7.4 NoR 4: SH1 Improvements - Urban Design Matters

NoR 4 upgrades the existing SH1 corridor from Albany in the south, through to Grand Drive in the North. The improvements to SH1 passes through a range of contexts, alongside the existing SH1 corridor designations as an alteration to these existing designations. The NOR is a combination of additional vehicle lanes, a new walking and cycling path along SH1, a new bridge at Lonely Track Road with subsequential re-alignments, upgraded interchanges at \bar{O} Mahurangi Penlink (Redvale) and Silverdale and a new interchange at Wilks Road. Due to the length of the corridor where necessary, the evaluation of NoR 4 provides commentary with reference to four segments. These are:

- Segment A: Oteha Valley Road Awanohi Road (Chainage 0 -3700)
- Segment B: Awanohi Road BP Service Station (Chainage 3700-7600)
- Segment C: BP Service Station Silverdale Interchange (Chainage 7600-11500)
- Segment D: Silverdale Interchange Grand Drive (Chainage 11500 end)

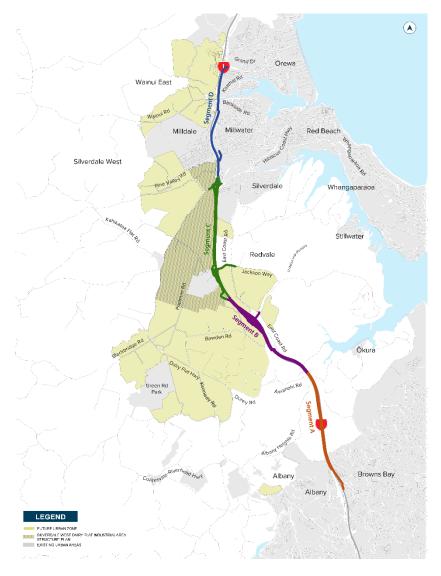


Figure 7-2: NoR 4 Segments

Table 7 outlines urban design commentary specific to NoR 4.

Table 7: Urban Design Evaluation for NoR 4 – SH 1 Improvements

Principle	Explanation	Application to NoR 4
ENVIRONMENT		
1.1 Support and enhance ecological corridors and biodiversity	Mitigate the effects on or enhance existing ecological corridors through the placement and design of movement corridors	Potential opportunities within the immediate environment of NoR 4 to support ecological connectivity and biodiversity are identified in the North: Assessment of Ecological Effects and include where the corridor crosses: Waiokahukura (Lucas Creek) and tributaries; Okura River; and tributaries Huruhuru (Dairy Stream) and tributaries; Weiti Stream and tributaries, John Creek and tributaries Refer to the North: Assessment of Ecological Effects for details of these opportunities. Refer to the North: Assessment of Ecological Effects for details of these opportunities. Prom Oteha Valley Road, this segment crosses an existing water course (Waiokahukura (Lucas Creek)) that is currently culverted under SH1 before heading north adjacent to the existing SH1 corridor which is flanked by areas of indigenous vegetation on the east and SEA on the west. The new walking and cycling path located on SH1 crosses Lucas Creek on a bridge. The corridor in this segment crosses five water courses and associated floodplains that are currently crossed by the SH1 corridor. The SH1 improvements will bridge Awanohi Road and the Okura Creek by a viaduct. This presents an opportunity to reinforce broader connectivity outcomes for ecology by minimising the stream interruption and providing a connected natural system. The improvements in this segment also require the existing Lonely Track Road bridge (ch600) to be replaced, with subsequential re-alignment, to span the width of the upgraded corridor. This will impact on an area of indigenous vegetation. Future design stages should demonstrate the approach to minimising impacts on existing vegetation. Segment B Segment B has no areas of SEA that are impacted by the improvements to the SH1 corridor. The corridor includes a length of active modes facilities on a bridge over Bawden Road and the adjacent Huruhuru (Dairy Stream) and flood plain (Ch4900-5300) and small

Principle	Explanation	Application to NoR 4
		areas of wetland. A viaduct is also proposed over Huruhuru (Dairy Stream) at Ch 7100 These structures over waterways presents an opportunity to reinforce broader connectivity outcomes for ecology by minimising the stream interruption and providing a connected natural system. The improvements in this segment also require the creation of a new active modes overbridge to connect with Bawden Road (ch 5300). Conceptual drawings show large areas of earthworks required to accommodate the active mode facilities connection from the SH1 corridor to the RTC corridor. These earthworks are outside the FUZ and future design stages should demonstrate the approach to minimising earthworks in this area of Countryside Living zone and integrating with the adjacent land form. Segment C There are no areas of SEA within this section of the SH1 corridor. The corridor does impact on tributaries to John Creek and associated wetlands that are currently crossed by SH1. As design is refined, opportunities to enhance outcomes in these locations should be taken. Segment D The SH1 corridor crosses the Wēiti Stream and associated SEAs in this segment. This section of the active mode facilities is to be on a viaduct; minimising its impact on the SEA. A similar approach is proposed across the Örewa River, minimising the impact there. This presents an opportunity to reinforce broader connectivity outcomes for ecology and water quality by minimising the stream interruption and providing a connected natural system. As the design is refined in later stages, it should minimise impacts on these locations and look for opportunities to enhance these areas where possible.
1.2 Support water conservation and enhance water quality in a watershed	Take into account and work with the existing watershed as part of a whole system.	Bridges are proposed across major water courses across all four segments as described in Principle 1.1
1.3 Minimise land disturbance, conserve resources and materials	Respect the existing topography, landforms and urban structure in the placement of strategic corridors. Minimise the quantity of hard engineering materials required. Minimise, mitigate any	There are large areas of earthworks located across the corridor, generally associated with bridged stream crossings, interchanges and also as a response to the steep topography in this area. This presents the opportunity to refine the earthworks approach in future design stages to further minimise or integrate land disturbance with the existing landform.

Principle	Explanation	Application to NoR 4
	adverse effects of activities on the environment.	 Conceptual drawings show large cut batters encroaching into areas of identified indigenous vegetation (ch1000-3100). As refinement of the design progresses in future design stages, this should be reduced wherever possible to reduce effects on these areas. The majority of Segment A is located within soils that are not considered to be highly productive. There is however, an area of LUC3 soils in the Rural Zone, where the widening of the corridor will encroach on this area.
		 Large scale earthworks are also required to accommodate the Upgrade to Ō Mahurangi Penlink (Redvale) Interchange (ch6400) including active mode connections. As the design is refined in the future, consideration should be given to how this can be integrated into the adjacent FUZ land which is anticipated to be residential. Segment B has a range of soil classifications, including LUC 3, 4 and 5. However, the majority of this segment is within the FUZ, meaning land will be developed and urbanised. There is a small area of rural zone, that includes an area of productive LUC 3 soils which will be impacted by widening along the corridor, which will remove these soils from potential productive use. Segment C Earthworks are required as part of Segment C, particularly around the Wilks Road interchange. Where these are within the Countryside Living Zone the future design refinement should look to integrate these
		 into the surrounding landscape. The majority of Segment C is LUC Class 4, which is not considered to be highly productive, with small areas of LUC Class 3 and 5. This area is zoned for future urban land use and therefore will be developed in the future. Segment D Minimal earthworks are required in this segment of the corridor. The majority of Segment C is LUC Class 4, which is not considered to be highly productive, with small areas of LUC Class 3 and 5. This area is zoned for future urban land use and therefore will be developed in the future.
1.4 Adapt to a changing climate and respond to the	Design for predicted future regional climatic impacts in the corridor location. Consider the positive	The SH1 improvements (3-laning) provide opportunity for dedicated public transport lanes between Albany and Silverdale as an interim solution until the RTC (NoR 1) is delivered; and also include active mode

Principle	Explanation	Application to NoR 4
microclimatic factors of each area	contribution that the orientation of transport corridors can make to the local climate of future places and streets.	facilities along the length of the upgraded corridor (Albany to Grand Drive), supporting mode shift.
SOCIAL		
2.1 Identity and place	The identity or spirit of place is generally acknowledged as the unique amalgam of the inherent built, natural and cultural qualities of a place. Responding to identity in the location and type of new corridors can provide a sense of continuity and contribute to our collective memory.	The SH1 corridor is a high movement corridor with little to no place value. The further identification, development and integration of key identity drivers within NoR 4 should be addressed in future design stages and are generally limited to gateways and way-finding as the SH1 and active mode corridor moves through and connects the various contexts.
2.2 Respect culturally significant sites and landscapes	Acknowledge significant sites and features in the layout of movement corridors including ridgelines or horizons.	Refer to Table 3 in relation to this design principle.
2.3 Adaptive corridors	Corridors should demonstrate flexibility to respond to changes in their function and physical interfaces. Consider an adaptive approach in the way strategic corridors are designed to be able to respond to changes in land use, the way we move around and utilise technology over time.	 The SH1 improvements utilise the existing corridor. They also provide for active modes and create the opportunity to provide priority for Public Transport or freight movements as part of widening of the corridor. Noise mitigation strategies may be required adjacent to existing land use in close proximity to the corridor. Refer to the North: Traffic Noise Report for more detail.
2.4 Social cohesion	Provide clear, effective and legible connectivity between community and social functions.	The upgrade widens the existing SH1 corridor, reinforcing the movement function of this corridor. Provision for cross corridor connectivity across SH1, linking communities on the east and west of the corridor is provided at:
		 Ō Mahurangi Penlink (Redvale) interchange New Wilks Road interchange Silverdale Interchange Silverdale to Highgate Active Mode Connection Active mode crossing near Bawden Road and at the existing Wainui Interchange. Crossing of the corridor is also facilitated by NoR 5, the Huruhuru (Dairy Stream) Active Mode Crossing.

Principle	Explanation	Application to NoR 4
2.5 Safety	Provide a safe and convenient network of routes accessible to people of all ages and abilities.	 Refer to Table 3 in relation to safety recommendations. In addition to these recommendations, a CPTED audit of the corridor within NoR 4 should address, at a minimum, the current identified CPTED risks including: The walking and cycling facilities where there are limited passive surveillance opportunities; and Future cross corridor connections whether they are under or overpasses.
BUILT FORM		
3.1 Align corridors with density	Locate stations/stops and corridors within walking distance of higher density development to facilitate modal shift, support commercial and mixed-use centres and contribute to vibrant, active urban environments.	The corridor has a high movement function, with little to no place value. It spans and connects a range of contexts in the north but does not specifically align with density.
3.2 Corridor scaled to the surrounding context and urban structure	Align the speed, type and scale of transport corridors and infrastructure with the environment that it moves through (appropriate scale to the context).	 The widening of the SH1 corridor reinforces its movement function and increases the scale of an already large corridor. The increased scale will need to be managed where it is adjacent to existing land use. The proposed interchange upgrades for Silverdale and at Wilks Road are at existing connections across the SH1 corridor, and Ō Mahurangi Penlink (Redvale) interchange will connect with O Mahurangi Penlink. Future design detail of the proposed interchange structures should consider scale, visual integration and interface response to adjacent land use functions.
3.3 Facilitate an appropriate interface between place and movement	Facilitate the opportunity for place as well as movement in corridors (people-oriented streets)	This principle is not directly relevant to NoR 4.
MOVEMENT		
4.1 Connect nodes	Provide tangible connectivity between identified activity nodes.	 The SH1 improvements provide a connection between Albany, Silverdale, Ōrewa, and beyond. The active modes path will provide access for active mode users throughout the length of the corridor and the proposed interchanges will provide east-west connections across the corridor for these communities including; Silverdale to Milldale, Whangaparāoa to Dairy Flat and Pine Valley to Silverdale

Principle	Explanation	Application to NoR 4
4.2 Connect modes	Provide for choice in travel and the ability to connect at interchanges between modes.	 The corridor provides for a range of modes. Due to the high movement function of the corridor, access is limited.
4.3 Support access to employment and industry	Align the corridor location and typology to provide direct and efficient access to areas of employment and industry.	The SH1 improvements de provide a connection to industry and employment areas associated with Albany, Silverdale, Ōrewa, and beyond. The Wilks Road interchange will provide a direct connection for future industrial freight from the Silverdale West Industrial Area to SH1 via south facing ramps.
4.4 Prioritise active modes and public transport	Provision of quality active mode corridors and dedicated public transport corridors to enable a modal shift away from private vehicle use.	 The corridor will be widened, with the opportunity to provide priority for public transport, which, once the RTC is implemented (NoR 1), could be used to manage high occupancy vehicles and/or freight. Active modes are provided the length of the corridor with east-west connections for active modes also provided at the proposed intersection upgrades connecting communities on either side of the SH1 corridor.
4.5 Support inter- regional connections and strategic infrastructure	Consider the location and alignment of significant movement corridors and placement of infrastructure (power, wastewater, water) to the network.	The SH1 improvements provide a connection to industry and employment areas associated with Albany, Silverdale Ōrewa, and beyond. The Wilks Road interchange will provide a direct connection for future industrial freight from the Silverdale West Industrial Area to SH1 via south facing ramps.
4.6 Support legible corridor function	Consider how the corridor can be clearly navigated and understood by users moving from place to place.	 NoR 4 has a high movement function, with legible connections from Albany, Silverdale Ōrewa, and beyond.
LANDUSE		
5.1 Public transport directed and integrated into centres	Locate rapid transit interchanges within centres (local, town and metro) to support a mix of uses and provide modal choice to a larger number of users.	 The SH1 improvements provide a connection to Albany, Silverdale, Örewa, and room for associated PT services.
5.2 Strategic corridors as urban edges	Strategic corridors as potential definers of a land use edge.	This principle is not directly relevant to NoR 4.

7.4.1	NoR 4: SH1 Improvements Outcomes and Opportunities Maps

OUTCOMES AND OPPORTUNITIES PLAN - SHEET 1 OF 4



Outcomes

Opportunities



Ecological connectivity - Landscape outcomes should reinforce the wider vegetation patterns of the local open spaces and support ecological connectivity and biodiversity where the corridor crosses Wēiti Stream and Ōrewa River.



Identity drivers - Key local community, landscape character and identity drivers should be identified, developed and integrated with the adjacent land use functions and future design response, including future land use and centres, existing development in Milldale, Millwater and Ōrewa, and adjacent Wēiti Stream and Ōrewa River.



Active mode legibility and priority - Legibility, connectivity demands, safety and modal priority for active modes should be addressed at intersections.



Earthworks - Design earthworks at corridor boundaries to establish an appropriate interface with State Highway 1. Use retaining structures in areas where space is insufficient to deploy earthworks batters or where earthworks negatively impacts the efficiency of adjacent landuses. Where mass planting is proposed on batters, use native ecologically appropriate species.



 $\textbf{Gateway into urban areas -} \ \textbf{The upgraded corridor will provide direct access into the existing}$ Silverdale area, Milldale, Millwater and Ōrewa. The future design of the corridor, should consider the opportunity to provide a gateway into the area, assisting in way finding and defining the transition between land uses.

OUTCOMES



Establish an appropriate interface with the State Highway One corridor that manages the relationship between the corridor and adjacent land use and considers the amenity and safety of the active mode corridor.



Landscape outcomes that provides an appropriate interface to the blue and green

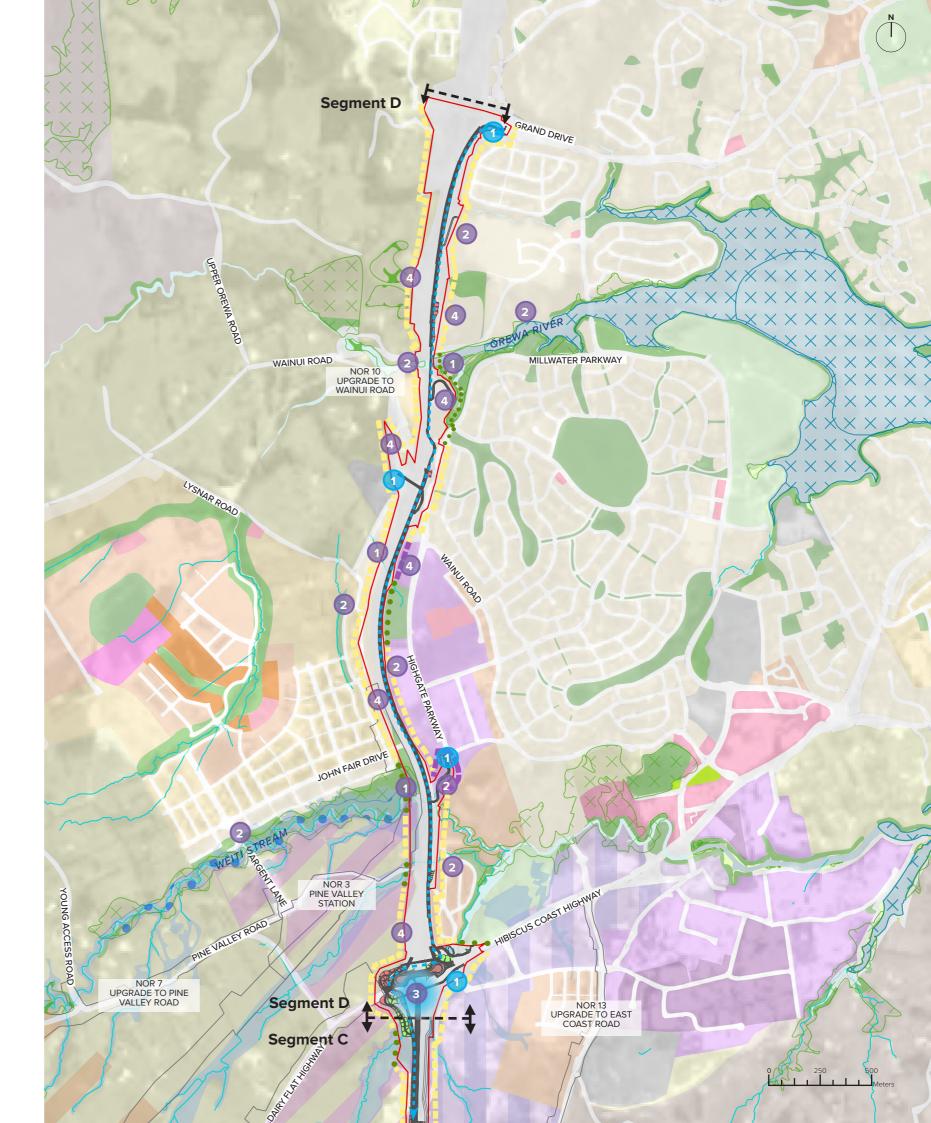


Intersection arrangement that addresses multi-modal priority, safety and legibility.

LEGEND







OUTCOMES AND OPPORTUNITIES PLAN - SHEET 2 OF 4

Outcomes

Opportunities

Ecological connectivity - Landscape outcomes should reinforce the wider vegetation patterns of the local open spaces and support ecological connectivity and biodiversity where the corridor crosses

Identity drivers - Key local community, landscape character and identity drivers should be identified, developed and integrated with the adjacent land use functions and future design response, including adjacent John Creek and its tributaries.

CPTED - Future design should incorporate CPTED principles including clear sightlines, good levels of lighting and passive surveillance, particularly at intersections and future cross-corridor connections. This should be a consideration of the active mode facilities which may have limited passive surveillance along the corridor from adjacent land use.

Active mode legibility and priority - Legibility, connectivity demands, safety and modal priority for active modes should be addressed at intersections.

Stormwater Wetlands - Consider integration outcomes for wetland/s such as setbacks, arrangement and scale of planting to support an appropriate interface to the road corridor, adjacent land use and development.

Earthworks - Design earthworks at corridor boundaries to establish an appropriate interface with State Highway 1. Use retaining structures in areas where space is insufficient to deploy earthworks batters or where earthworks negatively impacts the efficiency of adjacent landuses. Where mass planting is proposed on batters, use native ecologically appropriate species.

Integration of earthworks with the rural zone - Future earthworks design that interfaces with the rural zone should consider how these can be shaped and landscaped to integrate into the rural character of the rural zone.

Gateway into Silverdale Area - The corridor will provide direct access into the existing Silverdale area, and the future Silverdale West Industrial Area. The future design of the upgrade corridor should consider the opportunity to provide a gateway into the area, assisting in way finding and defining the transition between land uses.

Cycleway connections - Maximise cycleway connections along corridor into the future local

OUTCOMES

Establish an appropriate interface with the State Highway One corridor that manages the relationship between the corridor and adjacent land use and considers the amenity and safety of the active mode corridor.

Establish an interface that responds to the adjacent rural zone, integrating the corridor into the adjacent land form and include appropriate planting and screening.

Establish landscape outcomes that provides an appropriate interface to the blue and

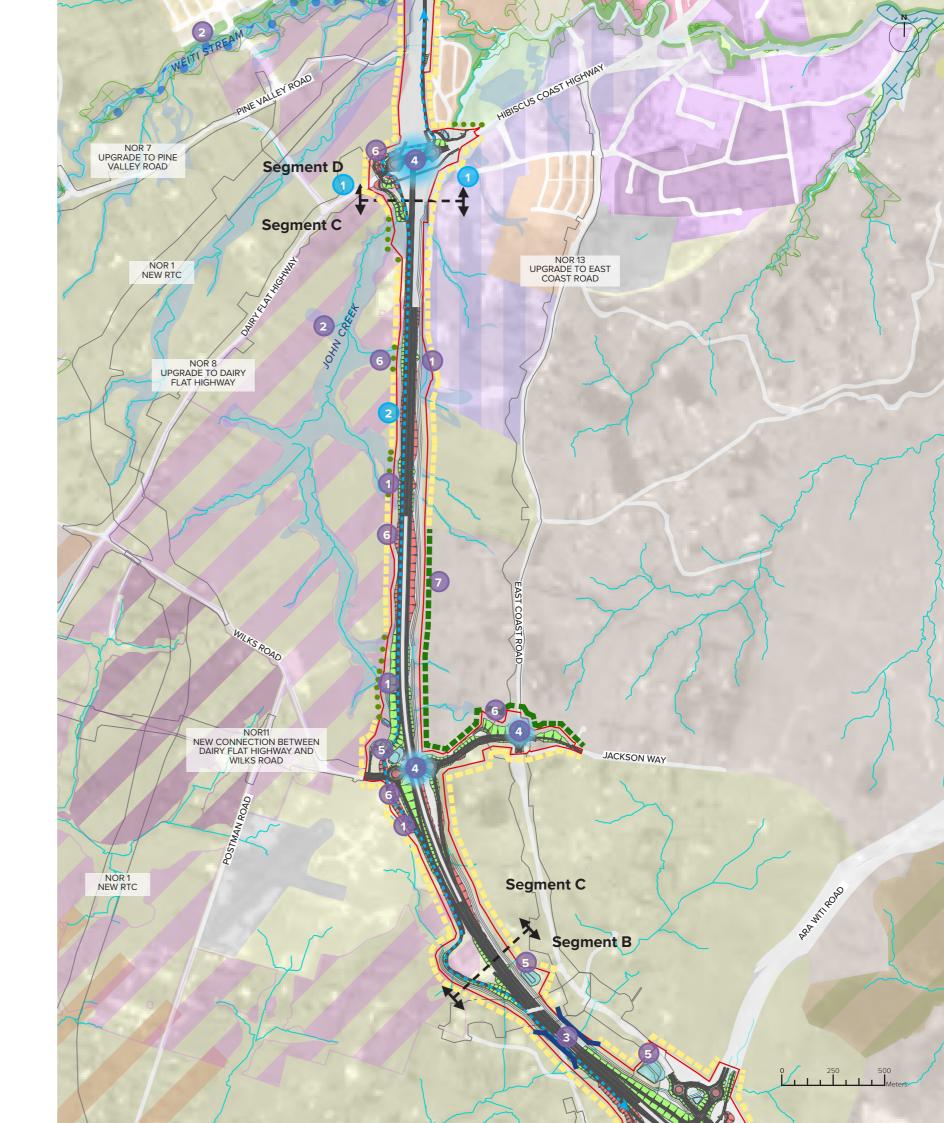
Consideration of visual integration, interface and sense of place for the bridge structure.

Intersection arrangement that addresses multi-modal priority, safety and legibility.

LEGEND

Designation Boundary Other NOR Boundaries Future Urban Zone - FUZ Residential - Large Lot Residential - Mixed Housing Urban Business - Light Industry Business - Heavy Industry Business - General Business Silverdale West Industrial Structure - Light Industry Silverdale West Industrial Structure - Heavy Industry Open Space - Conservation Open Space - Sport and Active Recreation





OUTCOMES AND OPPORTUNITIES PLAN - SHEET 3 OF 4

Outcomes

Opportunities

Ecological connectivity - Landscape outcomes should reinforce the wider vegetation patterns of the local open spaces and support ecological connectivity and biodiversity where the corridor crosses Ōkura Creek and Huruhuru (Dairy Stream) and its tributaries.

Identity drivers - Key local community, landscape character and identity drivers should be identified, developed and integrated with the adjacent land use functions and future design response, including adjacent Ōkura Creek and Huruhuru (Dairy Stream).

CPTED - Future design should incorporate CPTED principles including clear sightlines, good levels of lighting and passive surveillance, particularly at intersections and future cross-corridor connections. This should be a consideration of the active mode facilities which may have limited passive surveillance along the corridor from adjacent land use.

Active mode legibility and priority - Legibility, connectivity demands, safety and modal priority for active modes should be addressed at intersections.

Stormwater Wetlands - Consider integration outcomes for wetland/s such as setbacks, arrangement and scale of planting to support an appropriate interface to the road corridor, adjacent land use and development.

Earthworks - Design earthworks at corridor boundaries to establish an appropriate interface with State Highway 1. Use retaining structures in areas where space is insufficient to deploy earthworks batters or where earthworks negatively impacts the efficiency of adjacent landuses. Where mass planting is proposed on batters, use native ecologically appropriate species.

Gateway into Dairy Flat - The upgraded corridor will provide direct access into the Dairy Flat area, and the future design of the corridor, should consider the opportunity to provide a gateway into the area, assisting in way finding and defining the transition between land uses.

OUTCOMES

Establish an appropriate interface with the State Highway One corridor that manages the relationship between the corridor and adjacent land use and considers the amenity and safety of the active mode corridor.

Establish an interface that responds to the adjacent rural zone, integrating the corridor into the adjacent land form and include appropriate planting and screening.

Establish landscape outcomes that provides an appropriate interface to the blue and green network.



Consideration of visual integration, interface and sense of place for the bridge



Intersection arrangement that addresses multi-modal priority, safety and legibility.

LEGEND

Designation Boundary Other NOR Boundaries Future Urban Zone - FUZ Residential - Large Lot

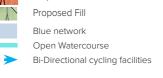
Business - Light Industry Silverdale West Industrial Structure - Light Industry

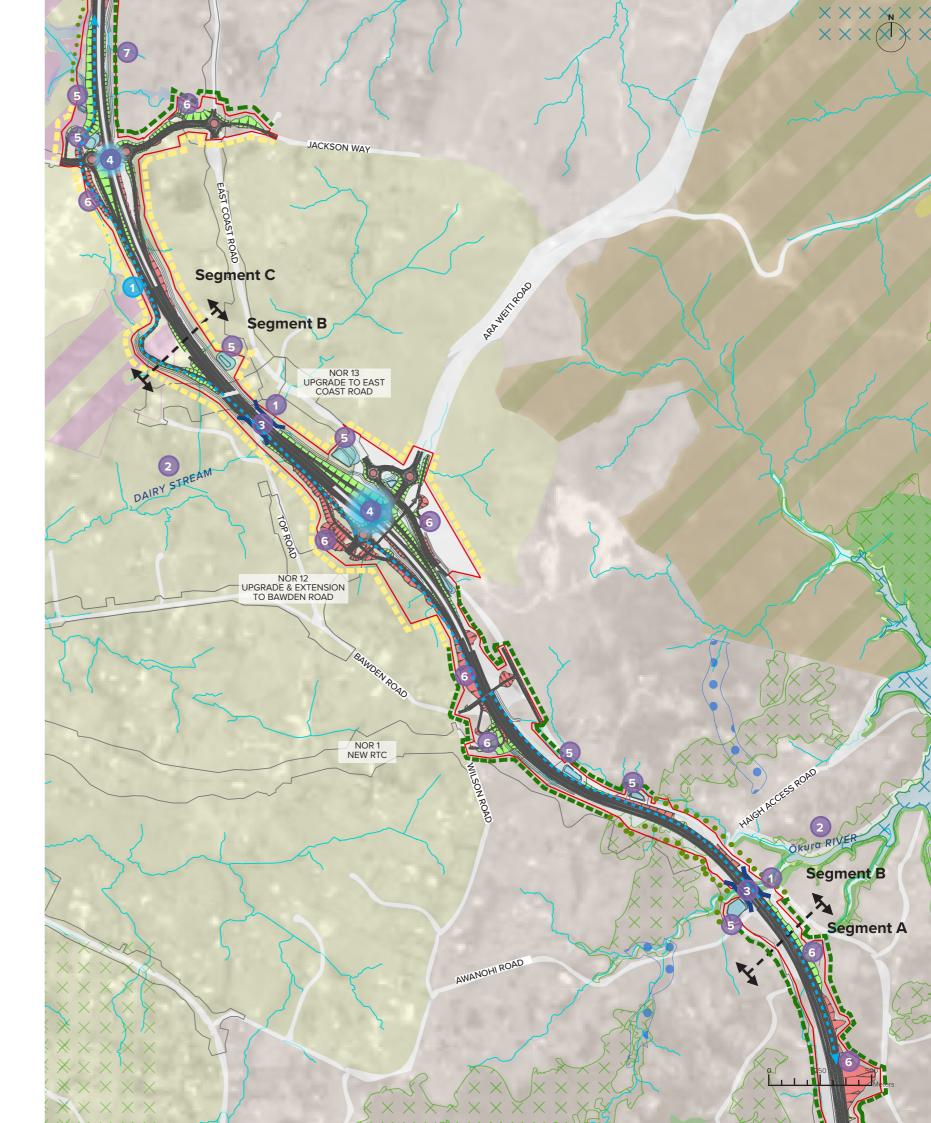
Silverdale West Industrial Structure - Heavy Industry

Rural - Countryside Living Rural - Rural Conservation

Rural - Mixed Rural







OUTCOMES AND OPPORTUNITIES PLAN - SHEET 4 OF 4

Outcomes

Opportunities

Ecological connectivity - Landscape outcomes should reinforce the wider vegetation patterns of the local open spaces and support ecological connectivity and biodiversity where the corridor crosses Ōkura River and Waiokahukura (Lucas Creek) and its tributaries.

Identity drivers - Key local community, landscape character and identity drivers should be identified, developed and integrated with the adjacent land use functions and future design response, including Waiokahukura (Lucas Creek), Ōkura River and the Albany Metropolitan Centre.

CPTED - Future design should incorporate CPTED principles including clear sightlines, good levels of lighting and passive surveillance, particularly at intersections and future cross-corridor connections. This should be a consideration of the active mode facilities which may have limited passive surveillance along the corridor from adjacent land use.

Active mode legibility and priority - Legibility, connectivity demands, safety and modal priority for active modes should be addressed at intersections.

Stormwater Wetlands - Consider integration outcomes for wetland/s such as setbacks, arrangement and scale of planting to support an appropriate interface to the road corridor, adjacent land use and development.

Earthworks - Design earthworks at corridor boundaries to establish an appropriate interface with State Highway 1. Use retaining structures in areas where space is insufficient to deploy earthworks batters or where earthworks negatively impacts the efficiency of adjacent landuses. Where mass planting is proposed on batters, use native ecologically appropriate species.

Gateway into Albany from the north - The corridor will provide direct access into the Albany area, and the future design of the corridor, should consider the opportunity to provide a gateway into the area, assisting in way finding and defining the transition between land uses.

Cycleway connections - Maximise cycleway connections along corridor into the future local

OUTCOMES

Establish an appropriate interface with the State Highway One corridor that manages the relationship between the corridor and adjacent land use and considers the amenity and safety of the active mode corridor.

Establish an interface that responds to the adjacent rural zone, integrating the corridor into the adjacent land form and include appropriate planting and screening. Landscape outcomes that provides an appropriate interface to the blue and green



Consideration of visual integration, interface and sense of place for the bridge



Intersection arrangement that addresses multi-modal priority, safety and legibility.

LEGEND

Designation Boundary

Residential - Mixed Housing Suburban

Residential - Large Lot

Residential - Mixed Housing Urban Residential - Terrace Housing and Apartment

Business - Metropolitan Centre

Business - Local Centre

Business - Mix Use

Rural - Countryside Living Open Space - Conservation

Significant Ecological Area (SEA) - Terrestrial

Natural Stream Management Areas

Proposed Cut

Proposed Fill

Blue network

Open Watercourse Bi-Directional cycling facilities

