Business- Mixed Use Zone
- Residential Mixed House Urban Zone
- Residential Mixed House Suburban Zone
- Land use a mix of residential and business zones resulting from adoption of Plan Change 25.

## PURPOSE

- Key north-south multimodal connection to provide access to North Warkworth Precinct.
- Alternative route to existing SH1 and Hill Street Intersection.
- Provision for future bus priority.
- Active mode spine to connect people to key social and economic destinations.

## CONSTRAINTS



- A number of permanent streams to be crossed in the study area.
- Mapped in Warkworth Structures Plan as having "large active or inactive landslides" present and "high risk" of slope instability.

## FORM AND FUNCTION ASSESSMENT

- New corridor to unlock growth. Will initially be developed as a two lane corridor with future proofing to be upgraded in the longer term to provide bus priority.
- Cross sections could be up to 30m and may vary in response to adjacent land use. Some examples below.

## FUTURE CROSS SECTION OPTIONS



## CLIMATE CHANGE ASSESSMENT

- This project can not be eliminated as the link is required to provide access to the Northern Public Transport Interchange, support walk up bus catchments for the northern growth area and provide a critical north-south active mode link.
- The multimodal nature of the corridor will support mode shift and a reduction in an enabled carbon emissions.



# NEW WESTERN LINK ROAD NORTH – EMERGING PREFERRED OPTION DEVELOPMENT

## DBC OPTION DEVELOPMENT

- Corridor alignment has been caucused through the Environment Court in association with Plan Change 25.
- Gap analysis and constraint mapping by Te Tupu Ngātahi does not identify any new issues that would challenge this indicative route.
- Therefore, no alternative optioneering is required for the corridor alignment of this corridor.**

## WHAT IS THE PROJECT FOR THIS DBC?

- Third parties will initially be delivering a two-lane cross section within the live zoned land for Western Link Road North to enable development in Warkworth North. Noting that:
  - Corridor is provided for in the Warkworth North Precinct Plan which is operative under the unitary plan.
  - Conditions provide for sufficient setback to allow future upgrading to four lanes with dedicated cycle facilities on both sides.
  - Precinct Plan fixes the network connection points at either end of the route being Tūhonohono ki Tai (Matakana Link Road) intersection to the north and Mansel Drive/Falls Road intersection to the south.
  - The alignment and design will be confirmed through the usual AT processes.
- The project considered in this DBC is widening the third-party alignment to four lanes to provide for future bus priority.**
  - No specific design is being undertaken on this corridor by SGA and the project is being priced on widening from 24m to 30m cross section using unit rates.
- It is noted that the future Northern Public Transport Interchange and Park and Ride is also located on this corridor, and it is important that the access to this facility is secured and can be delivered independent of third-party timelines for the Western Link Road North. Therefore, the section of Western Link Road North that provides access to the transport interchange will be designed and included as part of the Northern Public Transport Interchange project. This part of the link will be designed to integrate with Tūhonohono ki Tai intersection and existing land uses and will be designed for the final future form.

## HOW SOLUTION MEETS FUTURE MODAL PRIORITY

- Improvement of bus reliability through dedicated lanes when required.
- Provision of separated active mode facilities
- Minimisation of traffic capacity i.e. one lane in each direction.



## INTERSECTION FORM ASSESSMENT

Intersection	Existing	Future design assumption
Western Link Road North and SH1/Tūhonohono ki Tai Matakana Link Road	N/A	Signalised intersection being developed as part of Ara Tūhono Puhoi to Warkworth Motorway/ Tūhonohono ki Tai/Matakana Link projects.

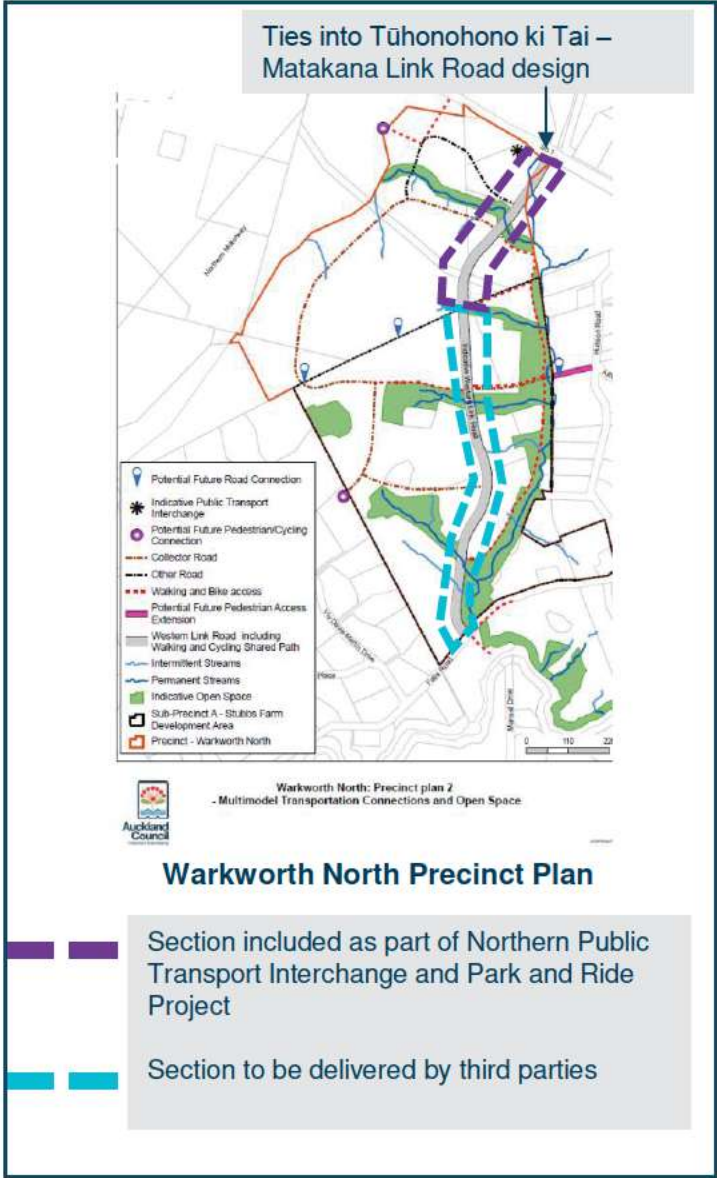
## MATTERS TO CONSIDER FURTHER IN FUTURE DETAILED DESIGN

Design Parameters	Complexity Rating
Once levels are known, progress design to minimise structures and impact on the existing culvert at the SH1/Tūhonohono ki Tai Matakana Link Road intersection.	H
Alignment with developers and land owners who will be delivering other sections of the Western Link Road- North.	M
Carbon and resource efficiency during bridge and road construction	L



# NEW WESTERN LINK ROAD NORTH – RECOMMENDED OPTION

## RECOMMENDED OPTION



## ALIGNMENT

- Final corridor alignment to be determined by developers under the conditions of the precinct plan.
- Corridor to be widened at a later date to provide for bus priority.

## RISKS

- Delay in making the full connection through to SH1 due to fragmented land ownership. This will impact access and bus reliability and routing.
- Uncertainty about NX2 interface due to limited design information being made available.

## INTERDEPENDICES

- Intersection with Tūhonohono ki Tai – Matakana Link Road
- Western Link Road - Central

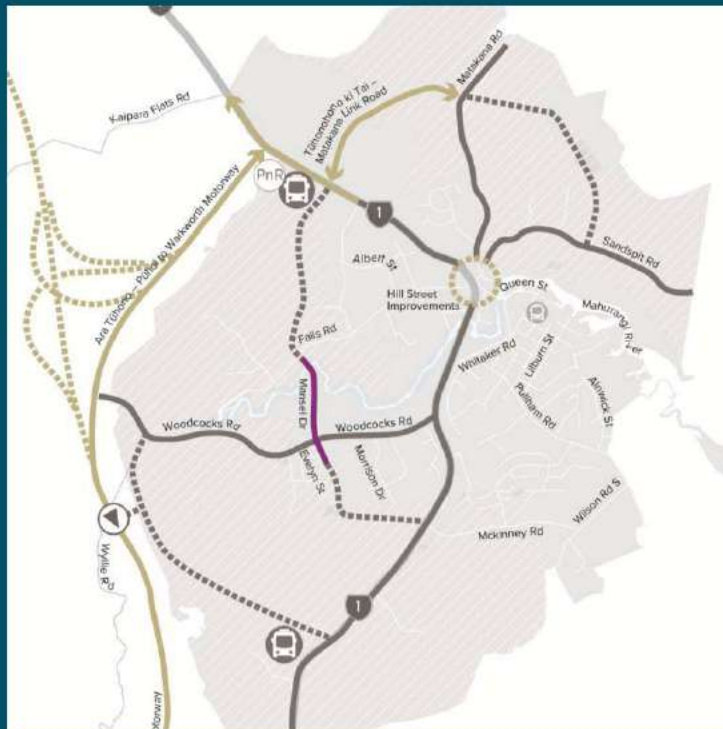
## PROJECT ALIGNMENT

Investment Objectives		Alignment
Access	Improve access to economic and social opportunities by providing an integrated multi-modal corridor along the Western Link Road – North.	New corridor will provide new access for <u>all modes</u> to the north western growth area including buses and walking and cycling. This will connect high density residential land use to a future local centre and beyond.
Resilience/Reliability	Enable network resilience for Puhinui Warkworth and improved reliability for the southern growth area.	Alternative direct north south route to SH1. Removes pressure from hotspots such as Woodcocks Road and Hill Street Intersection. Ability to provide additional lanes for bus priority improves reliability for buses to access future public transport interchange.
Travel Choice	Enable transformational mode share in Puhinui Warkworth by providing a high quality, low carbon transport network.	Provision of a contiguous active mode facility to connect into the wider Warkworth active mode network. Key bus route to serve North Warkworth and maximise walkable catchments to a range of bus services and provide transport choice.
Integration	Provide corridor protection to support planned growth and flexibly enable future land use and transport integration	Corridor will be provided under North Precinct Plan conditions which provides for initial access then upgrading to provide future bus priority.
Contribution to climate change response		
Climate Change	Supporting transformation to a low carbon transport system by connecting the new growth areas to the core active mode and bus networks to provide local and interregional travel choice and reduce future enabled carbon emissions. Corridor provides direct access to the Northern Public Transport Interchange and is future proofed to enable additional bus priority measures when required.	



# Western Link Road Upgrade - Central

## Project 9





# NEW WESTERN LINK ROAD CENTRAL – PRELIMINARY ASSESSMENT

## PROJECT #9



## GAP ANALYSIS

- Warkworth DBC reconfirms IBC Indicative Transport Network alignment.

## LAND USE



- Future Urban Zone
- Business- Light Industry Zone
- Residential Mixed House Suburban Zone
- Residential – Single House Zone

- Land use a mix of residential and business zones.
- Crosses the Mahurangi River

## PURPOSE

- Active mode spine to connect people to key social and economic destinations including industrial area and schools.
- Key north-south multimodal connection to provide access between North Warkworth Precinct and southern growth areas.
- Alternative route to existing SH1 and Hill Street Intersection.

## CONSTRAINTS



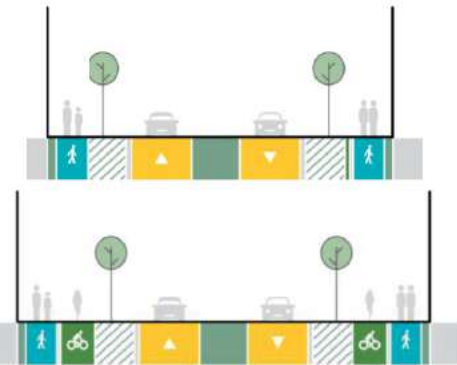
- Significant Environmental Area and riparian margins along Mahurangi River.

- A** Proposed future school
- B** Existing commercial development
- C** Retirement Village
- D** Constrained existing corridor and bridge

Highly constrained in the southern section with newly developed buildings. Sensitive ecological environment in the northern section.

## FORM AND FUNCTION ASSESSMENT

### EXISTING CROSS SECTION



### INITIAL FUTURE CROSS SECTION



## CLIMATE CHANGE ASSESSMENT

- This project provides a critical gap in the active mode network to access key destinations such as local centre and schools and cannot be eliminated.
- Active mode infrastructure supports mode shift and the reduction in enabled carbon emissions.

## DBC OPTION DEVELOPMENT

- Constraint mapping showed this corridor is highly constrained.
- Three options were considered with the desired 24m corridor width.
- In response to the identified impacts during constraint mapping two options were considered using a reduced 20m cross section.



# NEW WESTERN LINK ROAD CENTRAL – ROUTE REFINEMENT AND ASSESSMENT

		<div><div>Mansel Road</div><div>Evelyn Road</div></div>										KEY IMPACTS			Preferred	
		IO1: Access	IO2: Integration	IO3: Travel Choice	IO4: Safety	Heritage	Land Requirement	Ecology	Stormwater	Social cohesion	Transport	Construction	High impact	Medium impact		Low impact
1	<b>SGA 24m cross section</b> Holding centreline	✓	✓	✓	✓											✗
2	<b>SGA 24m cross section</b> Widening to west	✓	✓	✓	✓											✗
3	<b>SGA 24m cross section</b> Widening to east	✓	✓	✓	✓											✗
4	<b>SGA 20m cross section</b> Within existing road reserve. One cycling lane in each direction.	✓	✓	✓	✓											✗
5	<b>SGA 20m cross section</b> Within existing road reserve. Bi-directional cycling path	✓	✓	✓	✓											✓

## EMERGING PREFERRED OPTION – 20m CROSS SECTION WITH BIDIRECTIONAL CYCLING FACILITIES

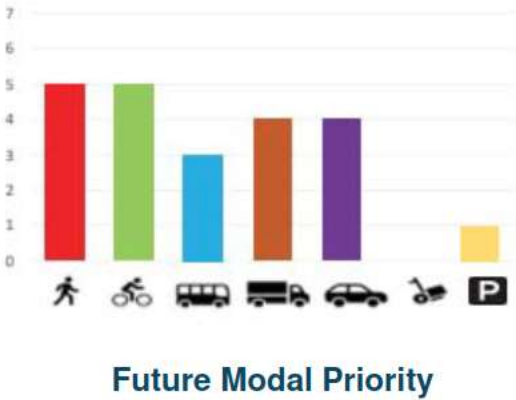
- Balances the land use with transport outcomes. Walking and cycling connectivity still achieved with dedicated facilities, but limited impact on key social and economic attractors. Bi-directional cycle path supports access to retirement village and north south connectivity.
- Cycle facilities would need to revert to shared lanes to cross the Mahurangi Bridge without widening the recently constructed bridge.



# NEW WESTERN LINK ROAD CENTRAL – EMERGING PREFERRED OPTION DEVELOPMENT

## HOW SOLUTION MEETS FUTURE MODAL PRIORITY

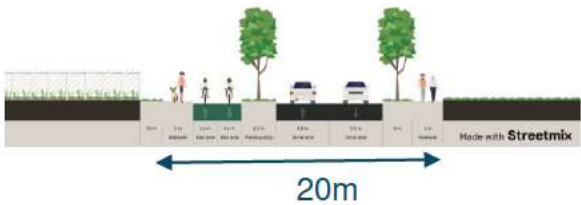
- Provision for separated cycle facilities and footpaths along the length of the corridor to connect active modes to key destinations such as local centre and school.
- Retention of existing level of traffic capacity i.e. one lane in each direction.
- No bus priority measures required.



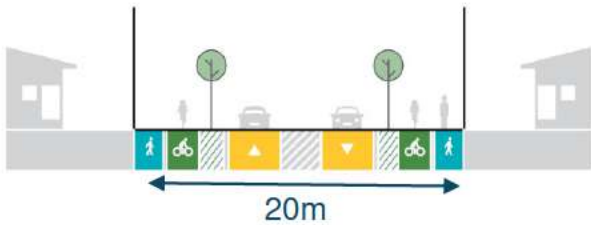
## DESIGN REFINEMENTS

- Identified as a **Type A design** for this business case.
- Type A concept developed. Proposed cross-section was reduced to a 20m two-lane arterial which can be accommodated within the existing road reserve.
- Design retains flexibility for two feasible cross sections for the reduced 20m cross section although bidirectional facilities on the western side are preferred.

### Segment 2: Bidirectional facilities



### Segment 2: Facilities each side



## INTERSECTION FORM ASSESSMENT

Intersection	Existing	Future design assumption
Mansel Drive and Falls Road/ Western Link Road (North)	Give way controlled priority intersection	Signalised intersection
Woodcocks Road and Mansel Drive/Evelyn Street	Stop controlled priority intersection	Single-Lane Roundabout

## MATTERS TO CONSIDER FURTHER IN FUTURE DETAILED DESIGN

Design Parameters	Complexity Rating
Driveway access for existing properties	M
Design of cycle facilities over the existing bridge footprint and the transition into the bidirectional midblock facilities.	M
Integration with the intersection upgrade on Woodcocks Road/Mansel Drive.	M



# NEW WESTERN LINK ROAD CENTRAL – RECOMMENDED OPTION

## RECOMMENDED OPTION



Ties into newly constructed Mahurangi Bridge Crossing

### OPPORTUNITIES

- To time this investment to be in place to connect with Western Link Road North and Woodcock Road upgrades to maximise the connecting active mode infrastructure from the start of land use development.

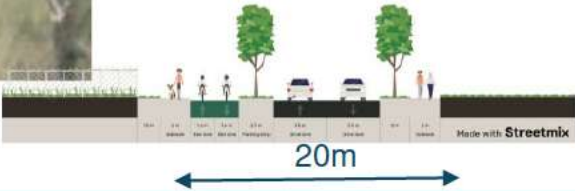
### RISKS

- Construction effects management and sensitive land uses e.g retirement village
- Delayed implementation due to perceived lower priority for funding resulting in gaps in the active mode network.

### INTERDEPENDENCES

- New Western Link Road North
- New Western Link Road South
- Woodcocks Road Upgrade

Bi-directional cycle facilities. Reallocation of existing road reserve



## PROJECT ALIGNMENT

Investment Objectives		Alignment
Access	Improve access to economic and social opportunities by providing an integrated multi-modal corridor along Mansel Drive and Evelyn Street.	Existing urban corridor is upgraded to improve active mode connections. This route directly connects the new north and south Warkworth growth areas to existing and planned future destinations such as local centres, employment and schools.
Travel Choice	Enable transformational mode share in Warkworth by providing a high quality, low carbon transport network.	Provision of an upgraded contiguous active mode facility to connect into the wider Warkworth active mode network. Connects to wider roading network to extend the future bus service offerings and further support mode shift
Integration	Provide corridor protection to support planned growth and flexibly enable future land use and transport integration..	Intersection upgrades to support active mode permeability across the corridor. Urban cross section avoids permanent impacts on existing residential and industrial land uses. Design integrates with existing facilities on the newly constructed bridge over the Mahurangi River.

### Contribution to climate change response

Climate Change	Supporting transformation to a low carbon transport system by connecting the new growth areas to the core active mode networks and supporting travel choice to multiple key Warkworth destinations. Mode shift to active modes supports reduction in future enabled carbon emissions. Reallocating space reduces new embodied and construction emissions.
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# New Western Link Road - South

## Project 10





# NEW WESTERN LINK ROAD SOUTH – PRELIMINARY ASSESSMENT

## PROJECT #10



## PURPOSE

- Enable development in south Warkworth and provide multimodal access to future urban land and industrial areas.
- Provide an alternative north south corridor to SH1 and help to reduce the pressure on Woodcocks Road between Mansel Drive and SH1.

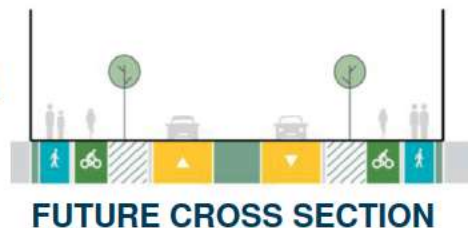
## GAP ANALYSIS

- Warkworth DBC reconfirms need for IBC Indicative Transport Network alignment. Further route refinement required for alignment and connections with SH1.

## CLIMATE CHANGE ASSESSMENT

- Provides multimodal access to southern growth area to unlock development. Completes a critical gap in the active mode network to access key destinations such as local centre and schools and cannot be eliminated.
- Active mode infrastructure supports mode shift and the reduction in enabled carbon emissions.

## FORM AND FUNCTION ASSESSMENT



## LAND USE



- Future Urban Zone
- Business- Light Industry Zone
- Residential Mixed House Suburban Zone
- Residential – Single House Zone



Warkworth Structure Plan

- Future land use will predominantly be a range of density of residential land use.

## CONSTRAINTS



- Steep topography and presence of flood plains and wetlands

## DBC OPTION DEVELOPMENT

MCA consideration of seven options that tested various alignment components including:

1. SH1 connection point ( 3 different locations)
2. Around or through the industrial zoned land to the north
3. Northern or southern central alignment
4. IBC southern alignment



# NEW WESTERN LINK ROAD SOUTH – ROUTE REFINEMENT AND ASSESSMENT



		IO1: Access	IO2: Resilience	IO3: Integration	IO4 Travel Choice	Heritage	Land Requirement	Ecology	Stormwater	Urban Design	Transport	Construction	Commentary	Preferred
1	McKinney Road Connection	✓	✓	✓	✓								Severs current industrial zoning. Safety sightline issues for SH1 intersection -can be mitigated by road re-levelling. Follows old road – archaeological considerations. Cultural site of significance potentially impacted.	x
2	Landowner indicative Alignment 2021	✓	✓	✓	✓								Most direct route. Severs current industrial zoning. Low positive contributions to amenity. Southern section – Impacts potential wetland, not in floodplain.	x
3	Southern SH1 connection	✓	✓	✓	✓								Poorest cumulative interaction with streams and wetlands. Severs current industrial zoning to the north. Located near floodplain	x
4	IBC alignment	✓	✓	✓	✓								Impacts on permanent streams, SH1 connection in major floodplain. Less direct route. Provides a buffer between FUZ (future residential) and industrial zoned land .	x
5	Refined IBC alignment	✓	✓	✓	✓								Less direct route. Severs current industrial zoning to the north. SH1 connection in Floodplain. Low positive contributions to amenity.	x
6	Refined option alignment	✓	✓	✓	✓								Sleeves FUZ and industrial zoning, provides buffer between land uses. Follows old road – archaeological considerations. Avoids key ecological features / floodplains. Eastern connection with SH1 acceptable transport outcome.	x
6A	Refined option alignment with McKinney Road	✓	✓	✓	✓								Same impacts as Opt 6. Improved east west land use/transport connection with intersection moving McKinney Road (assumed road re-levelling to improve sight distance).	✓

## EMERGING PREFERRED OPTION – OPTION 6A SLEEVING INDUSTRIAL & MCKINNEY ROAD CONNECTION

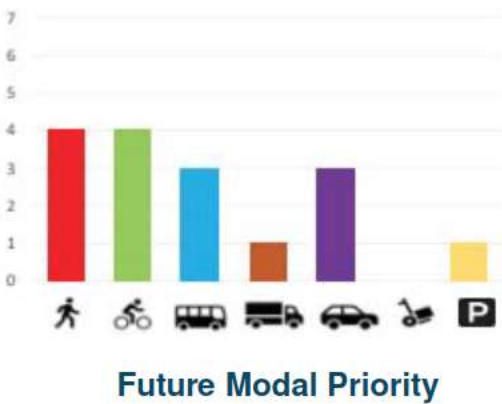
- Alignment minimises impact on wetlands, floodplains and Pohutukawa grove.
- Sleeves industrial land use to minimise impacts on existing land use and earthworks impacts.
- Connection at McKinney Road provides best east-west connectivity across SH1. Note assumes sight distance on SH1 issue will be improved.



# NEW WESTERN LINK ROAD SOUTH – EMERGING PREFERRED OPTION DEVELOPMENT

## HOW SOLUTION MEETS FUTURE MODAL PRIORITY

- Provision for separated cycle facilities and footpaths along the length of the corridor to connect key destinations.
- Provision of new capacity for access of one lane in each direction. This is commensurate with the rest of the proposed future Warkworth network.



## DESIGN REFINEMENTS

- Identified as Type B design for this DBC
- Additional design work undertaken to understand the impact of a roundabout at this location. Considered not feasible due to the topography and limited sight distance to the crest of the hill.
- Alignment moved west to sleeve the industrial area and best avoid Pohutukawa and wetlands.
- Bridge allowed for to minimise impact on wetlands and alignment requires the least amount of earthworks.

## MATTERS TO CONSIDER FURTHER IN FUTURE DETAILED DESIGN

## INTERSECTION FORM ASSESSMENT

Intersection	Existing	Future design assumptions
Western Link Road South/ SH1/McKinney	N/A	Signals

Design Parameters	Complexity Rating
Optimise alignment of Western Link Road South within designation to further minimise impacts on wetlands and potentially reduce earthworks.	M
Consideration of access arrangements and levels to provide for northernmost land owners to access Western Link Road South.	M
Carbon and resource efficiency during bridge and road construction	L



# NEW WESTERN LINK ROAD SOUTH – RECOMMENDED OPTION

## RECOMMENDED OPTION



### OPPORTUNITIES

- Developers to deliver the intersection with SH1 earlier to support plan changes on the eastern side

### RISKS

- Connection reliant on SH1 upgrades to address sight line deficiencies at Western Link Road South/SH1 intersection.

### INTERDEPENDENCES

- SH1 Upgrade
- Works associated with proposed McKinney Road Plan Change

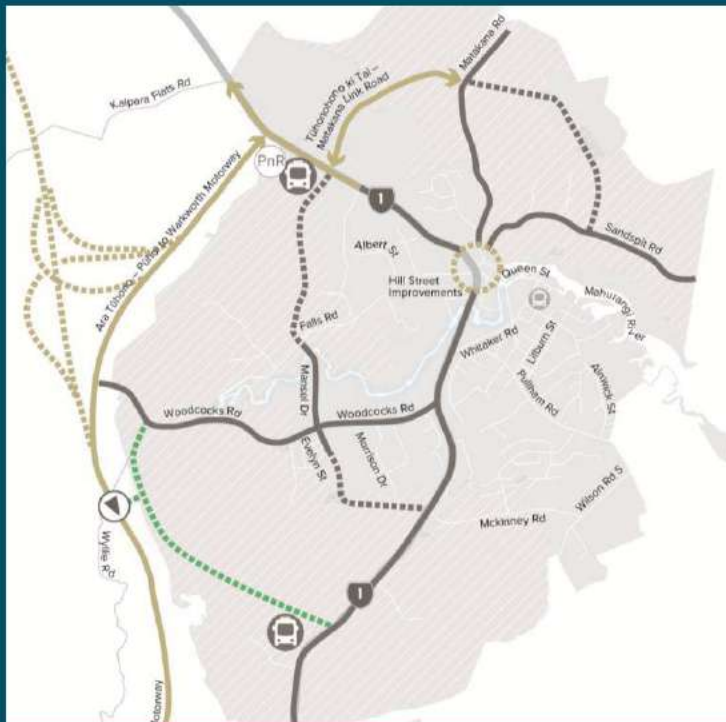
## PROJECT ALIGNMENT

Investment Objectives		Alignment
Access	Improve access to economic and social opportunities by providing an integrated multi-modal corridor along the Western Link Road – South..	New corridor will provide new access for <u>all modes</u> to the south western growth area including buses and walking and cycling. This will connect high density residential land use to schools and employment
Resilience/ Reliability	Enable network resilience for Puhinui Warkworth and improved reliability for the southern growth area.	Alternative direct north south route to SH1. Removes pressure from hotspots such as Woodcocks Road and Hill Street Intersection. Improves reliability for local bus network.
Travel Choice	Enable transformational mode share in Puhinui Warkworth by providing a high quality, low carbon transport network.	Provision of a contiguous active mode facility to connect into the wider Warkworth active mode network. Local bus route to connect east Warkworth to employment opportunities.
Integration	Provide corridor protection to support planned growth and flexibly enable future land use and transport integration.	Maximises connectivity between east and west Warkworth growth areas and centralises a key SH1 intersection into a four way intersection.
Contribution to climate change response		
Climate Change	Supporting transformation to a low carbon transport system by connecting the new growth areas to the core active mode and bus networks to provide local and interregional travel choice. Contributing to mode shift supports a reduction in future enabled carbon emissions. Alignment minimises structures and earthworks to reduce embodied construction emissions.	



# New Wider Western Link Road

## Project 11





# NEW WIDER WESTERN LINK ROAD – PRELIMINARY ASSESSMENT

## PROJECT #11



## PURPOSE

- New north south multimodal link to connect the planned north and south Warkworth growth areas.
- Provision for an arterial connection to the planned new southern interchange on Ara Tūhono – Puhoi to Warkworth motorway.

## GAP ANALYSIS

- Warkworth DBC reconfirms need for IBC Indicative Transport Network alignment. Further route refinement required for alignment.

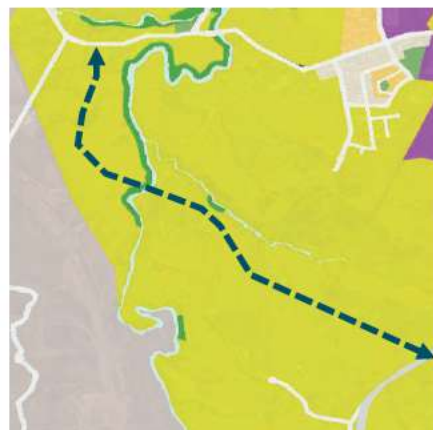
## FORM AND FUNCTION ASSESSMENT

### FUTURE CROSS SECTION



## PLANNED LAND USE

### Auckland Unitary Operative Plan



- Future Urban Zone
- Open Space – Conservation Zone

- Future Urban Zoned land.
- Conservation zones adjacent the Mahurangi River

### Warkworth Structure Plan (2019)



- Primarily residential with high density planned adjacent the planned local centre.
- Planned heavy industrial land adjacent Ara Tūhono – Puhoi to Warkworth motorway
- Planned bus interchange co-located with the local centre

## Proposed Waimanawa Plan Change ( as at August 2022)

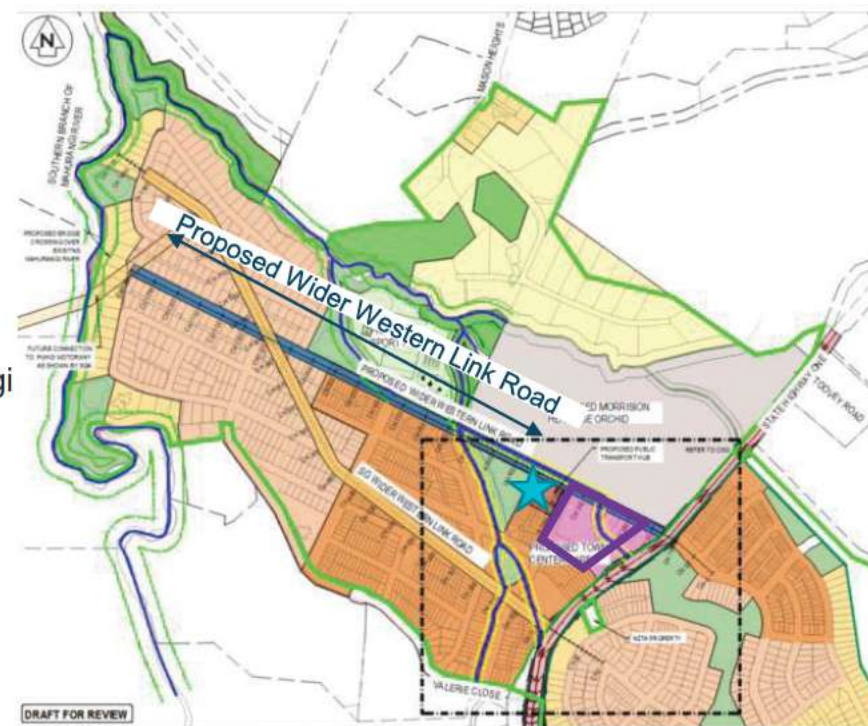


Figure 5: PROPOSED AND SG WWLR LOCATION

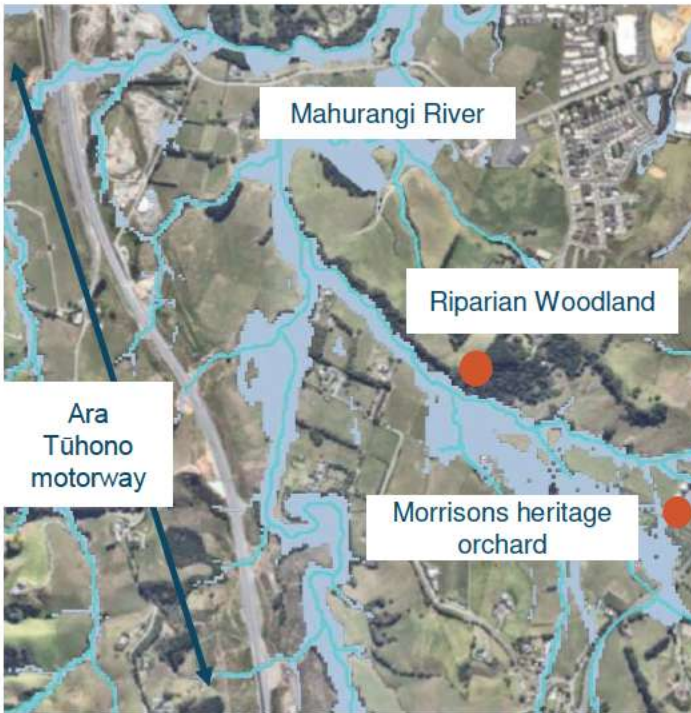
- Proposed Plan Change generally follows the structure plan land use with location of a bus interchange and local centre and the remainder of land use a mix of residential densities

- ★ Indicative location for a future public transport hub
- Proposed local centre location



# NEW WIDER WESTERN LINK ROAD – PRELIMINARY ASSESSMENT

## CONSTRAINTS



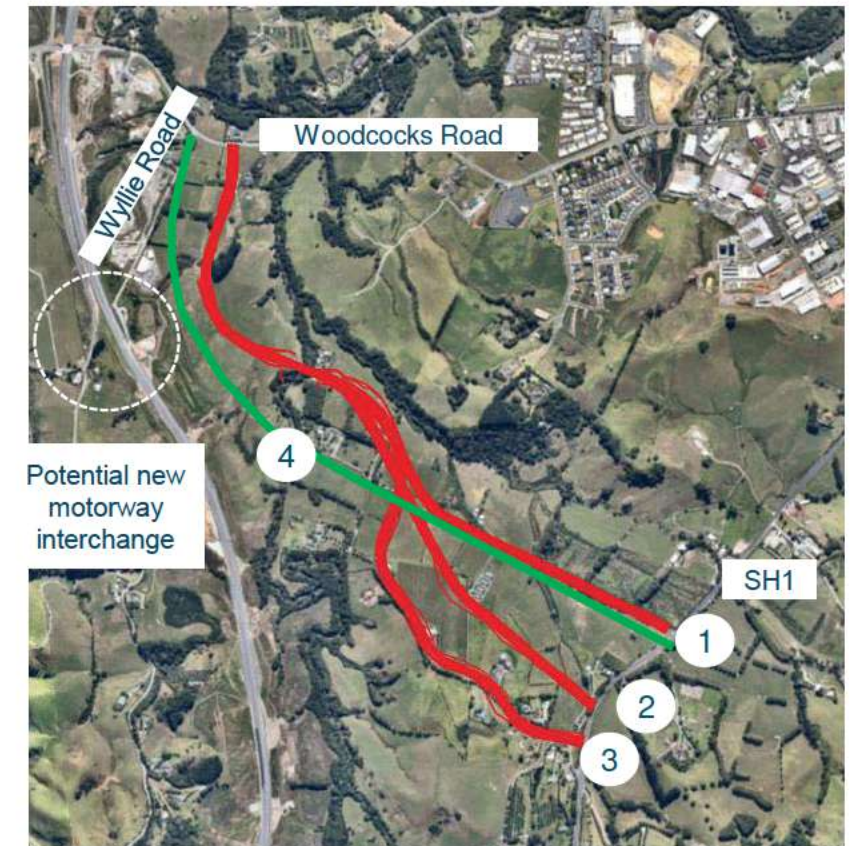
- Permanent streams and floodplains including Mahurangi River throughout the study area.
- Newly constructed Ara Tūhono motorway forming a western boundary and constraints for land use and interchange connection points.
- Riparian woodland.
- Morrisons heritage orchard.

## CLIMATE CHANGE ASSESSMENT

- Provides multimodal access to southern growth area to unlock development. Completes a critical gap in the active mode network to access key destinations such as local centre and schools and cannot be eliminated.
- Active mode infrastructure supports mode shift and the reduction in enabled carbon emissions.
- Connection to future Southern Interchange provides direct connection to the future industrial area supporting the Satellite Town concept of living and working in Warkworth and reducing enabled emissions from longer trips to access employment opportunities

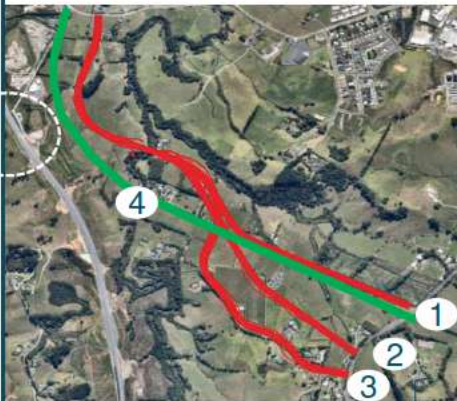
## DBC OPTION DEVELOPMENT

- Route alignment further optioneered using MCA process.
- All options needed to provide integration with a potential new interchange on Ara Tūhono – Puhoi to Warkworth motorway.
- First round of MCA tested eastern connections (Opt 1,2 &3) and held the western connection at a midblock point
- Following engagement the western connections were further assessed with an additional refined connection at Wyllie Road (Opt 4) and a revised eastern alignment slightly further south from the initial Opt 1 to respond to identified flooding impacts.





# NEW WIDER WESTERN LINK ROAD – ROUTE REFINEMENT AND ASSESSMENT



FIRST MCA

SECOND MCA

		IO1: Access	IO3: Integration	IO4 Travel Choice	Heritage	Land Requirement	Ecology	Stormwater	Urban Design	Transport	Construction	Commentary	Preferred
FIRST MCA	1	Waimanawa Concept Plan Change alignment	✓	✓	✓							Aligns with Plan Change alignment proposed by land owner. Good east west connectivity opportunities over SH1. Significant portion of alignment located in floodplain, including SH1 connection, and impacts highest number of streams, location of treatment difficult. Greater use of bridging and/or avoidance of floodplains would assist. Greatest proximity to / potential impact on ecologically sensitive areas (riparian, corridors, SEA's, wetlands).	✗
	2	IBC alignment	✓	✓	✓							Same impacts as option 1 north of Mahurangi River. Alignment generally avoids floodplains. Furthest distance from / potential impact on ecologically sensitive areas (riparian, corridors, SEA's, wetlands). East west connectivity over SH1 possible but some steep topography.	✗
	3	Connection via Valerie Close	✓	✓	✓							Same impacts as option 1 north of Mahurangi River. Ridgeline topography in the south limits development potential of local centre and transport hub. Alignment generally avoids floodplains. Runs within the zone of influence of Mahurangi River and associated SEA. Construction impacts on existing road and access connections to properties on Valerie Close.	✗
SECOND MCA	4	Wyllie road western connection and refined Opt 1 eastern connection	✓	✓	✓							Repurposes existing Wyllie Road and intersection. Crosses Mahurangi River at a single narrow point and avoids SEA. This crossing aligns with the proposed Plan Change crossing. Revised eastern connection has same transport outcomes as Option 1 but reduces impact on flood zones. Reduced residual land adjacent the Wider Western Link in northern half which maximises land available for industrial zoning.	✓

## EMERGING PREFERRED OPTION – OPTION 4

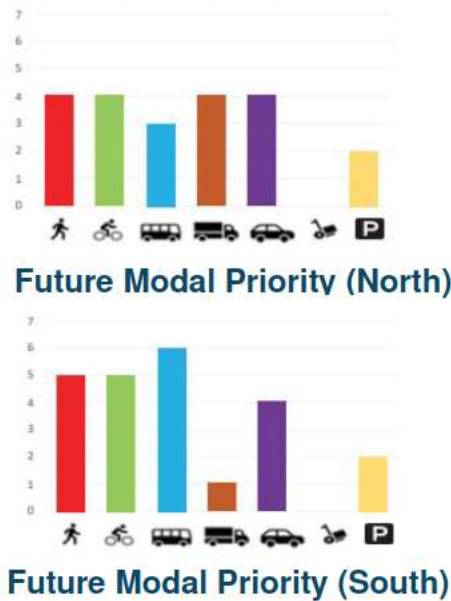
- Alignment minimises impact on conservation zone, Mahurangi River and wetlands.
- Stormwater for the eastern end is still high as it is located proximate to a flood zone so will require careful design to mitigate stormwater impacts.
- Eastern connection provides best east-west connectivity across SH1. Western connection repurposes existing Wyllie Road intersection and maximises adjacent heavy industrial land use zoning thus supporting the provision of employment land in Warkworth.



# NEW WIDER WESTERN LINK ROAD – EMERGING PREFERRED OPTION DEVELOPMENT

## HOW SOLUTION MEETS FUTURE MODAL PRIORITY

- Multimodal link
- Provision for separated cycle facilities and footpaths along the length of the corridor to connect key destinations.
- Provision of new capacity for access of one lane in each direction. This is commensurate with the rest of the proposed future Warkworth network.



## DESIGN REFINEMENTS

- Identified as **Type B design** for this DBC
- Further refinement on the southern section to align with an updated Plan Change Alignment. This alignment ran parallel to Morrisons Orchard and had moved south to shift it away from flood plains. The identified intersection location with SH1 was assessed to be suitable to provide the east west land use connection.
- The northern section was refined to use as much of Wyllie road as possible and be located as far west as possible. This had the benefits of a short connection to the proposed Southern Interchange, less residual land on the western side of the Wider Western Link ( maximising potential for industrial land zoning) and a Mahurangi river crossing that avoids the SEA and crosses at a narrow point.
- The alignment then connects with the proposed Plan Change alignment to allow for collaboration between AT and the developer.

## INTERSECTION FORM ASSESSMENT

Intersection	Existing	Future design assumptions
Wider Western Link Road and Woodcocks Road	N/A	Single lane roundabout
Wider Western Link Road and the link to the Southern Interchange	N/A	Single lane roundabout
Wider Western Link Road and SH1	N/A	Single lane roundabout

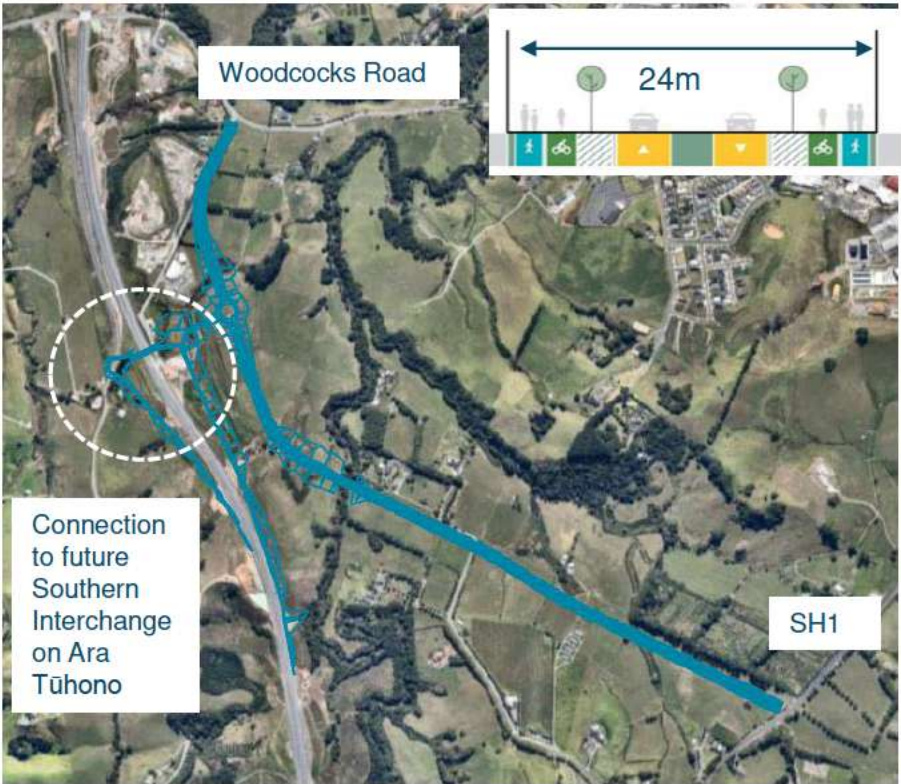
## MATTERS TO CONSIDER FURTHER IN FUTURE DETAILED DESIGN

Design Parameters	Complexity Rating
Road levels of corridor to be set to not preclude connection to future Ara Tūhono interchange. Expected the levels can be further optimised during detailed design stages.	H
Carbon and resource efficiency during bridge and road construction in particular the Mahurangi River bridge and the structure connecting to Southern Interchange.	L



# NEW WIDER WESTERN LINK ROAD – RECOMMENDED OPTION

## RECOMMENDED OPTION



### OPPORTUNITIES

- Collaboration with developers to deliver southern section of this corridor

### INTERDEPENDENCES

- SH1 Upgrade
- Woodcocks Road Upgrade
- New Southern Interchange on Ara Tūhono

### RISKS

- Developer timing does not proceed in a timely manner
- Uncertainty about NX2 interface due to limited design information being made available.

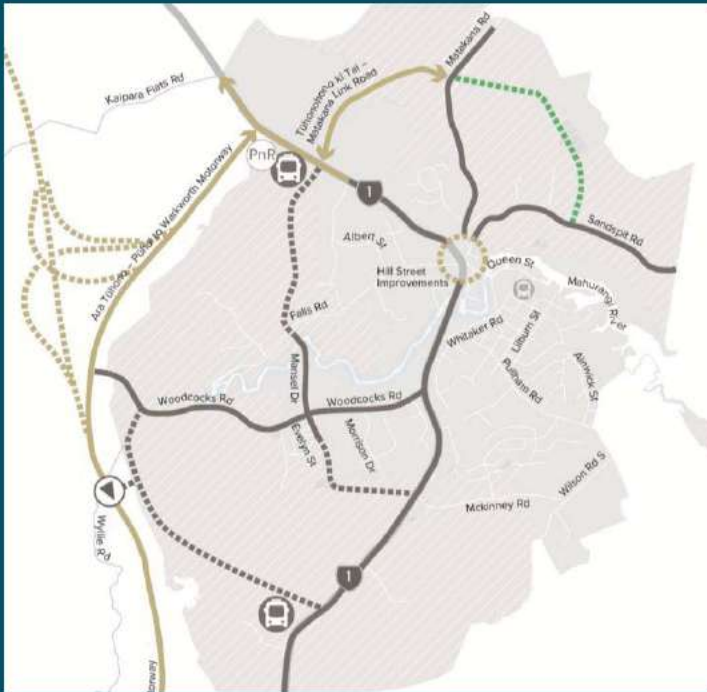
## PROJECT ALIGNMENT

Investment Objectives		Alignment
Access	Improve access to economic and social opportunities by providing an integrated multi-modal corridor along the Wider Western Link.	New corridor will provide new access for <u>all modes</u> to the south western growth area including buses and walking and cycling. This will connect high density residential land use to local centres and schools as well as provide access to key future heavy industrial land which supports the satellite town concept of providing local employment.
Travel Choice	Enable transformational mode share in Warkworth by providing a high quality, low carbon transport network.	Provision of a contiguous active mode facility to connect into the wider Warkworth active mode network. Key local bus route along this corridor to connect south Warkworth to the rest of the public transport network. Corridor supports access to the proposed southern public transport interchange.
Integration	Provide corridor protection to support planned growth and flexibly enable future land use and transport integration.	Corridor alignment supports a connection to the potential southern interchange on Ara Tūhono and maximises available heavy industrial land use. The eastern connection at SH1 optimises east west connectivity and connects land use developments on both sides of SH1. Alignment repurposes Wyllie Road intersection.
Contribution to climate change response		
Climate Change	Supporting transformation to a low carbon transport system by connecting the southern growth areas to the core active mode and bus networks to provide local and interregional travel choice. Seeking to reduce embodied carbon by reusing Wyllie Road alignment and streamlining bridge lengths. Supports access to the southern public transport interchange which provides back of house facilities for the whole Warkworth bus network.	



# New Sandspit Link Road

## Project 12





# NEW SANDSPIT LINK ROAD – PRELIMINARY ASSESSMENT

## PROJECT #12



## PURPOSE

- New east west link to provide local connectivity for all modes in the North East Warkworth growth area.
- Improved regional connectivity to Kowhai Coast and Mahurangi Peninsula
- Provides resilience for Matakana Road and Sandspit Road.

## GAP ANALYSIS

- Warkworth DBC reconfirms need for IBC Indicative Transport Network alignment. Further route refinement required for alignment.

## FORM AND FUNCTION ASSESSMENT



## LAND USE



- Future Urban Zone
- Future Urban Zone
- Rural – Countryside living Zone
- Open Space – Conservation Zone
- Limestone quarry

- Predominant land use Future urban zone surrounded by rural land use.
- Limestone Quarry currently operating to the north of the road



Warkworth Structure Plan

## CONSTRAINTS



- Working limestone quarry
- Number of permanent streams and flood plains
- Native woody and riparian vegetation including Significant Ecological Area (SEA)
- Geotechnical instability risk near the Quarry ( Northland Allochthon)
- Steep topography



# NEW SANDSPIT LINK ROAD – CLIMATE CHANGE ASSESSMENT

## CLIMATE CHANGE ASSESSMENT

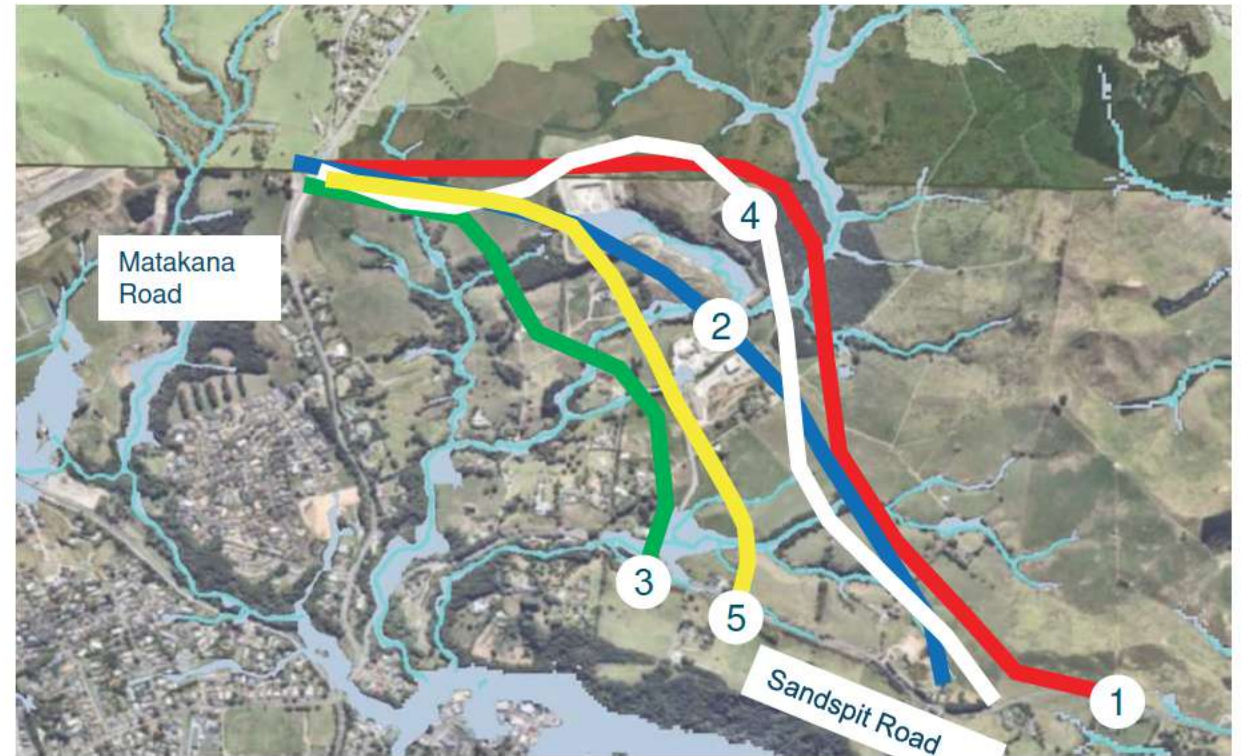
### Can we eliminate this link from the network?

- Link provides new private vehicle capacity that redistributes traffic for an existing trip pattern rather than inducing new trip patterns. It is a secondary active mode connection and not expected to have a frequent bus service. Elimination of this link was considered.
- Under a future scenario where growth in the north east of Warkworth is realised but there is no provision for Sandspit Link Road the transport network would have:
  - Less resilience with increased pressure on the Hill Street intersection which is a key intersection to access the Warkworth town centre.
  - The primary cycle links connecting Matakana Road and Sandspit roads to the town centre would be less attractive due to increased traffic and development accesses precluding a contiguous connection.
  - The ability to influence a connected urban form through the challenging topography of the north east growth area would be reduced. Organic growth in the north east area with fragmented land ownership would likely result in cul-de-sac type developments with limited active mode connectivity throughout the growth area, reducing the opportunity for more local trip mode shift.
- **It was concluded the link retains a role in the transport network supporting mode shift and resilience and therefore should be retained.**

### What other options or improvements could be considered to further support climate change?

- Climate change opportunity for enabling a dual role for this corridor to support both local and regional connectivity for all modes on the same link, rather than the creation of a separate and parallel bypass and local collector road.
- Need to consider the length and alignment of the route to minimise embodied carbon and earthworks during construction.
- Consider timing for implementation to align with growth.

## DBC OPTION DEVELOPMENT

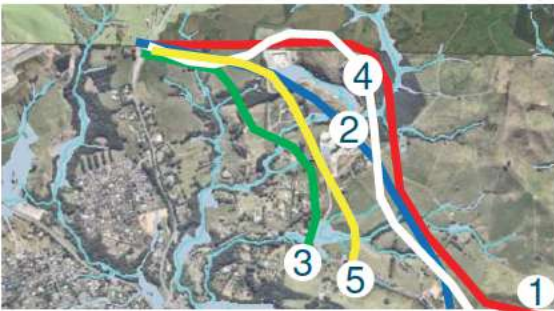


Five options were assessed using the MCA process. These options were designed to test:

- A range of eastern connection points.
- “Inner” alignment (south of quarry through the FUZ e.g Option 3) versus “outer” alignment (north of quarry and along FUZ/rural boundary e.g Option 1)
- Option 2 is the IBC alignment.
- Options 4 and 5 were developed following an initial MCA process and were refined to address identified impacts.
- All options have the same western connection at the Tūhonohono ki Tai Matakana Link Road intersection roundabout.



# NEW SANDSPIT LINK ROAD – ROUTE REFINEMENT AND ASSESSMENT



		IO1: Access	IO2: Resilience	IO3: Integration	IO4 Travel Choice	Heritage	Land Requirement	Ecology	Stormwater	Urban Design	Transport	Construction	Commentary	KEY IMPACTS			Preferred
														High impact	Medium impact	Low impact	
FIRST MCA	1	Rural alignment North of Quarry	✓	✓	✓	✓							Edge of FUZ alignment could be catalyst for increased development pressure outside of FUZ. Reduced urban form outcomes for central FUZ land use due to severance from the quarry. Impacts existing golf course. Highest ecological fragmentation of catchment and more pronounced stream and wetland effects. Instability risk due to quarry infill and slope instability. Longest route and highest earthwork cost				x
	2	IBC alignment	✓	✓	✓	✓							Opportunities to integrate with local network. Minimal flood risk overall. Moderate amount of catchment fragmentation, impacts on riparian features. Greenfield construction but some landslide features. Longer with more earthworks than option 3. Higher risk going through the working quarry.				x
	3	Southern alignment through FUZ	✓	✓	✓	✓							Shorter link more attractive for active modes and better opportunity to integrate with local network. Eastern connection - requires bridging over southern floodplains and ecological impact. Closest proximity to SEA, impacts on riparian features. Main construction impacts on existing Quarry road.				x
SECOND MCA	4	Refined Option 1 (Post MCA)	✓	✓	✓	✓							Improves Avoids quarry infill areas. Separation from FUZ doesn't enable good land use outcomes. Impacts on streams / riparian features / potential wetland minimised through refined alignment, crossing and intersection locations. Second longest route and highest earthwork cost. Quarry creates a severance and reduces connectivity for walking and cycling.				x
	5	Refined Option 3 (Post MCA)	✓	✓	✓	✓							Same as Option 3. Now avoids SEA and conservation zone. Eastern connection does impact new permanent streams – opportunity to consider reusing Quarry Road as per Option 3 to avoid this impact				✓

## EMERGING PREFERRED HYBRID OPTION – OPTION 5 WITH EASTERN CONNECTION OF OPTION 3

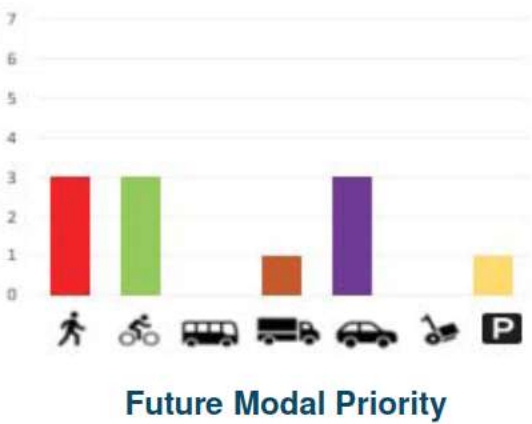
- Inner alignment provides dual role of enabling local connectivity through north east growth area as well as improving regional connection to Kowhai Coast and Mahurangi Peninsula. Shorter route length minimises embodied carbon in north east Warkworth.
- Clear land use integration opportunity to shape collector network in FUZ and enable connected urban form. Not likely to be achieved by developers alone.
- Eastern connection via existing quarry road avoids new impacts on permanent streams.



# NEW SANDSPIT LINK ROAD – EMERGING PREFERRED OPTION DEVELOPMENT

## HOW SOLUTION MEETS FUTURE MODAL PRIORITY

- Provision for separated cycle facilities and footpaths along the length of the corridor to connect key destinations.
- Provision of new capacity for access of one lane in each direction. This is commensurate with the rest of the proposed future Warkworth network.



## INTERSECTION FORM ASSESSMENT

Intersection	Existing	Future design assumptions
Western Link Road South and SH1	N/A	Single lane roundabout

## DESIGN REFINEMENTS

- **Identified as Type B design for this DBC**
- The eastern connection on Sandspit Road was changed to use the existing quarry road to reduce new impacts on the stream network and make best use of existing infrastructure.
- Consideration given to internal alignment to minimise the size of the three required bridges and avoid the ecological constraints.

## MATTERS TO CONSIDER FURTHER IN FUTURE DETAILED DESIGN

Design Parameters	Complexity Rating
Consideration for quarry access should it still be operating.	M
Ground improvements for section of alignment going through the quarry	M
Optimise alignment of Sandspit Link Road within designation to further minimise impacts on wetlands and potentially reduce earthworks.	M
Carbon and resource efficiency during bridge and road construction	L



# NEW SANDSPIT LINK ROAD – RECOMMENDED OPTION

## RECOMMENDED OPTION



### RISKS

- Long term integration with the quarry (could also be an opportunity)
- Complex environmental engineering constraints
- Misalignment in timing between land use release and public expectations

### INTERDEPENDENCES

- Sandspit Road Upgrade
- Matakana Road Upgrade
- Tūhonohono ki Tai – Matakana Link Road roundabout design

## PROJECT ALIGNMENT

Investment Objectives		Alignment
Access	Improve access to economic and social opportunities by providing an integrated multi-modal corridor along the Sandspit Link Road.	New corridor will provide access for <u>all modes</u> to both the north eastern growth area as well as a more direct route to connect regional trips to the Mahurangi peninsula.
Resilience/Reliability	Enable network resilience for Warkworth and reliable people and freight movement.	Corridor provides an alternative route to the Mahurangi peninsula removing pressure from hotspots such as Hill Street Intersection, Matakana Road and Sandspit Road. Improves reliability for local bus network on adjacent Sandspit Road.
Travel Choice	Enable transformational mode share in Warkworth by providing a high quality, low carbon transport network.	Sandspit Link Road will redistribute existing traffic from Matakana Road and Sandspit Roads. This will reduce traffic on these adjacent roads and improve attractiveness of active mode facilities between high density development and the nearby town centre. Will provide contiguous cycle facilities from north Warkworth to north east Warkworth via Tūhonohono ki Tai.
Integration	Provide corridor protection to support planned growth and flexibly enable future land use and transport integration	Provides a core east west link to promote good urban form in this growth area which due to fragmented land holding and challenging topography may otherwise not be achieved organically.
Contribution to climate change response		
Climate Change	Supports transformation to a low carbon transport system by providing a dual purpose link which connects both the local north east growth area as well as providing an alternative route to connect people to the Mahurangi peninsula and Kowhai Coast. This avoids the need for duplicate east west routes thus reducing embodied carbon whilst supporting compact urban form. The link also provides resilience for the congested intersection at Hill Street and relieves general traffic on Matakana Road and Sandspit Road to further support active mode uptake between planned high density housing and the Warkworth Town Centre.	





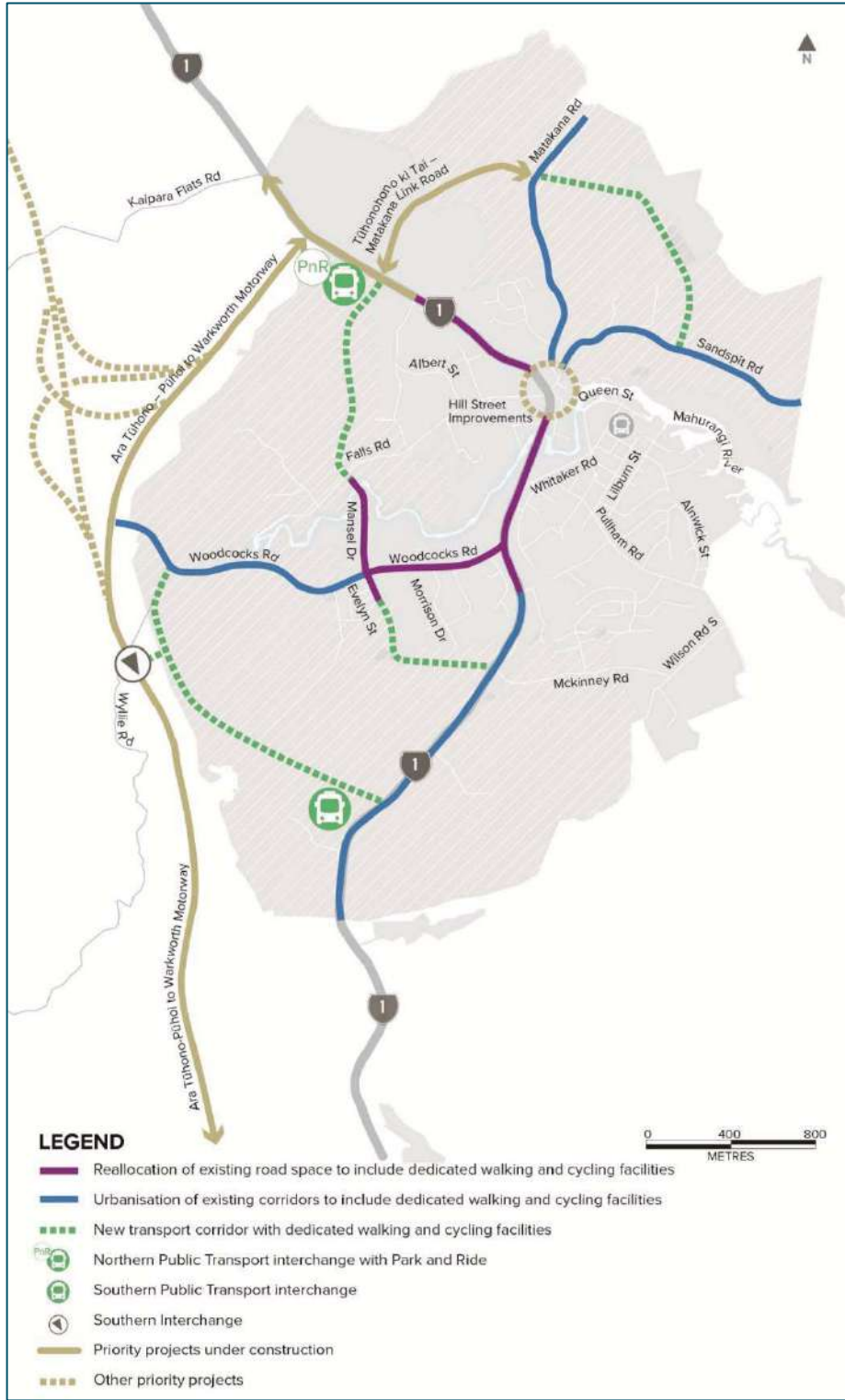
# Recommended Option



# 10 Recommended Warkworth Package

The recommended Warkworth transport package is shown in Figure 10-1.

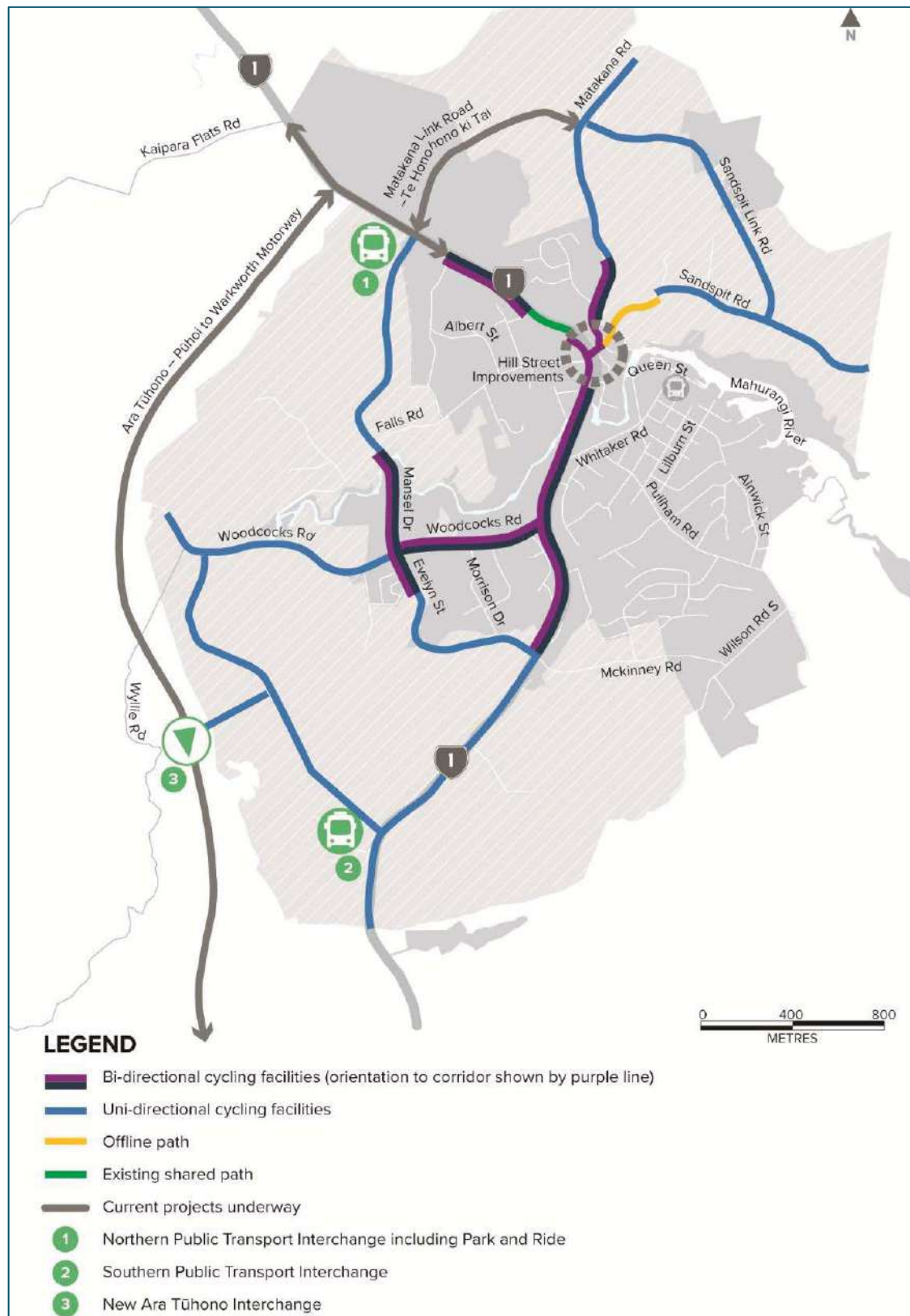
Figure 10-1 Recommended Warkworth Transport Package





From this network the following walking, cycling and micro mobility network will be achieved as shown in Figure 10-2.

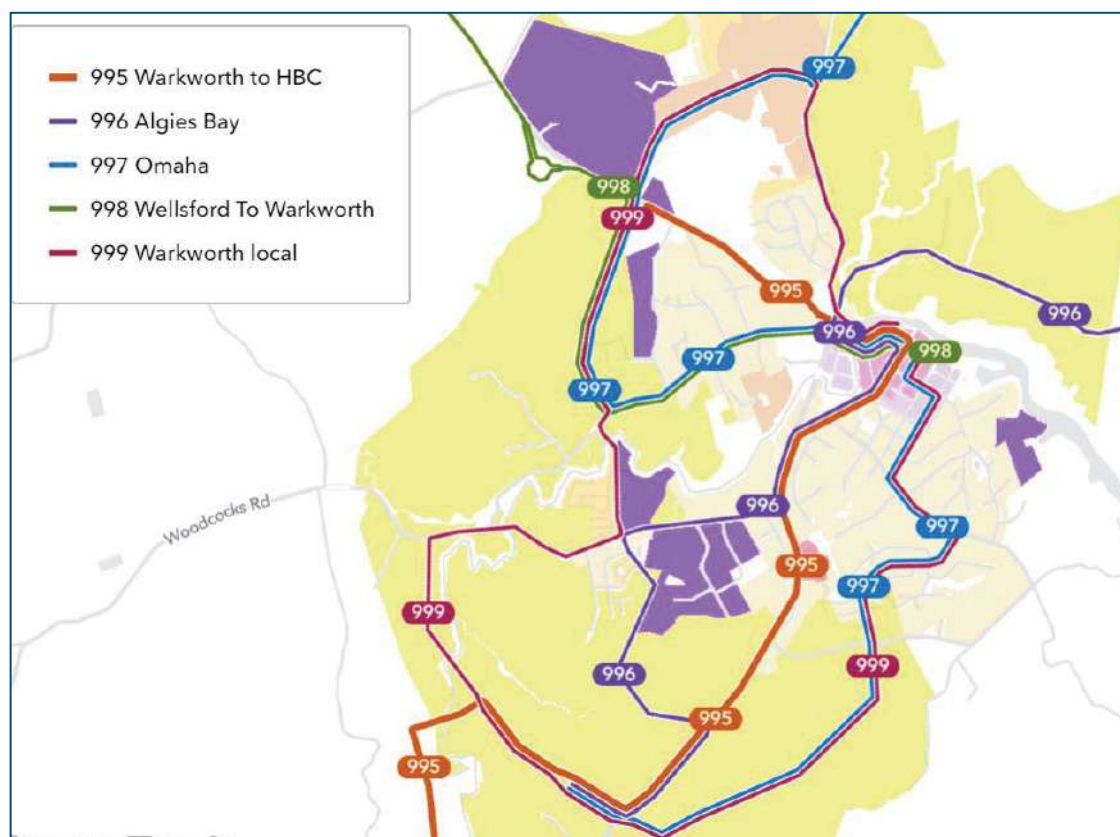
**Figure 10-2 Recommended walking, cycling and micro mobility network**





The indicative high quality bus network that will also be enabled by this investment is shown in Figure 10-3.

**Figure 10-3 Indicative future bus network in Warkworth**



Overall, this is a comprehensive transport solution that responds to planned growth and provides a transport network that supports:

- Long term development of a low carbon transport system to support future growth and facilitates mode shift from private vehicles to public transport and active modes to reduce greenhouse gas emissions.
- People living and working in Warkworth as part of the Satellite Town vision with direct freight connections to planned industrial land use and improved access to employment and social amenities.
- Urbanisation and intensification of adjacent land uses, particularly high density housing. Transport corridors maximise opportunities for walk up catchments to public transport interchanges and a high frequency local bus network.
- Increased reliability for public transport and additional resilience through urbanised alternative routes.
- Real travel choice with high quality, attractive alternatives to the private vehicle. This includes a contiguous, legible active mode network that connects people to key destinations and encourages active mode trips within the compact urban area.
- An areawide focus on safety through a holistic set of measures including Road to Zero safety principles, fully separated cycling facilities, well designed intersections and sufficient space for all modes to interact safely.



The outcomes will be achieved by targeted investment in:

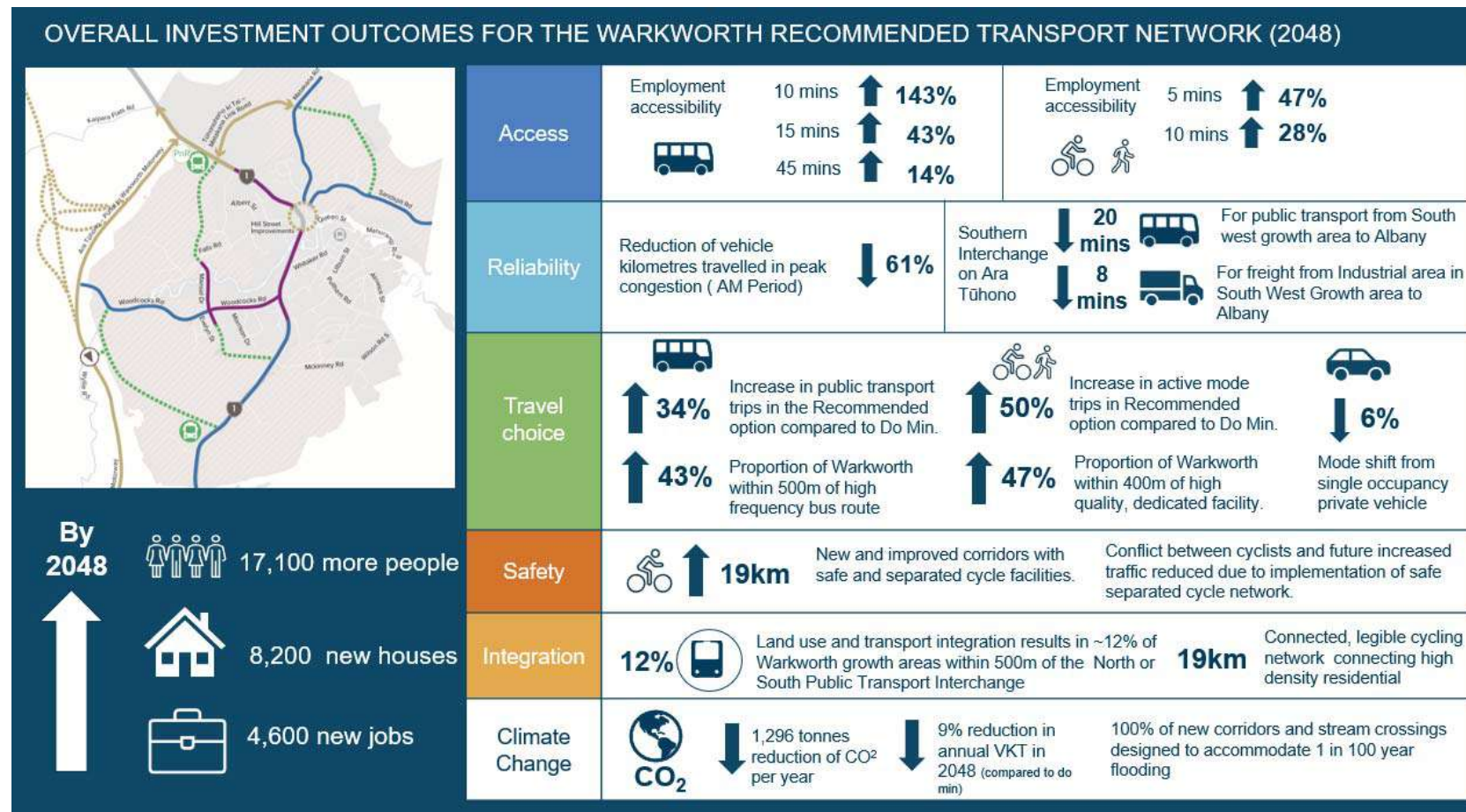
- Timely implementation of public transport interchanges to support the operation and patronage of a high frequency local bus service.
- Implementation of long term Park and Ride facilities to support mode shift for trips from the surrounding rural areas.
- Provision of active mode facilities on all corridors to complete an integrated active mode network. This includes 19km of new and improved cycle facilities. The suite of cycling measures include:
  - Separated cycle lanes on new urban corridors.
  - Bi-directional cycle facilities or upgraded existing shared paths on existing urban corridors.
  - An offline cycle connection on Sandspit Road.
- Four new corridors (Western Link Road North, Western Link Road South, Wider Western Link Road and Sandspit Link Road) to provide access to growth areas and resilient alternative routes for Warkworth.
- An additional motorway interchange on Ara Tūhono – Puhoi to Warkworth Motorway to provide direct access for freight to planned heavy industrial land, relieve a future bottleneck at the intersection with Ara Tūhono/SH1 and reduce vehicle kilometres travelled for southern growth area trips.



## 10.1 Key Performance Indicator Outcomes

The key outcomes for this recommended network are shown in Figure 10-4. Additional detailed information on overall outcomes for Warkworth as well as insights for key strategic and local interventions are included in **Appendix G: Transport Outcomes Report**.

Figure 10-4 Outcomes for the Warkworth recommended network





This recommended programme is a holistic package of interventions and whilst individual options may vary in their performance when considered in isolation, the performance of the programme is greatly increased when considered as a connected and complementary transport response. This results in the sum of the whole being greater than the sum of the individual parts. Each individual project addresses a local issue but then has a wider role in extending or completing an active mode or public transport network which has a flow on effect to the transport choices, reliability and efficiency area wide.

Additional commentary on the key investment theme outcomes is summarised in Table 10-1.

**Table 10-1 Investment theme commentary**

Warkworth Theme	Commentary
<b>Access</b>	<ul style="list-style-type: none"> <li>The recommended network provides new multimodal connections to unlock access to the growth areas ( which are primarily Greenfields). These new corridors provide physical access to connect houses to key destinations. The emphasis on active mode and public transport connectivity in the recommended investment will deliver additional benefits in the form of increased accessibility for non-private vehicle modes.</li> <li>The additional investment in active modes improves the accessibility for active modes to employment by 47% within 5 minutes and 28% within 10 minutes ( compared to the Do Minimum network) which reflects the benefits of a compact geographical town. It is noted that the number of jobs that are accessible by this active mode investment is up to 7,700 jobs which is approximately 65% of all future jobs over the full area of Warkworth<sup>11</sup>.</li> <li>The additional investment in Public Transport through placement of Public Transport Interchanges to support local centres and planned high density housing is expected to increase access to employment by 143% within 10 minutes and 43% within 15 minutes. This access represents public transport access within Warkworth of up to 7,700 jobs. If this measure is increased to within 45mins then this captures the longer employment trips to Silverdale and could expect an additional accessibility for 1,100 jobs.</li> </ul>
<b>Reliability/Resilience</b>	<ul style="list-style-type: none"> <li>Investment in alternative routes and a secondary connection to the strategic motorway network via the new Southern Interchange is overall expected to reduced Vehicle Kilometres Travelled in peak congestion (assumed as &gt; 90% vehicle capacity) in the AM peak in the recommended option compared with the Do Minimum. This will improve reliability for peak hour buses.</li> <li>The inclusion of the Southern Interchange has positive impacts on the vehicle kilometres travelled in Warkworth with an estimated reduction of 0.5% of transport emissions when compared with a network without the interchange. This shows that the VKT reductions resulting from shorter trips to/from the southern growth area is of benefit for Warkworth.</li> <li>Furthermore, the Southern Interchange reduces average freight journey time to Albany from the industrial area in South West Warkworth by 8 minutes in the AM peak illustrating the efficacy of the interchange in providing reliable freight movements to the planned industrial land uses.</li> <li>The Southern Interchange connection also adds additional reliability for longer interregional bus services with a predicted reduction of 20 minutes in travel time from South West Warkworth to Albany in the AM peak period. The connection enables the bus service to use the Southern Interchange to reduce “ back</li> </ul>

<sup>11</sup> Assuming 12,000 jobs based on Warkworth Structure Plan assumption of 0.6 jobs to household ratio and future population of around 25,000 people.

Warkworth Theme	Commentary
	<p>tracking” and increase the ability for the route to pick passengers up locally, rather than requiring people to travel from the South West Growth area up to a northern pick up point. This results in a more efficient bus system that maximises catchment areas.</p> <ul style="list-style-type: none"> <li>Resilience of the Warkworth network is improved with the new connections providing alternative north south access including Wider Western Link and Western Link road in the western areas.</li> <li>The inclusion of the Sandspit Link Road in the recommended network improves the resilience of the network through an alternative route around the complex Hill Street Intersection. Transport modelling in the Hill Street has shown that in a 2036 land use scenario, with no Sandspit Link road, the Hill Street roundabout solution leads to a congested model that exceeded the ability for this intersection to cope with demand. Warkworth DBC modelling showed that in 2048, the AM peak period would have 50% more delays without the Sandspit Link Road, demonstrating the role Sandspit Link Road plays in the wider Warkworth Transport Network.<sup>12</sup></li> </ul>
<b>Mode choice</b>	<ul style="list-style-type: none"> <li>Mode shift from private vehicles to public transport or active modes is a key part of the DBC’s GHG emission reduction response.</li> <li>The cumulative effect of investment in the Warkworth is expected to deliver by 2048 an overall AM public transport mode share of approximately 5% for public transport ( 34% increase on the Do minimum network) and 15% for active modes (50% increase on the Do minimum network). It is anticipated this mode shift could be further enhanced as part of wider travel behaviour change measures such as parking restrictions or charges, cycle training and quality end of trip facilities.</li> <li>The attractiveness of both active modes and public transport is greatly enhanced with the proposed Warkworth investment with : <ul style="list-style-type: none"> <li>43% of Warkworth estimated to be within 500m of a high frequency bus route. This equates to 1,706 hectares (86%) of Warkworth in the Recommended option compared to only 849 hectares in the Do-min Option.</li> <li>47% of Warkworth is estimated to be within 400m of a dedicated, separated active mode facility. This equates to 1,267 hectares (86%) of Warkworth in the Recommended option compared to only 335 hectares in the Do-min Option.</li> </ul> </li> <li>The investment in the active mode network of the recommended option will provide an additional 19km of safe, legible and well connected active mode network that meets the Auckland Transport Quality of Service measures.</li> <li>The investment in a Park and Ride will support the trips from the hinterland to use public transport either within Warkworth or for the longer interregional trips to Albany and Silverdale.</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>Every corridor in Warkworth has investment in active mode facilities to create a connected and safe network. This includes over 19km of new or improved corridors and the separated cycle facilities will improve the actual and perceived safety of cycling in the Warkworth.</li> <li>There have been currently no cycling DSIs recorded in the past five years which is directly related to the low level of cycling due to lack of safe and suitable facilities. Should no investment occur the exposure risk would be expected to increase as the traffic volumes increase from realisation of growth. Therefore, the provision of dedicated active mode facilities will support the retention of low DSI in Warkworth.</li> </ul>

<sup>12</sup> Refer to Appendix D6 Sandspit Link Road technical note



Warkworth Theme	Commentary
<b>Integration</b>	<ul style="list-style-type: none"> <li>• <b>19km</b> of corridors have sufficient space in the recommended cross sections for future designs to provide street furniture, lighting, tree planting and additional berm space in local centres to support people movement. This will enable improved amenity for Warkworth and support improved liveability.</li> <li>• The inclusion of two new Public Transport Interchanges in the Warkworth transport network will enable the development of a high frequency bus network which cannot be accommodated in Warkworth Town Centre due to space constraints. These facilities will have dual roles in providing direct services to local catchments as well as key back of house facilities such as electric charging facilities and bus driver facilities.<sup>13</sup></li> <li>• The proposed Southern Interchange will provide the additional benefit for redistributing freight trips away from local roads and residential and educational land uses. This will have the dual outcomes of supporting viability of the planned heavy industrial land use with shorter, direct access whilst preserving the place making needs of the local centres and housing.</li> <li>• The Sandspit Link Road has been designed to provide a dual role for Warkworth. It will firstly provide an alternative connection for longer distance trips to the Mahurangi Peninsula and improve the reliability of the Hill Street Intersection. The DBC has identified challenges for future organic growth in North East Warkworth due to topographically constrained land scape and currently fragmented land ownership. The proposed Sandspit Link Road therefore enables a central east west spine through the growth area to provide area wide connectivity and reduce undesirable outcomes such as series of cul-de-sac developments.</li> <li>• All planned corridors support maximising intensification opportunities within currently planned zoning e.g., AUPOIP planned Terrace Housing and Apartment Building zones are well served by bus infrastructure and active mode facilities. The NPS:UD will provide further intensification opportunities for the Warkworth and this principle has been incorporated into decision making for the Warkworth.</li> </ul>
<b>Climate Change Response</b>	<ul style="list-style-type: none"> <li>• The investment in Warkworth supports three key outcomes sought in the Aotearoa New Zealand First Emissions Reduction Plan including integrated land use planning, supporting people to walk cycle and use public transport and linking roadway investment to be consistent with transport targets (such as reducing VKT). The recommended network for Warkworth is based on the premise of maximising mode shift, enabling connectivity and not providing excess capacity for private vehicles.</li> <li>• The recommended network is estimated to achieve a reduction in CO2 emissions of 1,296 tonnes per year compared to the Do Minimum scenario. This is cumulatively around 80,000 tonnes over the next 60 years.</li> <li>• 9% Annual reduction in VKT on the Warkworth network compared to the do min network.</li> <li>• The recommended network has been adapted to respond to 1 in 100 year flooding with 100% of new corridors and stream crossings meeting Q100 flood level immunity.</li> <li>• The corridor decisions made in this DBC conserve and provide opportunities to enhance the natural environment and cultural heritage including wetlands, SEA's, streams and vegetation stands. This supports the opportunity for future carbon sequestration in Warkworth.</li> <li>• During design development the use of embodied carbon has been reduced as much as practicable for this stage of design and has considered measures such</li> </ul>

<sup>13</sup> Refer to Appendix D1 – Public transport approach

Warkworth Theme	Commentary
	as reduced structures, length of routes and resulting earthworks associated with options. Road space reallocation has been prioritised in existing urban areas to reduce impacts.

## 10.2 Sustainability outcomes

The concept of sustainability is in synergy with Te Ao Māori (Māori world view) and the interconnectedness and interrelationship of all living and non-living things. The development of the Warkworth recommended transport network has been undertaken holistically and is based around the three principles of social, environmental and economic sustainability.

The overarching sustainability principles were introduced in Section 6.3 and are shown again in Figure 10-5 below.

**Figure 10-5 Sustainability principles**

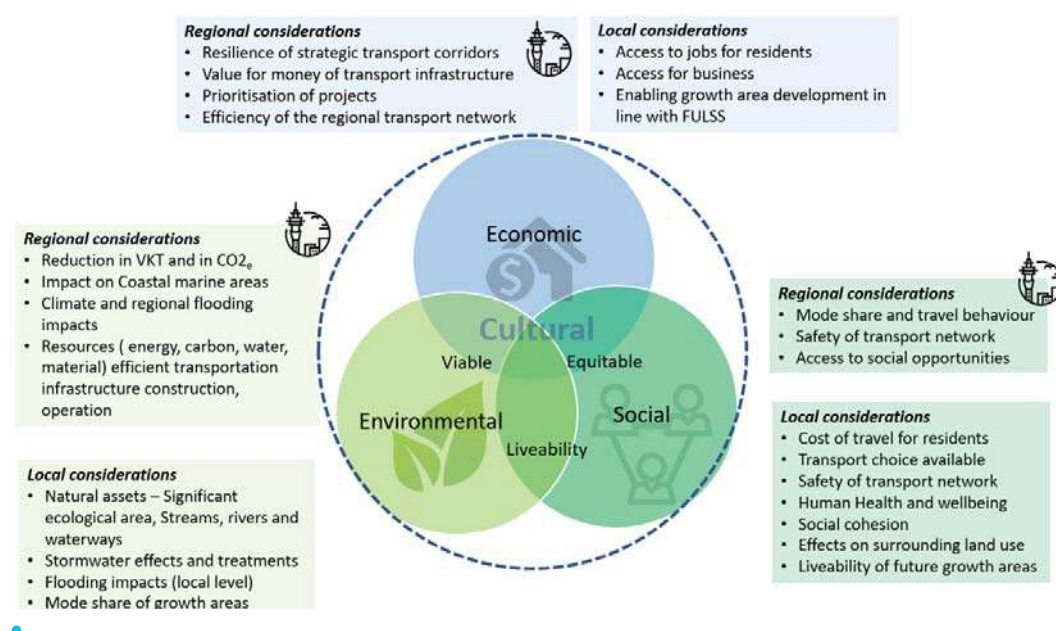


Figure 10-6 to Figure 10-8 detail how the recommended programme delivers against these three principles to support a strong Warkworth culture, better community outcomes and create liveable communities.



Figure 10-6 Warkworth environmental outcomes

# Warkworth Environment Outcomes



Figure 10-7 Warkworth social outcomes

## Warkworth Social Outcomes





Figure 10-8 Warkworth Economic outcomes

# Warkworth Economic Outcomes

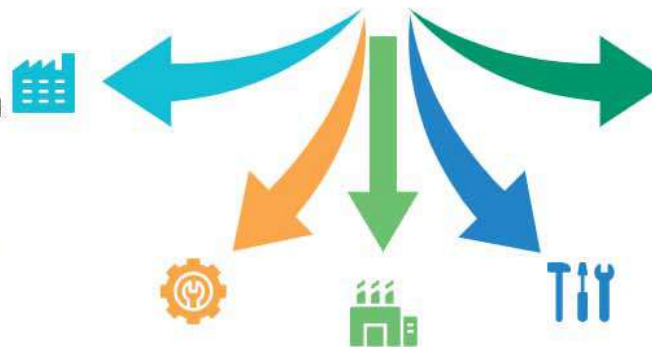
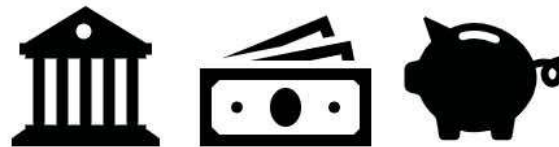
## Transport Choice

- Focused investment in public transport and active mode options to enable travel choice in the compact town.
- Active mode investment creates connected infrastructure linking people to jobs and schools.
- Public transport services have been designed to maximise local catchments and uses two Public Transport Interchanges to support choice of service to local catchments.
- VKT reduction of 9% in annual VKT in 2048 compared to do min.
- Mode share for the Warkworth recommended network in 2048 AM peak is

  15%

 5%

- Further improvements on bus mode share can be expected with supporting measures such as travel behaviour and parking controls.



## Access to jobs

- 8,800 jobs can be accessed within 45 minutes by public transport.
- 7,700 jobs can be accessed within 10 minutes by active modes

## Integrate with other projects

- Integrates with Hill Street Upgrades, Ara Tūhono and Tūhonohono ki Tai – Matakana Link Road projects to complete the Warkworth network.

## Connectivity

- Provide direct connections for freight to the strategic road network – Ara Tūhono via the Southern Interchange.

## Integration with development

- Options that integrate well with future land use and FUZ development have been selected.
- Southern Public Transport Interchange has been located adjacent the local centre to maximise walk up catchments.
- Southern Interchange can be accommodated within existing Waka Kotahi Land holdings
- SH1 upgrades support efficient east west movements over SH1 to connect Warkworth growth areas.

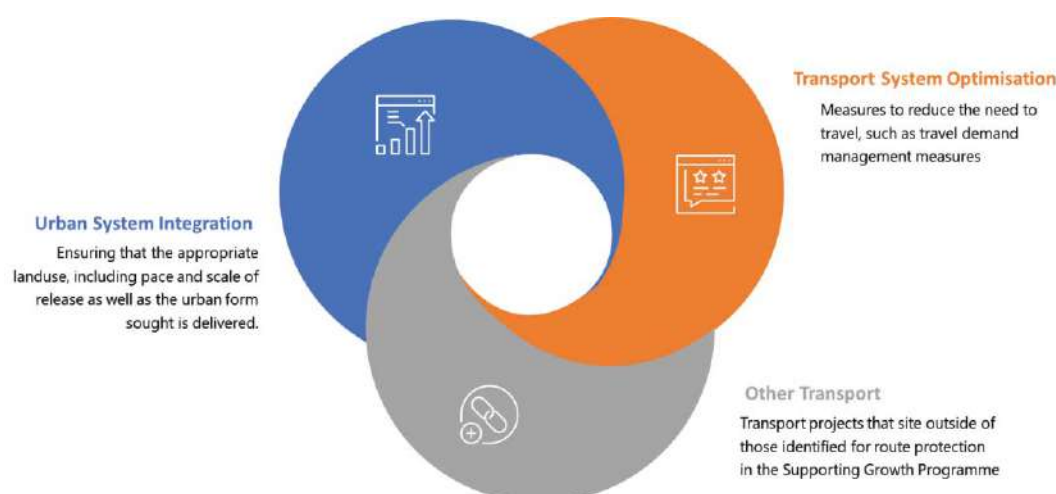
**Te Tupu Ngātahi Supporting Growth**

## 10.3 Supporting measures

If all the transport infrastructure projects identified in the Te Tupu Ngātahi programme were successfully delivered this would not guarantee or optimise the outcomes sought from the programme. This is due to the wide range of other necessary elements, including pre-conditions to investments, that also need to be implemented and monitored to ensure the successful overall outcome of the programme.

These elements can be broadly summarised into three areas, being Urban System Integration, Transport System Optimisation and Other Transport, as shown in Figure 10-9.

**Figure 10-9 Additional contributory elements**



It is critical that each of these elements are delivered in parallel and in collaboration with this programme of transport interventions to optimise and deliver the full range of outcomes sought. For example, if the projected land use is not delivered the planned transport system will be sub-optimal, underutilised and critical elements such as mode-shift targets will not be met.

Specific Warkworth complementary measures are summarised in Table 10-2. Management of these measures are discussed further in the Management Case of this DBC (Section 14).

**Table 10-2 Supporting measures for the Warkworth Recommended Network**

Supporting measure	Measure	Warkworth application
Urban System integration	Ongoing land use and transport integration	<ul style="list-style-type: none"> <li>This programme of transport interventions is intrinsically linked to the urban system including land use, urban form &amp; place quality, density &amp; proximity, and employment self-sufficiency. Te Tupu Ngātahi recognises this with place making and liveability outcomes a key focus area, alongside alignment with the future pace, location and scale of the proposed growth.</li> <li>It is therefore critical that these urban system integration outcomes are delivered alongside and at the appropriate timing for the transport interventions recommended.</li> <li>Warkworth has an adopted structure plan which gives an initial level of certainty over how land use is expected to develop. However, with recent policy changes it is anticipated that future Plan Changes will seek even</li> </ul>



Supporting measure	Measure	Warkworth application
		<p>further land use intensification. This has been evidenced in recent Plan Change submissions for the North, South and North East of Warkworth.</p> <ul style="list-style-type: none"> <li>Continued discussions will be required with Council to help shape the supporting collector and local road network to best support the overall Warkworth transport outcomes. This will include maximising development around local centres and creation of local cycling networks on newly developed collector roads to connect with the planned arterial active mode network to support the wider uptake of cycling. In particular, the planned Mahurangi Shared Path and the existing Falls Road between Hill Street Intersection and Western Link Road will both provide key support for wider active mode outcomes.</li> <li>Ongoing discussions will be needed in relation to the timing of growth and the ability to have the core infrastructure ready to enable good travel behaviour choices and access from the outset of development.</li> </ul>
Transport system optimisation	Travel Demand Management	<ul style="list-style-type: none"> <li>The Te Tupu Ngātahi programme IBCs identified a wide range of Travel Demand Management initiatives to ensure the demand pressure on the transport system of Auckland substantial growth is appropriately managed prior to the transport system being called upon to move people to and from their destinations. These measures are a combination of locally driven interventions and whole of region measures, which make coordination and collaboration across the multiple parties required challenging. In Warkworth, the management of parking will be an important consideration in supporting behaviour change.</li> </ul>
	Increased bus frequencies	<ul style="list-style-type: none"> <li>The Warkworth recommended network enables a future high frequency local bus network. However, without the operational funding to actually increase bus services and the overall attractiveness of the service, the public transport mode shift will not be realised.</li> </ul>
	Fleet Management	<ul style="list-style-type: none"> <li>Whilst mode shift is preferable to reduce emissions there is also a role for better fleet management to support emission reduction targets. This will include wider government-led initiatives to support the uptake of electric vehicles (including buses) to reduce emissions from private vehicles and could also extend to the introduction and uptake of biofuels. Emission modelling in 2048+ includes an assumption of ~66% of the total fleet being electric and this is a major contributor to reduction in emissions. Therefore, this is a very important measure to support the overall reduction in emissions and maximise the outcomes of the Warkworth recommended network.</li> </ul>
Other Transport	Implementation of key projects	<p>This programme relies on a number of other transport projects being in place within the transport system to support the Warkworth preferred transport network and realise the desired transport outcomes. Examples of this are:</p> <ul style="list-style-type: none"> <li>Completion of the Ara Tūhono Puhoi to Warkworth link</li> <li>Completion of the Tūhono ki Tai – Matakana Link Road</li> <li>Upgrade of the Hill Street Intersection</li> </ul> <p>The DBC has identified project dependencies in Section 5.2.</p>





Table 10-3 Summary of key changes between Warkworth DBC and IBC networks

Corridor	What has changed?
<b>Park and Ride</b>  New location for Park and Ride.  New long term Northern Public Transport interchange in the north.	<p>The Warkworth public transport approach was reviewed at the start of the DBC. This recommended a shift to the location of public transport facilities.</p> <p>Park and Ride facilities moved from the southern location in the IBC to the north. A northern location intercepts commuters from northern and eastern communities and surrounding hinterland and reduces traffic travelling through Warkworth to access the Park and Ride. This location also leverages the demand from the interim interchange being developed adjacent the Warkworth Showgrounds by the Rodney Local Board.</p> <p>To support efficient modal transfer at the Park and Ride it was recommended to co-locate a public transport interchange with the Park And Ride facilities.</p> <p>Note there was no change to the IBC recommendation for a Southern Public Transport Interchange. The Interchange is still in a similar location to the IBC however it is noted that the alignment of the Wider Western Link Road has moved so the interchange will now be on the south side of this corridor.</p>
<b>Southern Interchange</b>	<p>Location has moved further north than the IBC to respond better to topography and minimise earthworks and also maximise the residual industrial land for development. It is noted this location also maximises the use of land already owned by Waka Kotahi.</p>
<b>Western Link Road South</b>	<p>The eastern connection point at SH1 has been aligned in the DBC to intersect with McKinney Road to maximise east west connectivity in Warkworth. It is noted that this will require lowering of the SH1 carriageway to improve sight distance at this location. The mid-block alignment of this route has been modified to avoid wetlands, provide a buffer between residential and industrial land uses and minimise earthworks.</p>
<b>Wider Western Link Road</b>	<p>Through the DBC design process the eastern and western connections for this link and its integration with the proposed Southern Interchange on Ara Tūhono have been carefully considered. The eastern connection with SH1 has been moved a little further north from the IBC to maximise east west connectivity across SH1 (due to better topography), align with the developer Plan Change and respond to flooding challenges. The Mahurangi River crossing is further west than in the IBC and avoids sensitive ecological and riparian features. The Western connection has moved to be at the existing Wyllie road to maximise existing roading assets as well as optimise residual land for industrial development and supporting employment land uses in Warkworth.</p>
<b>Sandspit Link Road</b>	<p>The western connection with Tūhonohono ki Tai – Matakana Link Road is consistent with the IBC. However, the alignment has been moved a little further south to enable a dual role for this road in providing a strategic connection and also providing a central spine to support good urban form. The eastern connection has moved to the existing quarry road to avoid impacting new streams.</p>

## 10.5 Staging for Warkworth

Given the long term nature of this route protection DBC, there is some uncertainty as to the final land use and timings for supporting infrastructure upgrades. The following sections discuss the resilience of the proposed network to these external uncertainties and potential prioritisation of the network. Additional details on staging considerations are included in **Appendix N: Staging Considerations**.

### 10.5.1 What happens if the surrounding land use changes?

The Warkworth DBC is based on the land release for the growth areas identified as part of the FULSS. High level consideration has been given to the resilience of the proposed network to significant land use changes such as the combination of land use policy change (e.g the NPS:UD, MDRS and the new Future Development Strategy that is under development) as well as inherent uncertainties related to third party developers.

Key issues are discussed in Table 10-4 below and collectively show that the Warkworth network has flexibility to respond to land use uncertainty.

**Table 10-4 Resilience of the proposed network to land use changes**

Change	Commentary
Land use is intensified	<ul style="list-style-type: none"> <li>Intensification of planned residential areas is provided for in Warkworth through the active mode network and new public transport interchanges which are located to best capture residential catchments and local centres. The indicative future bus services also provide additional penetration into the growth areas to allow improved walk up access to buses. It is considered that further urban intensification would actually be of benefit to Warkworth as it could drive higher public transport usage and spread the cost of infrastructure over more people.</li> <li>The Warkworth recommended network is expected to have sufficient residual vehicle capacity on all the planned arterial links. Intersection performance currently shows available capacity generally sufficient to respond to variations in land use intensification.</li> <li>The Western Link Road North is projected to be a key public transport spine. Provision of bus lanes is enabled through space provisions in the Warkworth North Precinct and if required earlier then could be brought forward for earlier implementation (subject to funding).</li> </ul>
Urban sprawl	<ul style="list-style-type: none"> <li>The Warkworth growth area is surrounded by rural land use and there remains the possibility of future plan changes outside planned growth areas resulting in urban sprawl. Possible locations for sprawl might be west of the proposed Southern Interchange on Ara Tūhono or further to the North East facing onto Matakana or Sandspit Roads. From a network perspective, these land use implications have been considered at a high level with the following observations:</li> <li>The Southern Interchange location does not preclude a western connection which could respond to urbanisation west of Warkworth. However, the current indicative design does not seek to build this connection and encourage urban sprawl. The interchange instead retains the connection of Wyllie Road to the motorway via the Wider Western Link Road. It is noted that Ara Tūhono itself acts as barrier between rural and urban land use with no east west connections between Puhoi and Warkworth.</li> <li>Development further north east of Warkworth would continue to load trips onto Matakana Road, Sandspit Link Road or Sandspit Road. There is generally sufficient</li> </ul>



Change	Commentary
	<p>mid-block capacity on these corridors, particularly Sandspit Link Road, so no further route protection is considered necessary for this scenario. It is noted that more growth would put more pressure at the Hill Street and Tūhonohono ki Tai – Matakana Link Road intersections which might drive earlier implementation of the new Sandspit Link Road.</p>
Land use does not eventuate	<ul style="list-style-type: none"> <li>• If land use does not eventuate as anticipated in the Structure planning the overall the planned Warkworth Network might respond as follows:</li> <li>• Should industrial land not develop in western Warkworth, this might delay the implementation of the Southern Interchange which has a primary function to provide strategic transport network access for industrial land use.</li> <li>• If growth does not occur in south Warkworth then the need for the Southern Interchange, Wider Western Link Road and to a lesser extent Western Link Road South will be reduced. The primary function of the Wider Western Link Road is to activate the new growth so its implementation is tied to the realisation of land use. The Western Link Road South has a role in completing the north south alternative to SH1 and therefore may be required for resilience as well as providing access to growth and may be developed independently of adjacent land use.</li> <li>• If growth does not occur in North East Warkworth then Matakana Road will still require active mode upgrades to support the western land use that is live zoned. Sandspit Road Upgrades and Sandspit Link Road may not be required.</li> <li>• If proposed intensity of land use does not occur in North Warkworth then the widening of Western Link Road to four lanes to support bus priority may not be required or could be delayed.</li> </ul>
Land use is delayed or brought forward earlier than planned	<ul style="list-style-type: none"> <li>• In general, the need for the greenfield corridors is directly linked to the adjacent land use. If land is slower to develop then it is reasonable to assume the infrastructure timing can be delayed as well. Similarly, if land use occurs earlier than planned then the corresponding greenfield corridors would need to be implemented to provide development access.</li> <li>• Regardless of greenfield land use timing, there is a need to consider upgrading the existing core central Warkworth transport network e.g SH1 between Hudson Road and Fairwater, Woodcocks Road east of Mansel and Matakana Road. Active mode facilities on these links would support existing communities and key land uses such as schools and the Warkworth Town Centre. Importantly, the upgrades would prepare the Warkworth network to receive growth when it occurs.</li> </ul>

## 10.5.2 How could the transport investment be staged?

As shown above, the Warkworth network has been designed with enough flexibility to respond to land use changes. The main impact from land use changes is therefore expected to be in relation to the timing of investment. A set of key principles has been applied to the recommended Warkworth network, which links staging to delivering the following desired transport and land use outcomes for Warkworth:

- Immediate shift to more sustainable travel choices.
- Manage adverse impacts of development on the wider system.
- Support the desired urban form, in particular higher density, quality urban environments.
- Recognise the need to support both place and movement function.
- Provide affordable staging plans that match expected land development.
- Protects space for longer terms needs.

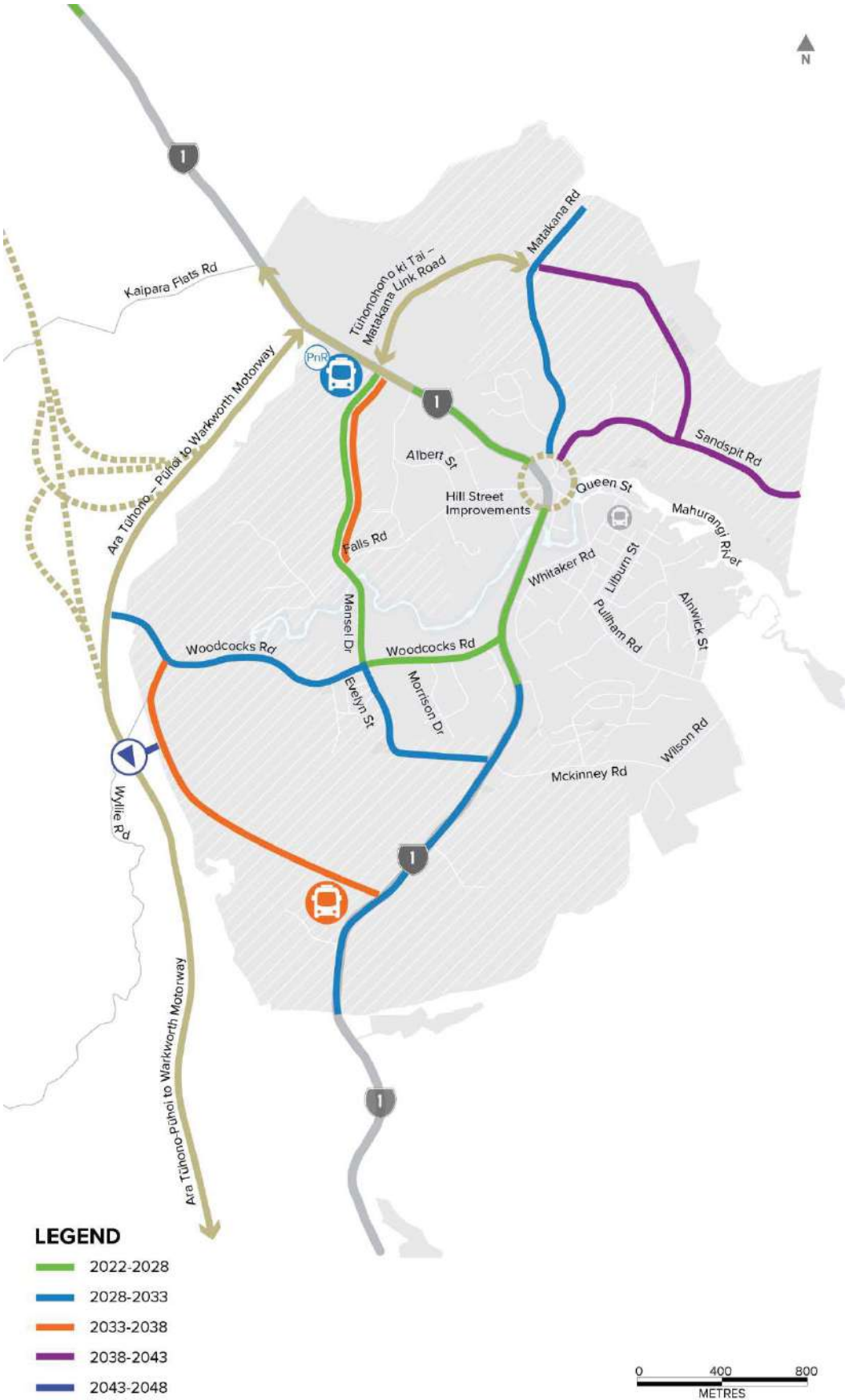
The suggested principles for staging are:

- Prioritise facilities that are on existing, brownfield corridors to enable the network to immediately receive and connect with the new greenfield developments.
- Programme public transport and active mode facilities and services from the start of urban development to support a shift to more sustainable travel.
- Consider potential interrelationships between transport projects to achieve overall outcomes.
- Consider staging of elements of a project to match likely development stages and system needs, whilst also considering pathways to achieve the full built elements.
- Consider the needs to support place function, not solely movement function.
- Provide safe travel by all modes.
- Staging that can respond to the timing, scale and form of urban development.

Considering all these principles and the current understanding of how the land use is planned to develop, the recommended staging for Warkworth is shown in Figure 10-11.



Figure 10-11 Recommended Staging for Warkworth Transport Investment



It is noted there are a number of key interdependencies within the Warkworth network that influence the staging considerations. These include:

- **Upgrading the existing corridors.** Focusing investment on brownfield corridors before greenfield corridors will support Warkworth to be ready to receive the anticipated growth.
- **Northern Public Transport Interchange and Park and Ride and Western Link Road North.** The public transport interchange requires access to SH1 via the Western link Road to capture bus services from Wellsford and Matakana as well as intercept vehicle trips for the Park and Ride. The Western Link Road North enables bus connections to schools, local centres and existing and future residential areas. Therefore, these projects have a co-dependency to support modal shift in Warkworth.
- **Southern Public Transport Interchange and Wider Western Link Road.** These are both linked to the timing of growth in the Southern growth cell. To enable mode shift from the start the Southern Public Transport Interchange needs to be built at the outset of development and access to the interchange cannot be provided without the Wider Western Link Road.
- **Southern Interchange and Ara Tūhono.** The implementation of the Southern Interchange is programmed towards the end of the growth projects to enable early mode shift in Warkworth and promote uptake of public transport or active mode trips and early behaviour change as growth is realised. Ara Tūhono is a Public Private Partnership (PPP) and has a contractual arrangement lasting 25 years and as such will be complex to implement additional works on Ara Tūhono during this period.
- **Hill Street Intersection and Sandspit Link Road.** Sandspit Link Road provides both relief to the intersection in later years as well as providing resilience for interregional trips to the Mahurangi Peninsula. The investment in Sandspit Link Road will lengthen the life of the Hill Street Intersection upgrade investment.

It is noted that consideration has been given to developing an alternative staging scenario for the Warkworth Growth Area. The development of an alternative staging scenario is typically created in response to known funding constraints and to inform the feasibility and deliverability of land use release projections. The greatest benefit of testing alternative staging scenarios exists where large, strategic infrastructure has the ability to create significant liabilities to asset owners. This could include implications on property liability or peak cashflow demands for capital expenses. These have large consequences for planning and policy documents such as the Regional Land Transport Plan, Regional Public Transport Plan and the National Land Transport Plan.

While there are wider known funding constraints in the Auckland context, no alternative staging has been proposed for Warkworth for the following reasons:

- There is no clear evidence of any significant change to forecasted land use sequencing.
- Growth in Warkworth has been sequentially staged and there appears to be a reasonable distribution of land use release across the projected growth periods to 2048, therefore no significantly critical funding pinch points have been identified.
- Warkworth infrastructure requirements are predominately based on upgrades to existing roads. For new local arterial connections, these are intrinsically linked to land release and unlikely to proceed in advance of development. It is noted that these new local corridors offer the largest opportunity for co-delivery with developers, potentially reducing financial impacts to asset owners should the land use timing change.



- The staging principles discussed previously have enabled proposed staging to be cognisant of climate change principles, land use release implications and project interdependencies.

Overall, it is considered that the proposed staging scenario provides a realistic assumption of likely staging outcomes, and as such has been used to inform transport modelling, transport economics and financial forecasting within the Warkworth DBC.

## 11 Economic Case

This section summarises the economic analysis which has been prepared for the full recommended package. The Warkworth DBC is for the purposes of route protection, rather than imminent implementation. The appraisal has therefore been targeted at this decision (to progress to route protection), rather than at the more detailed assessment that could be expected for an implementation decision.

This economic evaluation has been undertaken in accordance with the Waka Kotahi NZ Transport Agency Monetised Benefits and Cost Manual (MBCM).

**Appendix K: Economics Assessment** sets out the full methodology, assumptions, scenario testing, incremental analysis, and sensitivity analysis undertaken. For economic assessment purposes the Warkworth DBC has been split into the following packages in Table 11-1.





**Table 11-1 Economic packages for assessment.**

Economic Package	Corridors included
Full Warkworth recommended transport network	All 12 projects
Southern Interchange	Strategic project to provide a new Southern Interchange on Ara Tūhono
South West arterials	<ul style="list-style-type: none"> <li>• Woodcocks Road (Mansel Drive to Edge of Future Urban Zone (FUZ))</li> <li>• Western Link Road – South</li> <li>• Wider Western Link Road</li> <li>• State Highway 1 (SH1) (McKinney Road to Valerie Close)</li> <li>• New Southern Public Transport Hub</li> </ul>
North West arterials	<ul style="list-style-type: none"> <li>• Woodcocks Road (SH1 to Mansel Drive)</li> <li>• Western Link Road – Central</li> <li>• Western Link Road – North</li> <li>• SH1 (Hudson Road to McKinney Road)</li> <li>• Northern Public Transport Interchange and Park and Ride</li> </ul>
North East arterials	<ul style="list-style-type: none"> <li>• Matakana Road</li> <li>• Sandspit Road</li> <li>• Sandspit Road Link</li> </ul>

## 11.1 Key assumptions

The key assumptions assumed in the economic analysis are shown in Table 11-2.

**Table 11-2 Key economic assumptions**

Assumption Type	Warkworth DBC Assumptions
Base date	1 July 2021
Time zero	<ul style="list-style-type: none"> <li>For all five packages, the time zero is 1 July 2022.</li> </ul>
Analysis period	<ul style="list-style-type: none"> <li>The economic analysis for all projects is for 50 years as considered suitable for long-lived infrastructure projects. All the core benefits, costs and BCRs are based on 50 years period, but are sensitivity tested with 40 years period.</li> </ul>
Travel time benefits	<ul style="list-style-type: none"> <li>Assessment of base and congested (CRV) travel time benefits from the SATURN models</li> </ul>
Vehicle operating costs	<ul style="list-style-type: none"> <li>Assessment of base running vehicle operating costs (VOC) from the SATURN models .</li> </ul>
Discount rates	<ul style="list-style-type: none"> <li>Discount rate 4% applied to all annual benefits and costs, but sensitivity tested for 3% and 6%.</li> </ul>
Transport reliability benefits	<ul style="list-style-type: none"> <li>Assumed as 8% of the base travel time benefit, as a standard approach.</li> </ul>
Public transport reliability	<ul style="list-style-type: none"> <li>Public transport reliability benefits are estimated as 70% of public transport user benefits in the commuter peaks and 40% in other periods.</li> </ul>
Emissions	<ul style="list-style-type: none"> <li>Carbon dioxide (CO<sub>2</sub>) benefits are calculated from the vehicle emission prediction model (VEPM) version 6.3, with (upper bound) rates as per the MCBM:  per tonne in 2028,  per tonne in 2038,  per tonne in 2048,  per tonne in 2048+.</li> </ul>
Walking and cycling benefits	<ul style="list-style-type: none"> <li>Estimated based on trip demand and travel cost matrices from SAMM, using the same method as used for PT benefits in the MSM, and using same approach as South DBCs.</li> </ul>
WEBs	<ul style="list-style-type: none"> <li>WEBs calculated, in accordance with the MCBM, then applied to the project using an adopted percentage uplift to the conventional benefits. The analysis is done for three principal type WEBs – agglomeration, imperfect competition impact, and labour supply impact. The base WEB's assumption is 15% but sensitivity BCR test include 10% and 20% WEB's.</li> </ul>



## 11.2 Cost

This section summarises the project construction and property costs prepared for the economic analysis. Indications of operational and maintenance costs have also been given. The estimates and appraisal have been developed with available information for the purpose of informing a decision whether to invest in route protection.

Detailed information is included in **Appendix J: Cost Report**.

### 11.2.1 Capital Cost

Cost estimates (expected cost P50) and property costs for each individual project are outlined in Table 11-3.

It is worth noting the following key cost assumptions:

- **Type A projects** ( SH1 upgrade, Woodcocks urban upgrade and Western Link Road Central) do not require land and are therefore not being progressed to route protection. The costing methodology for these route has been based on linear rates for the endorsed concepts. The project scope has been limited to the provision of the new active mode facilities and unless directly impacted generally does not include undergrounding of power or other future service provisions.
- It has been assumed that the property beneath the Southern Public Transport interchange will need to be purchased from the developers.
- No property cost for the Southern Interchange project.

The P50 estimated costs for the Warkworth projects includes the following costs.

- Property.
- Project development.
- Pre-implementation.
- Physical works and Implementation.

Table 11-3 Capital Costs

No.	Package Projects		Total P50 Cost (incl Property) (Undiscounted, \$M)	P50 Property Cost (Undiscounted, \$M)
1	Northern Public Transport Interchange and Park and Ride			
2	Southern Public Transport Interchange			
3	New Southern Interchange on Ara Tūhono Puhoi to Warkworth Motorway			
4	SH1 Upgrade	5a Hudson Road to Hill Street (TYPE A)		
		5b Hill Street to Fairwater Road (TYPE A)		
		5c Fairwater to edge of FUZ		
5	Woodcocks Road	4a Woodcocks Road Urban Upgrade (TYPE A)		
		4b Woodcocks Road Rural Upgrade		
6	Matakana Road Upgrade			
7	Sandspit Road Upgrade			
8	New Western Link Road – North	8a Western Link Road North ( Stream to SH1)		
		2 lanes to 4 lanes		
9	New Western Link Road – Central (TYPE A)			
10	New Western Link Road – South			
11	New Wider Western Link Road			
12	New Sandspit Road Link			
	TOTAL		1,092	



A breakdown of these cost components is shown graphically in Figure 11-1 and Figure 11-2.

Figure 11-1 Warkworth P50 Cost estimates

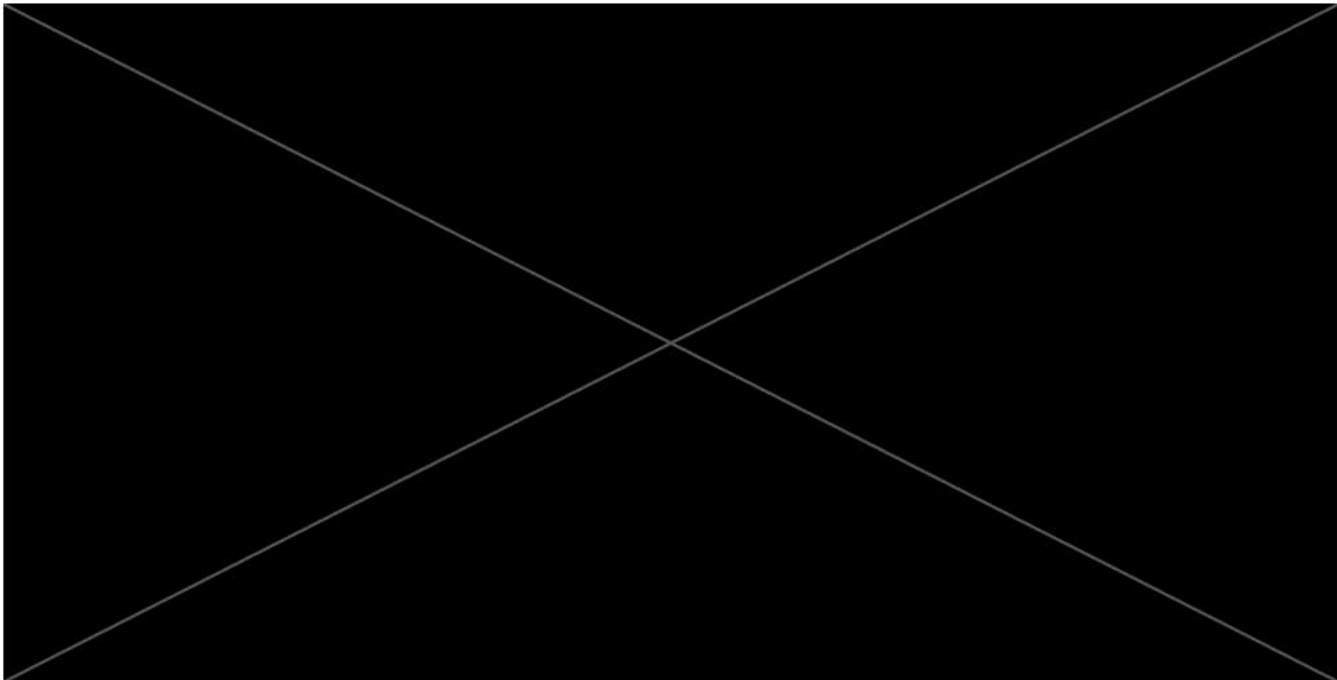
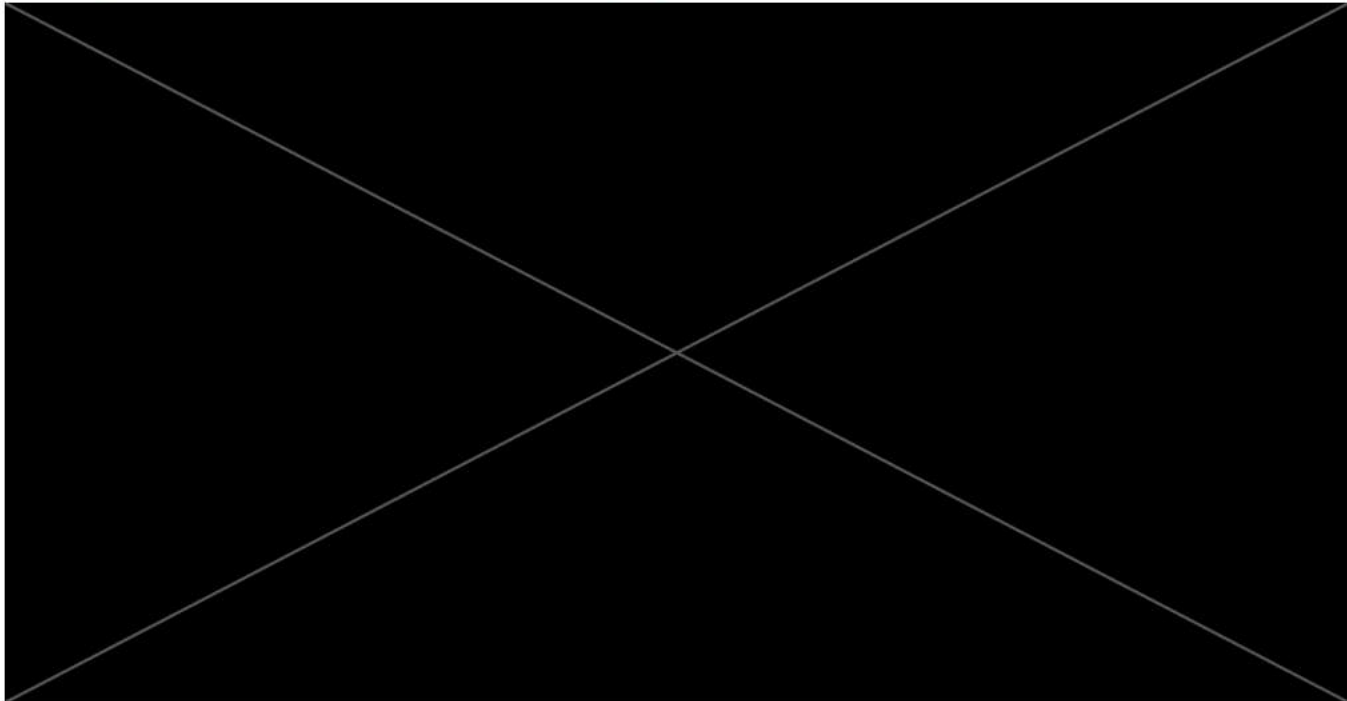


Figure 11-2 Warkworth P50 Cost estimates – by project area



## 11.2.2 Operation and maintenance costs

Operating and maintenance costs associated with Warkworth are shown in Table 11-4. The following descriptions describe how these costs were assessed.

**Table 11-4: Other Annual Costs (undiscounted costs NZ\$ million)**

Item	Full Recommended Transport Network	Southern Interchange	South West Arterials	North West Arterials	North East Arterials
General Corridor maintenance (annual)					
Road Resurfacing (every 10 years)					

### General Road Maintenance

Maintenance of road and transport corridors will vary significantly depending on a number of factors. For the purpose of this assessment, an annual cost of [REDACTED] per linear km of new infrastructure has been assumed for urban 2 lane road, [REDACTED] per linear km of new infrastructure has been assumed for urban 4 lane road. For the rural 2 lane road a general maintenance cost of [REDACTED] per linear km is assumed. Hence, for the roads which undergo upgrades from rural to urban has an additional maintenance cost of [REDACTED] per linear km for 2 lanes.

### Road Resurfacing

Resurfacing can be expected to occur periodically throughout the life of a pavement. An allowance of [REDACTED] has been provided at 10-year intervals. Reconstruction of the pavement has not been provided for as it is assumed that the pavement life will exceed the 40-year evaluation period.

### Bridge Maintenance

The bridge maintenance cost is ignored because the bridge construction cost is not available in isolated form from the total construction cost for each of the individual projects.

## 11.2.3 Public transport operating costs

PT operating costs were adopted from those used in the IBC ([REDACTED] for buses). Although the cost of operating PT services depends on several variables (distance travelled, drivers' salaries, fleet maintenance and parking, etc.), at this stage typical figures were used based on 2017/18 data provided by Auckland Transport. These rates were applied to the change in bus service kms from the MSM model.

The list of all the project costs available for the economics is summarised in the **Table 11-5**.



### 11.2.4 Project costs for economic assessment

The project costs used in the economic assessment are shown in Table 11-5.

**Table 11-5: NPV Project Costs, \$M**

Projects	PV capital Cost, \$M	PV Maintenance Cost, \$M	PV PT Operating Cost, \$M	PV total net costs, \$M PV
Full Recommended Transport Network				
Southern Interchange				
South West Arterials				
North West Arterials				
North East Arterials				

### 11.3 Benefits

The key economic benefits generated by the Warkworth recommended programme are summarised in Table 11-6.

**Table 11-6 Warkworth economic benefits**

Items	NPV Benefits (\$m)				
	Full Recommended Transport Network	Southern Interchange	South West Arterials	North West Arterials	North East Arterials
Traffic - Travel Time Benefits					
Traffic - Congestion Benefits					
Traffic - Trip Reliability					
Traffic - Vehicle Operating Costs					
Active Modes					
Crash savings					
PT - Travel Time Benefits					
PT - Reliability					
PT - Health benefits					
CO2					
PV total net benefits excluding WEBs					
PV of total net costs					

Items	NPV Benefits (\$m)				
	Full Recommended Transport Network	Southern Interchange	South West Arterials	North West Arterials	North East Arterials
<b>National BCR Excluding WEBs</b>	<b>0.6</b>	<b>2.3</b>	<b>0.7</b>	<b>0.8</b>	<b>0.4</b>
WEBs %	15%	15%	15%	15%	15%
WEBs Benefits	71	39	54	25	21
PV Benefits Including WEBs	544	300	414	194	163
<b>National BCR Including WEBs<sup>14</sup></b>	<b>0.6</b>	<b>2.6</b>	<b>0.8</b>	<b>0.9</b>	<b>0.4</b>

### Key observations

- Travel time benefits for both vehicles and PT contribute significantly to the overall package benefits for each of the five packages assessed. This can be attributed to the new links on the Warkworth network as well as the shift to alternative modes of transport reducing congestion on the network.
- Another significant contributor to the benefits for each package is from vehicle operating costs.
- There is a reasonable level of active mode benefits for the North East Arterials, this is expected given that the upgrades are mainly focused on active mode improvements. These improvements are a significant contributor to the overall active mode improvements for the Full Recommended Transport Network.
- The North East Arterials has high costs but lower benefits. This can be attributed to the high cost implications associated with the Sandspit Road Link. This is not unexpected given it is considered more of a 'collector road with some strategic function', rather than an arterial. There is a case for developer contributions to assist in funding this link.
- The local package benefits are in descending order beginning with the South West Arterials, North West Arterials and finally the North East Arterials which is reasonable from the level of interventions undertaken for each package.

<sup>14</sup> The National BCR including Webs is considered as sensitivity test as per MBCM



## 11.4 Benefit Cost Ratio (BCR)

The Base Estimate BCRs with and without Wider Economic Benefits (WEBs) are shown in Table 11-7 and Table 11-8. Overall, the Warkworth programme is expected to achieve a **0.6 BCR**.

**Table 11-7 Warkworth DBC BCR excluding WEBs**

Projects	PV total benefits, \$M PV	PV total net costs, \$M PV	PV Fare Revenue, \$M PV	National BCR
Full Recommended Transport Network				0.6
Southern Interchange				2.3
South West Arterials				0.7
North West Arterials				0.8
North East Arterials				0.4

**Table 11-8 Warkworth DBC BCR including WEBs**

Projects	PV total benefits, \$M PV	PV total net costs, \$M PV	PV Fare Revenue, \$M PV	National BCR
Full Recommended Transport Network				0.6
Southern Interchange				2.6
South West Arterials				0.8
North West Arterials				0.9
North East Arterials				0.4

The Warkworth recommended transport programme underpins the whole premise for growth in Warkworth and without it growth would be constrained. The evaluation is based on the standard

evaluation methods for transport infrastructure, which is typically dominated by travel time savings. The purpose of many of the Warkworth schemes are primarily about providing the basic infrastructure to make growth happen such as urbanising existing rural roads and upgrading existing corridors to include separated active mode facilities. These types of corridors (e.g., Woodcocks, Sandspit and Matakana Road) have high costs but relatively small transport benefits (primarily walk/cycle benefits), and exclude other, un-monetised benefits that would arise from 'urbanisation'. The bulk of transport benefits for the Warkworth network therefore come from completing new links to enable the land use to develop. This heavy investment in urbanisation in Warkworth results in the BCR for the full programme being estimated at 0.6 which is noted to be less than 1.

Despite the lower BCR, the recommended programme is still needed to respond to the planned growth and realise the wider transport outcomes and therefore the DBC continues to recommend the full programme is route protected to enable the growth sought.

However, the DBC has also shown that the North East Warkworth growth area in particular is achieving the lowest value for money in Warkworth with a BCR of ~0.4. This is due to its lower yields due to topographical and ecological constraints as well as some of the most expensive infrastructure costs (the New Sandspit Link Capex estimated to be ██████████ and Sandspit Upgrade estimated to be ██████████). Therefore, there is opportunity to carefully consider the timing and scale of the planned North East growth and consider value engineering in future Implementation DBCs.

Costs have been carefully managed in this DBC and every opportunity to minimise land take and reduce the size of projects has been taken. It is also expected that value engineering will be undertaken at later steps for individual corridors to further improve value for money. It is considered that the BCR calculation is conservative with the base assumption that the BCR does not include developer contributions. Given the necessity of some of the greenfield roads in particular for access, there is a clear opportunity to capture developer funding which would reduce the costs for the owners and further improve the BCR.

Notwithstanding the lower BCR, these corridors do however continue to play a wider role in the transport outcomes for the Warkworth as the corridors support the access to key social and economic destinations and provide significant connectivity gains for the walking and cycling network. Importantly the recommended network aligns well to the GPS priorities, in particular the access, resilience and reduction of reliance on private vehicles.

## 11.5 Range of BCR estimation

The BCR range estimation is split into analysis framework and parameter sensitivity tests. The Analysis framework includes Discount rate and Analysis period and Parameter sensitivity includes %WEBs. Full details are included in **Appendix K: Economics Assessment**.

The sensitivity tests show that the BCRs have a fairly small impact on the parameter sensitivity tests but larger variations are observed on discount rate and analysis period sensitivity.



**Table 11-9: Summary of BCR Range for the Warkworth DBC Projects**

Parameter	Full Recommended Transport Network	Southern Interchange	South West Arterials	North West Arterials	North East Arterials
Analysis Framework	0.5 to 0.8	1.9 to 3.1	0.5 to 1.0	0.7 to 1.1	0.3 to 0.6
Parameter Sensitivity	0.6 to 0.7	2.5 to 2.7	0.7 to 0.8	0.9	0.4 to 0.5

The appraisal has not considered 3rd party funding (such as developer contributions), nor of more detailed staging scenarios in line with the growing travel demand (e.g., construction of station corridors expanded to full stations at a later date when needed). Both of these opportunities could increase the likely BCRs. The progressive development of this area over the next 30+ years suggests there would likely to significant opportunities for such strategies

## 11.6 Investment prioritisation method

The Waka Kotahi Investment Prioritisation Method for the 2021–24 National Land Transport Programme (NLTP) has been used to understand the potential investment prioritisation for the Warkworth DBC. This has been assessed against the better travel options criteria.

Factor	Rating
GPS alignment	<p><b>High – Very High</b></p> <p>Gives close effect to the GPS in particular, the recommended Warkworth network has a strong focus on safety, mode shift and better access to social and economic opportunities. This is provided through new connections, real transport choice and design improvements. The mode shift focus of the network fundamentally supports the development of a low carbon transport network for future growth.</p> <p>In the AM period it is estimated that mode shift for private vehicles will reduce by ~6% . In addition, there is ~14% increase in jobs accessed within 45 minutes by bus and ~28% increase in jobs accessed within 45 mins by active modes. 43% of Warkworth is within 500m of a bus stop and an increase of 47% of Warkworth withing 400m of a high quality active mode network.</p>
Efficiency	BCR 0.6 (VL)
Scheduling	<p><b>High.</b></p> <p>This programme has a high interdependency with other investments being implemented in Warkworth ( Ara Tūhono and Hill Street Intersection Upgrade). Non delivery of this Warkworth network will result in an unconnected active mode and bus network that will not be able to support the planned future growth. In particular the alternative routes to SH1 ( Western Link Road and Sandspit Link Road) have a primary purpose to provide resilience to the network. Note it will be delivered outside the 2021-24 NLTP period but needs to be planned for in future funding planning processes.</p> <p>High criticality as the recommended programme directly supports the release of FUZ land. Without the investment the planned land release will not be able to occur at the same speed or density. The investment in upgrading existing urban corridors ( Woodcocks Road, SH1, Matakana Road) is critical prepare the existing network to receive the extra growth.</p>
Priority order	7





# Financial Case



## 12 Financial Case

This section outlines the Financial Case for both route protection and implementation of the recommended Warkworth package. The Financial Case is based on several variables as long-term route protection has not been previously widely undertaken. The types of uncertainty include:

- Level of third party (developer) funding, as this requires negotiation, agreement and must be undertaken on a case by case basis.
- Change in quantum of property acquisition required.
- Cost of property is higher or lower than assumed.
- Growth is quicker or slower than assumed.

This uncertainty should be considered by funders when allocating property funding.

The following analysis is based on the staging assumed in the Economic Case which is broadly based on the FULSS and the estimated release of land in Warkworth.

It is noted that the graphs assume the “likely” escalation of  for property and  for construction costs unless otherwise stated.

Not all projects in the recommended network have been recommended to proceed for route protection. Of those that have there is a range of route protection mechanisms. Table 12-1 provides a summary of the project assumptions for this financial case. For more detailed information on the route protection strategy refer to Section 13.1 and Appendix L: Route Protection Strategy

**Table 12-1 Financial case assumptions for route protection**

No.	Package Projects		Project to be implemented	Route Protection required?	Type of Route protection
1	Northern Public Transport Interchange and Park and Ride		✓	✓	NOR
2	Southern Public Transport Interchange		✓	✓	Developer Agreement and Plan Change Provisions
3	New Southern Interchange on Ara Tūhono Puhoi to Warkworth Motorway		✓	✓	Land retention strategy
4	Woodcocks Road	4a Woodcocks Road Urban Upgrade (TYPE A)	✓	X	N/A
		4b Woodcocks Road Rural Upgrade	✓	✓	NOR



No.	Package Projects		Project to be implemented	Route Protection required?	Type of Route protection
5	SH1 Upgrade	5a Hudson Road to Hill Street (TYPE A)	✓	✗	N/A
		5b Hill Street to Fairwater Road (TYPE A)	✓	✗	N/A
		5c Fairwater to edge of FUZ	✓	✓	NOR
6	Matakana Road Upgrade		✓	✓	NOR
7	Sandspit Road Upgrade		✓	✓	NOR
8	New Western Link Road – North		✓	✓	NOR Northern Section only
9	New Western Link Road – Central (TYPE A)		✓	✗	N/A
10	New Western Link Road – South		✓	✓	NOR
11	New Wider Western Link Road		✓	✓	NOR Northern Section only and Plan Change Provisions for southern section
12	New Sandspit Road Link		✓	✓	NOR

## 12.1 Whole of life costs

The financial implications for Waka Kotahi and Auckland Transport can be summarised into the following categories:

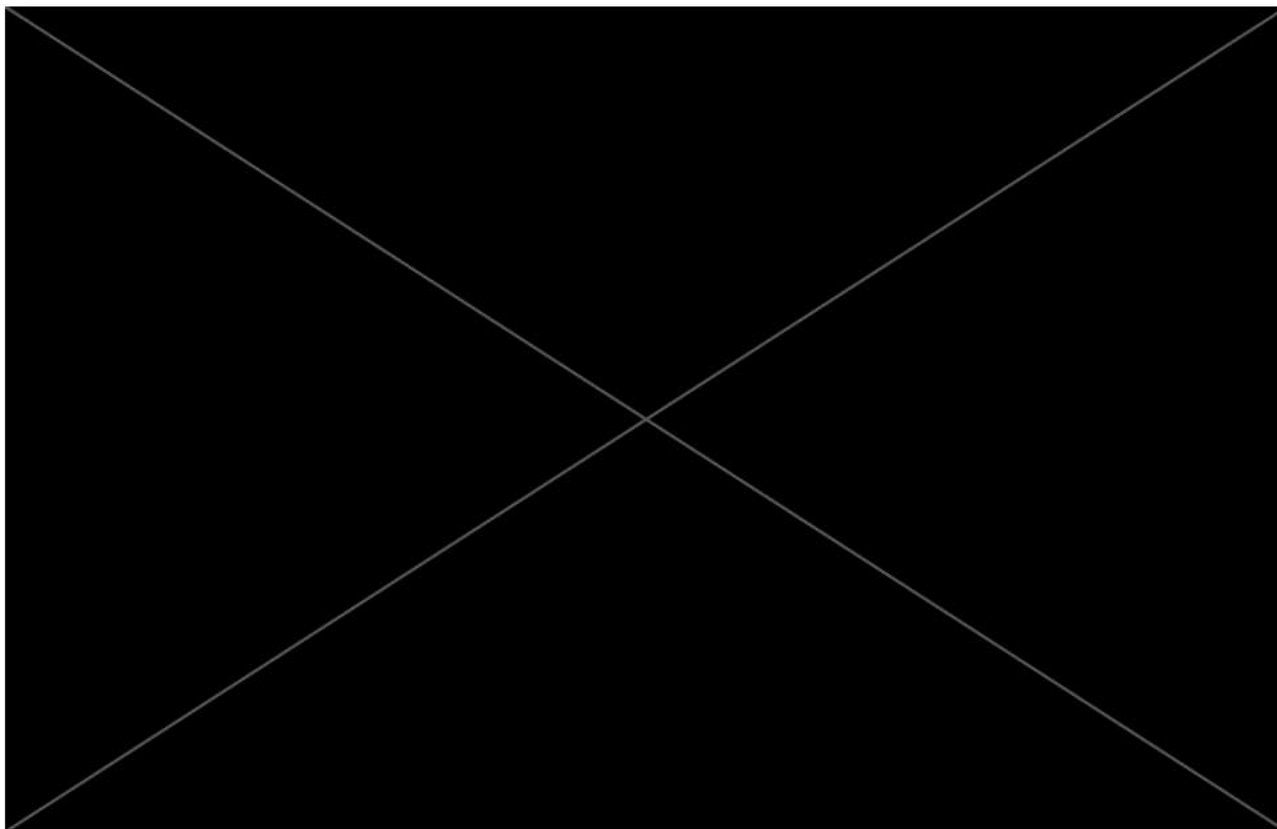
- **Cost of route protection** (Post lodgement costs, early property acquisition and property implementation costs).
- **Implementation costs** (Project development, pre-implementation, project implementation).
- **Operations and Maintenance costs.**

The Warkworth cashflow for all three components by project phase is shown in Figure 12-1.





Figure 12-1 Whole of life Warkworth cashflow (excluding contingency)



### 12.1.1 Cost of route protection

Route protection using NoR is the recommended mechanism for nine of the projects identified in the Warkworth package. The DBC seeks to progress the recommended upgrades to the next phase, which includes post-lodgement. Two key cost elements have been identified as being related to route protection.

#### 12.1.1.1 Professional services – Post lodgement costs

The expected post lodgement cost is detailed in Table 12-2.



Table 12-2 Professional service costs for Warkworth post lodgement

Post Lodgement cost item	Cost (undiscounted \$Millions)
Target Cost Estimate (TCE)	XX
Risk	XX



Post Lodgement cost item	Cost (undiscounted \$Millions)
Escalation	XX
Management cost XXXXXXXXXX	XX
<b>TOTAL</b>	XX

### 12.1.1.2 Expected property costs of route protection

There is a potential property cost implication once the Warkworth NoRs are lodged. While the vast majority (80%) of property purchase is typically anticipated in the three years prior to implementation of a particular project, this acquisition could occur prior to route protection being enacted, or during the route protection process.

**The following costs have been developed using the Waka Kotahi Cost Estimation Manual (SM014) and property estimates are based on current zoning.**

The Te Tupu Ngātahi Programme Wide Property Strategy identifies several different potential acquisition profiles for forecasting the potential property acquisition cashflow:

- Profile A: Designate and hold until implementation (generally applies to greenfield sites).
- Profile B: Designate and moderate acquisition (generally applies to brownfield sites).
- Profile C: Early acquisition (applicable for strategic sites).

The Warkworth profiles are shown in Table 12-3 below.

**Table 12-3 Property acquisition profiles for Warkworth<sup>16</sup>**

No.	Package Projects		Profile A	Profile B	Profile C
1	Northern Public Transport Interchange and Park and Ride				✓
2	Southern Public Transport Interchange		<b>Not going to NoR so no early property liability risk. Have assumed a profile C purchase profile.</b>		
3	New Southern Interchange on Ara Tūhono Puhoi to Warkworth Motorway		No property acquisition		
4	SH1 Upgrade	4a Hudson Road to Hill Street (TYPE A)	No property acquisition		
		4b Hill Street to Fairwater Road (TYPE A)	No property acquisition		

<sup>15</sup> Based on escalation from 2017 estimates.

<sup>16</sup> Note only corridors that are proceeding to route protection are included in this property assessment. Note that Wider Western Link Mahurangi to SH1 is not going to NoR so no early property acquisition liability has been allowed.

No.	Package Projects		Profile A	Profile B	Profile C
		4c Fairwater to edge of FUZ		✓	
5	Woodcocks Road	5a Woodcocks Road Urban Upgrade (TYPE A)	No property acquisition		
		4b Woodcocks Road Rural Upgrade		✓	
6	Matakana Road Upgrade			✓	
7	Sandspit Road Upgrade		✓		
8a	New Western Link Road – Sh1 to stream bridge (4 lanes )				✓
8b	New Western Link Road – South of stream bridge to Falls Road (4 lanes)		No property acquisitions. Assume provided by Warkworth North precinct provisions		
9	New Western Link Road – Central (TYPE A)		No property acquisition		
10	New Western Link Road – South		✓		
11	New Wider Western Link Road	11a West (Woodcocks Road to South of Mahurangi)	✓		
		11b East (Mahurangi to SH1)	<b>Not going to NoR so no early property liability risk. Assume land if required is bought 3 years prior to construction as per normal procedures.</b>		
		11c Wider Western Link/SH1 intersection	✓		
12	New Sandspit Road Link		✓		

It is noted that the one strategic project in Warkworth ( Southern Interchange on Ara Tūhono) does not require land so the property profiles that follow are for local road upgrades only.

The Northern Public Transport Interchange and Park and Ride and Wider Western Link Road North are interdependent and are the only projects to be given a Profile C in Warkworth. This highlights their worth as a strategic acquisition for the future network. Purchasing these sites early will allow AT full



flexibility to either deliver the Northern Public Transport Interchange and Park and Ride to support the North Warkworth growth at its outset, or alternatively control the land to enable developers further south to complete the Western Link Road North early and unlock housing yield for their developments.

The overall cashflow associated with the cost of route protection ( NoR Post lodgement, Early property acquisition and property implementation) is shown in Figure 12-2.

Figure 12-2 Cashflow for cost of route protection- NoR Post Lodgement Costs, Early Property Acquisition, Property Implementation

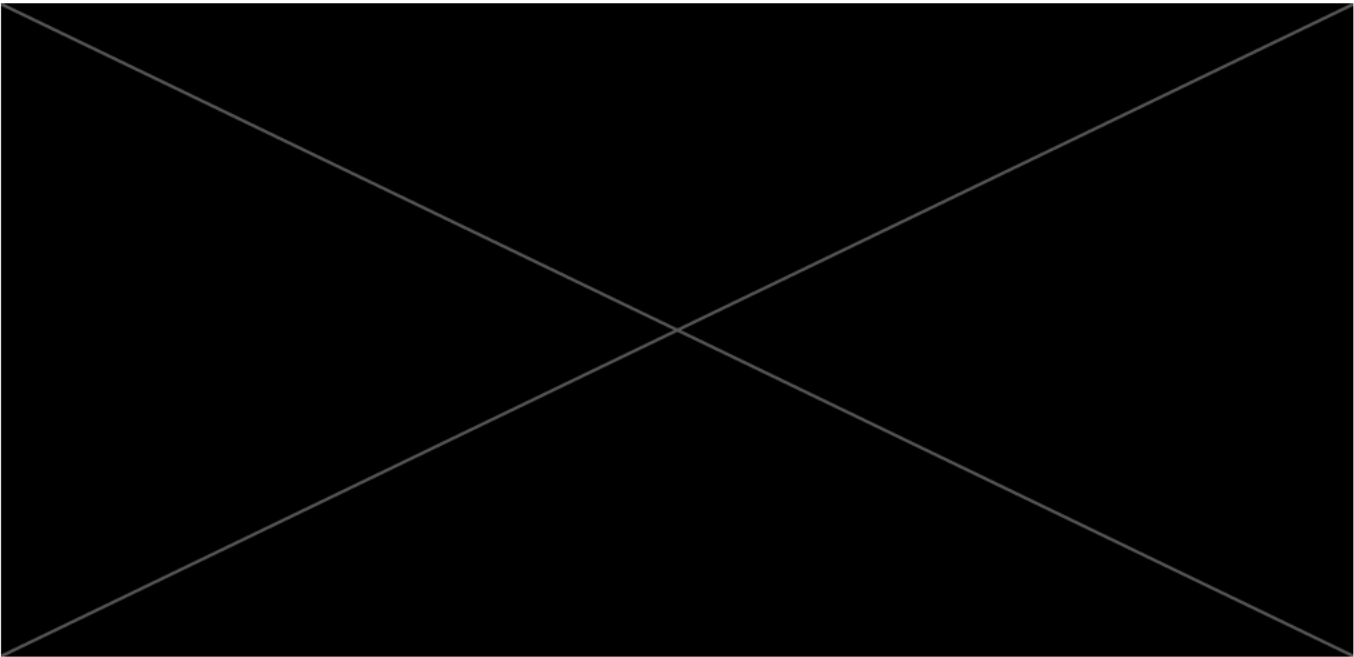
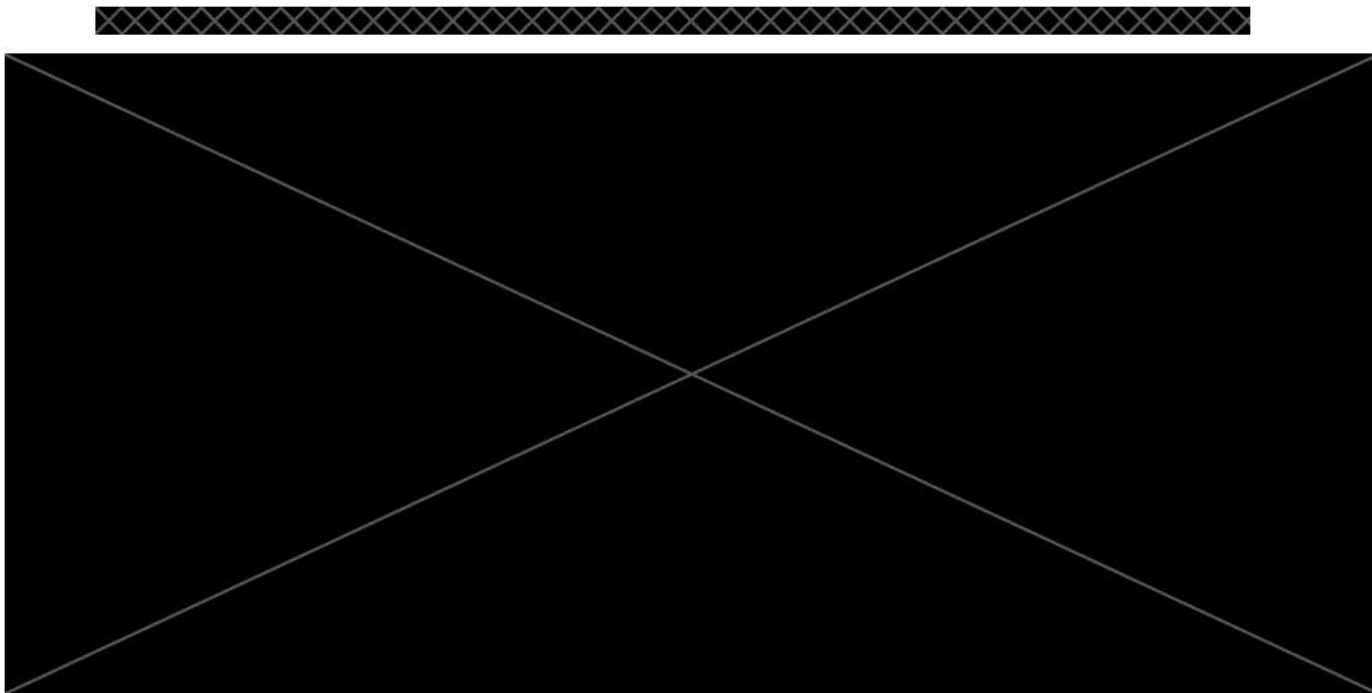




Figure 12-3 Total Property Warkworth Cashflow split by project area including Early Property Acquisition and Property Implementation costs ( base estimate plus likely escalation)







The current RLTP is from 2021/22 to 2030/2031 and the Warkworth costs that fall into this first decade are shown in Figure 12-4 below. This details the **route protection only ( NoR and Early Property acquisition)** for this first decade which totals [REDACTED]. Table 12-5 shows the first decade early property acquisition ranges from [REDACTED] to [REDACTED] depending on the level of escalation assumed. The assumed staging to respond to land use release demonstrates the speed at which the early property acquisition is anticipated to start to meet the current implementation timeframes.

Figure 12-4 First decade (2023-2032) cashflow for cost of route protection – NOR Post Lodgement Costs, Early Property Acquisition [REDACTED]

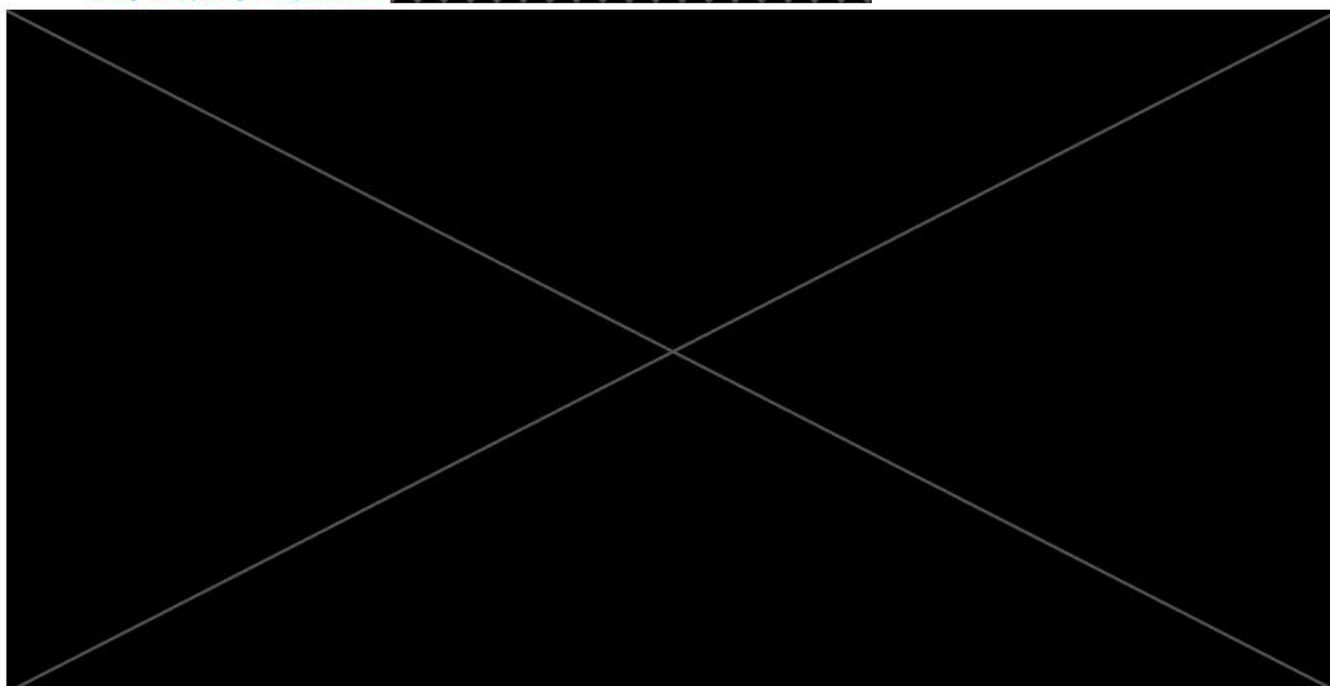
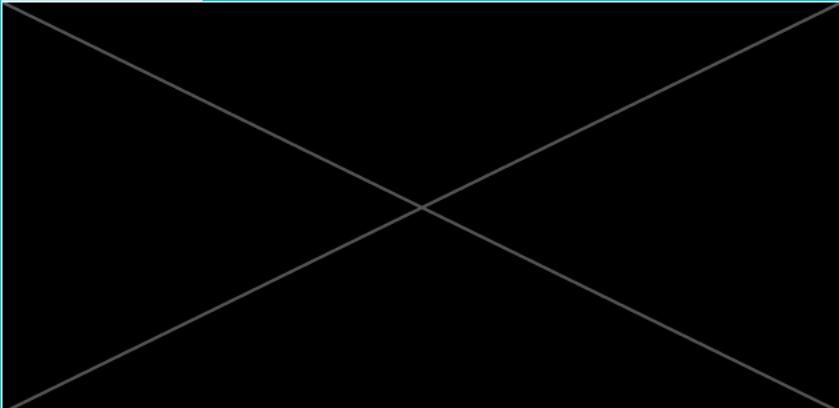


Table 12-5 Cost of Route Protection with range of property escalation from 2028-2032

Scenario	NOR Post Lodgement \$M (undiscounted)	Early Property Acquisition \$M	Property Implementation \$M	Total cost for route protection \$M
Base Estimates, Low Escalation				
Base Estimates, Likely Escalation				
Base Estimates, High Escalation				



### 12.1.2 Implementation costs

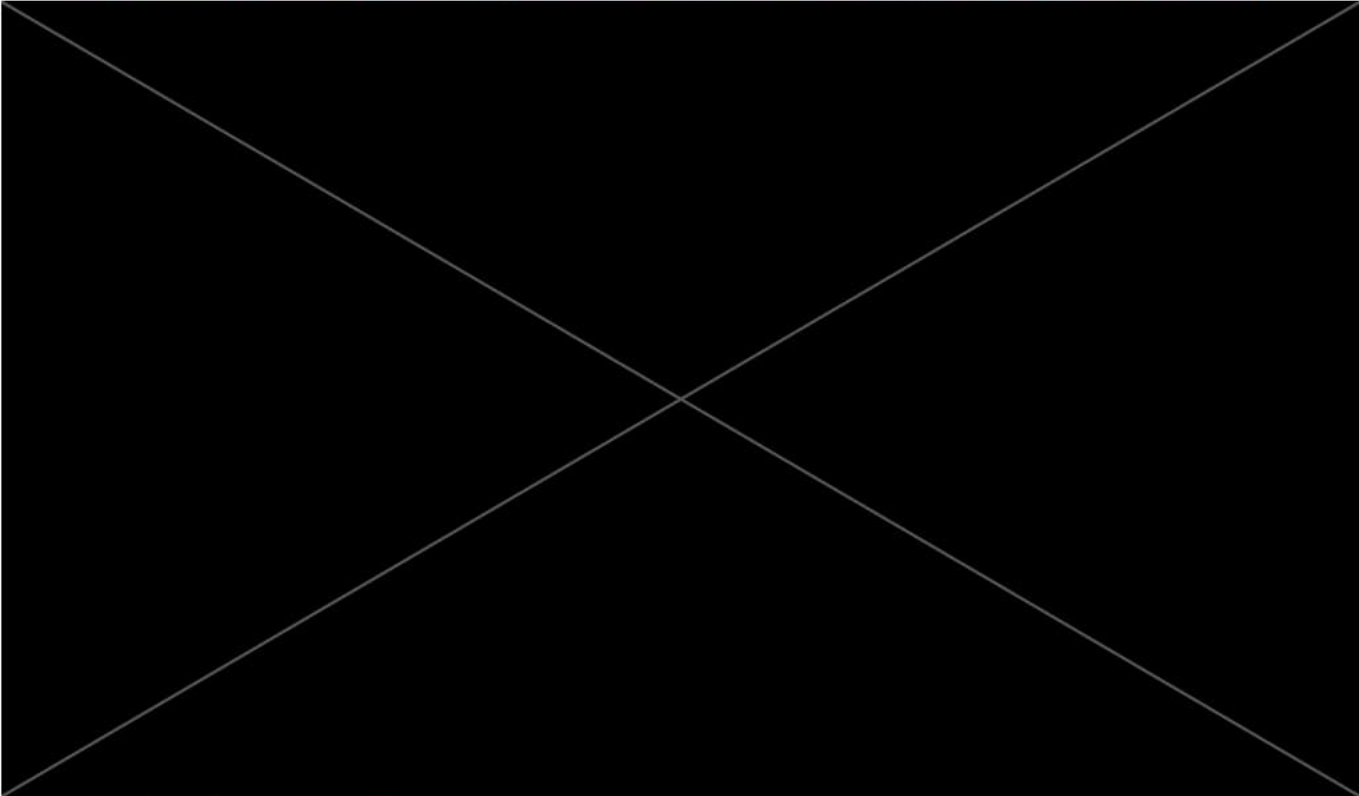
The implementation costs include:

- Project development – including consultancy fees and Waka Kotahi and Auckland Transport management costs.
- Pre-implementation costs – including consenting, design fees, site investigations, consultation and mana whenua consultation.
- Project implementation costs. Associated with construction, as well as other non-construction costs associated with supporting the construction. An allowance of █ of physical works costs has been allowed for non-construction costs associated with completion of the implementation phase. This is made up of █ for consultancy fees to allow for a traditional measure and value contract, plus an additional █ for Waka Kotahi / AT managed costs, and █ for construction monitoring fees.
- A “likely” construction escalation scenario of █ has been adopted.

Figure 12-5 shows the project cashflow for the implementation costs with the assumed land use release scenario.



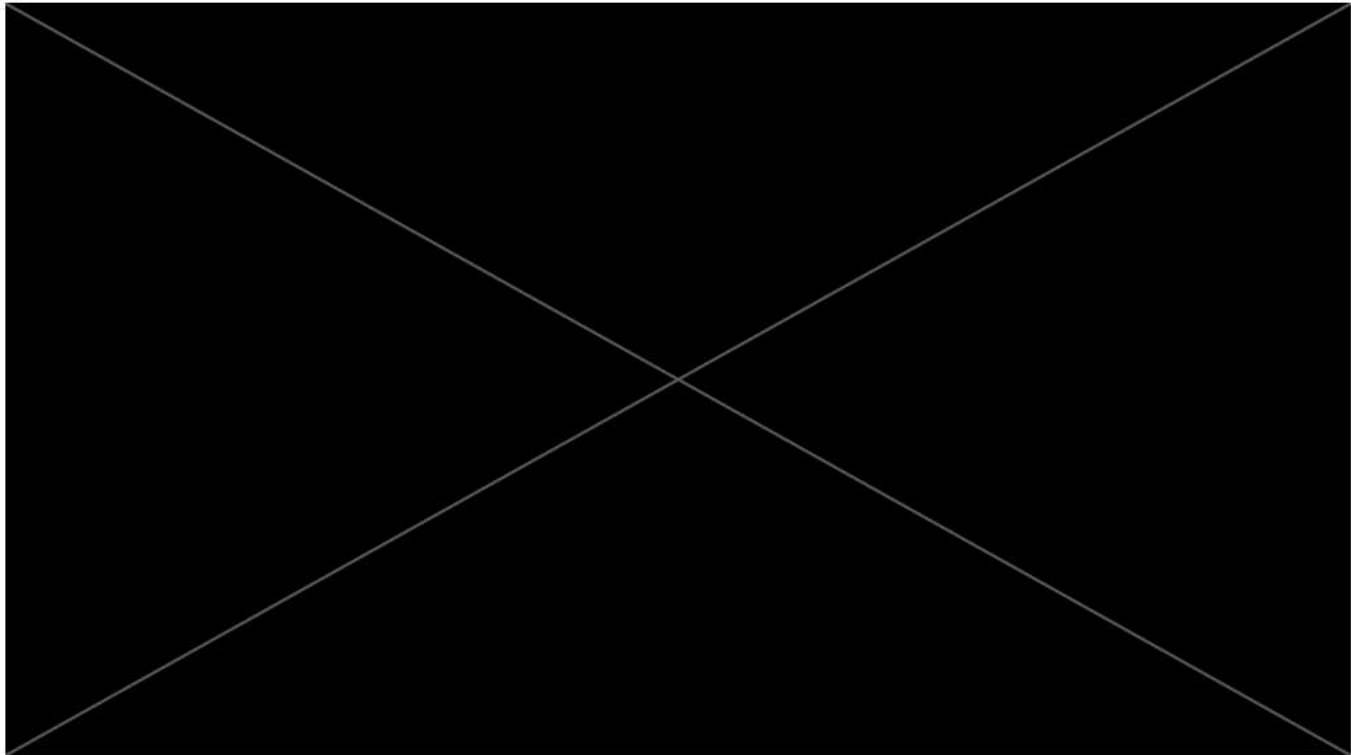
Figure 12-5 Warkworth Cashflow – Implementation costs (Base estimates, likely construction escalation)



12.1.3 Operational costs

The operational costs were described in Section 11.2.2 and these have been applied as an annual or one off cost as appropriate.

[Redacted text block]



## 12.2 Funding

### 12.2.1 Funding sources

Potential funding sources are detailed in Table 12-6.

**Table 12-6 Potential funding sources for Warkworth**

Funding source	Commentary
<b>National Land Transport Fund (NLTF)</b>	<ul style="list-style-type: none"> <li>For the 2021-24 NLTP, the total funds allocated was \$13.1b (excluding local share contribution of \$3.8b). This amounts to approximately \$4.3b per year and around \$1.8Bn of this to be spent in Auckland.</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> </ul>
<b>Approved organisations' local share</b>	<ul style="list-style-type: none"> <li>AT's local share for transport services and projects is funded by Auckland Council.</li> </ul>
<b>Government grants</b>	<ul style="list-style-type: none"> <li>This is a long term delivery programme and the nature of additional government funds will vary throughout time. It is feasible that one or more of the projects may qualify for criteria under separate government funding.</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>This DBC cannot assume any of this type of funding but it is worth noting that the owners should be looking for opportunities to contest this type of future funding for the Warkworth projects. This would obviously increase the affordability of this large scale investment.</li> </ul>
<b>Other supplementary funding sources</b>  Refers to contributions that are additional to the NLTF, local share funding or Crown loans.	<ul style="list-style-type: none"> <li>Financial contributions towards the costs of improving network infrastructure (Developer Contributions). Note Auckland Council is undertaking a citywide assessment of Developer Contributions with a framework for Drury being consulted on at the time of the writing of this DBC. It is noted the intention is that a similar process will be rolled out for both green and brownfield growth Auckland Wide. This process aims to capture contributions based on a beneficiary style analysis.</li> <li>Debt finance and Public Private Partnerships (PPPs).</li> <li>Value capture / Beneficiary pays.</li> <li>This DBC identifies cost saving opportunities from financial contributions from developers for the Warkworth Programme, primarily through the delivery of growth corridors and vesting of land. This assessment has not considered debt finance or value capture and it is recommended this is further explored by the owners as the Programme progresses.</li> </ul>

<sup>17</sup> Waka Kotahi NLTP Bulletin October 2022



An analysis of the recently released Regional Land Transport Plan (RLTP) 2021-2031 is detailed in Table 12-7 and includes the following funding streams directly related to the Warkworth transport network.

**Table 12-7 Identified Warkworth Funding**

Item	Description	Funding status	Responsible agency	Part of DBC network
<b>Western Link Road Route Protection</b>	Route Protection for the Western Link Road in Warkworth.	\$6M	Auckland Transport	Yes
<b>Hill Street Intersection Improvement</b>	Upgrade and reconfiguration of two intersections on SH1 and Sandspit Road in Warkworth, to improve movement for all modes.	\$18.7M	Auckland Transport	No
<b>Tūhonohono ki Tai-Matakana Link Road</b>	A connection between SH1 and Matakana Road.	\$26M	Auckland Transport	No
<b>Supporting Growth Route Protection Programme</b>	There are three funded line items for Supporting growth covering the programme, site investigations and post lodgement and property purchase	Post Lodgement \$64.5M Site investigations \$28M Programme \$40M	Waka Kotahi	Yes
<b>Ara Tūhono Pūhoi to Warkworth</b>	The Pūhoi to Warkworth project will extend the four-lane Northern Motorway (SH1) 18.5km from the Johnstone's Hill tunnels to just north of Warkworth. It is the first stage of the Ara Tūhono – Pūhoi to Wellsford project.	\$874M	Waka Kotahi	No
<b>Ara Tūhono Warkworth to Wellsford. Designation</b>	The Warkworth to Wellsford project is the second section of Ara Tūhono Pūhoi to Wellsford. The Indicative Alignment is 26km long, includes an 850m long twin bore tunnel in the Dome Valley and three interchanges located at Warkworth, Wellsford and Te Hana	\$21M	Waka Kotahi	No

This shows that investment in parallel strategic projects in Warkworth is generally well planned for with funding confirmed for Ara Tūhono Puhoi to Warkworth, Tūhono ki Tai – Matakana Link Road and Hill Street upgrades as well as route protection for Ara Tūhono Warkworth to Wellsford.

The Te Tupu Ngātahi programme itself is funded so there is programme wide funding for the Warkworth NOR professional services going forward including pre lodgement and NOR documentation preparation. Preparation of this documentation does not in itself trigger the early property acquisition, this arises once the NOR is formally lodged.

**However, with respect to the proposed recommended Warkworth Network to support growth, only a small amount for Western Link Road route protection has been nominated in the next decade 2021-2031. This is likely to leave a significant funding gap for Warkworth.**

### 12.2.2 Funding share

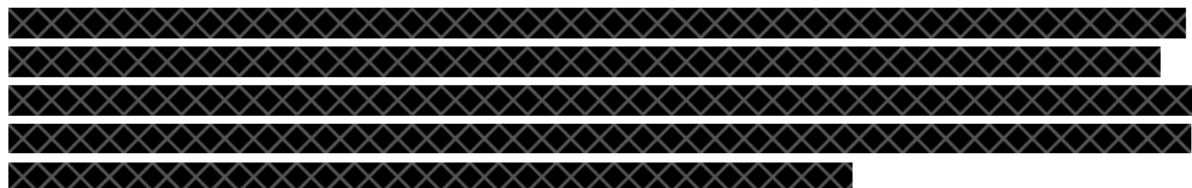
Based on discussions with owners the projects have been split for delivery by organisations as shown in Figure 12-7.

**Figure 12-7 Projected split of owners for Warkworth Projects**



As shown, 11 of the Warkworth projects will be delivered by Auckland Transport. Waka Kotahi is responsible for delivering the Southern Interchange on Ara Tūhono. It is noted that the existing SH1

corridor is currently owned by Waka Kotahi, however with the imminent opening of Ara Tūhono – Puhoi to Warkworth, discussions are underway to revoke the existing SH1 corridor within Warkworth to Auckland Transport. As such the assumption is that the SH1 extents in this recommended Warkworth Network will be owned by Auckland Transport at the point of project implementation.



**Table 12-8 General assumptions for developer contributions and potential cost savings**

Corridor Type	Third Party % of implementation costs	Third Party % of property costs	Commentary







Figure 12-8 Funding Split for Warkworth Projects (P50 Costs)

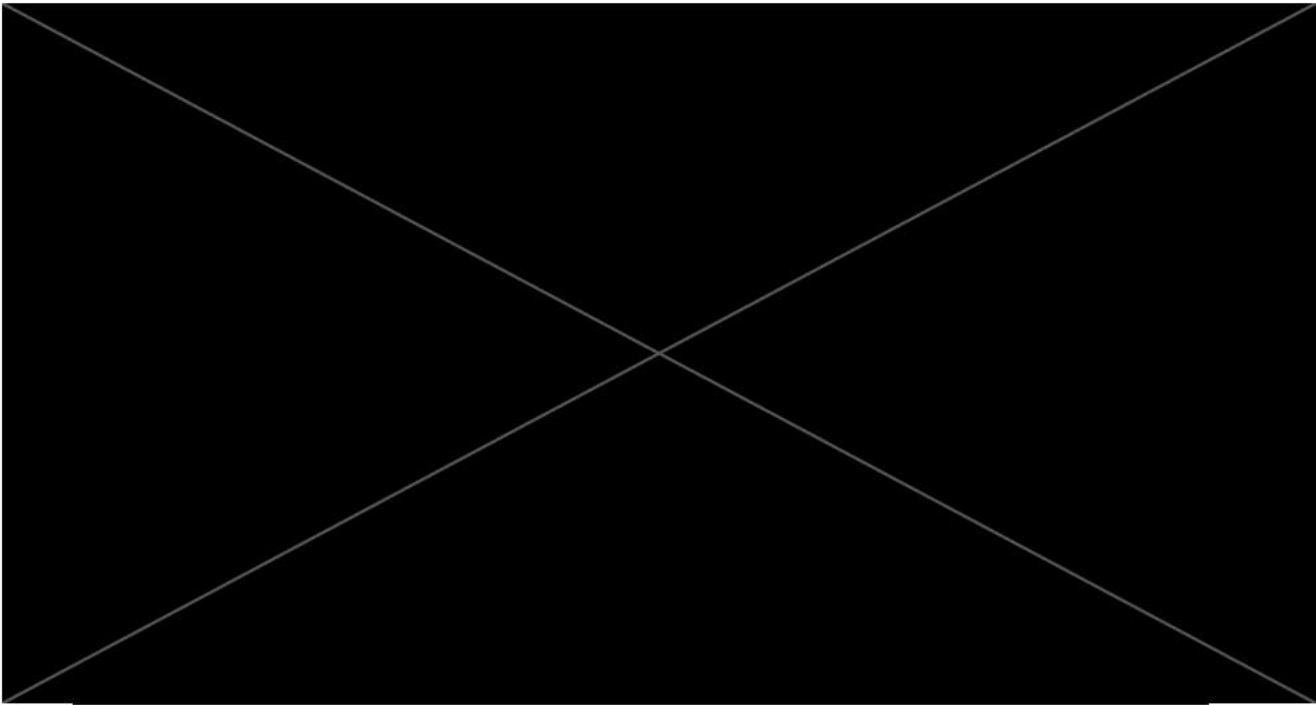
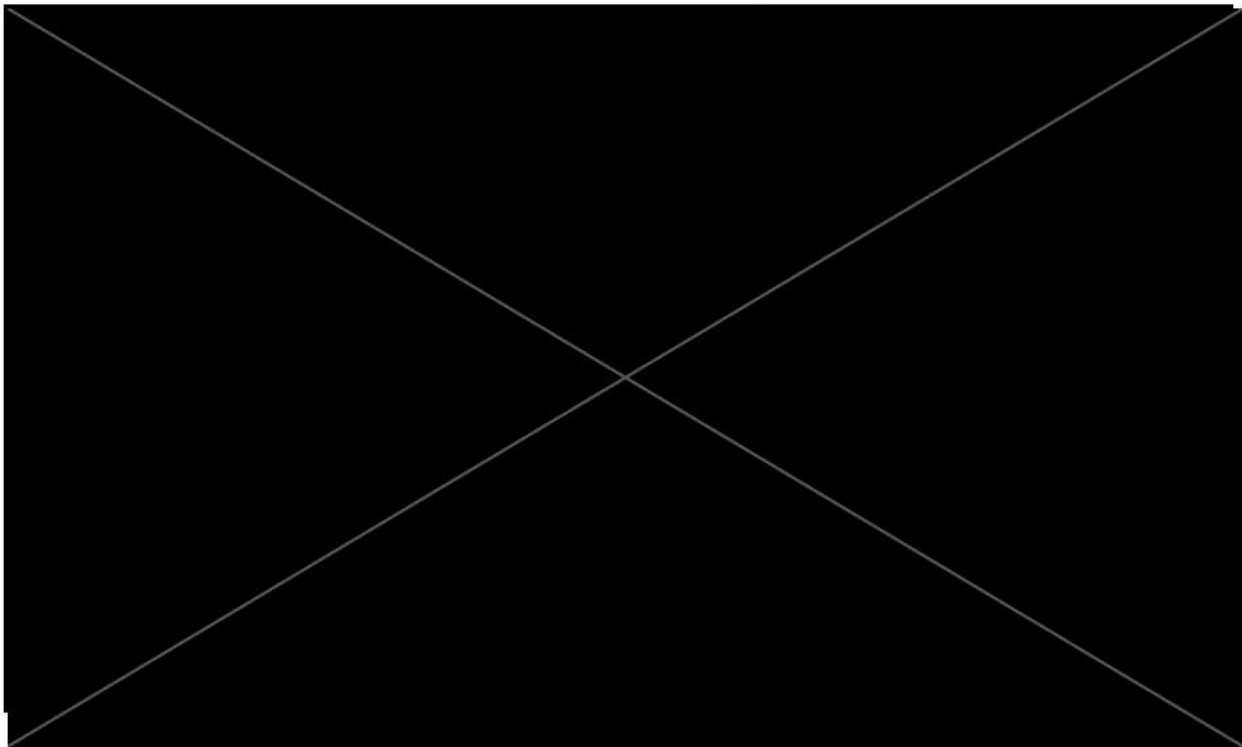


Figure 12-9 Funding Split for Warkworth Projects by Project Area (P50 Costs)



[Redacted]

The North East growth area is achieving the lowest value for money in Warkworth due to the high cost and lowest benefits. This could suggest it is not a great investment as fully funded by Auckland Transport. However, there is a case for Auckland Transport funding key elements (such as bridges and end point intersections) with developers constructing other parts adjacent or accessing their growth. The advantage would be that Auckland Transport would then get a completed link (and strategic benefit) , with a moderate contribution. These benefits however won't be achieved unless an agreed corridor is identified and protected (i.e., Auckland Transport funding priority could be low, but need for route protection needed to achieve the desired outcome).

12.2.3 First Decade route protection affordability

[Redacted]

Table 12-9 First decade Warkworth Financial Case Summary (Base estimates, no contingency, likely property escalation)

[Redacted Table Content]	
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18 [Redacted]  
19 [Redacted]

## 12.3 Financial Case Summary

This is a substantial transport investment programme (\$1.1Bn Capex P50) to support the planned Warkworth growth. The current staging is based on the FULSS land use which assumes the majority of growth land will be released in Decade 2 which has front loaded a lot of early property acquisition costs into Decade 1 and concentrates implementation around 2028-2038 with the final three pieces of investment spread in the third decade (2038+).

As is shown by the RLTP funding, there is only a small portion of property funding currently committed for the Warkworth in Decade 1. This would suggest that unless an external funding source is identified for the route protection in particular that the release of land may need to be slowed down and the infrastructure implementation delayed allowing the transport network time to respond.

Similarly with no secured funding for implementation, the leading infrastructure projects identified in the early decade to enable the existing network ready to receive the growth i.e., completing cycle connections will be at risk.

Despite the lower BCR, progressing route protection is still recommended to enable the desired future transport outcomes for Warkworth. There are a number of funding opportunities to consider to further improve the value for money proposition:

- Consider timing and scale of the North East growth area. This might include Auckland Transport delivering key parts of Sandspit Link (such as bridges and intersections) and protect the route for developers to complete other sections.
- This financial analysis has been based on the assumed staging; however, the policy landscape has changed such that we might reasonably expect more out of sequence development to occur. One of the opportunities to be considered when seeking funding is the ability for Auckland Transport to make strategic property purchases if land becomes available. It is noted that an internal Auckland Transport workstream is investigating the development of a strategic property fund. Warkworth currently has only one localised area highlighted for strategic property purchase (Northern Public Transport Interchange and Park and Ride and the northern section of the Western Link Road North) but other opportunities may present themselves and some flexible funding would maximise the flexibility for delivering the Warkworth infrastructure.
- A second funding consideration is the ability for Auckland Transport to have sufficient flexibility in funding to respond to out of sequence Plan Changes, in particular if the funding would enable an Infrastructure Funding Agreement with third parties. An example of this might be that Auckland Transport purchases the land in the northern section of the Western Link Road North and the developer builds some or all of the connection through to SH1. The developer would be unable to proceed without the missing link of land, but the opportunity cost for Auckland Transport would be significant – [REDACTED]

It is acknowledged that there is a cost to flexibility and route protection and the work undertaken to date for Warkworth has concentrated on balancing the future needs of the corridors and desired design flexibility against the property requirements to facilitate the infrastructure. Key considerations and opportunities to note:

- Throughout the design process a rigorous approach has been undertaken to consider reductions of corridor widths for constrained brownfield corridors such as SH1,



Woodcocks Road, Matakana Road and Sandspit Road. Localised reduced cross sections or road space reallocation have been applied where appropriate and have been used to avoid significant topographical or ecological constraints or reduce significant impacts to adjacent existing property land uses.

- Provision of additional vehicle capacity for greenfield corridors has been restricted to two lanes with only the Western Link Road North triggering four lanes to support future bus reliability.
- The topography throughout Warkworth is particularly steep in some locations. For greenfield corridors, alignments have been optimised to balance cut and fill and reduce earthwork batter impacts on property.
- The DBC has not considered cross section reductions for greenfield corridors as the overall benefits of the 24 or 30m cross sections will best provide for the future growth.
- Specific analysis has been undertaken to understand which intersections in Warkworth should remain route protected for roundabouts compared with intersections that have clear operational or legibility requirements for signals. In this way the additional footprints associated with roundabouts have been minimised.
- The need for the Southern Interchange and Sandspit Link Road has been considered in detail due to their significant investment profiles. Whilst it has been decided that there is merit in retaining them in the long term Warkworth network, their alignments and timing have been optimised to support their intended outcomes and best align with land use predictions.

One final comparison to note is that the Warkworth IBC had estimated the cost at around \$850M<sup>20</sup> in 2019. The DBC P50 estimate of ~1.1Bn is around 28% more than the IBC cost and aligns with the widely reported construction escalations over the last few years. This shows that the additional detail developed in this DBC has worked hard to maximise outcomes whilst maintaining focus on value for money and affordability.

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<sup>20</sup> Warkworth IBC P50 \$970M less \$111M for collector roads and \$5M for shared path.



# Commercial Case

## 13 Commercial Case

This section sets out the proposed approach to development of each project in relation to the recommended system described in the economic and financial cases. The following sections describe:

- Consenting / route protection strategy for each project.
- Property acquisition strategy for each project.
- Procurement strategy for the package.

### 13.1 Route protection approach

The Route Protection strategy has been developed to support the Warkworth DBC and makes recommendations on the prioritisation, packaging and preferred planning mechanism to secure route protection for the Warkworth recommended network.

A separate consent strategy will be prepared as part of the NoR process which will confirm consenting pathways, technical assessments and NoR staging.

The proposed route protection strategy is shown in Figure 13-1.

As discussed previously, the corridors in the Warkworth DBC are split into four types of route protection:

- **Type A** - No route protection as the corridor upgrade does not require additional land
- **NoR** - Development of a Notice of Requirement for route protection
- **Land Retention** – Existing designation and/or Land Ownership
- **Plan Change and Landowner Agreements/Memorandum** – Delivery by third parties.

Table 13-1 summarises the individual corridor route protection requirements and priority. The management of the route protection processes is considered further in the Management Case of this DBC.

Note that it is expected that after construction many designations may be able to be rolled back and land sold as surplus.

Full details can be located in **Appendix L: Route Protection Strategy**



Figure 13-1 Warkworth Route Protection Strategy

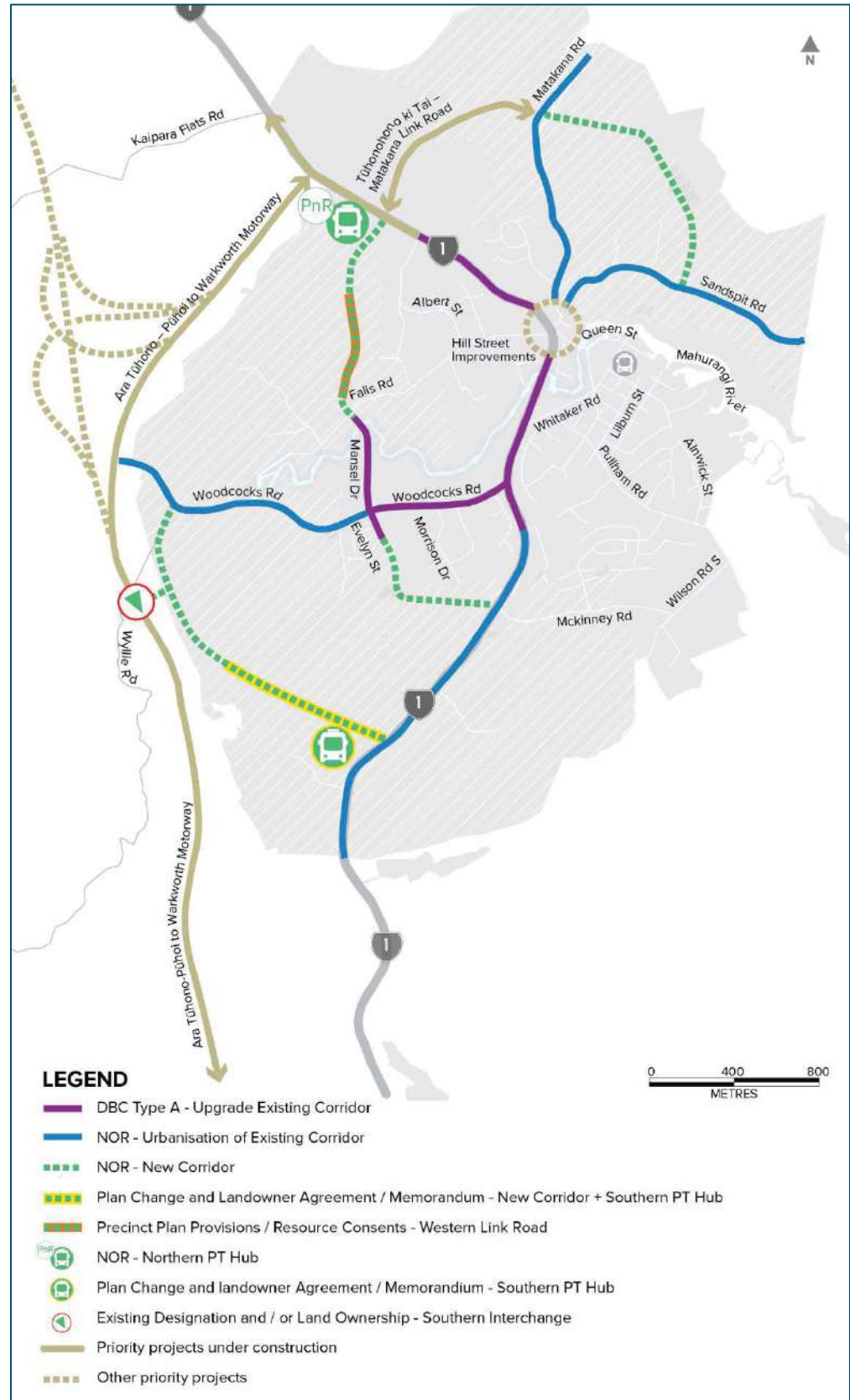


Table 13-1 Warkworth Route Protection by Corridor Summary

Package	Components	Mechanism	Requiring Authority	Priority to Protect	Lapse Period	Recommendation Rationale / Notes
Northern Public Transport Hub + Park and Ride and Western Link Road (PT Hub Section)	Transport Hub and Park and Ride	NoR – new corridor	Auckland Transport	Medium Priority	<b>15 - 20 years</b> <ul style="list-style-type: none"> <li>FULSS land release 2022 (Warkworth North Precinct)</li> <li>DBC modelling - 2038 need for implementation</li> </ul>	Route protection via NoR <ul style="list-style-type: none"> <li>Ensures AT retain control of outcomes, including access to, and delivery of, the PT Hub</li> <li>Medium to high risk of build out associated with development pressure from Precinct</li> <li>NoR provides certainty to AT and landowners / developers of outcomes – greater ability for future development to integrate land use and transport outcomes.</li> </ul>
	Section of Western Link Road North between SH1 Intersection and access to PT Hub					
Southern Public Transport Hub	Transport Hub only	Plan Change + Landowner agreement	N/A	N/A	N/A	<ul style="list-style-type: none"> <li>Location Protection through Plan Change / Developer Agreement (Waimanawa PPC) -</li> <li>Causal relationship in demand/need for PT hub with development of the FUZ</li> <li>Recognised interrelationship with location of Warkworth South local centre</li> </ul>
Ara Tūhono Southern Interchange	Ara Tūhono motorway interchange + 2 lane arterial connection to the Wider Western Link Road	Land ownership / retention strategy	Waka Kotahi	Low Priority	N/A	<ul style="list-style-type: none"> <li>Route Protection through retention of Waka Kotahi land ownership via property/land management strategy</li> </ul>
Woodcocks Road Upgrades	Section A – West of Mansel Drive Urbanisation to 2 lane 24m urban arterial + intersection	NoR - new corridor	Auckland Transport	Medium Priority	<b>15-20 years</b> <ul style="list-style-type: none"> <li>FULSS land release 2028-2032</li> <li>DBC modelling - 2038 need for implementation</li> </ul> <i>Note: as an existing corridor potential to bring forward</i>	Route protection via NoR <ul style="list-style-type: none"> <li>Multiple landowners result in complex third-party agreement process</li> </ul>
	Section B – Mansel Drive to SH1 20m cross section with bi-directional cycle facilities	DBC – Type A Project	N/A	N/A	N/A <i>Note: DBC modelling - 2028 need for implementation</i>	<ul style="list-style-type: none"> <li>Type A for DBC – no identified impacts outside existing corridor, upgrading / reallocation of existing corridor space and facilities only.</li> </ul>
State Highway 1 Upgrades	Section A –Hudson Road to Hill Street Intersection Upgrading existing (shared path) facilities	DBC – Type A Project	N/A	N/A	N/A <i>Note: DBC modelling - 2028 need for implementation</i> <i>As an existing corridor potential to bring forward (noting emission reduction staging considerations).</i>	<ul style="list-style-type: none"> <li>Type A for DBC – no identified impacts outside existing corridor, upgrading / reallocation of existing corridor space and facilities only.</li> </ul>
	Section B – Hill Street to Fairwater Road intersection	DBC – Type A Project	N/A	N/A	N/A <i>Note: DBC modelling - 2028 need for implementation</i> <i>As an existing corridor potential to bring forward</i>	<ul style="list-style-type: none"> <li>Type A for DBC – no identified impacts outside existing corridor, upgrading / reallocation of existing corridor space and facilities only.</li> </ul>



Package	Components	Mechanism	Requiring Authority	Priority to Protect	Lapse Period	Recommendation Rationale / Notes
	Providing walking and cycling facilities Road + upgrades intersections at Woodcocks Road and the Grange					
	Section C – The Fairweather Intersection to the southern FUZ boundary  Urbanisation to 2-lane 24m urban arterial	NoR (alteration to designation)	Auckland Transport / Waka Kotahi (subject to SH1 revocation process)	Medium Priority	N/A – Alteration to existing designation that has already been given effect to  <i>Note: DBC modelling - 2038 need for implementation</i>	<ul style="list-style-type: none"> <li>Route protection via NoR (alteration to existing designation,) if not contained within existing corridor</li> <li>Multiple landowners result in complex third- party agreement process</li> <li>Note: Western Link Road South and Wider Western Link Road intersections to be captured by the respective projects.</li> </ul>
<b>Matakana Road Upgrades</b>	Urbanisation upgrade to 2 lane 24m urban arterial	NoR – urbanisation of existing corridor	Auckland Transport	Medium Priority	<b>15-20 years</b> <ul style="list-style-type: none"> <li>FULSS land release 2033-2037</li> <li>DBC modelling - 2038 need for implementation</li> </ul> <i>Note: as an existing corridor potential to bring forward</i>	<ul style="list-style-type: none"> <li>Route protection via NoR</li> <li>Development pressure for live zoned land adjacent to corridor</li> <li>Multiple landowners result in complex third-party agreement process</li> <li>Greater ability to achieve integration in the short term with the (non-SGA) Tūhonohono ki Tai (Matakana Link Road) and the Hill Street intersection upgrade Projects.</li> </ul>
<b>Sandspit Road Upgrades</b>	Urbanisation upgrade to 2 lane 24m urban arterial	NoR – urbanisation of existing corridor	Auckland Transport	Medium Priority	<b>20-25 years</b> <ul style="list-style-type: none"> <li>FULSS land release 2033-2037</li> <li>DBC modelling - 2038 need for implementation</li> </ul> <i>Note: as an existing corridor potential to bring forward (noting emission reduction staging considerations).</i>	<ul style="list-style-type: none"> <li>Route protection via NoR</li> <li>Multiple landowners result in complex third-party agreement process</li> </ul>
<b>Western Link Road Central Upgrades</b>	Shared path (over bridge) + corridor upgrades to provide walking and cycling facilities	DBC – Type A Project	N/A	N/A	N/A  <i>Note: DBC modelling - 2028 need for implementation</i>  <i>As an existing corridor potential to bring forward</i>	<ul style="list-style-type: none"> <li>Type A for DBC – no identified impacts outside existing corridor, upgrading / reallocation of existing corridor space and facilities only.</li> </ul>
<b>Western Link Road South</b>	New 2 -lane 24m urban arterial + intersection with SH1	NoR - new corridor	Auckland Transport	Medium Priority	<b>15-20years</b> <ul style="list-style-type: none"> <li>FULSS land release 2028-2032</li> <li>DBC modelling - 2038 need for implementation</li> </ul>	<ul style="list-style-type: none"> <li>Route protection via NoR</li> <li>Existing developer / landowner activity in the northern section, including in relation to the FUZ and live zoned industrial land, introduces additional complexities and an elevated urgency for protection</li> <li>NoR provides certainty to AT and landowners / developers of outcomes – greater ability for future development to integrate land use and transport outcomes</li> </ul>
<b>Sandspit Link Road</b>	New 2 lane 24m urban arterial + Intersection with Sandspit Road	NoR - new corridor	Auckland Transport	Medium Priority	<b>25-30years</b> <ul style="list-style-type: none"> <li>FULSS land release 2033-2037</li> <li>DBC modelling - 2048 need for implementation</li> </ul>	<ul style="list-style-type: none"> <li>Route protection via NoR</li> <li>Multiple landowners resulting in complex third-party agreement process.</li> <li>NoR provides certainty to AT and landowners / developers – greater ability for future development to integrate land use and transport outcomes.</li> </ul>



Package	Components	Mechanism	Requiring Authority	Priority to Protect	Lapse Period	Recommendation Rationale / Notes
Wider Western Link Road	<u>Southern Section</u> Located between Mahurangi River and SH1  New 2 lane 24m urban arterial + Intersection with SH1	Plan Change + Landowner agreement	Auckland Transport	Medium Priority	N/A  <i>Note:</i> <ul style="list-style-type: none"> <li>FULSS land release 2028-2032</li> <li>DBC modelling - 2038 need for implementation</li> </ul>	<ul style="list-style-type: none"> <li>Route protection via plan change combined with developer agreement</li> </ul>
	<u>Northern Section</u> Located between Woodcocks Road and Mahurangi River (including bridge) and intersection  2 lane arterial + Intersection with Woodcock Road	NoR - New corridor	Auckland Transport	Medium Priority	<b>15-20 years</b> <ul style="list-style-type: none"> <li>FULSS land release 2028-2032</li> <li>DBC modelling - 2038 need for implementation</li> </ul>	<ul style="list-style-type: none"> <li>Route protection via NoR</li> <li>Low to Medium risk of build out under current zoning / land use</li> <li>NoR provides certainty to AT and landowners / developers of northern intersection and alignment and Mahurangi River crossing</li> </ul> <p><i>Note: PPC landowners currently in negotiations to purchase land holdings in the northern section</i></p>

## 13.2 Property Overview

### 13.2.1 Wider Te Tupu Ngātahi Context

The full property overview for the Warkworth DBC is included in **Appendix I: Property Overview**.

It is important to note that whilst this property overview has been developed for a DBC, the Warkworth DBC is for route protection purposes only and therefore the property implications are different to those of a project where implementation is imminent. There will be a subsequent Implementation Detailed Business Case to seek approval for implementation funding for individual projects, which will include more detailed analysis of the property issues. This DBC also forms part of the wider Te Tupu Ngātahi programme of works that has developed a Programme Wide Property Overview that outlines the principles for property acquisition for the entire programme. These will guide the development of the property approach for Warkworth with the key points being:

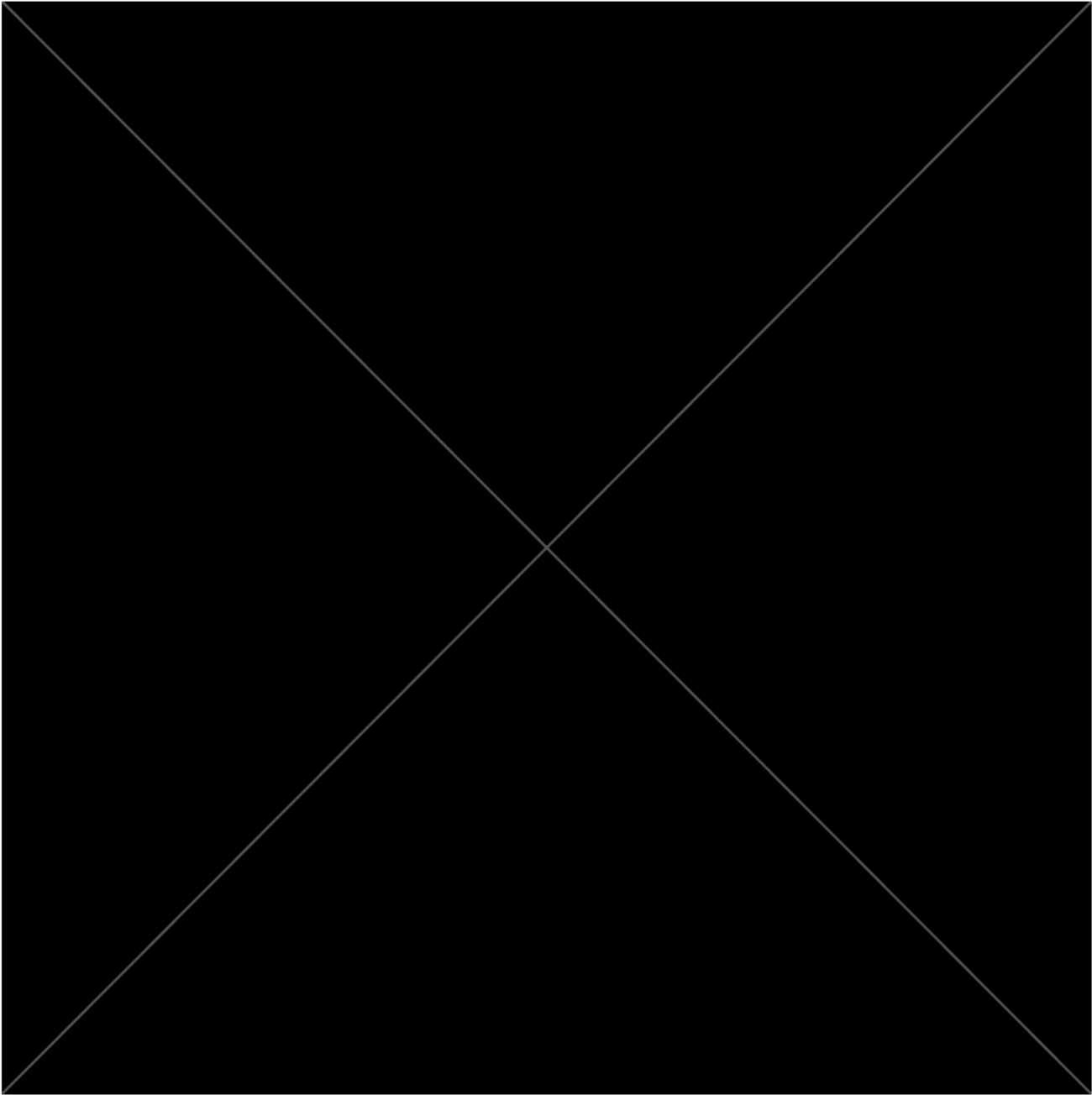
- The programme is about long-term affordability and property will be generally acquired closer to implementation. It is noted that the longer property purchase is delayed the more expensive property will become through property escalation and change of land use for FUZ zoning.
- There will be potential early property acquisition costs as soon as the NoR is lodged for each project.
- The Requiring authority will take the lead on property negotiations for that specific project, utilising the current processes of that organisation (Auckland Transport or Waka Kotahi).
- Advance Purchase Guideline processes will apply.
- Where there is opportunity for strategically important properties to be acquired, these should be taken. The Northern Public Transport Interchange and Park and Ride site has been identified as a potential strategic property purchase for Warkworth.
- A programme wide property resource will look at opportunities for resultant value capture from residual land as part of the land use integration opportunities of the programme.

Early property acquisition costs are a critical issue once the identified projects are route protected and the Property Overview outlines the analysis and approach to providing as much certainty as possible to what this cost could be into the future.

The preliminary Property Overview is a living document developed for the route protection business case phase. Given the long-term route protection, this Overview will need to be revisited, reviewed and updated each decade and more frequently in the lead up to project implementation, during development of the detailed business cases and the design and advancement of the consenting and land acquisition programmes. The acquisition programme is dependent on detailed design and final land requirement plans being completed.

A total of 236 property interests have been identified for acquisition as outlined in Table 13-2.

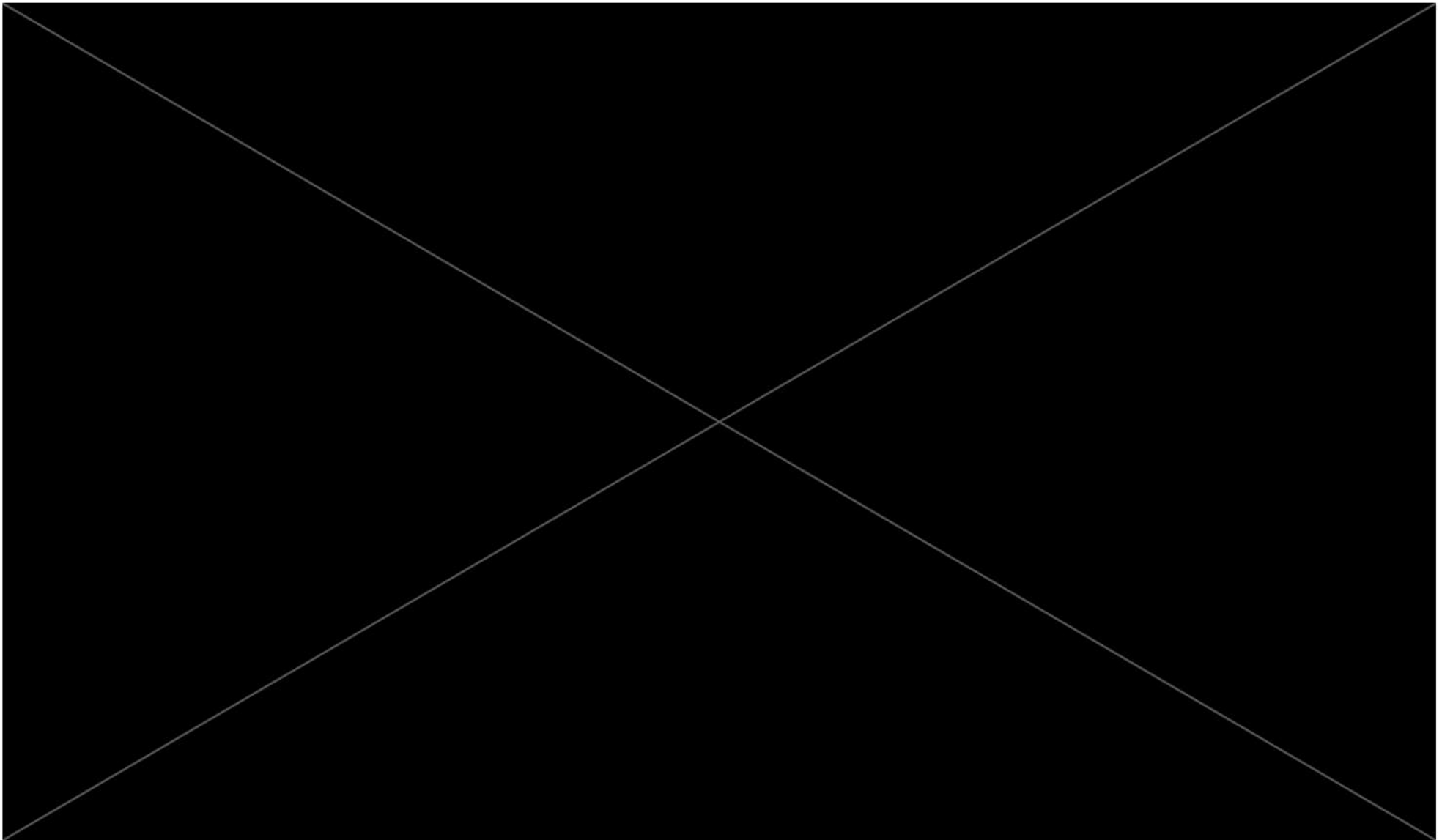
Table 13-2 Property Acquisition Summary



13.2.2 Compensation



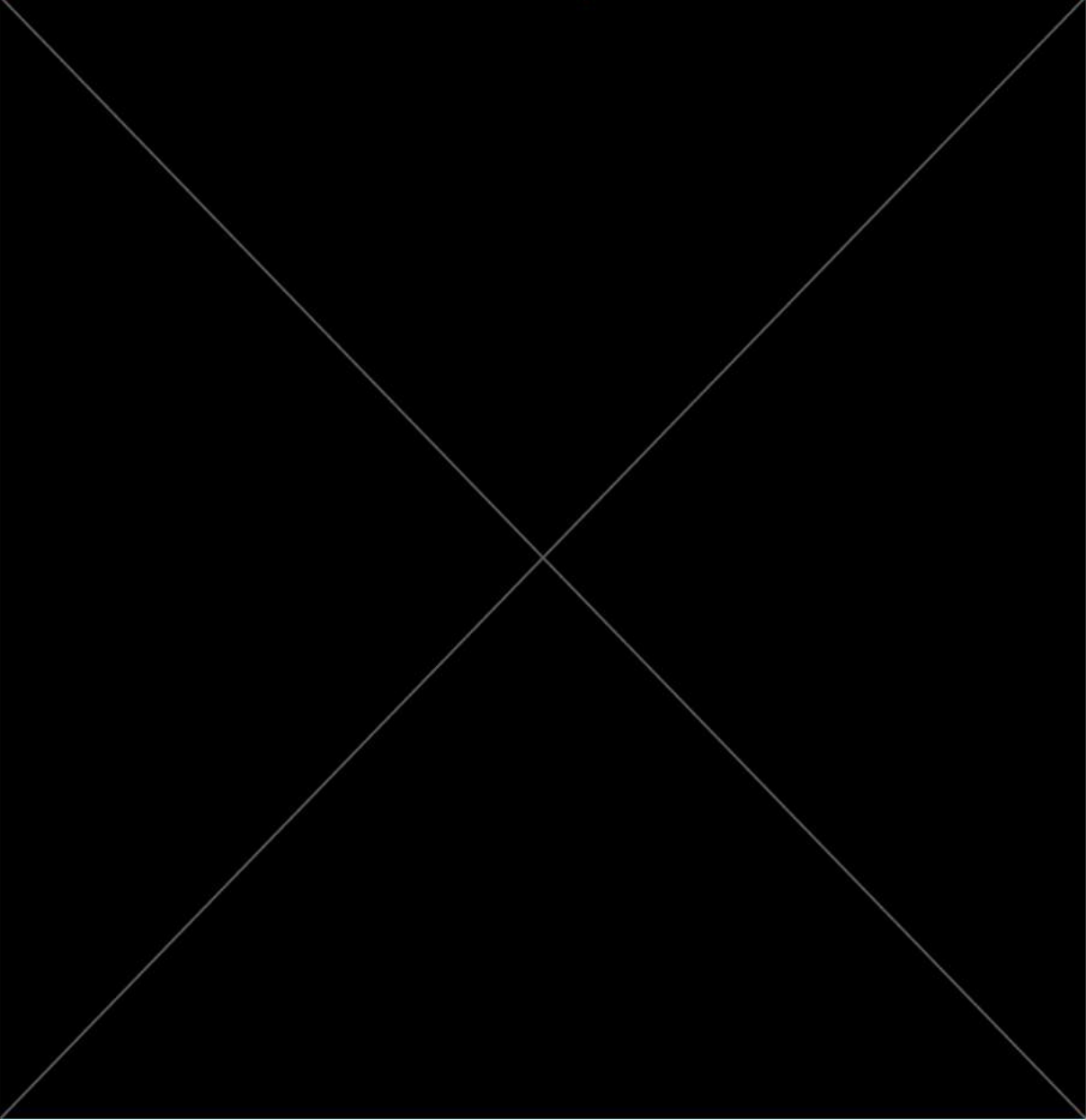




13.2.3 Key property risks and opportunities

Due to the long term nature of the route protection approach, there are a number of risks and opportunities from a property perspective as shown below.

Table 13-4 Key Property Risks for Warkworth

Risks	Opportunities
	

### 13.2.4 Managing property risks

There is considerable uncertainty around the property costs given the size of this programme (and the wider Te Tupu Ngātahi programme) and therefore to best manage this uncertainty and minimise the early property acquisition expenditure as much as possible until projects are implemented the following is proposed:

- **Joint governance from owners.** It is recommended that a joint owner approach to property be taken at a governance level to ensure the appropriate prioritisation of funding.
- **Appropriate resourcing.** This is a large programme of works over an extended period of time and appropriately resourcing will ensure best for programme outcomes are achieved.

[REDACTED]

Waka Kotahi and Auckland Transport have comprehensive processes and teams dedicated to the ongoing management of properties once purchased. It is assumed that these existing processes will be used to manage the properties. With [REDACTED] of the properties being full purchases the ongoing management is considered achievable.

Potential ongoing management issues that will need consideration going forward are:

[REDACTED]

### 13.2.5 Wider Te Tupu Ngātahi property management

It is also important to outline that the Te Tupu Ngātahi Wide Property Strategy sets out a number of initiatives to effectively manage the significant acquisition programme of the route protection approach. These are currently being considered and this Property Strategy is consistent with the aspirations of these wider approaches if successful. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



[REDACTED]

13.2.6 Property next steps

[REDACTED]

[illegible]

### 13.3 Procurement Plan

The scope of works for Te Tupu Ngātahi is to undertake the works necessary to support and obtain the designations for the recommended network (i.e., route protection) and does not currently include obtaining resource consents for individual projects. The timing and delivery model for the remainder of works needed to support resource consent applications should therefore be considered in the pre-implementation phase of work.

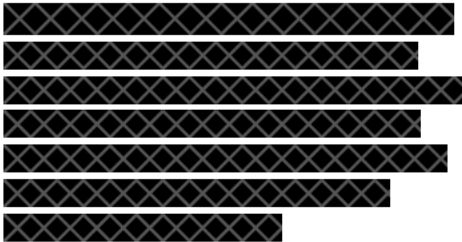
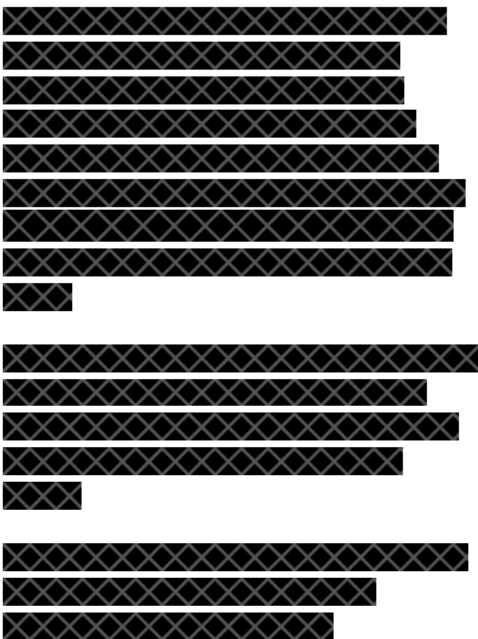
Once a project has been through the pre-implementation phase it will be ready for implementation. This will include detailed design, consenting and physical works. The delivery model will need to consider factors, including:

- Scale.
- Complexity.
- Programme.

Given that this implementation phase is many years away for most Te Tupu Ngātahi projects, a detailed procurement strategy should be developed for each project at an appropriate time in advance and closer to the implementation of each project.

Some initial issues for consideration during the implementation phase are summarised in Table 13-5.

### Table 13-5 Implementation Procurement Strategy

Consideration	Waka Kotahi projects	Auckland Transport Projects
Scale and complexity		
Timing and urgency	<p>Discussions to date, indicate that the Warkworth Community have expectations that early implementation is needed for many of the 'big move' projects e.g., the Southern Interchange and Sandspit Link Road.</p> <p>There is increased urgency for southern projects with active developers at Waimanawa. Similarly, there are signs of increasing development along Matakana Road. North</p>	



Consideration	Waka Kotahi projects	Auckland Transport Projects
	Warkworth is partially live zoned which has associated urgency for connecting infrastructure on Woodcocks Road and Mansel Road.	
Defined scope	[REDACTED]	[REDACTED]
Supplier market conditions	[REDACTED]	
Client involvement, control and capability	Client control will depend on the delivery mechanism eventually chosen. But it is expected that the client will retain design control and site supervision for the local roads.	
Tangible demonstration of value for money	[REDACTED]	

These approaches should be reviewed in detail during the Implementation DBC phase once more detail is understood and a more definitive procurement approach can be made.

## 13.4 Required Services

Following the route protection level NoR approach described above, the remaining elements required to prepare this project for implementation include:

- Detailed design.
- Regional consents.
- Resource consents and management.
- Surveillance and quality assurance (MSQA).

Key matters to be considered are shown in Table 13-6.

**Table 13-6 Considerations for required services**

Consideration	
Scale and complexity	
Funding	
Timing and urgency	
Defined scope	
Supplier market conditions	
Client involvement, control and capability	
Non-cost success factors	

Consideration		
Tangible demonstration of value for money		

These considerations indicate that the works proposed range from small to large scale works.

Overall procurement risk is low considering that with appropriate planning, there are skills, capability, and client expertise to deliver these Warkworth projects.





# Management Case

## 14 Management Case

The following sections describe the arrangements that will be implemented for the successful delivery of the recommended Warkworth Transport Network. It describes the delivery arrangement for each phase of the route protection and tests the project planning, governance structure, risk management, stakeholder management, benefits realisation and assurance.

It is noted that the Warkworth DBC sits within the wider context of the Te Tupu Ngātahi programme, and as such this management case draws on the overarching management case developed as part of the wider programme.

There are two distinct phases for delivery:

### 1. Route protection including:

- Preparation of NoR documentation for lodgement (8 projects in one package)
- Plan Change process and associated Developer Agreements
- Retention of existing land ownership.

### 2. Post route protection management – post lodgement activities for NoR packages.

These steps are discussed separately in Sections 14.1 to Figure 14-4 to 14.4 below. Each section discusses the specific governance, key activities, roles and responsibilities, risks and stakeholder engagement requirements applicable for that stage. This is followed by some additional overall programme management considerations post route protection.

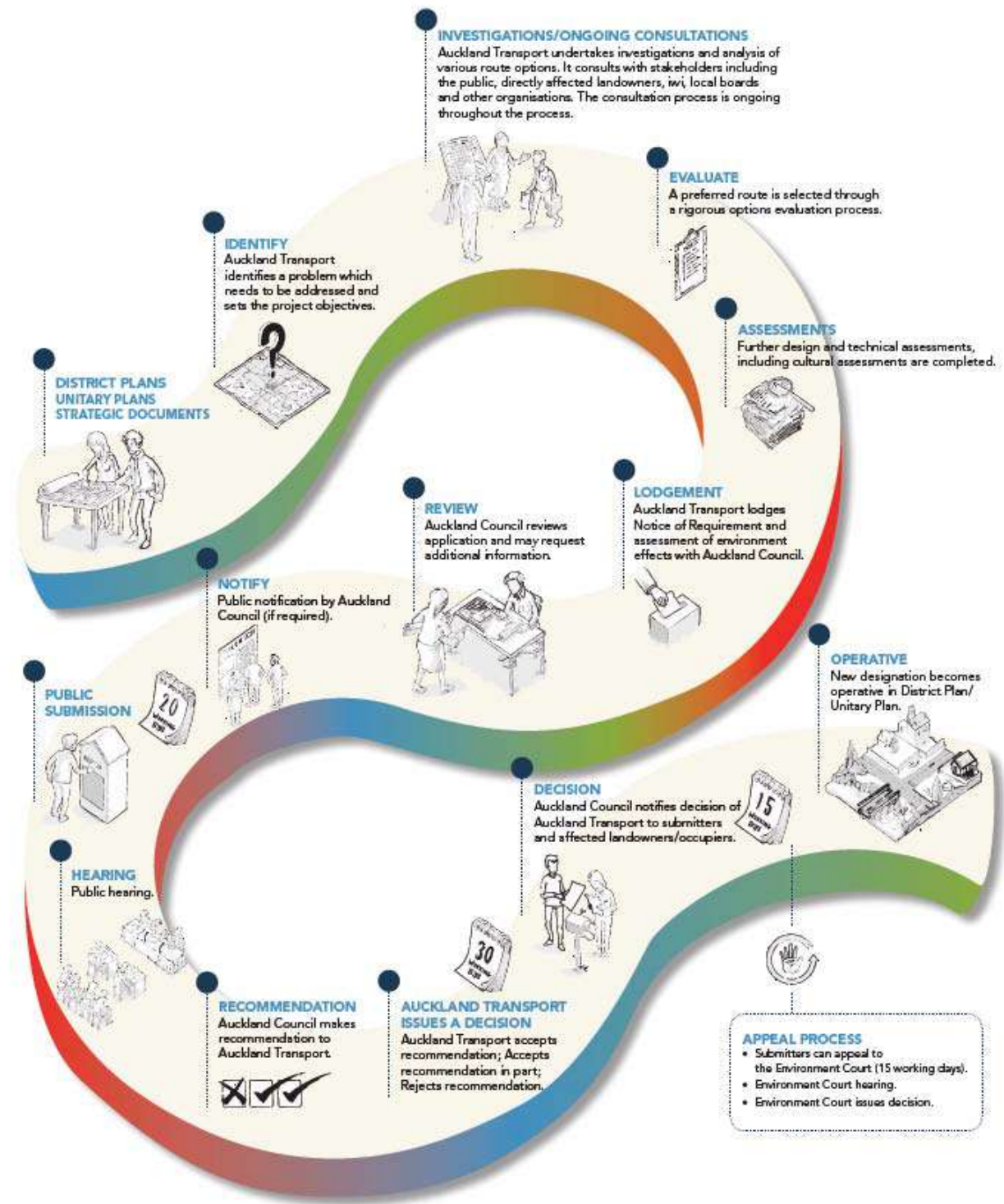
## 14.1 NoR Route protection management

It is noted there are multiple methods to achieve route protection and this section is based on obtaining a transport designation. This section covers the preparation and lodgement of NoR documentation and any post lodgement activities to confirm the operative designation. It concerns 9 projects within Warkworth to be delivered through eight NoR packages.

### 14.1.1 NoR Route protection process

The route protection process is shown in Figure 14-1.

Figure 14-1 Route protection process



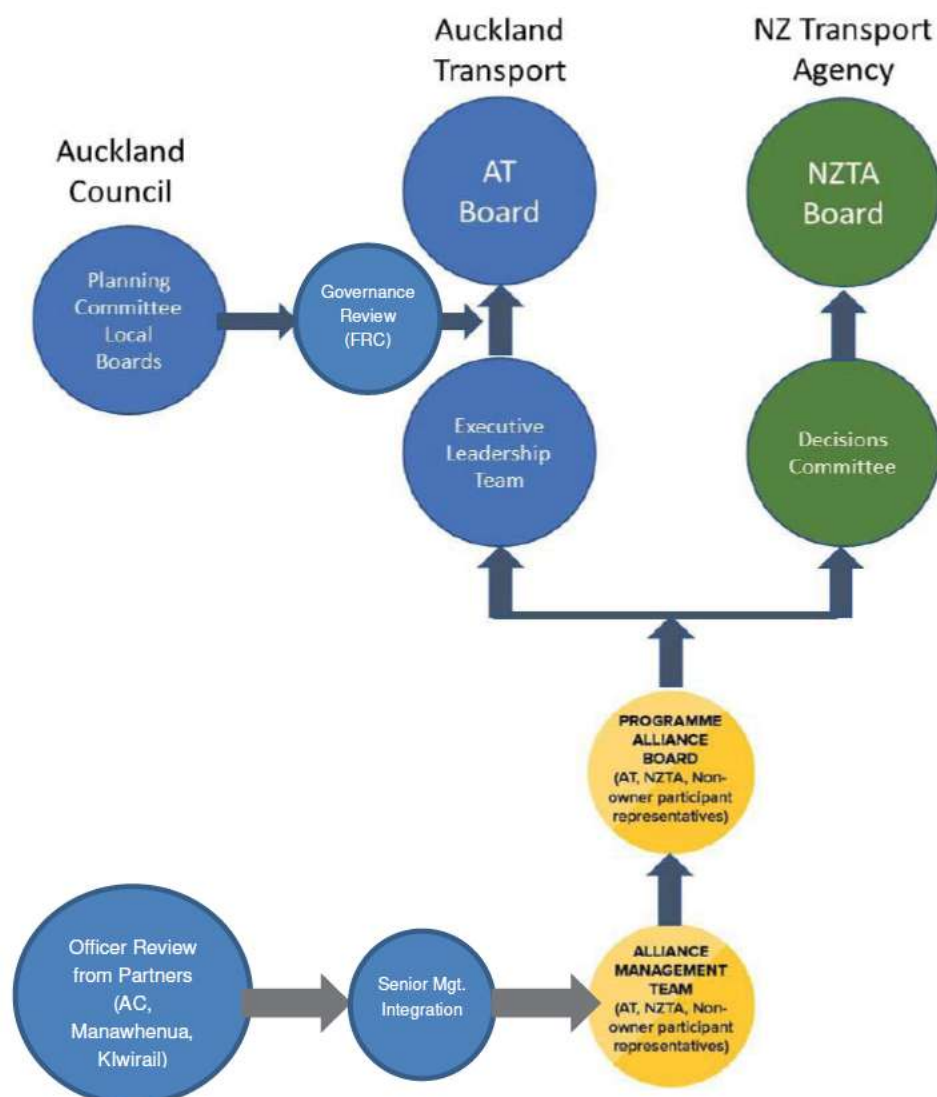


### 14.1.2 How is the route protection phase being governed?

Waka Kotahi and AT identified a collaborative Alliance model as the appropriate delivery mechanism to efficiently deliver this route protection. It is intended that the Alliance would also need to work collaboratively with owner and partner organisations in respect of wider land use, transport system planning and specific programme governance.

Governance in the context of the Alliance is defined as the processes by which the Alliance is directed, controlled and held to account. The Governance Management Plan has been developed and guides the implementation of a shared understanding of why, how and who is responsible for the effective governance of the Alliance. This structure is summarised below in Figure 14-2.

Figure 14-2 Te Tupu Ngātahi governance structure



The Alliance Board is ultimately responsible for approving Alliance deliverables for release. The Alliance Board does not replace the approval processes for AT or Waka Kotahi.

The outcomes sought from the Te Tupu Ngātahi alliance over the next five years are:

- Business cases that confirm the recommended transport network and enable investors to make decisions on whether first decade projects will proceed to the implementation phase or alternatively to route protect corridors for longer term projects.
- The preferred transport network for each growth area is route protected within five years.
- Efficiency of process – by protecting the recommended networks in each of the four growth areas together, efficiencies are sought through the business case and NoR processes.

While projects without a physical footprint are not within the scope of Te Tupu Ngātahi, these projects (including TDM and maximising land use opportunities) are critical in meeting programme objectives and wider policy directives and are recommended to progress in parallel with the route protection task.

### 14.1.3 Who decides and approves the route protection approach?

The decision to formally lodge for route protection will ultimately be made by both AT and Waka Kotahi through the required delegations. There are however several steps preceding this ultimate decision as outlined in Figure 14-3. The process also allows for multiple review and staged approvals of the documents as they are prepared.

Figure 14-3 Route Protection approval process



### 14.1.4 How are different projects prioritised over others?

The benefits of route protecting each transport corridor varies subject to a range of matters, including:

- **Urgency** – development pressure including the lodgement of private plan changes, council structure planning, or the timing of related projects to the intervention.
- **Financial benefits obtained from protection** – route protection can reduce property and construction costs associated with a project. Benefits achieved are significant if protection is obtained prior to development but erodes over time for projects in the longer term.

- **Place shaping** – certain projects have an increased influence on the surrounding urban environment. Protection of these project corridors is likely to enable land use and shape the urban form within an area.
- **Potential for value capture** – Some projects have significant value capture opportunities which are enabled through corridor protection and increased certainty for land use and development opportunities.
- **Contribution to programme outcomes** – The extent to which a project contributes to the overall programme benefits including mode share, accessibility, resilience etc.

Warkworth has been prioritised by Te Tupu Ngātahi to progress as a complete programme through route protection due to the urgency of development and the ability of this network to support place making and good urban form as the town is developed. The Te Tupu Ngātahi management team regularly review the overall programme prioritisation (at least every six months) and any changes are recommended to the Alliance board for endorsement. The Warkworth growth area has approval to commence the pre-lodgement work in parallel to the development of the DBC and current expectation is that lodgement will occur in Q2 of 2023.

### 14.1.5 Property

The Te Tupu Ngātahi Programme Wide Property Strategy identifies an approach for the securing of strategic properties. Whilst the vast majority (80%) of property purchase is typically anticipated in the three years prior to implementation of a project, this acquisition could occur prior to route protection being enacted, or during the route protection process. The Te Tupu Ngātahi Programme Wide Property Strategy identifies several different potential acquisition profiles for forecasting the potential property acquisition cashflow.

Typically, the purchase and ongoing management of these property purchases will be undertaken by the purchasing entities business as usual (BAU) property teams. Both AT and the Waka Kotahi have well proven and tested property management processes and dedicated teams in place to manage these property purchases and then the ongoing management of these properties.

### 14.1.6 NoR Lodgement

The management of the NoR process is shown in Table 14-1 below.

**Table 14-1 Management of the NoR process**

Stage	Management
Lodgement	<ul style="list-style-type: none"> <li>• The decision to formally lodge documents will be made via delegated approval channels at AT and Waka Kotahi for all projects as per current processes for both organisations. This includes the Alliance getting owner endorsement from technical leads within each owner as per the earlier described Quality Assurance process. .</li> <li>• To ensure that the documents prepared are appropriate to the receiving authority (Council) regular (fortnightly) meetings have been established with the regulatory arm of Council to agree levels of detail and standard consent conditions prior to lodgement.</li> </ul>
Hearing	<ul style="list-style-type: none"> <li>• Once the decision is made to lodge, and documents are formally lodged; Te Tupu Ngātahi will manage the interface with the receiving authority (Council) and the hearing processes on behalf of the specific requiring authority (AT or Waka Kotahi).</li> </ul>



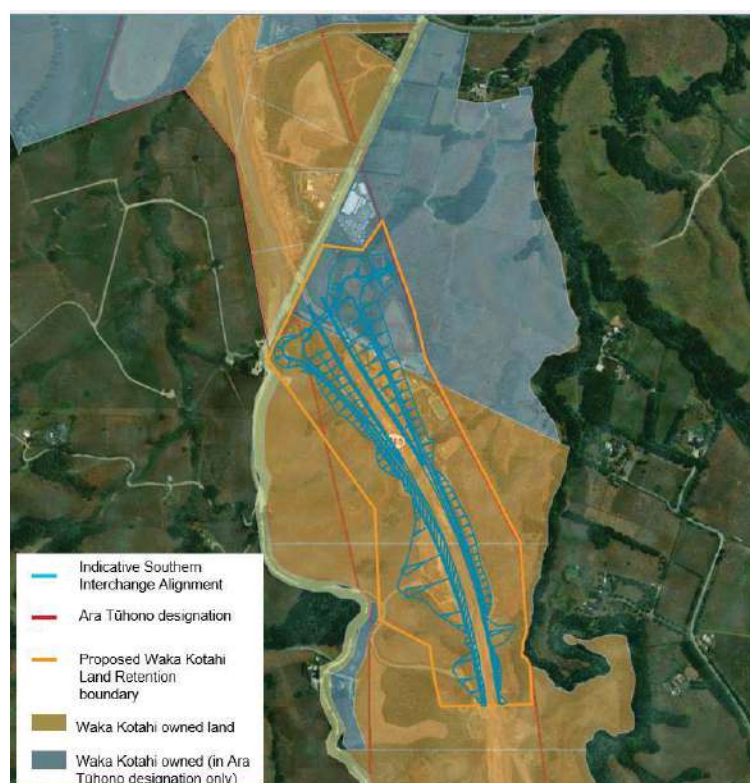
Stage	Management
	<ul style="list-style-type: none"> <li>Leading into and during the hearings there is a need for fast decision making in respect to a number of key aspects, including conditions, submitter negotiations and requests from the hearings panel/court.</li> <li>Both AT and Waka Kotahi have considerable experience in managing these dynamic situations and the SGA team will work closely with the requiring authority (AT or Waka Kotahi) to ensure that the required delegations and decision-making approval processes are in place prior to lodgement.</li> </ul>
Property agreements	<p>Where the identified route protection mechanism does not include a designation process, such as a developer agreement, the following steps will be undertaken:</p> <ul style="list-style-type: none"> <li>Te Tupu Ngātahi working closely with AT and/or Waka Kotahi property teams will provide technical advice to negotiations.</li> <li>AT and/or Waka Kotahi will develop developer agreements.</li> <li>AT and/or Waka Kotahi property teams will remain the 'custodian' of the agreement and ensure any conditions are undertaken and the agreement is monitored and actioned as required.</li> </ul>

## 14.2 Route protection through existing land ownership

This is a specific route protection mechanism for the **Southern Interchange on Ara Tūhono project**.

The DBC investigations have confirmed that a new interchange can be accommodated on land that is already owned by Waka Kotahi as part of the Ara Tūhono – Warkworth to Puhoi designation as shown in Figure 14-4.

**Figure 14-4 Waka Kotahi Land Ownership**



When the Ara Tūhono project is opened the construction designation will be rolled back to an agreed operational boundary. Normally this land might be considered surplus and sold through standard Waka Kotahi processes, however for route protection of the Southern Interchange this DBC **recommends that the identified land is not sold and held until the connection is implemented.**

It is intended that this DBC will provide the justification for the land retention. With the exception of ongoing maintenance costs such as leasing costs or maintenance of fields there are not expected to be other ongoing property costs to be incurred from this route protection mechanism.

14.2.1 Who manages this approach?

This route protection approach has been agreed with Waka Kotahi. The key risk for this strategy is that the land does inadvertently get sold in the future and there is then no protection for the future infrastructure. This has been internally discussed within Waka Kotahi and the following management process is proposed to safeguard against this outcome :

- 1. Te Tupu Ngātahi to identify land requirements for the Southern Interchange
- 2. Waka Kotahi to discuss the requirement with the Puhoi to Warkworth Team to ensure land already owned by Waka Kotahi is not disposed of, and there is an agreement to maintain the land either with NX2 under the PPP or by Waka Kotahi.
- 3. A note is to be entered into SAP to alert the Waka Kotahi property team that the land has been set aside for a future Southern Interchange for Warkworth in the 3<sup>rd</sup> decade (2048).
- 4. For any disposal of land, the Waka Kotahi land disposal process will be followed. This will be managed by the Waka Kotahi Property Team which includes approval from the Transport Planning and Environmental Planning Teams ( amongst others) with access to Te Tupu Ngātahi records undertaken for the Southern Interchange. An assessment from those teams will determine whether the land is still required in the future.

It is noted that step 4 is currently being refined programme wide for Te Tupu Ngātahi to confirm how decisions will be made post Te Tupu Ngātahi involvement. This will be completed before the alliance concludes.

14.3 Route protection through Plan Change and developer agreements

This is a specific route protection mechanism applicable to two projects in Warkworth: **Wider Western Link Road ( south of the Mahurangi River to SH1)** and the **Southern Public Transport Interchange**.

[Redacted text block]

[Redacted text block]

[REDACTED]

[REDACTED]

[REDACTED]

### 14.3.1 Who manages this approach?

This route protection approach has been agreed with Auckland Transport and will be managed via the steps outlined in

**Table 14-2 Plan Change route protection management**

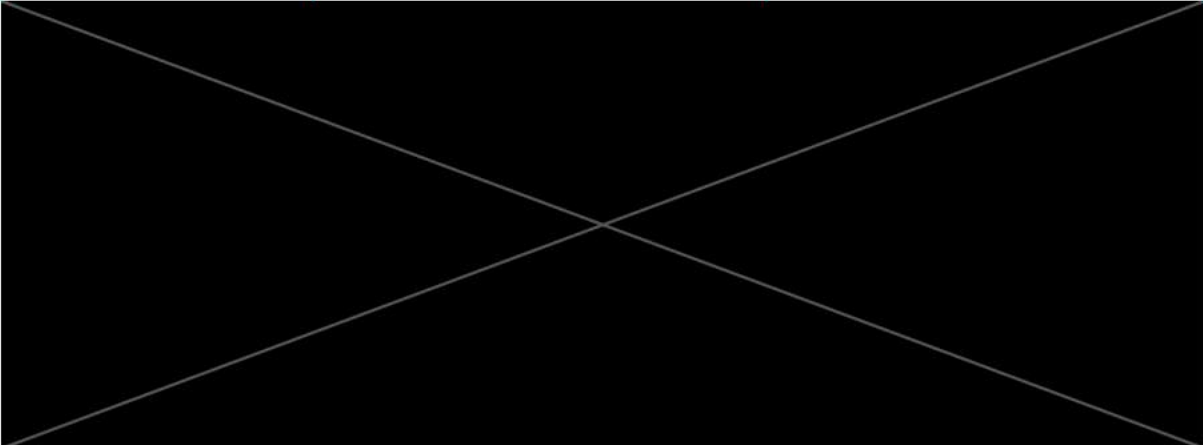
Step	Actions
Plan Change	<ul style="list-style-type: none"> <li>Auckland Transport will provide input into the developer-led Plan Change with the objective of ensuring that it incorporates the preferred Te Tupu Ngātahi options for the Wider Western Link Road and the Southern Public Transport Interchange projects.</li> <li>Auckland Transport Land Use Policy and Planning team will lead Auckland Transport input into the Plan Change process, including submissions and hearings and potentially involvement in any appeals.</li> <li>The Land Use Policy and Planning team will be supported by the Te Tupu Ngātahi Fast Response team or a team set up post-Alliance to provide a similar specialist/technical role.</li> </ul>
Sub-division Resource Consent	<ul style="list-style-type: none"> <li>Auckland Transport input into any subsequent Resource Consents will be led by the Auckland Development Planning team, who provide Subject Matter Expertise to the Council.</li> <li>They will be supported by the Te Tupu Ngātahi Fast Response team or a team set up post-Alliance to provide a similar specialist/technical role.</li> </ul>
Developer Agreement	<ul style="list-style-type: none"> <li>Auckland Planning and Investment team will lead discussions with the developer on the timing of infrastructure delivery and any land acquisition and funding required.</li> <li>Additional support will be provided by the Planning and Acquisitions, Legal and Funding and Finance teams.</li> <li>Any agreement will need to be endorsed by the Enabling Growth Investment Portfolio Steering Group, and any funding required approved by the Investment Committee.</li> </ul>



### 14.3.2 How is risk managed?

The risks associated with this type of route protection are summarised in Table 14-3.

Table 14-3 Plan Change risk management

Risk	Controls	Owners
		

## 14.4 Post route protection management


This section covers the management of tasks after the route protection has been enabled e.g., designation has become operative or infrastructure agreement is in place.

### 14.4.1.1 Key tasks

During this phase of the programme the key tasks could include:

Table 14-4 Key tasks post designation

Task	Commentary
Management of designations obtained in previous phase	This could include the management of conditions and the potential for monitoring lapse periods as required. The requiring authority for a project will be responsible for the management of a specific designation. Both AT and Waka Kotahi have existing and proven systems for the management of these designations and currently do this on a daily basis. The Te Tupu Ngātahi designations would be added to the respective requiring authority's current suite of designations to manage.
Scoping, procurement and delivery of required implementation DBCs	The DBCs undertaken have been focused on the case for investment in the route protection of the identified preferred interventions. It is acknowledged that given this route protection focus, there will need to be a further investment 'gate' to confirm the case for investment in the implementation of the identified interventions when required in the future. This subsequent investment decision will require appropriate information.

Task	Commentary
	<p>It is proposed that this sits within the business case framework as an Implementation Detailed Business Case (ImpDBC). The scope of each ImpDBC will be informed by the specific intervention but is anticipated to include:</p> <ul style="list-style-type: none"> <li>• Review of any changes in critical assumption since package DBC completed.</li> <li>• Further design development.</li> <li>• Safety Audit.</li> <li>• Parallel Estimate.</li> <li>• Consenting Strategy.</li> <li>• Confirmation of funding sources.</li> <li>• Inter-dependences with other projects and any critical triggers.</li> <li>• Procurement Strategy.</li> <li>• The scoping of this ImpDBC will be undertaken by the lead entity for the intervention and it is recommended that: <ul style="list-style-type: none"> <li>• Scoping is undertaken at least three years prior to planned implementation.</li> <li>• The ImpDBC is completed at least one year prior to planned implementation, earlier if property issues are anticipated.</li> </ul> </li> </ul>
<p>Scoping, procurement and delivery of projects to implementation</p>	<p>Once a project has funding (through acceptance of ImpDBC) the next stage in the implementation of the project will include four stages as shown in Figure 14-5 below.</p> <p><b>Figure 14-5 Project implementation</b></p>  <p>Depending on the project, there will be a number of different options to deliver each of these stages. For example, consenting, design and implementation could all be procured separately from one another, or in one collective contract (such as an Alliance).</p> <p>This will be very dependent on the project risks as defined in the ImpDBC. It is anticipated that the ImpDBC will include a procurement strategy that will outline in detail how each of these steps will be procured and managed.</p> <p>Both AT and Waka Kotahi have the systems and capability to successfully manage the procurement and delivery of each of these steps.</p>
<p>Purchasing and management of property acquisitions</p>	<p>Typically, the vast majority of property purchase for a project is anticipated in the three years prior to implementation of a particular project. The Programme Wide Property Strategy also outlines the need for a dedicated Supporting Growth Strategic Property Fund for advanced property purchase and a dedicated team to drive this fund. Both AT and Waka Kotahi have well proven and tested property management processes and</p>

Task	Commentary
	dedicated teams in place to manage these property purchases and then the ongoing management of these properties.
Land use and transport integration optimisation activities	Tasks could include continued input into future structure planning or progressing intensified land use development and Transit Oriented Development at stations. These tasks are likely to involve ongoing discussions with multiple organisations with the outcome to maximise land use and transport integration. Many of these have been identified in the next steps section of this Warkworth DBC (Chapter 15).

#### 14.4.1.2 How will the Warkworth programme be governed?

The Te Tupu Ngātahi scope finishes with the route protection of the identified transport corridors. Therefore, this next phase will be managed and governed directly by the project owners of Waka Kotahi and Auckland Transport. It is noted that a formal handover and knowledge transfer will need to occur between Te Tupu Ngātahi project team and the wider owner organisations to ensure the appropriate next steps are progressed.

These post designation activities are generally considered Business as Usual for the owners and it is expected that the owners would identify the relevant teams within the organisations to progress the tasks.

Given the scale of the overall Te Tupu Ngātahi programme there may be opportunity for the owner organisations to consider how they will resource and deliver the tasks. [REDACTED]

[REDACTED]

[REDACTED]

Any future joint governance arrangement will need to be considered and agreed by Waka Kotahi and Auckland Transport.

#### 14.4.1.3 Post route protection risk and opportunity management

Both the AT and Waka Kotahi delivery systems and processes have risk management at their core. In terms of the key risks envisaged at this time for this stage of the programme, these are considered to be:

[REDACTED]





These risks (and others identified closer to the time) during the scoping and the continued project development phases will need to be proactively managed to ensure the successful implementation of the projects moving forward.

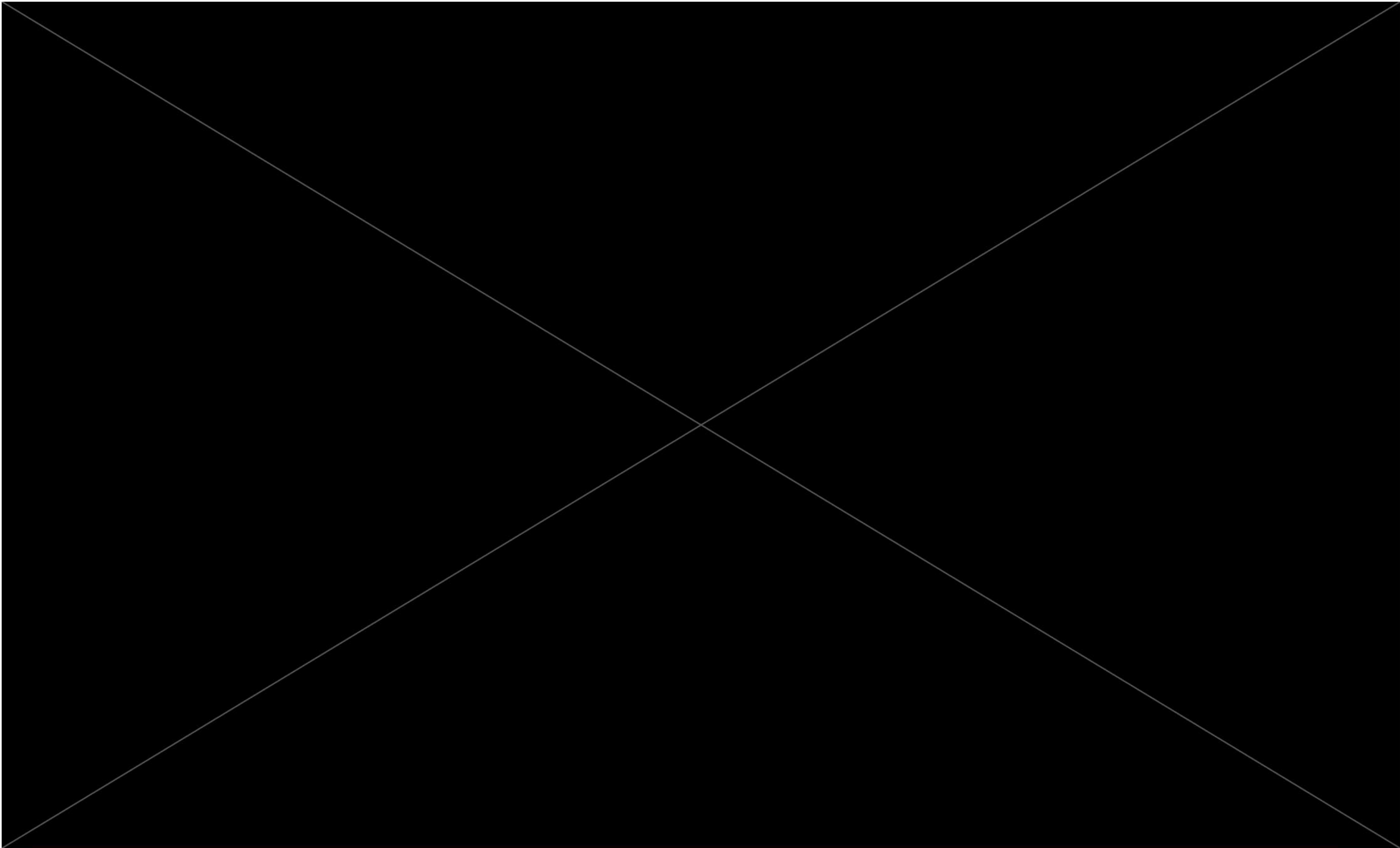
14.5 Warkworth Risk and opportunity management

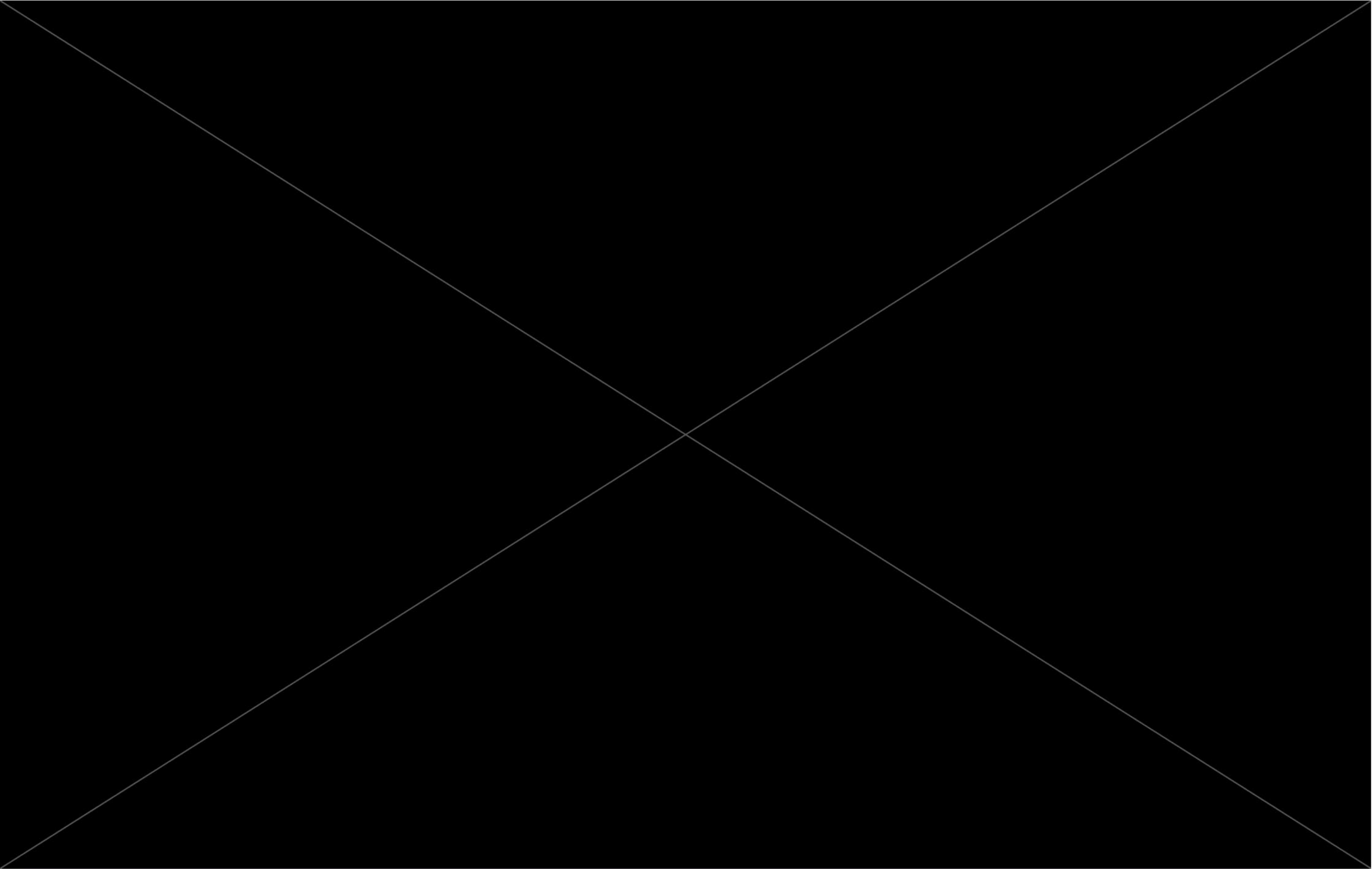
The Te Tupu Ngātahi programme is a large programme comprised of multiple projects and a range of policy and land use uncertainties which transpire into risks and opportunities. These must be managed to enable successful delivery.

A Risk and Opportunity Management Plan has been developed and endorsed by the Te Tupu Ngātahi governance team. The risk management process is consistent with AS/NZS ISO 31000:2009 and is consistent with typical risk management processes undertaken by AT and Waka Kotahi.

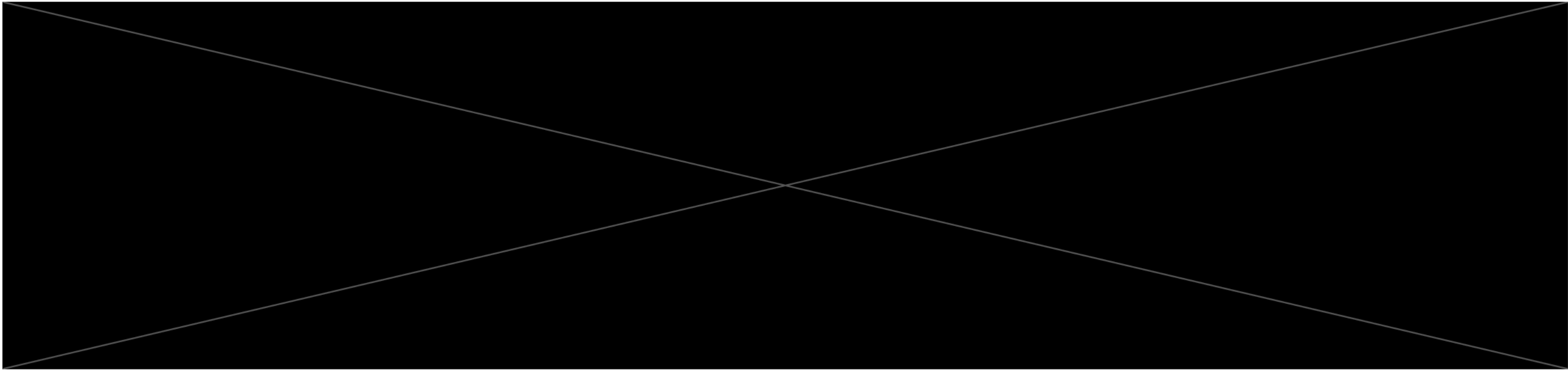
A full risk report for Warkworth is included in **Appendix M: Risk Register** which includes details of the methodology undertaken to identify and manage risk for both the Warkworth programme as well as identify future individual project risks.

The top 10 identified Warkworth Programme DBC risks are shown in Table 14-5.









In addition to these programme risks, a number of individual project risks have been identified for further investigation in the future Single Stage Business Case or Implementation Business Case.

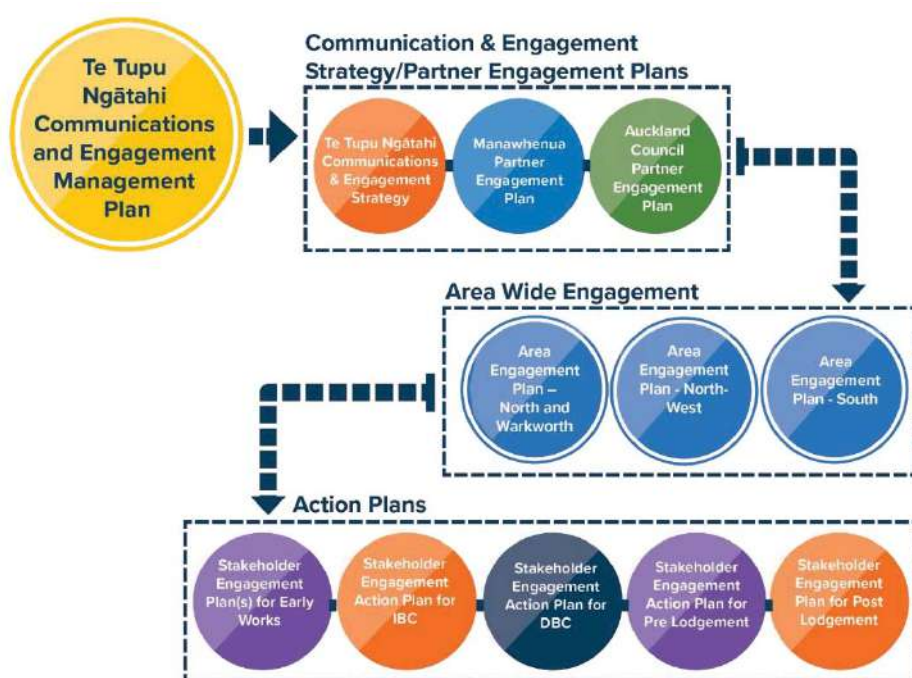
[Redacted text block containing multiple lines of information, likely detailing project risks and their investigation status.]

## 14.6 Engagement

Te Tupu Ngātahi has an extensive and ongoing engagement and consultation programme. The purpose of this plan is not solely to ‘consult’ with partners and stakeholders, but also to collaborate and empower others, particularly partner organisations who have their own roles and responsibilities in delivery of an integrated urban transport system and sustainable land use pattern (e.g., particularly the Council).

A Communications and Engagement Management Plan has been prepared which outlines operational policies and procedures for managing the communications, stakeholder and community engagement workstream within Te Tupu Ngātahi. The Management Plan has informed the Communications and Engagement Strategy and a variety of plans to inform engagement with partners, key stakeholders and the community/public. The relationship of these documents is shown in Figure 14-6.

**Figure 14-6 Te Tupu Ngātahi communications and engagement**



The focus of the engagement at a programme wide level during the preparation of the NoRs is detailed in Table 14-6.

**Table 14-6 Engagement during preparation of NoR**

Theme	Programme Wide response	Warkworth specific response
Manawhenua	<ul style="list-style-type: none"> <li>Regular hui to communicate progress and discuss specific project activities.</li> </ul>	<ul style="list-style-type: none"> <li>Regular hui.</li> <li>Discussions around impacts and mitigations on sensitive locations such as Rawiri and Totara Streams and the ASH.</li> </ul>

Theme	Programme Wide response	Warkworth specific response
Public engagement	<ul style="list-style-type: none"> <li>• <b>Continue to build understanding</b> of wider Te Tupu Ngātahi progress and the process of route protection as set out in the Programme Wide Comms and Engagement Strategy</li> <li>• <b>Continue one-on-one engagement with landowners / developers</b> (e.g., meetings) regarding potential effects and opportunities for shared alignment in outcomes (e.g. through developer agreements) – particularly in areas where land is live zoned or is about to be.</li> <li>• <b>Inform stakeholders about the processes for route protection</b> (e.g., via e-updates, meetings and website information) and provide an opportunity for participation (i.e. submission on the NoR or similar as appropriate).</li> </ul>	<ul style="list-style-type: none"> <li>• Development of engagement plan for NoR preparation phase.</li> <li>• For the Warkworth particular regard will be given to the re-engagement strategy with landowners associated with the Alternative State Highway.</li> <li>• Initial land owner meetings will need to be held with property associated with the RTC and Brigham Creek Interchange projects which have had limited owner interactions to date.</li> </ul>
Council engagement	<ul style="list-style-type: none"> <li>• Critical ongoing discussion with the Council around land use and transport integration. This will include a range of interactions from detailed structure plans to wider discussions around achieving sustainable urban mobility in the un-zoned future urban areas. This will take place through specific Auckland Council/SGA forums, workshop environments and individual meetings.</li> </ul>	<ul style="list-style-type: none"> <li>• Participation in Council land use forums.</li> <li>• Continued relationships with Council Plans and Places about future structure plans.</li> </ul>
Stakeholders	<ul style="list-style-type: none"> <li>• Provide information (and seek feedback) on staging and timing for the preferred network, including specific opportunities for sequencing of urban development (e.g., meetings with utility providers regarding integration of utilities within the future transport corridor).</li> <li>• Ongoing workshops and communications with Programme-wide stakeholders and stakeholder groups e.g., Development/Freight/Road Users Group, Active Modes/Public Transport Advocacy Group and Environmental/Social Impact Group</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing attendance at existing stakeholder forums.</li> </ul>
Environment	<ul style="list-style-type: none"> <li>• Further understand specific issues/ environmental/ urban development effects and opportunities in the preferred network to identify potential design responses and environmental management / mitigation (for route protection documentation</li> </ul>	<ul style="list-style-type: none"> <li>• Will be considered as part of the preparation of AEE documentation.</li> </ul>
Property	<ul style="list-style-type: none"> <li>• Identify opportunities for AT and Waka Kotahi to undertake early property acquisition (e.g. willing buyer/willing seller arrangements. Note leading this process is outside the specific scope of work for Te Tupu Ngātahi.</li> </ul>	<ul style="list-style-type: none"> <li>• Information to be passed on by project team to appropriate owner organisation.</li> </ul>
Decision makers	<ul style="list-style-type: none"> <li>• Enable Te Tupu Ngātahi to inform decision makers on the risks and opportunities of potential route protection mechanisms for the preferred network.</li> </ul>	<ul style="list-style-type: none"> <li>• Regular update of risks and opportunities registers.</li> <li>• Project team to work with Owner Interface Managers to allow briefing into owner organisations.</li> </ul>



## 14.7 Overall programme management

### 14.7.1 Prioritisation

Prioritisation of the overall programme is a critical component to ensuring the programme outcomes are delivered, as prioritising the programme incorrectly could in fact undermine the outcomes sought.

Each individual DBC has identified an assumed prioritisation at this time to best deliver the outcomes sought. It is acknowledged that this a programme to 'support growth' and is therefore intrinsically linked to the scale and pace of development that eventuates as a result of land use zoning and market forces. Therefore, each DBC and the overall prioritisation has identified triggers for implementation of a number of the projects in the programme.

At the conclusion of the route protection process undertaken by Te Tupu Ngātahi there will be an overall programme implementation and prioritisation plan based on the information at that time and based on the key principles of scale and pace of development, mode share outcomes, placemaking and contribution to transport emission reduction. Given this programme could take in the order of 30 years it is almost certain that circumstances will change that impact on the delivery and prioritisation of the programme.

### 14.7.2 Benefits realisation

Ongoing tracking and measurement are another important aspect of the programme to make sure the outcomes sought are delivered. This is particularly important for a programme of this scale and duration where there is likely to be considerable change in what actually occurs (such as pace and scale of land use) over this long time period.

The DBCs have therefore been developed with a consistent programme wide Benefit Logic Map (BLM). Adopting a BLM approach ensures the benefits of each project align with strategic objectives and help deliver the programme-level benefits. The BLM also allows proposed outputs to be logically mapped to benefits (via outcomes), so that different scenarios can be compared on the basis of their benefits impact. A single BLM for the programme will also:

- Allow subsequent time profiling of benefit realisation to inform prioritisation discussions, by sub-programme and programme.
- Allow more effective and consistent programme communications and stakeholder engagement.
- Minimise the amount of re-work when completing the benefits for the DBCs.
- Inform the consenting strategy.

The BLM will act as a reference document for validating each options' contribution to programme benefits. Analysing options in this way will immediately address the value for money strategic objective, by transparently demonstrating the:

- Contribution towards the desired GPS results (benefits).
- Return on the investment – expected benefits compared with expected cost.
- Reason for the decisions, especially where there is a cost benefit ratio lower than would normally be required for inclusion in the NLTP.<sup>21</sup>

<sup>21</sup> Government Policy Statement on Land Transport, 2021, Section 3.2

In addition, value for money also requires investments to be made at the right time. Developing a benefit realisation profile based on when outputs are complete (i.e., when assets are commissioned) will allow resources to be focused on those activities that shift the benefits dial the most. Re-prioritising initiatives in the event that strategic objectives change or external factors dictate - becomes a simple exercise of re-mapping the outputs and outcomes to the updated benefit set.

### 14.7.3 Optimising the outcomes from Te Tupu Ngātahi Programme

Specific measures to support the Warkworth recommended network have been detailed in Section 10.3.

Table 14-7 outlines the proposed management to ensure that these complementary and necessary elements are also delivered.

**Table 14-7 Proposed management for supporting measures**

Element	Organisations	Proposed Te Tupu Ngātahi Management
Urban System integration	<p>This is an incredibly complex arrangement as there are often competing needs and low cross party coordination in planning and implementation activities. It is critical that common outcomes are sought, clearly communicated to all parties for alignment and that parties are held to account in the delivery of their particular aspect of the complete solution.</p> <p>There are multiple parties involved in these aspects, including:</p> <ul style="list-style-type: none"> <li>• Auckland Council (statutory &amp; spatial planning, consent authority, civil &amp; social infrastructure provider, local transport system specifier &amp; operator, via CCO Auckland Transport).</li> <li>• Government departments (public facilities including schools and other facilities).</li> <li>• Developers (implement form and function ultimately).</li> <li>• Transport authorities (build stations and supporting infrastructure).</li> <li>• Kāinga Ora – an urban development agency to assist in delivering transport supportive urban outcomes.</li> <li>• Separation in metropolitan rail provision between public transport operators and infrastructure providers.</li> <li>• Council urban renewal agencies such as Panuku in Auckland.</li> </ul>	<p><b>Develop an urban strategy for Warkworth.</b></p> <p>All parties will be critical to its development, actions and active monitoring.</p> <p>It is proposed that as well as the current organisations tasked with urban outcomes, that a dedicated role is identified that is focused on the delivery, monitoring and implementing of the Urban Strategy.</p>
Transport system optimisation	<p>To be led by Waka Kotahi and Auckland Transport.</p> <p>Financial, technological and operational incentives are also needed to support mode shifts needed to address GHG emission reduction and congestion.</p>	<p><b>Provide a dedicated TDM resource.</b></p> <p>It is proposed that a dedicated resource is tasked with ensuring the TDM elements identified are</p>

Element	Organisations	Proposed Te Tupu Ngātahi Management
		developed, implemented and monitored.
Other Transport	<p>It is critical that there is cross organisation collaboration and alignment on the implementation of these ‘other’ projects so that the outcomes sought can be delivered by all projects. There are many competing needs and challenges to aligning multiple projects and careful planning and management of this integration is required. There will need to be coordination between:</p> <ul style="list-style-type: none"> <li>• Waka Kotahi (funding and state highway projects).</li> <li>• Auckland Transport (Local roads and public transport services).</li> <li>• KiwiRail (Rail infrastructure).</li> <li>• Developers (Key local transport links).</li> <li>• Kainga Ora.</li> </ul>	<p><b>Part time programme coordinator role</b></p> <p>To ensure the coordinated delivery in a dynamic environment, a part time programme coordinator role is proposed to ensure the necessary level of coordination is achieved.</p>

#### 14.7.4 Ongoing programme management roles

It is proposed to manage identified roles through the establishment of a **Green Fields Action team**. This ongoing programme management team for the programme provides for a total of five roles as shown in Figure 14-7. This includes three roles to deliver optimised outcomes as detailed above and two additional roles for previously identified property tasks.

Figure 14-7 Project management team roles





## 15 Conclusion and Next Steps

This Warkworth DBC sets out the rationale for investing in route protection for the Warkworth. Based on the information provided throughout this document, the following approvals are sought:

### 1. Approval of the Warkworth recommended transport network.

Approval and endorsement are sought for the recommended options of the Warkworth recommended transport network which includes 12 projects:

- Two new Public Transport Interchanges and one Park and Ride.
- Upgrade of five existing corridors to provide active mode facilities and support urbanisation.
- Four new multimodal corridors to support new growth areas
- New Southern Interchange on Ara Tūhono motorway

### 2. Approval of Approval to implement the Route Protection Strategy up to lodgement of NoRs (Approval for lodgement to be sought separately)

Approval for to proceed with the Route Protection Strategy for the Warkworth growth area including:

- Nine projects to be delivered in eight NoR packages.

Note the full footprint for the Northern Public Transport Interchange and Park and Ride and the northern end of the Western Link Road North are combined into one package due to project interdependencies.

It is noted that the preparation of NoR documentation for the Warkworth is underway and documentation would be subject to standard review processes by Waka Kotahi and AT.

### 3. Approval for funding release for the Warkworth post lodgement activities.

- Funding is available and will be unlocked with the above approvals.

### 4. Acknowledgement of the potential early property acquisition and associated risk arising from route protection of the recommended Warkworth Package.

It is acknowledged that this business case is focussed on route protection and that there are funding implications associated with early property acquisition of this route protection. This business case does not seek to resolve issues surrounding the funding required for the delivery of the recommended new infrastructure and services. For a range of reasons including the impact of Covid-19 on forward revenue projections, there is significant uncertainty surrounding the ability to fund the programme using traditional funding mechanisms/ NLTF over the long-term.

Acknowledging this uncertainty and the forecast long-term funding gap it is recommended that route protection and resultant property purchases be completed at this time due to:

- **Certainty of growth.** Extensive previous work and strategic guidance has confirmed the growth projections for Warkworth. This predicted growth has been further reinforced by evidence of actual growth in Warkworth which is also occurring at higher intensities than first predicted in the Warkworth Structure Plan. In addition, early outputs for Warkworth from the Future Development Strategy (which is being progressed by Auckland Council in parallel to this DBC and is anticipated to be an update to the FULSS) indicates growth is

still to be expected in all three areas of Warkworth with higher intensities in the current live zoned Warkworth North.

- **Ability to plan infrastructure.** The very nature of route protection enables the provision of planned infrastructure rather than “responsive” infrastructure which typically results in infrastructure being retrospectively added and squeezed into available land that has already experienced growth related development. This planned approach therefore provides the owners with significant opportunity to front foot and respond to key issues such as emission reductions and other mitigation/ adaptation needs of the network. Importantly it also protects the ability to actually realise the step change transport outcomes (mode shift, land use integration and accessibility enhancements) which otherwise can be compromised as space is restricted. It also allows proactive collaboration with developers to assist in the delivery of key infrastructure and drive good urban outcomes.
- **Financial upside.** Financially, a small investment now is forecast to save many millions of dollars in property and implementation costs that makes financial sense. Route protection requires some upfront expenditure but is cheaper than acquiring land later due to escalated property prices due to underlying growth in land values, rezoning and development.
- **Ease of Implementation.** Implementation will be considerably less difficult (and costly) due to a designation being in place prior to the growth. In some locations it will unlock development infrastructure where land has fragmented ownership.
- **Increased certainty for developers.** Route protection provides increased certainty for developers. This increases opportunities for co-funding agreements to be reached resulting the best possible opportunity for increased affordability of the required infrastructure and achieving good urban form.

The most significant risk for route protecting now is affordability due to the early property acquisition costs. This can be managed through Programme wide initiatives to address this issue including:

- Having a property team focussed on the Te Tupu Ngātahi programme.
- Developing an agreed position for the programme on the approach and application to betterment.
- Developing and providing programme position on advanced property purchase.
- Provide agreed programme positions outlined above to the Auckland Transport and Waka Kotahi boards for endorsement in 2023.

There is also the challenge of funding the implementation of the options identified given the constrained NLTF. Whilst not the focus of this business case, it is important that Auckland Transport and Waka Kotahi work together to resolve this long-term funding challenge. It is almost certain given the challenges facing the NLTF that alternative funding mechanisms are required. Whilst both organisations have experience with these, the scale of the wider Te Tupu Ngātahi programme is of a scale not undertaken before, providing unique challenges and opportunities for alternative funding models.

## 15.1 Next Steps

The following key next steps for Te Tupu Ngātahi in terms of route protection are:

1. Preparation of documentation for NoR
2. Lodgement of NoR
3. Post lodgement activities.

In a DBC this complex there have been a number of key activities that have been identified that need to be undertaken to either reduce residual risks, better manage uncertainty or unlock additional potential and opportunities for the projects. These activities will also support a handover to the owner organisations once the Te Tupu Ngātahi programme is completed.

These are documented in Table 15-1 and Table 15-2 below and are split into general and local project actions. Some fall outside the Te Tupu Ngātahi remit of route protection and in these instances, appropriate owners have been identified for the actions. These steps have been discussed with both Auckland Transport and Waka Kotahi to agree the best solution for ongoing management.



Table 15-1 General next steps for Warkworth

Project/s	Corridor	Next step	Action	Owner/s	Dates
4-12	<ul style="list-style-type: none"> <li>Existing and future arterials in Warkworth</li> </ul>	<p><b>Land use and transport integration for areas which are live zoned, structure planned or in process of a plan change.</b></p> <p>Provide timely input into resource consent process. Stay close with developers and work to find mutual solutions to implement transport infrastructure.</p>	<ul style="list-style-type: none"> <li>Auckland Transport and Waka Kotahi Development Consents team assesses consents as part of Business as Usual activities. Te Tupu Ngātahi can assist through the fast track response tea.</li> <li>Ongoing developer relationships to be continued. Build on existing Te Tupu Ngātahi regular meetings.</li> <li>Consideration will need to be given to resourcing and a full handover once the Te Tupu Ngātahi programme is completed. The Owner Interface Managers could be a starting point for future comments. Developer Relationships should continue to be managed by the Land Use Policy and Planning teams.</li> <li>Opportunity for the consenting focused Owner Interface Managers to foster a collaborative relationship between Auckland Transport, Waka Kotahi and Council.</li> <li>The Roads and Streets Framework Assessment (RASf) and/or One Network Framework (ONF) for each arterial will need to be continually reviewed as the FUZ land use is refined to zones and actual development to enable the final designs to best integrate land and transport use.</li> </ul>	<p><b>Waka Kotahi/Auckland Transport</b></p> <p>With interim support from Te Tupu Ngātahi.</p>	Ongoing
All	<ul style="list-style-type: none"> <li>Recommended Warkworth Transport Network.</li> </ul>	<p><b>Sustainability and Climate Change response.</b></p> <p>Organisations are developing strategies to respond.</p>	<ul style="list-style-type: none"> <li>Climate change factors have already been incorporated in Warkworth DBC e.g., through the transport outcomes/investment objectives, option selection, measurement of emissions.</li> <li>Owner organisations are currently developing their own tools to assess and review projects against climate change. It is recommended that the Te Tupu Ngātahi projects are include in owner climate change assessment programmes at the appropriate future gateways to realise the maximum opportunities for mitigation and adaptation.</li> </ul>	<b>Waka Kotahi/Auckland Transport</b>	Ongoing
All	<ul style="list-style-type: none"> <li>Recommended Warkworth Transport Network.</li> </ul>	<p><b>Property</b></p> <p>Management of property acquisition</p>	<ul style="list-style-type: none"> <li>Develop overall plan for Warkworth property purchase.</li> <li>Consideration of strategic advance purchases .</li> <li>Consider opportunity for early developer agreements.</li> </ul>	<b>Waka Kotahi/Auckland Transport</b>	Ongoing
All	<ul style="list-style-type: none"> <li>Recommended Warkworth Transport Network.</li> </ul>	<p><b>Changes to the Resource Management Act</b></p> <p>Impacts on the Route protection strategy.</p>	<ul style="list-style-type: none"> <li>Warkworth NoR team will continue tracking these policy changes and will need to adapt the strategy if required.</li> <li>Not expected to influence the “why” for route protection but might impact the “how”.</li> </ul>	<b>Te Tupu Ngātahi NoR team</b>	Ongoing
All	<ul style="list-style-type: none"> <li>Recommended Warkworth Transport Network</li> </ul>	<b>Future Design</b>	<ul style="list-style-type: none"> <li>Consider sites of significance in all future designs.</li> </ul>	<b>Waka Kotahi/Auckland Transport</b>	Ongoing

Table 15-2 Next steps – Individual projects

Project/s	Corridor	Next step	Action	Owner/s	Dates
1	<ul style="list-style-type: none"> <li>Northern Public Transport Interchange and Park and Ride</li> </ul>	<b>Future Design</b>	<ul style="list-style-type: none"> <li>Finalise layout of interchange including the bus facilities, cycle storage and carpark layout to enable good urban form and prioritise active mode connectivity to the interchange.</li> <li>Optimisation of site levels to connect interchange with Western Link Road and Tūhonohono ki Tai- Matakana Link / SH1 intersection. Consider the implication on the existing culvert.</li> </ul>	<b>Auckland Transport</b>	Ongoing

Project/s	Corridor	Next step	Action	Owner/s	Dates
			<ul style="list-style-type: none"> <li>Enhancement opportunities for stormwater management and ecological enhancement.</li> <li>Consider opportunities to stage the delivery of the Park and Ride capacity so as not to oversupply with parking while growth is developing.</li> </ul>		
2	<ul style="list-style-type: none"> <li>Southern Public Transport Interchange</li> </ul>	<b>Implement the route protection strategy</b>	<ul style="list-style-type: none"> <li>Auckland Transport to secure the interchange site location and agree delivery mechanism with the developer as per Section 14.3.1 of this DBC.</li> </ul>	<b>Auckland Transport</b>	Ongoing
		<b>Future Design</b>	<ul style="list-style-type: none"> <li>Finalise location to maximise connection to the local walking and cycling network and the future local centre.</li> <li>Confirm final layout to provide sufficient cycle storage, offline turning facilities and preclude reverse manoeuvring on site.</li> <li>Opportunity to consider on-line bus stops on Wider Western Link Road once final location is understood.</li> </ul>	<b>Auckland Transport</b>	Ongoing
3	<ul style="list-style-type: none"> <li>New Southern Interchange on Ara Tūhono Puhoi to Warkworth Motorway</li> </ul>	<b>Implement the land retention strategy</b>	<ul style="list-style-type: none"> <li>Implement the land protection process as per Section 14.2.1 of this DBC.</li> </ul>	<b>Waka Kotahi</b>	Ongoing
		<b>Additional analysis to be considered in future business cases.</b>	<ul style="list-style-type: none"> <li>Explore opportunities with NX2 or Ara Tūhono Warkworth to Wellsford design team to provide a southern growth area connection as part of these projects</li> <li>Understand the final agreed operational boundary for Ara Tūhono Puhoi to Warkworth. Issues to consider in future design include mitigation planting impacts and the impact from a new interchange, maintenance requirements for the retention of land outside the operational boundary.</li> <li>Keep a watching brief on the realisation of industrial land use in Warkworth and any impacts it might have on the timing of this strategic infrastructure.</li> <li>Provision for cycle connectivity through the interchange, noting that the land to the west of the interchange is zoned to remain.</li> <li>Consideration of bus priority through the interchange during next stage of design.</li> <li>Consider interfaces with motorway levels to inform the next stage of design.</li> <li>Design to consider the future Wyllie Road connection.</li> <li>It is recommended that a full carbon assessment is undertaken in future design stages for this project to understand the embodied carbon impacts of this infrastructure and the alternative scenario of further upgrading other local roads if this link is not provided.</li> </ul>	<b>Waka Kotahi</b>	Ongoing
		<b>Maintain dialogue with NX2</b>	<ul style="list-style-type: none"> <li>Maintain dialogue with NX2 to understand the opportunities to consider implementing the interchange within the 25 year PPP period.</li> </ul>	<b>Waka Kotahi</b>	Ongoing
4,5,9	<ul style="list-style-type: none"> <li>SH1 Upgrade - Hudson Road to Fairwater Road</li> <li>Western Link Road Central</li> <li>Woodcocks Road (Mansel Drive to SH1)</li> </ul>	<b>Reallocation of road space to improve quality or provide new separated cycle facilities.</b>	<ul style="list-style-type: none"> <li>To be considered for inclusion in future Regional Land Transport Plans as a corridor improvement project for funding and prioritisation.</li> <li>Will need detailed/implementation design.</li> </ul>	<b>Auckland Transport</b>	Ongoing
4	<ul style="list-style-type: none"> <li>SH1 Upgrade - Fairwater Road to FUZ</li> </ul>	<b>Future Design</b>	<ul style="list-style-type: none"> <li>Reassessment of the necessity and re-design of the passing lane at the edge of the FUZ.</li> </ul>	<b>Waka Kotahi/Auckland Transport – depending on final revocation boundaries.</b>	Ongoing
7	<ul style="list-style-type: none"> <li>Sandspit Road Upgrade</li> </ul>	<b>Future investigation</b>	<ul style="list-style-type: none"> <li>The Vipond Culvert located east of the Hill Street intersection has been identified as being likely to overtop during 1 in 10 and 1 in 20 year floods under the flooding assumptions assuming rising flood levels due to climate change. This solution will require a systems approach across multiple organisations to</li> </ul>	<b>Auckland Transport, Healthy Waters and potentially developers</b>	Future consideration

Project/s	Corridor	Next step	Action	Owner/s	Dates
			develop a solution that avoids significant impacts such as downstream flooding or upstream dewatering of the QEII covenanted land area.		
		<b>Integration opportunities</b>	<ul style="list-style-type: none"> <li>Explore opportunity to work with Plan Change developers to optimise/ deliver the boardwalk connection to Hill Street.</li> </ul>	<b>Auckland Transport</b>	Ongoing
11	<ul style="list-style-type: none"> <li>Wider Western Link Road – southern section</li> </ul>	<b>Secure developer agreement</b>	<ul style="list-style-type: none"> <li>Auckland Transport to agree delivery mechanism with the developer as per Section 14.3.1 of this DBC.</li> </ul>	<b>Auckland Transport</b>	Ongoing
	<ul style="list-style-type: none"> <li>Wider Western Link Road – Northern section</li> </ul>	<b>Future Design</b>	<ul style="list-style-type: none"> <li>Road levels of the corridor to be set to not preclude connection to a future Ara Tūhono Interchange. Expect the levels can be further optimised during detailed design stages.</li> </ul>	<b>Auckland Transport</b>	Ongoing
12	<ul style="list-style-type: none"> <li>New Sandspit Link Road</li> </ul>	<b>Future Design</b>	<ul style="list-style-type: none"> <li>It is recommended that a full carbon assessment is undertaken in future design stages for this project to understand the embodied carbon impacts of this infrastructure.</li> </ul>	<b>Auckland Transport</b>	Ongoing
4-12	Local Roads	<b>Exploration of redevelopment opportunities.</b>	<ul style="list-style-type: none"> <li>Auckland Transport to lead discussions with Kāinga Ora and Panuku where potential sites are identified in the NoR process.</li> </ul>	<b>Auckland Transport</b>	NoR phase
Not in programme	Mahurangi Shared Path	<b>Future investigation</b>	<ul style="list-style-type: none"> <li>It is recommended that the recreational Mahurangi Shared path is considered as a future project for either Auckland Transport or the Rodney Local Board to be considered as part of the greenway plan for Warkworth.</li> </ul>	<b>Auckland Transport/Local Boards</b>	Ongoing
Not in programme	Falls Road/Hill Street	<b>Future investigation</b>	<ul style="list-style-type: none"> <li>This collector corridor from Hill Street to the new Western Link Road remains an important active mode connection between Warkworth North Precinct and the Warkworth Town Centre. It will also be a key route for future local buses. It is recommended this corridor is further studied by Auckland Transport to understand any future upgrades this requires to contribute to the overall Warkworth Transport Network.</li> <li>It is noted that Falls Road west of the new Western Link Road is likely to be closed to vehicles to protect the fjord (assumed in modelling) but will remain for active mode access.</li> </ul>	<b>Auckland Transport</b>	Ongoing



# Appendices

**Appendix A: Warkworth Strategic Case**

**Appendix B: Climate Change Response**

**Appendix C: Options Assessment Report**

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