

MILL ROAD

URBAN AND LANDSCAPE DESIGN MANAGEMENT PLAN (ULDMP)

NZ TRANSPORT AGENCY | WAKA KOTAHI

DATE: 08 September 2026

STATUS: APPROVAL FOR ISSUE

DOCUMENT CONTROL RECORD

CLIENT	NZ TRANSPORT AGENCY NZTA WAKA KOTAHI
PROJECT NAME	MILL ROAD
DOCUMENT NO.	0002
DOCUMENT	MILL ROAD ULDMP
DATE OF ISSUE	08 SEPTEMBER 2026
STATUS	REVISION / VERSION: L APPROVAL FOR ISSUE
ORIGINATORS	SUZANNE LANGE REGISTERED LANDSCAPE ARCHITECT (NZILA 1358) s9(2)(a)
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INTRODUCTION

1.1 GENERAL OVERVIEW

Mill Road Stage 1, referred as the Project, will provide a strategic, four-lane, divided carriageway between Manukau in the north and Takaanini in South Auckland. The Project will amongst other things provide network resilience as an alternative to the Southern Motorway (SH1). The route follows Redoubt Road along the ridge-line from the existing SH1 motorway interchange at Manukau, and then down through the hills parallel to the existing Mill Road alignment and onto the flats at Alfriston. The Project transitions through established urban environments, with developing residential pockets, park land as well as rural areas.



FIG 1 MILL ROAD - STAGE 1 (PROJECT EXTENT)

INTRODUCTION

1.2 OBJECTIVES AND CONSIDERATIONS

Objective of the ULDMP

The objective of the Urban Design and Landscape Management Plan (ULDMP) is to, as far as practicable, integrate the Project’s permanent works into the adjacent landscape and manage potential adverse landscape effects. The ULDMP establishes the overarching design vision, principles, and intended outcomes for the Project and provides a structured framework for their implementation throughout the Project.

The ULDMP has been developed through an iterative process of engagement with Mana Whenua, Auckland Council, and other key stakeholders, including consultation via hui, technical workshops, and design review sessions. The ULDMP has been prepared to be consistent with the preliminary Urban and Landscape Design Guidelines and the Waka Kotahi NZ Transport Agency Landscape Guidelines (2013), ensuring alignment with recognised best-practice design and environmental management standards.

Design Considerations

A design review has been undertaken against the Standardised Designs – NZTA Standardised design solution for use on State Highway Roads of National Significance (version 3.0 May 2025 - RoNS standards).

The following urban and landscape design elements are covered in this report and include the standards used in their development and, in comparison, with the RoNS standards:

- Bridge environments
- Retaining walls with geotechnical considerations
- Noise walls and screens
- Road Furniture, lighting and potential need for gantries
- Boundary treatments and fences
- Hardscape materials
- Planting strategy with plans and sections
- Design integration elements; Soils, Stormwater - culverts, stream diversions, swales and stormwater wetland and raingardens

ULDMP Overview

The framework is divided into the following sections:

SECTION 1: Introduction
The Project background and its objectives across the Project

SECTION 2: Corridor Wide
Specific design considerations and requirements at the specific areas of the Project , along with constraints and opportunity mapping

SECTION 3: Urban | Landscape Elements
Design outcomes for urban and landscape elements across the Project

APPENDIX: Landscape plans and sections

Cultural Design Considerations

The ULDMP provides a baseline framework for urban and landscape design outcomes along the Project corridor, guiding form, materials, spatial integration, and overall visual and ecological character.

The specific urban and landscape design elements identified within this management plan are also opportunities for Mana Whenua to develop their own cultural design outcomes and/or lead design direction of these elements. This could include (but not limited to) the integration of mahi toi, motifs, stories, and other culturally significant narratives.

This approach ensures that the corridor achieves its functional and aesthetic objectives while enabling the built and natural environment to reflect, celebrate, and be enriched by the identity, heritage, and cultural values of local communities.

Mana Whenua will be consulted regarding their interest in these opportunities prior to any subsequent detailed design development.

INTRODUCTION

1.3 THE ULDMP GUIDING PRINCIPLES

The ULDMP principles have been developed through the analysis of multiple reference sources, including the 2014 Urban Design and Landscape Study, NZTA's Bridging the Gap Urban Design Guidelines, NZTA technical reports, and consultation with Mana Whenua, Auckland Council, and key stakeholders.

Opportunities, constraints, and outcomes identified in these sources have been assessed and refined to produce a set of design principles tailored to the Project. These principles provide a consistent framework for guiding design decisions, integrating the Project into its urban and landscape context, and ensuring high-quality outcomes across all stages of design and construction.

ULDMP for Mill Road

Taking into account the overall project objectives and the NZTA urban design and landscape principles, the following urban design and landscape objectives have been determined for the Mill Road Project:

	PRINCIPLE	METHOD	OUTCOME
ULD -1	Design streetscapes and landscapes that express and reinforce local identity by responding to surrounding landform, vegetation, heritage, and built character	Use locally appropriate materials, forms, and planting palettes that align with and enhance the character of the area	Creating a cohesive sense of place
ULD -2	Integrate transport, walking, and cycling networks to create safe, accessible, and legible routes for all users	Design new pedestrian and cycle links that strengthen local connectivity and support active transport	Establishing well-connected, movement networks
ULD -3	Work with the existing landscape to tie in and re-vegetate the land to support ecological resilience, biodiversity, and stormwater performance	Design slopes and earthworks that follow natural topography, minimise visual impact, and incorporate habitat opportunities through low-impact, nature-based design	Creating a visually integrated and ecologically functional landscape that supports natural systems and long-term environmental resilience
ULD -4	Preserve and frame important views and landmarks that contribute to local identity and a sense of place	Acknowledge and integrate cultural and heritage features in the design to ensure they remain visible, respected, and connected to their context	Providing opportunities to enhance the local character and reinforce identity. Through visual cultural heritage elements
ULD -5	Deliver designs that are robust and low-maintenance to support long-term care and usability	Incorporate green and sustainable design approaches, using durable materials, efficient systems, and resilient planting with whole of life considerations at the forefront	Creating landscapes and streetscapes that remain functional, attractive, and climate resilient over time

FIG 2 GUIDING PRINCIPLES FOR THE MILL ROAD PROJECT

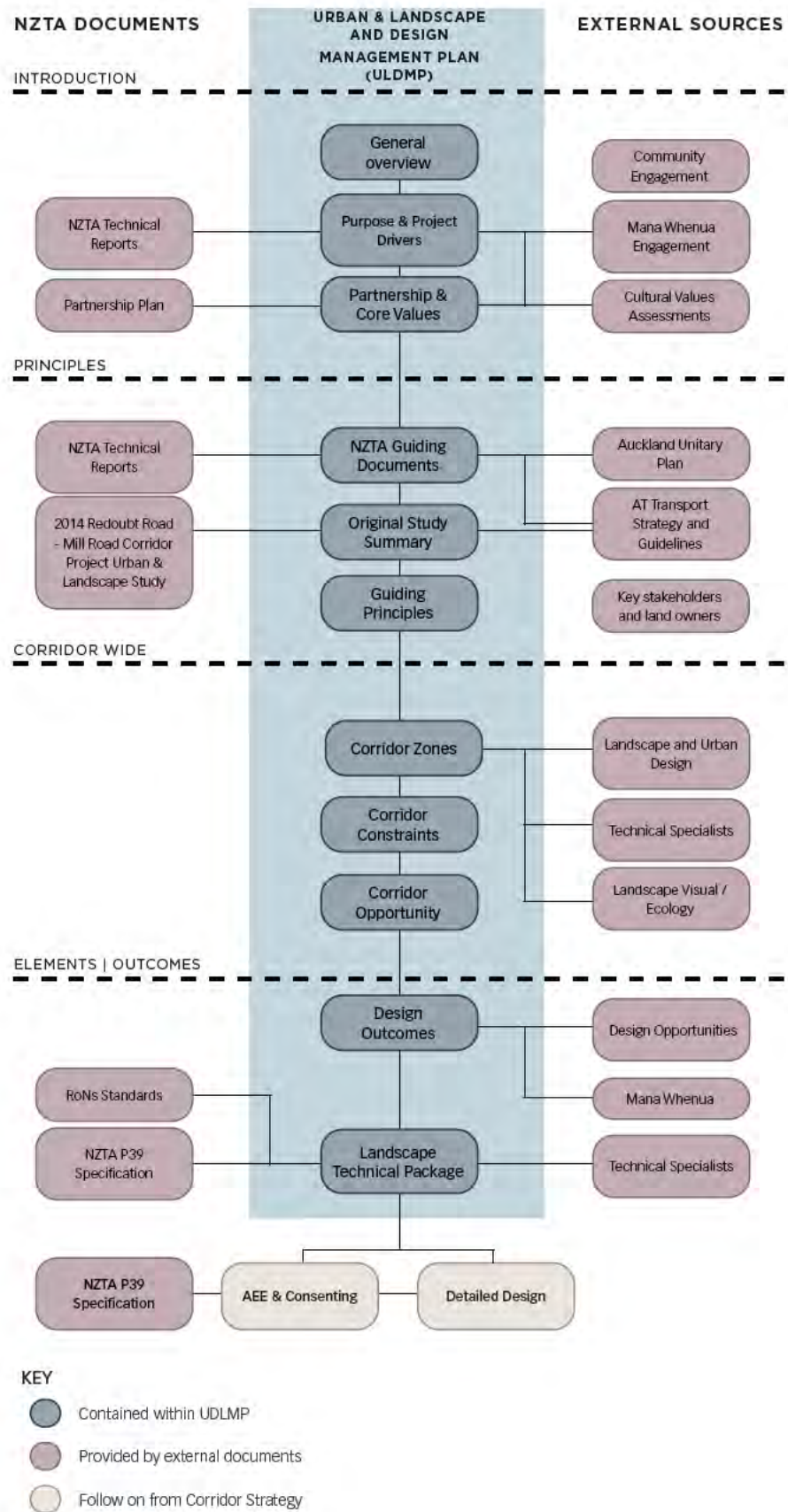


FIG 3 MANAGEMENT PLAN PROCESS

CORRIDOR WIDE



CORRIDOR WIDE

2.1 CORRIDOR ZONES

The 2014 Urban Design and Landscape Study identified 5 distinct character zones within the Project corridor. These zones have been further defined through a constraints and opportunities analysis.

Corridor zone 1 - Urban area

The most urbanised section of the corridor, characterised by continuous residential development dominated by detached housing. Exceptions include a church and a motel located just south of the corridor near the SH1 motorway. The road functions as a key connector to both SH1 and SH20, as well as to Manukau Centre. Because there is no southbound access to SH1 from Te Irirangi Drive, traffic is funneled along this stretch of Redoubt Road to reach the available on-ramps.

Corridor zone 2 - Park Edge

Although dwellings remain along parts of the northern and southern boundaries, the dominant character is shaped by open space and vegetation. Expansive views extend across Tōtara Park to the Manukau Harbour, and eastward toward the CBD and Waitematā Harbour. Here the road takes on a more informal, semi-rural character, with swales replacing traditional kerbs.

Tōtara Park is the defining landscape feature, offering a range of recreational opportunities for walkers, dog owners, mountain bikers, and horse riders. While fenced, the park boundary allows for long views into the open space and southern landscape. Access points are located along Redoubt Road, including an entrance to the Tōtara Park.

Corridor zone 3- Murphys Road

The Murphys Road link realigns the corridor to create a safer, more streamlined, signalised intersection with the main Mill Road corridor. This new section cuts into the landform and requires retaining walls on both sides. Coordination with Auckland Transport ensures seamless integration with future connections and roading projects. District views extend to Flat Bush and the surrounding valley communities.

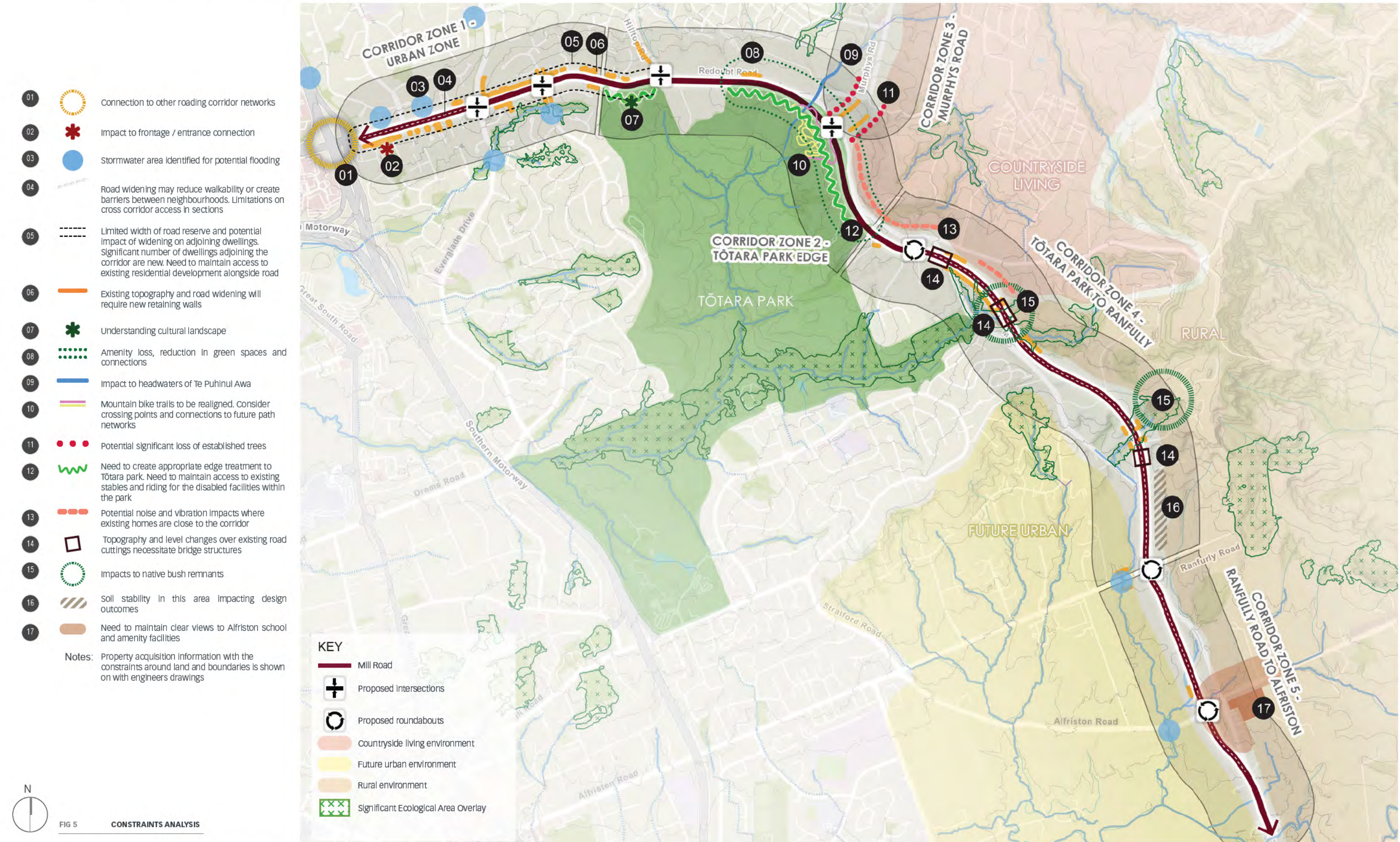
Corridor zone 4 & 5- Rural Area

The corridor transitions into a flatter, more open rural landscape, with wide views eastward across farmland and westward toward the urban area. Some large-lot residential developments are present, but built form is generally not visually dominant from the road. The surrounding land is primarily used for grazing, reinforcing the open rural character. Also within these zones sit two Significant Ecological Areas, 38 Mill Road - Watercare Bush and Watercare Scrub (AUP reference: SEA-T-4570), 146 Mill Road – Cheesman's bush (AUP reference: SEA-T-9102) with a number of high value species and significance to the existing vegetation and character that was here before settlement.



CORRIDOR WIDE

2.2 CONSTRAINTS ANALYSIS



CORRIDOR WIDE

2.3 OPPORTUNITIES ANALYSIS

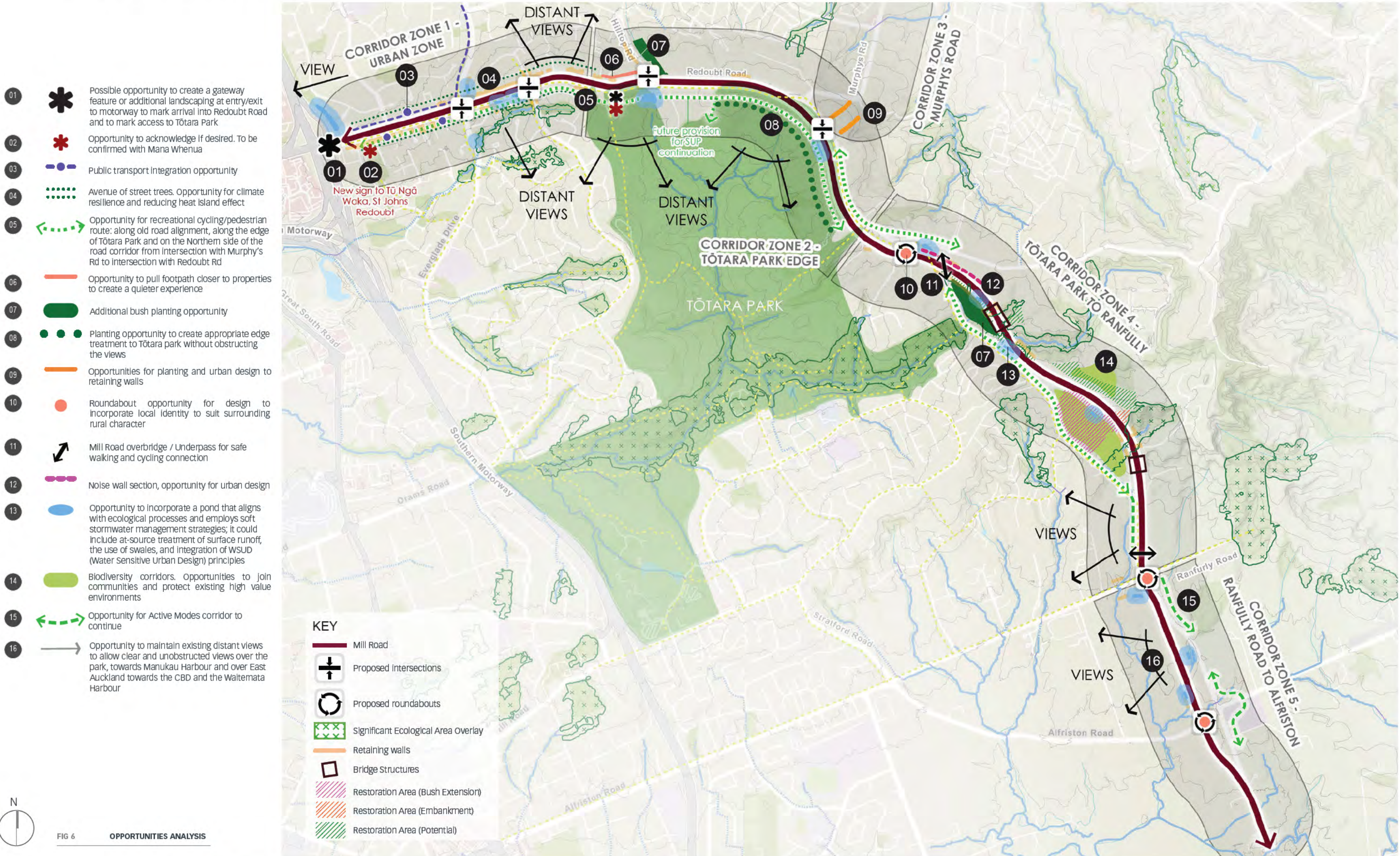


FIG 6 OPPORTUNITIES ANALYSIS

PROJECT SPECIFIC DESIGN ELEMENTS



URBAN | LANDSCAPE ELEMENTS

3.1 THE BRIDGE ENVIRONMENTS

Context

The Project includes three bridge structures positioned along the proposed alignment as it transitions through existing urban and rural environments, as well as natural and cultural landscapes. Given their size, these bridges are likely to be visually prominent features within the corridor. Sensitive landscape areas include the proposed bridge locations near Te Puhinui and Cheesman's Bush, densely vegetated settings where fine detailing will not be easily visible. The proposed bridges are designed primarily for vehicular movement and do not include Shared Use Paths (SUP).

Bridges within the environment

Mill Road Overbridge - Proposed structure: Concrete Super T

- The existing road alignment will remain beneath the new bridge, providing access for residents and forming part of an active modes corridor for walking and cycling

Puhinui Creek Bridge - Proposed structure: Concrete Super T

Cheesman's Bush Bridge - Proposed structure: Steel Girder Bridge

Outcomes

Bridges within the Project should consider the following outcomes:

- A corridor-wide design approach that provides consistency in bridge materials and design language
- Integration of cohesive bridge elements that respond to both users and adjacent audiences
- Structures that minimise ongoing maintenance and environmental impacts, especially in sensitive ecological areas, as much as practicable
- Bridge design that emphasises clean, refined, and robust forms, making use of RoNs standardised bridge design details wherever possible

To achieve the outcomes, the design shall consider:

Mill Road Overbridge-

- Using maximum corridor width for vertical abutments
- Allowance for urban design patterns or cultural pattern to exterior bridge barriers and abutments

Puhinui Creek Bridge-

- Maximising the distance between spans where crossing over areas of high ecological value within the Te Puhinui Stream area to minimise the bridge footprint
- Providing a central column to minimise disturbance and impact into the valley floor

Cheesman's Bush Bridge-

- Providing longer span to remove the need for piers and no additional impact or element touching the valley floor within the Significant Ecological Areas (SEA)

Design Guidance

To achieve the outcomes, the design shall consider:

Landscape Integration and Views

- Maximising opportunities for outward views to the surrounding urban and natural landscapes
- Designing the bridge railings and barriers to maintain visual permeability for vehicle occupants
- Achieving a slender, horizontally emphasised form that complements the landscape rather than competing with it
- Using clean lines, simple geometries, and coherent details. Avoiding unnecessary visual clutter.

Whole-of-Structure Composition

- Designing each bridge as an integrated composition, including abutments, piers, headstocks, barriers, and undercroft spaces. Considering the bridge's appearance from all perspectives - including road users, adjacent properties, and pedestrian/cycle paths
- Giving equal design attention to the underside and side elevations
- Maximising the openness beneath bridges, especially where users pass under overbridges.

Abutment and Structural Form

- Avoiding steep embankment slopes (no steeper than 1V:3H) to support effective planting and accommodate tree pits
- In low-light or dry undercroft conditions, using local rock armour instead of planting to minimise weed and litter accumulation
- Within SEA, coordinating with ecologists to determine the extent and location of interventions to minimise impact to high value vegetation and specimen trees.

Architectural Treatment and Cultural Narrative

- Applying an appropriate level of architectural treatment reflecting each bridge's visibility and significance
- Maintaining consistency in bridge types, parapets, and railing details to create a cohesive corridor experience
- Integrating cultural narratives or local design responses where appropriate and visible.

Materiality and Detailing

- Using a simple, coherent palette of materials; avoid hybrid structural systems unless a unified composition is demonstrably achieved
- Integrating safety barriers, lighting, and signage into the primary bridge design - not as afterthoughts
- Concealing stormwater pipes and services within the structure; design for controlled water shedding to avoid staining or weeping joints
- Using local rock for scour protection, blending with natural contours and planting to reduce visual dominance.

Environmental and Maintenance Considerations

- Providing sufficient bridge length to allow unobstructed stream passage and restoration of natural margins
- Avoiding sediment traps, fauna hazards (e.g., bird strike), and impediments to fish passage
- Adopting CPTED principles where pedestrian or cycle paths pass beneath bridge structures.

Technical Enhancements

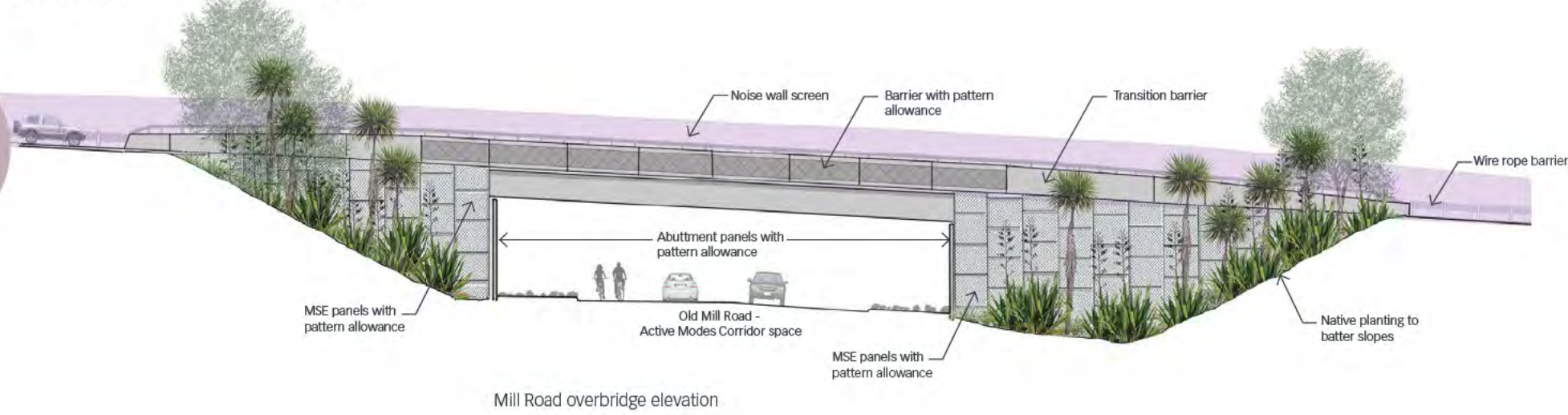
- Where practicable, using bridge designs that accommodate seismic movement without mechanical expansion joints
- Extending lower-height bridge barriers along the highway where noise mitigation is required
- Using detailing techniques to reduce bulk and enhance visual refinement, for example:
 - Top rails instead of solid parapets (unless required for mitigation near residences)
 - Hanging parapets with strong shadow lines to recess beams visually
 - Pier headstocks extended beyond beams for visual relief
 - Side barriers extended beyond bridge ends to anchor and emphasise horizontal lines.



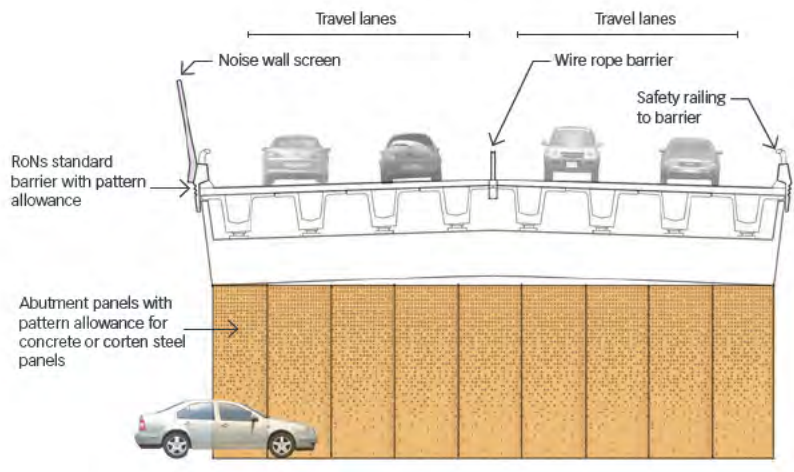
URBAN | LANDSCAPE ELEMENTS

3.2 BRIDGES - INDICATIVE ONLY

Mill Road overbridge
Vertical abutments
Active modes interface

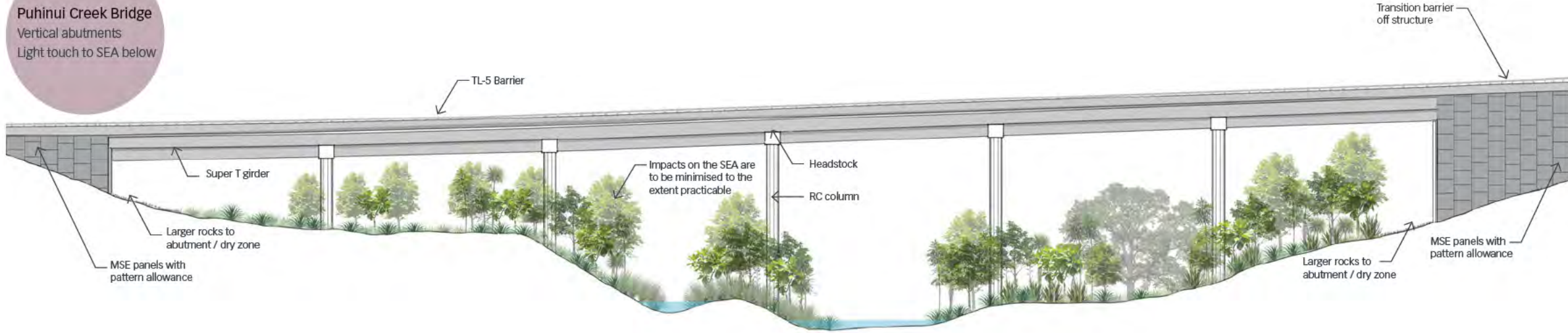


Mill Road overbridge elevation

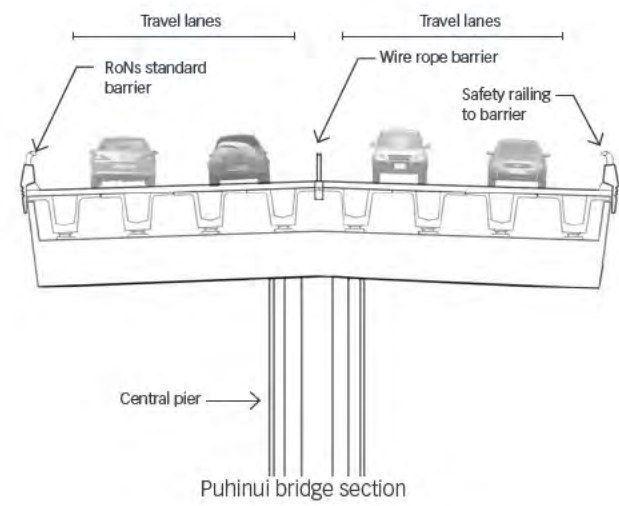


Mill Road overbridge section

Puhinui Creek Bridge
Vertical abutments
Light touch to SEA below



Puhinui bridge elevation

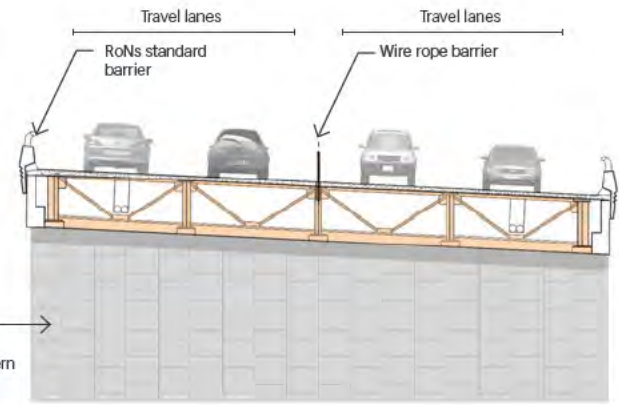


Puhinui bridge section

Cheesman Bush Bridge
Vertical abutments
Light touch to SEA below



Cheesman's Bridge elevation



Cheesman's Bridge section

URBAN | LANDSCAPE ELEMENTS

3.3 RETAINING WALLS

Context

A number of retaining walls are required throughout the corridor, many of which will have large exposed faces visible to users of the Project and from surrounding roads, pedestrian and cycle networks, private properties, and areas of public open space. Retaining wall design shall respond to context, visibility, and user experience, with particular attention to areas of high exposure, sensitive landscape character, or proximity to walking and cycling paths.

Vertical retaining walls, including mechanically stabilised earth (MSE) structures, shall form a coherent suite of elements that contribute positively to corridor character and avoid visual clutter. Where facing is required, shotcrete, soil nails, and rockfall mesh shall be avoided. Where retaining walls act as landscape or neighbourhood markers, their materiality, texture, and colour shall be coordinated to achieve design consistency and enhance the amenity of surrounding communities.

Retaining walls within the environment

Urban Section: The urban section will require retaining walls to affected properties, namely on the southern side of the corridor where road widening is occurring. Some of these walls are outward-facing to the corridor, while others face inward toward the properties.

Park Edge: Adjacent to Tōtara Park, retaining walls will be required where there is insufficient space for vegetated, planted batter slopes.

Murphys Road: The new alignment will require a cut through the existing grade for the new road, necessitating retaining walls to the slope.

Rural Section: In the rural section, walls will be limited mostly around bridge abutment structures and around several stormwater treatment areas or culverts. These spaces are outward-facing to the corridor, with limited visual connection to most user groups.

Outcomes

Retaining walls within the Project should consider the following outcomes:

- Wall design will balance robust engineering performance with a coherent and consistent material expression across the corridor
- Wall design will visually integrate with associated infrastructure (bridges, structures, shared-use paths), with required safety barriers and railings designed as a single, coordinated entity
- Use local materials where practicable to reflect local colour, texture, and identity
- Maximise planting at the base and/or top of walls, where practicable to soften visual impact and enhance integration with the surrounding landscape
- Use of vegetated batters over retaining walls, where practicable
- At culverts, use retaining walls or reinforced slopes to steepen batters and reduce culvert lengths; however, planted batter slopes are preferred where practicable
- Discourage climbing and address all relevant safety requirements. Fences shall be provided for falls greater than 1m
- Where precast concrete panel walls are adopted use a single basic modular design, finished in natural concrete colour to avoid consistency issues associated with pigmentation

- A continuous, flowing line at the top edge of retaining walls
- Where precast panel walls are adopted, include a capping with smooth, flowing lines, and concealed drainage where practicable
- Horizontal alignment of walls that are parallel to the adjoining carriageway or local road where practicable
- Simple plan layouts, avoiding kinks and irregular bends
- Fencing that is integrated with the wall design, avoiding irregular steps in fencing panels, where practicable with a preference for a consistent fence top line.

General consistency with Section 4.13 of Bridging the Gap:

- Complement the over arching family of highway structures along the Project and in the vicinity of the Project connections
- Integrate with landscape plans / planting schemes to soften the appearance of the structures and to deter graffiti
- Use of a neutral colour palette or one that reflects the local area (i.e. use of dark colours to ground the structure and reference the underlying basaltic volcanic landscape).

Design Guidance

To achieve the outcomes, the design shall consider:

Urban Section - specific matters

- Using wall types and scales that respond appropriately to the urban environment
- Greening in front of the walls where practicable
- Adding a fence type for walls over 1m in height or that sit on the property boundary
- Incorporating variety to mitigate a singular design finish within this section of the Project.

Park Edge - specific matters

- Greening of walls where practicable by adding planting
- Use native planting to provide screening
- Using plants that are appropriate for the site's exposure and the soil depths that are available to the slopes.

Murphys Road - specific matters

- Steepening vegetated batters where practicable to reduce wall size
- Greening in front of the walls where practicable
- Allowing for a baseline urban design pattern.

Rural Section - specific matters

- Integrating walls into the surrounding environment using recessive colours and textures, with a preference for planting to screen walls where practicable
- Minimising ongoing maintenance and discourage graffiti and vandalism.



Gravity block wall
Image Firth wall



Gravity block wall and fence detail
Image Stonefields development site



Weep holes to allow plant growth
Image Northwest motorway wall Auckland



Cultural pattern to precast concrete panels
Image Oteha Valley motorway wall Auckland



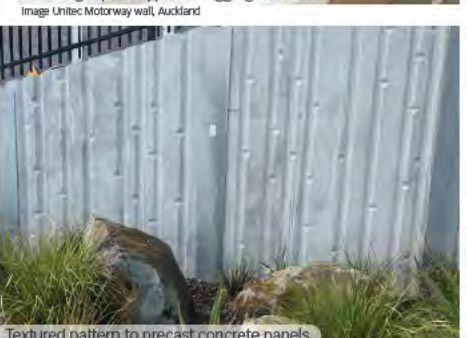
Urban pattern precast panel wall
Image Calder Park Drive level crossing, Australia



Full height panels, pebble aggregate finish
Image Unitec Motorway wall, Auckland



Textured pattern to precast concrete panels
Image IC Darling Harbour, Australia



Textured pattern to precast concrete panels
Image Northern Motorway corridor, Auckland



Corten steel panels to retaining wall
Image Transmission Gully, Wellington



Corten steel perforated panel
Image Art rendering

URBAN | LANDSCAPE ELEMENTS

3.4 RETAINING WALLS TYPOLOGIES

A: Concrete and Blockwork Retaining Walls

Concrete blockwork retaining walls are to be used predominately within the urban area and facing in towards to corridor. Gravity walls and concrete block retaining systems will be used where structural requirements dictate, particularly in cut and fill sections and where space within the designation is constrained.

To achieve the overarching retaining wall outcomes, the design of Concrete and Blockwork Retaining Walls shall consider:

- Using surface treatments such as textured concrete, patterned formwork, or integrally coloured finishes to reduce visual dominance and enhance integration with the surrounding landscape
- Allowance for custom moulds to provide variety
- Allowance for the use of oxide or pigment finishes, enabling walls to recede visually into the surrounding landscape environment. Due to cost considerations, this should be limited to custom blocks that are highly visible within the urban section
- The use of locally referenced textures (e.g. coarse aggregate finishes reflecting volcanic geology) to reinforce corridor identity
- Where appropriate, incorporating planting zones, greening of walls, or climbing vegetation to further integrate retaining walls into the landscape setting
- Compliance with NZTA performance and seismic design standards
- Interfaces with adjacent property that require safety barriers and railings are to be integrated seamlessly.

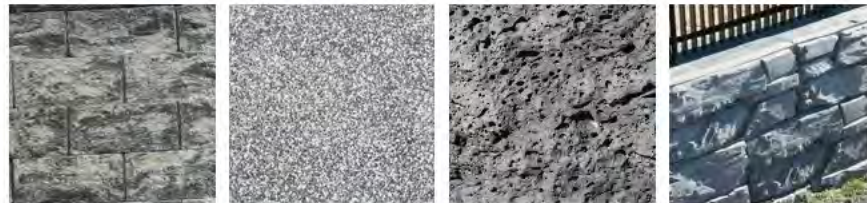


FIG 7 TEXTURE COLOUR MATERIAL PALETTE



FIG 8 GRAVITY WALL SECTION & ELEVATION STUDY

B: Reinforced Soil Retaining Walls

Reinforced soil retaining walls (MSE systems) and precast panel walls will be applied where corridor geometry, geotechnical conditions, and structural efficiency require taller or more flexible retaining solutions.

MSE and precast systems will be utilised in locations where large cut-and-fill operations are required, or where tall walls provide the most efficient land use.

Their modular nature shall enable efficient construction and adaptability to varied site conditions.

To achieve the overarching retaining wall outcomes, the design of Reinforced Soil Retaining Walls shall consider:

- Where precast concrete panels are adopted using durable finishes and surface articulation to avoid monolithic or visually stark outcomes
- Using surface treatments such as, patterned form liners, textured aggregates, ribbed or relief finishes, and colouring that reflects the local geology and soils of the Project corridor
- Allowance for form liners or moulds for each wall, incorporating either an urban design or cultural narrative pattern. These patterns may be repeated across wall sections. Where a cultural pattern is used, the liners shall remain the property of the iwi or artist
- Visually breaking down large expanses of walls shall through surface patterning and articulation, and shall be designed enabling it to weather evenly and retain visual quality over time
- Integrating landscape planting to soften the interface between hard and natural elements
- The interfaces with adjacent properties with safety barriers and railings integrated seamlessly where required.

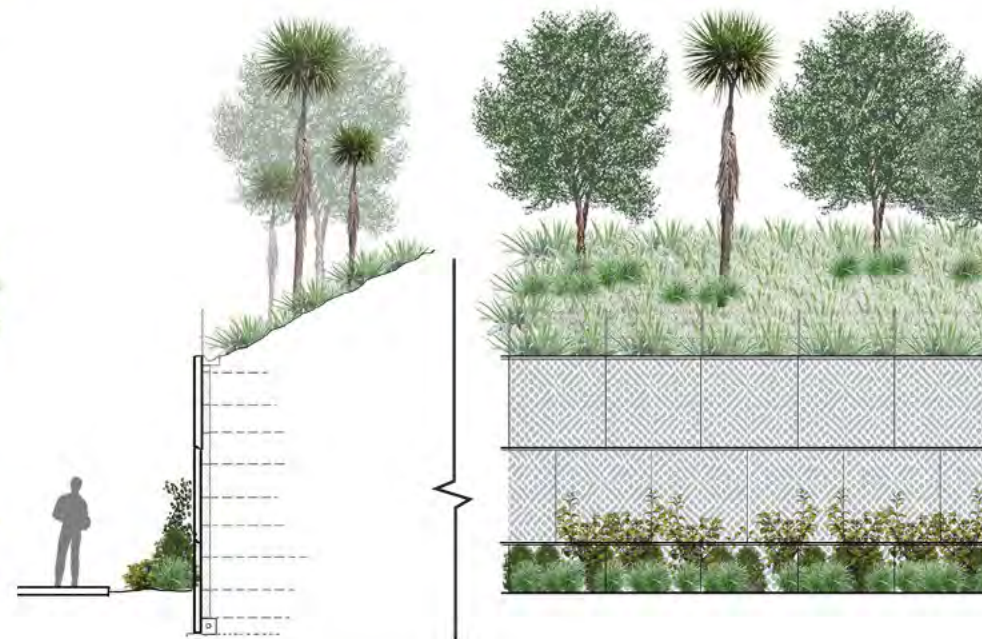


FIG 9 MSE WALL SECTION & ELEVATION STUDY

C: Bore Piled Walls

Bored pile walls will be used selectively along the Project corridor in locations where deep excavation, constrained sites, ground conditions, or depth of cut require a structurally robust solution or where conventional gravity or MSE wall solutions are not feasible.

These are currently proposed at Murphys Road and potentially on the approach to Te Puhinui Bridge

To achieve the overarching retaining wall outcomes, the design of Bored Piled Retaining Walls shall consider:

- Treating exposed pile surfaces with architectural concrete finishes such as patterned form liners, ribbed detailing, or applied textures to reduce visual bulk
- Allowance for moulds per wall, incorporating either an urban design or cultural narrative pattern. Where a cultural pattern is used, the liners shall remain the property of the iwi or artist
- Where piles are joined with a capping beam, designing the beam as part of the corridor's overall design language, aligning with other wall types to achieve a cohesive visual outcome
- Although primarily structural, treating bored pile walls as part of the family of retaining wall types, enabling visual consistency along the corridor
- Providing for green integration - such as planted batters above or in front of the piles to soften the appearance
- Detailing to reduce staining and deterioration and minimising maintenance needs, so that exposed faces weather consistently over time
- Incorporating safety features such as integrated barriers, railings, or fencing where required, in a manner that complements the wall system rather than appear as add-on elements
- Where practicable, extending the concrete panels to act as fall protection reducing the need for additional fencing elements.



FIG 10 BORE PILE WALL SECTION & ELEVATION STUDY

URBAN | LANDSCAPE ELEMENTS

3.5 NOISE WALLS AND SCREENS

Context

Noise walls are required along a portion of the Project. Currently this is on the northern side of Mill Road and covers the new Mill Road over bridge to the Te Puhinui Bridge section.

Two noise wall details are proposed – a solid wall on the ground sections and a light weight panel to the bridge edge.

Outcomes

Noise walls within the Project should consider the following outcomes:

- Where solid noise walls are required, these are to be a single noise wall design using precast concrete panels, Hebel panels or equivalent
- Contribute positively to the overall corridor character and respond to the established design objectives and principles
- Integrate with planting and landscape treatments
- Blend with the surrounding environment and reduce perceived scale
- Incorporate vertical greening or climbing plants to soften wall faces where practicable
- Wall heights with balanced proportions and that minimise visual dominance
- Noise walls that are two-sided elements, providing an appropriate response to both road users and adjacent land uses
- Materials and finishes that are contextually appropriate, reflecting the quality and character of neighbouring land uses while maintaining durability, ease of maintenance, and long-term performance
- Strong, continuous lines along the upper edge of noise walls that will contribute to a coherent visual language along the corridor
- Wall forms that integrate smoothly with surrounding topography and built elements, stepping or angling down in height at approaches and transitions where practicable to achieve visually cohesive connections between spaces.

Design Guidance

To achieve the outcomes, the design shall consider:

Typical Noise Wall Panel

- Retaining wall to noise details for a well formed urban outcome
- Allocation for an urban design pattern and a painted finish
- Planting in front of the walls where practicable
- Piled footings to structurally support the steel beams. These are hidden below the surface on both sides
- Integrating a pre-cast panel retaining wall into the noise wall design where there is a difference between proposed and existing levels.

Solid Noise Wall detail

- Attaching panels to the front face of the steel supporting posts, presenting a simple, consistent fence type along the corridor
- Concealing the posts on the road side and those visible from the off-road side
- Setting Steel Universal Beam (UB) posts perpendicular to the roadway at 6.0m centres to avoid stepping of the wall
- Fixing the panels to the face of the post with steel clip fixings to the rear, which lock onto the post flange. Except for bolt heads, posts and fixings should be concealed from the motorway
- Top edge stepping of a maximum of 600mm, as far as practicable
- Maximising native planting on both sides of the noise wall to screen the barriers, reduce their visual impact and discourage graffiti
- Terminating the barrier by stepping down over 2 or 3 bays.

Noise Wall to Bridge Detail

- Using clear or opaque panels that could allow views from the Project into the off-road context
- That the wall is typically mounted on a bridge parapet or F-type barrier at the road edge and is highly visible from the Project and in some cases the context
- Fixing Steel T-section posts directly onto the concrete bridge parapet
- Setting the posts perpendicular to the top of the parapet to follow the gradient of the carriageway and slope outwards to meet vehicle clearance requirements and create an “open” feeling for the road user
- Fixing transparent or opaque panels to the outer face of the T-section flange, with a steel cover plate to secure them
- Terminating the barrier gradually over four bays.

Surface Treatment and Colour

- Forming a visible and continuous built element within this section of the Project corridor and contributing positively to corridor identity and visual quality
- Reinforcing the design intent through surface treatments and colours and enhancing the overall legibility, identity, and aesthetic coherence of the Project
- Apply high quality finishes to ensure consistency, durability and ease of maintenance across the corridor
- Introducing texture or pattern where appropriate to reduce visual dominance and responds sensitively to the surrounding environment
- Using a bold or neutral accent colour on the corridor-facing side where practicable, providing visual rhythm or emphasis aligned with overall design objectives.

Anti-graffiti Strategy

- Maximising planting in front of noise walls, particularly through the use of native trees and shrubs that limit access and soften visual exposure
- Where planting is not practicable, protecting walls through durable coatings – either painted finishes or clear anti-graffiti treatments
- Supporting maintenance of treated surfaces through prompt cleaning and re-application or repainting as required to maintain the intended visual standard and surface protection.



Noise wall screen overlap transition
Image SketchUp test model



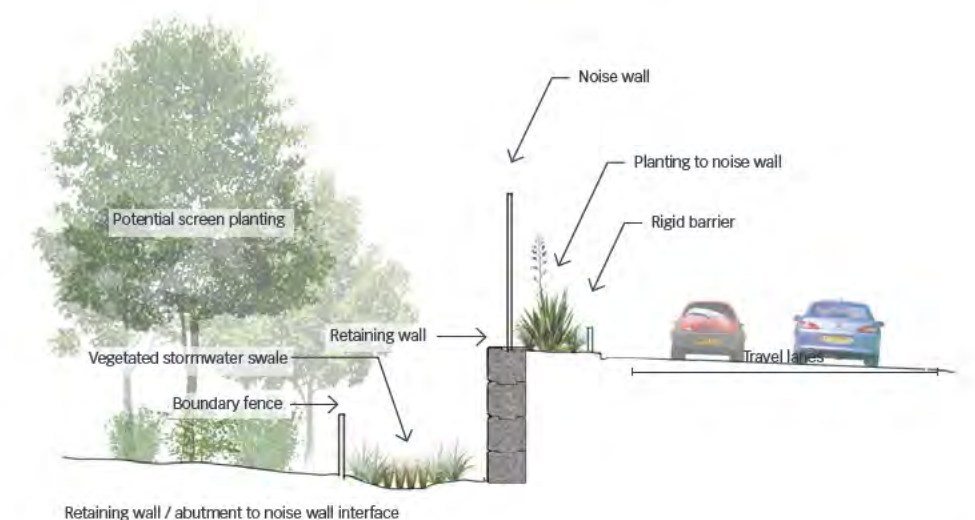
Transparent vs opaque panel options
Image M7 Sydney



Urban design to precast concrete panels
Image Hunter Valley expressway Australia



Green wall, trellis mesh to noisewall detail
Image internet - Europe context



URBAN | LANDSCAPE ELEMENTS

3.6 ROAD FURNITURE | LIGHTING | GANTRIES

Context

The Project's road furniture and surface treatments - including small structures, signage, gantries, lighting, and barriers to present an opportunity to achieve a cleaner, more cohesive aesthetic while simplifying long-term maintenance.

Individually, each sign or light pole is a minor component, but collectively this suite of elements has the potential to either create visual clutter or contribute positively to the character and quality of the highway environment. Placement of ancillary infrastructure such as signal boxes, power boxes, pits, and poles should be within the vegetated back berm, maintaining a clear and uncluttered roadside appearance.

The most important aspect of road furniture design is the creation of a "whole-of-journey" experience that complements the surrounding cultural and physical context. The Project passes through urban, park-edge, and rural environments - each requiring a calibrated response to scale, materiality, and detailing.

Within the Project corridor, consistency across lighting, gantries, signage, barriers, and medians should reinforce the design language of other structures and align with the wider Auckland regional network. For shared paths and walkways, detailing should operate at a human scale, providing a comfortable, safe, and high-amenity environment.

Outcomes

Road furniture within the Project should consider the following outcomes:

- Contribute to a coherent, whole-of-journey experience across all contexts (urban, park-edge, and rural)
- Align materials, finishes, and forms with other corridor structures to reinforce design cohesion
- Be sited and scaled to reduce visual clutter and maintain clear sightlines
- Provide safe, legible, and comfortable environments for all user groups
- Utilise energy-efficient LED lighting, minimise light spill and glare, and be restricted to essential operational areas
- Barriers that provide protection while maintaining openness and visual integration
- Be durable and low-maintenance, with decommissioned elements recycled or reused where practicable
- Employ surface treatments, colours, and patterns that maintain corridor character and unity
- A coordinated palette of materials and finishes consistent with Bridging the Gap (Section 4.16) and other Project structures (e.g. bridges, retaining walls, and noise barriers)
- Furniture that responds to user experience, considering varied travel speeds and environmental context.

Design Guidance

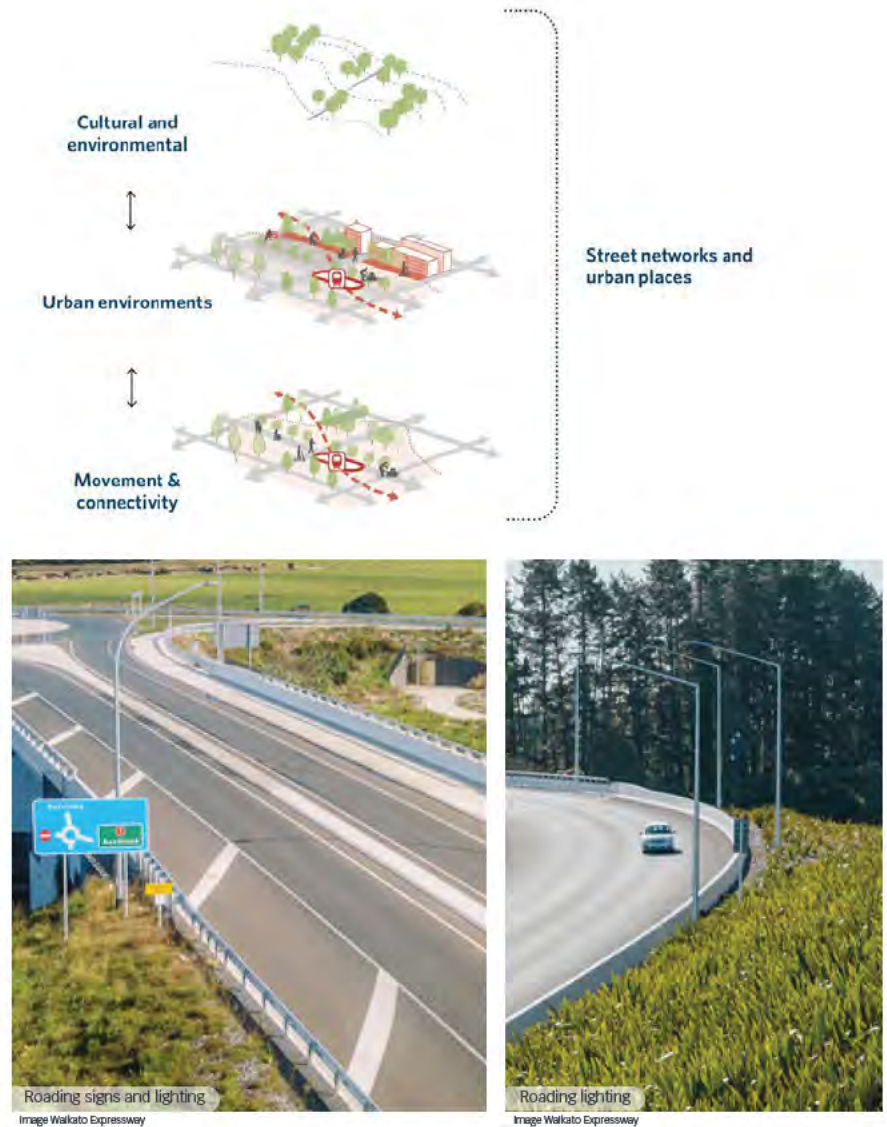
To achieve the outcomes, the design shall consider:

Light Poles and gantries

- Minimising the number of individual elements; combine functions within a single structure where practicable
- Maintaining consistent spatial layout and height to achieve cohesion along the corridor
- Scaling gantries and signage appropriately to reduce visual dominance, particularly where visible from pedestrian and cycle routes
- Using modest, recessive materials and finishes to ensure these structures blend with the surrounding landscape
- Designing gantries and climbable structures to prevent unauthorised access, avoiding the need for retrofit deterrents
- Avoiding siting gantries where they impede significant views or serve as unintended signage on feature bridges
- Where practicable, locating road lighting centrally within the median to reduce spill and visual intrusion on adjacent properties.

Lighting

- Reflecting the appropriate lighting typology for urban, park-edge, and rural contexts, reducing intensity outside urban areas to support dark sky objectives
- Providing lighting only where required for safety and operations (e.g. roundabouts, intersections). No lighting or light spill shall occur within SEA's
- Light standards and poles that form part of a coherent family of elements, maintaining consistent materials, colour, and detailing at pole-arm junctions
- Integrating lighting within the standardised roadside spatial configuration, maintaining consistent height and spacing to reduce clutter
- Using energy-efficient LED technology and minimise light spill, reducing impacts on fauna and mitigating headlight glare for nearby communities.



Urban section - streetscape environment

URBAN | LANDSCAPE ELEMENTS

3.7 BOUNDARY TREATMENT FENCES

Context

Fencing is required throughout the Project corridor to ensure safety, security, and visual cohesion. It should present a consistent appearance, provide protection for adjoining residents and landowners, and ensure safe conditions for road and SUP users.

The key functions of fencing include:

- Providing security for adjacent properties
- Preventing unauthorised access to the carriageway
- Ensuring fall protection for maintenance staff (e.g. at retaining walls)

Boundary treatments at the public-private interface must respond to multiple considerations - including access, visual impact, views, CPTED principles, and noise. Both residential and rural boundaries should be designed sensitively, with outcomes shaped by fence type, structure, slope treatment, and land acquisition processes.

Boundary treatment within the environment

Urban Section: The urban section requires new boundary treatments primarily along the southern side of the corridor, where road widening occurs. Some boundaries will combine retaining walls and fences, while others will consist solely of fencing or planted boundary treatments. Treatments will be developed in consultation with affected property owners, or, where acquisition has occurred, be designed to accommodate future land use.

Park Edge: A new boundary fence is required along Tōtara Park, replacing the existing farm-style fence. A like-for-like replacement is anticipated, with an emphasis on reuse and recycling of existing posts where possible.

Park Edge: In the rural sections, most boundaries are currently defined by farm-style fencing. Where existing boundary lines remain unaffected, fencing will be retained. In areas impacted by construction, reinstatement fencing shall match the existing style and materials to maintain continuity.

Outcomes

Boundary treatments within the Project should consider the following outcomes:

- Balance privacy, safety, and noise attenuation needs while responding to local character, budget, and maintenance requirements
- Respect rural activities and character, maintaining open views and integrating with the natural landscape where practicable
- Provide, where practicable, space for planting to screen fences and structures, enhance pedestrian amenity
- For heights over 1 m, integrate fencing with fall protection measures to deliver a coordinated urban design response.

Design Guidance

To achieve the outcomes, the design shall consider:

Urban Section - specific matters

- Providing fencing that balances resident privacy and safety with appropriate levels of noise mitigation
- Using fence types and heights that reflect local built character and scale to respond to the surrounding urban context while considering long-term maintenance and cost efficiency
- Using open or visually permeable fencing to promote passive surveillance where appropriate
- Using aluminum fence panels, with variation in colour and style to provide visual diversity along the corridor
- Greening in front of walls or fences where practicable to enhance visual and ecological outcomes.

Park Edge - specific matters

- Using farm-style fencing to maintain rural character and reflect the functional requirements of the park setting
- Providing post-and-rail fencing at the park entrance, coordinated with Auckland Council, the Local Board, and Mana Whenua where input is sought
- Using sustainable fencing materials, such as recycled plastic posts from local suppliers where practicable
- Incorporating access points and gates to maintain park functionality and operational needs.

Rural - specific matters

- Fencing that accommodates rural activities while maintaining the natural landscape character
- Boundaries to preserve open views and vistas consistent with rural values
- Fencing that integrates with the surrounding environment to minimise visual impact
- Retaining existing farm fencing where practicable
- Providing access points and gates where required to maintain functionality and landowner access.



Urban environment retaining wall and fencing
Image Internet source



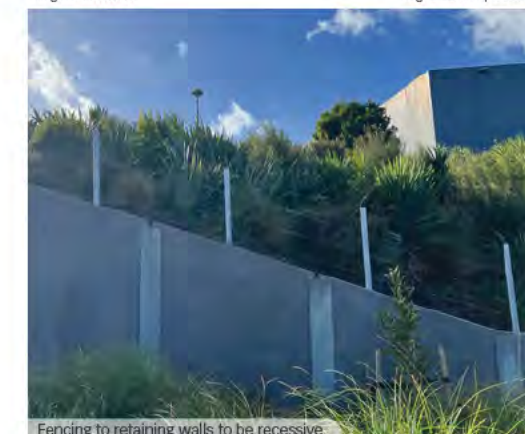
Low and open fencing detail
Image Internet source



Post and panel solid timber fence detail
Image Internet source



Recycled and long wearing fence post
Image www.futurepost.co.nz



Fencing to retaining walls to be recessive
Image Northern Motorway corridor, Auckland



Planting to be allowed to spill over walls
Image Northern Motorway corridor, Auckland



Dark green/black powder coated roll top fence
Image Glen Innes SUP, Auckland



Aluminum panel fencing next to pedestrian spaces
Image Northern Motorway corridor, Auckland

URBAN | LANDSCAPE ELEMENTS

3.8 CORRIDOR ELEMENTS | HARDSCAPE MATERIALS PALETTE

Context

A ‘family of design’ hardscape materials palette will be established to provide a consistent identity, distinct character, and a sense of place specific to the Project. The palette will set out guiding principles for the use of paving, furniture, structures, and associated built elements, so that the corridor reads as a unified environment rather than a collection of disparate parts.

The hardscape palette will cover the following elements:

- Pedestrian paving – footpaths, shared paths, and crossing thresholds
- Shared Path paving – shared-use paths, transitions and interfaces with vehicular traffic
- Street furniture and lighting items – wayfinding markers, light poles
- Above-ground utilities – cabinets, service boxes, access covers, and ancillary infrastructure.

Outcomes

Corridor elements within the Project should consider the following outcomes:

- Built surfaces and corridor elements that reflect the local environment, incorporating references to local geology, soils, and natural patterns, and shall use locally sourced aggregates and stone where practicable
- Surfaces that provide consistency and coherence, establishing a material language that supports wayfinding, corridor identity, and legibility
- Surfaces that support safety and accessibility, being smooth, slip-resistant, glare-free, and designed to avoid trip hazards or conflicts between different users
- Surfaces that respond to context, adapting the same family of materials to suit urban areas, residential interfaces, rural edges, and ecological areas
- Corridor elements that support public transport as an attractive option within the corridor.

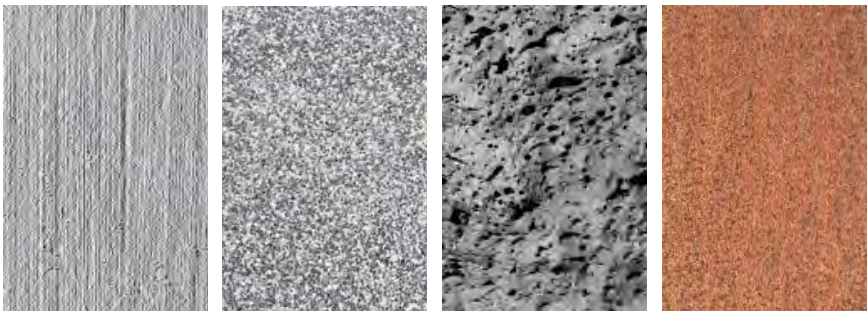


FIG 11 COLOUR MATERIAL PALETTE

URBAN | LANDSCAPE ELEMENTS

4.1 PLANTING STRATEGY

Context

The planting strategy for the Project seeks to reflect the character of the surrounding landscape, restore indigenous ecosystems, and enhance ecological resilience. The approach is to preserve, restore, enhance, and where appropriate, recreate native vegetation and habitats across the Project footprint.

Planting will occur at two key levels:

- Rehabilitation planting within the Project earthworks footprint, including stormwater wetlands and material supply sites
- Restoration planting beyond the construction footprint and predominately within the designation (given a couple of exceptions for off set planting), to:
 - Mitigate landscape and visual effects on properties, perceptions, and landscape values
 - Provide ecological compensation / offsetting to address effects on ecosystems

Outcomes

Planting within the Project should consider the following outcomes:

- Planting that works with existing ecosystems and species types to support ecological integrity
- Planting that connects and integrates existing vegetation stands and environments to create cohesive landscape corridors
- Protection of existing indigenous vegetation where practicable
- Planting palettes dominated by indigenous species to reflect natural ecosystems
- Planting that establishes both pioneer and later successional species to build resilience against pests and weeds
- Creation of habitat linkages to strengthen ecological corridors and connectivity
- Recognition and treatment of SEA, remnant vegetation, and bush stands as high-value features
- Prioritisation of climate-resilient plant species to ensure long-term sustainability
- Provision of trees where practicable to enhance shade and amenity, with those in the urban sections also providing for resilient outcomes
- Planting that reflects the guidance in Te Whakaoranga o Te Puhinui: Te Whakaraapopoto Te Puhinui Regeneration documents, enabling the right plant to be placed in the right location
- Planting that is tailored to the urban, park edge, and rural typologies of the corridor, responding to their unique character.

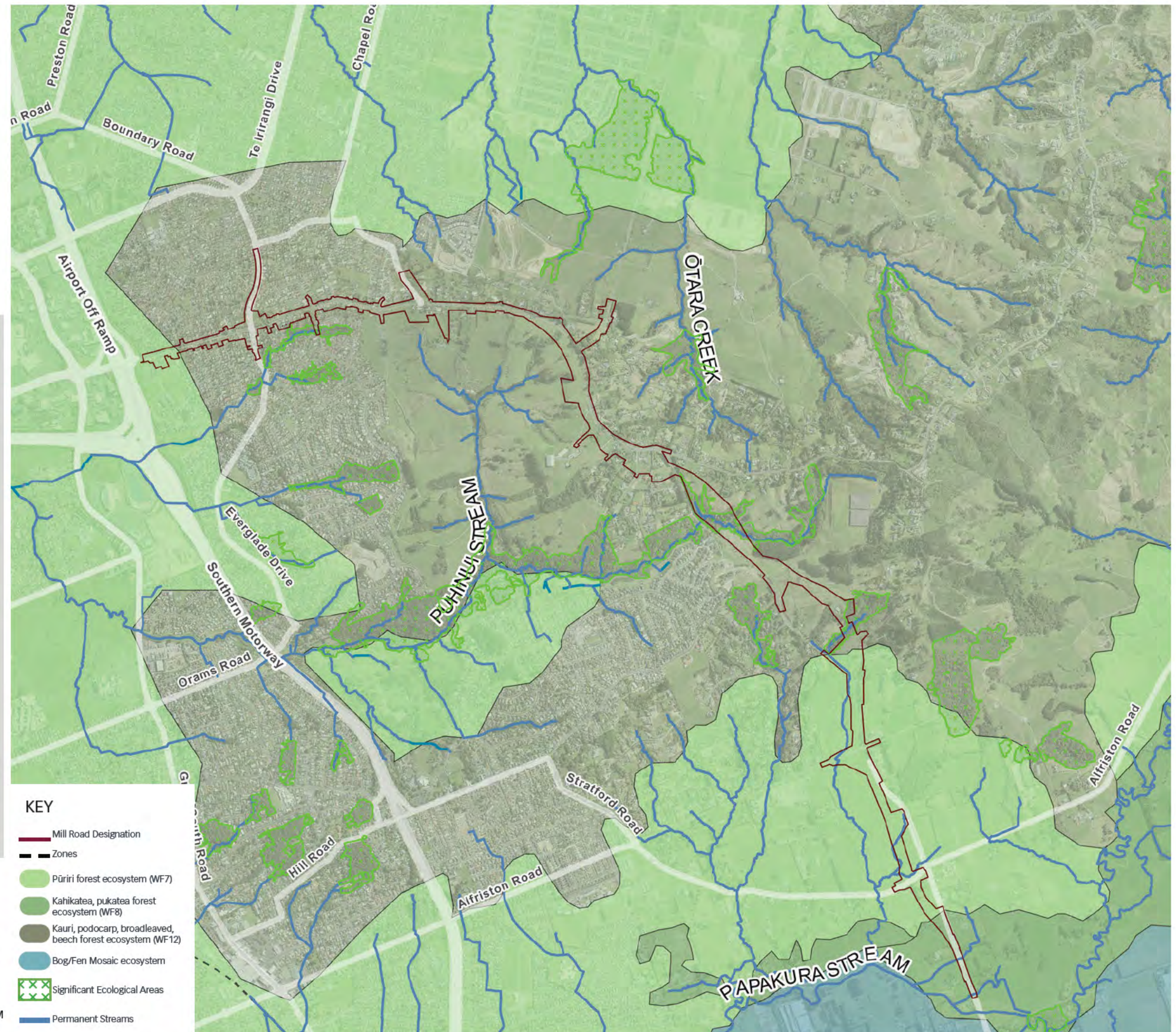


FIG 12 ECOSYSTEMS & ECOLOGY



URBAN | LANDSCAPE ELEMENTS

4.2 PLANTING GUIDANCE

Design Guidance

To achieve the outcomes, the design shall consider:

Planting Strategy

- The planting strategy which is a core component of the Project, supports the principles of performance preservation, restoration, enhancement, and the creation of positive outcomes. It provides a unifying project narrative, with the potential to establish a journey of learning and varied experience along the Project corridor
- The RONs programme which identifies adjustments for planting, including refinement of topsoil management, mulching and planting spacings
- NZTA's P39 Standard Specification for Highway Landscape Treatments which provides detailed guidance on landscape
- Planting will be tailored to the urban, park edge, and rural typologies of the corridor, responding to their unique character.

Revegetation and Integration

- Integrating revegetation with the wider landscape, avoiding narrow “corridor edge” approaches
- Connecting planting with adjacent vegetation stands to repair forest edges, enhance ecological connectivity, and strengthen ecosystem resilience
- Using planting to soften views and enhance ecological connections where practicable.

Ecology and Natural Processes

- Using planting to enhance biodiversity and natural processes, allowing ecosystems to regenerate and function naturally
- Using plant mixes that reflect natural distributions, ecosystem types, microclimates, and catchment conditions
- Using indigenous species for bank stabilisation, riparian resilience, and flood management, avoiding exotic species and hard engineering where practicable
- Support natural succession through enrichment planting, pest and weed control, and long-term ecological management
- Coordinating planting with ecological assessments and vegetation maps to ensure appropriate species integration.

Design Approach

- Reusing site-won materials, including live plants, soils, and timber where practicable
- Planting that follows landscape-scale design principles, using natural patterns and groupings and reinforcing stream corridors, wetlands, topography, and bush remnants rather than highlighting the highway
- Selecting plants and form that incorporate Crime Prevention through Environmental Design (CPTED) principles to support public safety
- Including both pioneer and enrichment species in planting to support successional diversity and long-term resilience
- Adopting planting schedules and practices that follow the maramataka (Māori lunar calendar) for seed sourcing, propagation, planting, and maintenance, where practicable.

Maintenance and Whole-of-Life Outcomes

- Implementing planting that have low whole-of-life costs, predominantly self-sustaining beyond the initial maintenance period
- Retaining grass areas only where they tie into existing parks or street areas
- Planting that provides safe access for inspection, cultural harvest, and community planting activities.

Implementation Principles

- Implementation that adopts site-appropriate design aligned with soil, hydrology, and topography, supported by proper preparation, topsoil management, and drainage
- Proactive and ongoing pest and weed control
- Planting that achieves long-term sustainability, thriving beyond the initial maintenance period through robust establishment practices and ecological succession.



URBAN | LANDSCAPE ELEMENTS

4.3 PLANTING PALETTE



Urban corridor zone planting

Outcomes:

The Project should consider the following outcomes:

- A cohesive, resilient and high amenity streetscape that enhances urban character
- A greener, more sustainable and low maintenance streetscape
- Planting that strengthens corridor identity and environmental performance
- Vegetation that contributes to urban amenity, ecological function and stormwater management.

To achieve the outcomes, the design shall consider:

- Implementing street trees that define and frame the corridor, improving legibility, shade, and comfort, while reducing the urban heat island effect
- Implementing street trees that use consistent, resilient species and spacing to provide structure, shade, and seasonal interest, and includes root barriers where required to protect services and utilities
- Directing stormwater from roads and footpaths into planted berms to support vegetation naturally and reduce runoff where practicable
- Establishing berm planting that uses hardy, low-maintenance species that enhance biodiversity, soil health, and visual quality.



Park Edge corridor zone planting

Outcomes:

The Project should consider the following outcomes:

- Integration of the new road alignment with the surrounding parkland, while enhancing ecological value, where practicable and reinstating visual connection to the wider landscape
- Having a Park Edge that is visually integrated and ecologically connected with the surrounding landscape
- Planting that strengthens the relationship between the transport corridor and adjacent natural spaces
- Vegetation that supports habitat provision and enhances biodiversity where practicable.

To achieve the outcomes, the design shall consider:

- Tree planting in established clustered groups along fill batters to frame district views and soften the transition between road and park
- Using low, dense species for shrub and groundcover planting to create habitat for lizards and other small fauna while maintaining visibility and ease of maintenance
- Planting design that aligns with the Te Puhinui Awa Planting Strategy and existing Tōtara Park initiatives to achieve a cohesive and integrated outcome across the Project.



Rural corridor zone planting

Outcomes:

The Project should consider the following outcomes:

- Planting that connects the transport environment with the natural character of the catchment
- Vegetation that strengthens habitat connectivity and support ecological processes where practicable
- Reinforcement and extension of the ecological and visual character of the rural landscape while stabilising landforms and managing stormwater sustainably.

To achieve the outcomes, the design shall consider:

- Using native species consistent with nearby SEAs to strengthen habitat connectivity where practicable
- Establishing vegetated swales and stormwater treatment areas along the Project edge to manage runoff and support ecological processes
- Applying mass native revegetation on batters, slopes, and open areas to reduce erosion and visually soften the road corridor
- Planting clusters of larger native trees along corridor edges to reinforce boundaries and landscape character.

URBAN | LANDSCAPE ELEMENTS

4.4 DESIGN INTEGRATION ELEMENTS : CONTOURING

Context

Throughout the Project corridor, earthworks in the form of cut and fill slopes will be required, particularly where the alignment interfaces with the landform around Tōtara Park and the rural sections near Te Puhinui Bridge.

Outcomes

Design integration with contouring within the Project should consider the following outcomes:

- Minimise the extent and height of cut and fill slopes, aligning them with natural land contours to blend with the surrounding topography
- Where practicable support successful planting and ecological restoration

Design Guidance and Overall Coordination

To achieve the outcomes, the design shall consider:

Slope Design and Alignment

- Optimising road alignment and slope geometry to minimise the need for cut and fill, particularly in sensitive areas
- Avoiding intersecting puna (springs) and natural watercourses wherever practicable
- Shaping slopes to appear natural and continuous with existing landforms
- Feathering the upper edges of cut batters where feasible to soften transitions into the existing terrain.

Slope Profiles and Treatment

- Using monoslopes over benched designs to achieve a more natural landform expression
- Scarifying slope faces and revegetating with endemic species suited to local site conditions
- Where stable rock is exposed, allowing selective exposure or plant with tree pockets to enhance character; revegetate unstable rock surfaces for stability
- Minimising visual impacts by blending slope tops and edges into adjacent landforms
- Where appropriate, integrating sculpted or graded transitions to support future planting and reduce erosion risk.

Slope Gradients

- Adopting slopes of approximately 1V:3H to support long-term planting success and visual integration
- Using steeper gradients (up to 1V:2H) only where necessary to reduce retaining requirements and subject to stability analysis
- Limiting grassed slopes to gradients no steeper than 1V:4H to facilitate maintenance and prevent erosion.

Vegetation and Revegetation

- Using planting palettes that reinforce slope stability and complement adjacent landscape character
- Grading fill slopes naturally into surrounding terrain, avoiding encroachment into sensitive ecological or visual areas.

Drainage and Stability

- Designing crest drains to avoid concrete or riprap linings where practicable; use vegetated channels to reduce visual impacts
- Sizing and aligning flumes carefully to minimise visibility; where lining is required, use natural riprap materials
- Designing cut slopes with gradients, drainage systems, and construction timing that prioritise stability and avoid reliance on shotcrete or soil nails.

Fill Batter Approach

- Where practicable using monoslopes over benched fill designs to create smoother, naturalistic profiles
- Grading or overfilling slopes in rolling terrain to blend with adjacent landforms while avoiding ecological disturbance
- Integrating fill batters with adjoining drainage and planting systems to reinforce long-term slope performance.



URBAN | LANDSCAPE ELEMENTS

4.5 DESIGN INTEGRATION ELEMENTS : CULVERTS | STREAM DIVERSIONS

Context

Integration and coordination between stormwater, ecology, and landscape design are critical for the successful delivery of culverts and stream diversions.

Outcomes

Design integration with culvert and stream diversions within the Project should consider:

- Integrating seamlessly with the surrounding landscape, landforms, and waterway systems

Design Guidance and Overall Coordination

To achieve the outcomes, the design shall consider:

Integration with Landscape

Stream Margin and Riparian Planting:

- Extending riparian planting across fill embankments to soften visual impacts and highlight stream crossings.

Embankment Planting:

- Providing planting that transitions in height — lower vegetation near road edges to maintain visibility, increasing to taller species near stream margins
- Using locally appropriate native species to promote stability, habitat diversity, and visual cohesion.

Culvert Integration:

- Contouring culvert inlets and outlets to merge naturally with surrounding earthworks and landforms where practicable
- Chamfering all exposed pipe ends to eliminate abrupt edges and improve visual continuity
- Incorporating habitat-enhancing features where practicable, such as woody debris, rock clusters, or planting pockets.

Stream Diversions

Stream diversions shall be designed to replicate natural stream conditions, minimise ecological disruption, and enhance both habitat and landscape character where practicable.

To achieve the outcomes, the design shall consider:

- Using planting along stream margins to stabilise banks, enhance biodiversity, and integrate with surrounding vegetation patterns
- Highlighting streams as visible landscape features, using riparian planting to soften transitions into culverts and reinforce corridor continuity where practicable
- Aligning plant selection and composition with the Landscape Planting Plan (Refer - appendix 1) and Ecology Freshwater Management Plan to ensure species consistency and cohesive corridor identity
- Where practicable, creating naturalistic landforms with gentle gradients and layered planting to enhance both ecological function and visual appeal



Box culvert and planted outfall
Image Clevedon development Auckland



Locally sourced rocks for outfalls
Image Ki uta ki tai, shared path Meadowbank



Box culvert with natural bottom and pinned wooden debris
Image Internet source



Stream diversion and restoration
Image Taiotea-Stream-Natural-Habitats



Stream diversion
Image Stream diversion, Huntly bypass

URBAN | LANDSCAPE ELEMENTS

4.6 DESIGN INTEGRATION ELEMENTS : SWALES | STORMWATER ELEMENTS

Context

Roadside swales, wetlands, and raingardens shall form integral components of the corridor landscape, contributing to water quality improvement, habitat creation, and visual character enhancement.

Outcomes

Design integration with swales and stormwater elements within the Project should consider the following outcomes:

- Create coherent, visually simple layouts that avoid clutter and minimise maintenance requirements
- Use vegetation to stabilise land, enhance habitat and biodiversity, and reduce mowing and herbicide use
- Adopt naturalistic forms that reinforce local landscape character, ecological processes, and cultural connections to water
- Swales, wetlands, and raingardens shall adopt naturalistic forms that reinforce local landscape character, ecological processes, and cultural connections to water

Design Guidance

To achieve the outcomes, the design shall consider:

Swales

- Using longitudinal swales particularly in Park Edge and Rural sections, to capture and filter surface runoff
- Providing swales that follow a naturalistic design philosophy, reflecting the principle of “letting the land be its natural self.”

Integration with Landscape

- Where swales connect to wetlands or open spaces, widening and integrating them into the surrounding planting scheme to slow flows and enhance treatment performance
- Using swales as visual and ecological transitions between the roadway and the SUP wherever practicable
- Avoiding hard, linear edges; encouraging soft, naturalistic transitions into adjacent vegetation
- Selecting and managing vegetation to reduce mowing and herbicide reliance, enhancing safety and long-term cost efficiency. Refer to Landscape Planting Plans.

Form and Natural Character

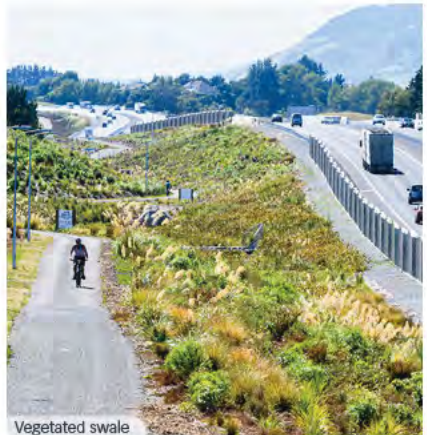
- Adopting naturalistic forms and gentle contours, avoiding geometric shapes, steep batters, or retaining structures
- Designing wetlands to integrate with the surrounding topography, reinforcing the natural hydrological and visual patterns of the site
- Designing for shallow, densely planted systems that maintain water movement, avoid stagnation, and strengthen the connection between wai and Papatūānuku where practicable
- Restoring natural character by re-establishing historic plant communities and habitat types once common in the local area.



Vegetated swale next to shared path
Image Northern corridor Auckland



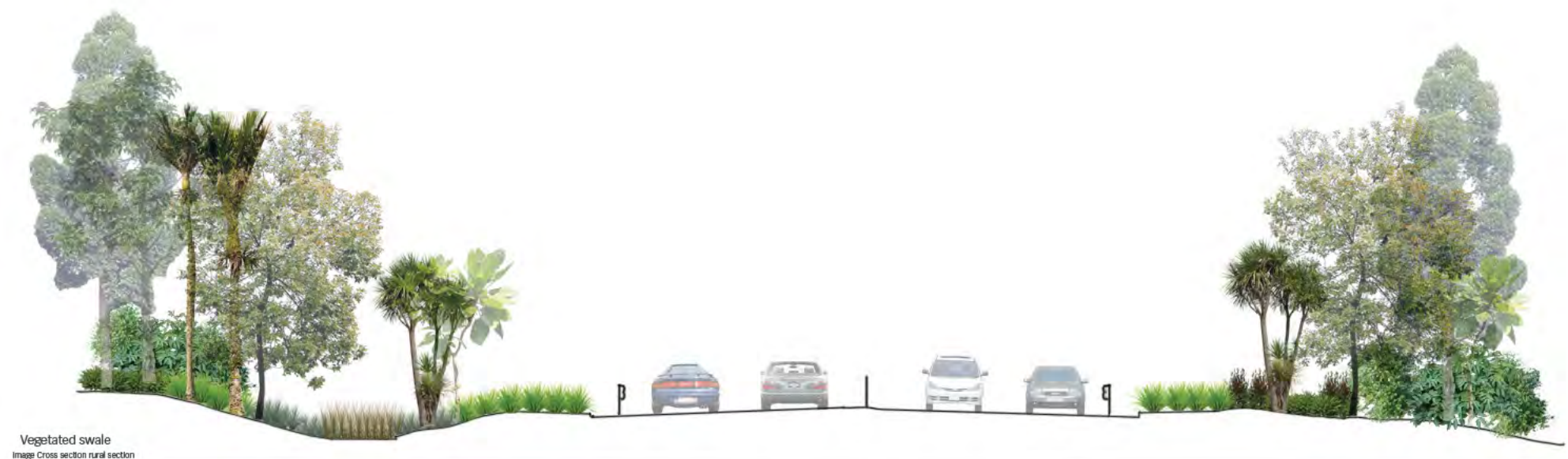
Drone view of Constructed wetland
Image Waikato-Expressway-Infrastructure-Planting-Natural-Habitats



Vegetated swale
Image Mackays to Peka Peka Expressway



Constructed wetland
Image Waikato-Expressway-Infrastructure-Planting-Natural-Habitats



Vegetated swale
Image Cross section rural section

APPENDICES

1. LANDSCAPE PACKAGE (NOTES, PLANS, SECTIONS, SCHEDULES)
2. TŌTARA PARK MANAGEMENT AND MITIGATION PLAN



