Project Number: 2-S5416.01

# SH2 Waikare Gorge Realignment

## Waka Kotahi NZ Transport Agency

## Urban Landscape Design Framework

6 March 2023

wsp VisionUrban Environmental Ltd

150 YEARS IN AOTEAROA

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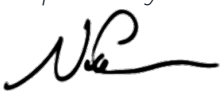

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# Executive Summary

## 1.1 Background

This Urban Landscape Design Framework (ULDF) sets out the objectives, context and outcomes for this realignment project. Initially it confirms the 'why', the investment objectives and outcomes of the project itself, and why it is being completed. This is important from an urban design perspective. The ULDF then considers the existing environmental context that the project will sit within. In doing so it considers factors as broad as land use, natural heritage, cultural values and heritage, and connectivity.

With project objectives and outcomes and the surrounding environment understood the purpose of the ULDF is to identify how best to design the new alignment to an optimal fit within the environment, and what benefits can be gained. This is done with reference to Waka Kotahi urban design guideline and principles.

In designing to optimise the new alignment, an outcome-based Design Vision was created, and an approach to delivering that outcome identified, addressing key design principles and outcomes

This ULDF has identified opportunities to enhance the corridor by recognising a heritage and purpose associated with being an important movement corridor, while ensuring a comfortable fit into its relatively remote rural environmental context. It addresses the need for continued rural connectivity in a physical connection and a landscape character sense. This ensures impact on land uses are minimised and character-amenity values protected to the benefit of the local environment and road corridor users alike.

Strategic placement of features and vegetation are considered as means to address urban design principles to achieve outcomes. The ULDF recognises that most users that experience the alignment will do so from a moving vehicle, and so deliberately focusses its attention on the experience that such transit users will have. This makes use of larger design features such as the proposed new bridge structure, and the potential to use public art and or cultural artworks. It also uses the positioning of new landscape planting as a means to integrate the corridor into its environment, and to enhance that environment.

However, the ULDF also identified an opportunity to further enhance journey experience and potentially safety by suggesting a possible opportunity to deliver a 'stopping place'. If the opportunity was available, this could provide an opportunity break a long and relatively winding journey. It also provides an opportunity for a key reference back to the heritage of this place as a key movement corridor connecting Wairoa and Napier, for road, rail and even shipping; and the historic use of the areas as a stopping place that extends back more than a century.

# 1 Introduction

## 1.1 The Structure of this Urban and Landscape Design Framework (ULDF)

This ULDF utilises background documentation and contextual analysis to inform design principles and objectives. The content structure of this document is based on Appendix 2 of the NZ Transport Agency (Transport Agency) 'Bridging the Gap' Urban Design Guidelines as outlined below:

Sections 1: - **Purpose, Philosophy and Objectives** - Introduces the ULDF document by outlining it's purpose, urban design philosophy and related objectives.

Section 2: **Contextual Analysis** - Defines the built, environmental and social design context of the existing corridor. From the contextual study, design implications are considered and applied to the Project.

Section 3: **Strategic Context** - Outlines influences and considerations of planning and transportation policies which impact on the Project, including relevant Waka Kotahi documents.

Section 4- **Vision** - Outlines a cohesive and integrated urban and landscape design vision for the Project. This includes urban and landscape design principles and objectives which reflect the design implications of Section 3, as well as the Waka Kotahi objectives for the new alignment, immediately adjacent areas, and stakeholders. This section identifies a series of character areas within the Study Area.

Section 5: **Design Outcomes** – Outlines how the integrated vision for the alignment will be achieved through design.

Section 6: **Summary** - Presents a simple summary of landscape mitigation and urban design enhancement opportunities.

This ULDF also is intended to be included with the detailed design package, so that the construction team is aware of the objectives and guiding principles of the Project.

The Preliminary Landscape Plans (refer **Appendix A**) demonstrates how elements of the ULDF have guided the design of the new realignment.

## 1.2 Purpose of this ULDF

The purpose of this ULDF report is to ensure that the urban and landscape design concepts for the new realignment are appropriately defined, developed and implemented in accordance with:

- Waka Kotahi Urban Design Guidelines "*Bridging the Gap*"; and
- local aspirations for the area as set out in Wairoa District Council (WDC) and Hastings District Council (HDC) documents and strategies.

Earlier Business Case and Multi Criteria Assessments informed and influenced the development, assessment and selection of options for the enhancements within the corridor. This ULDF sets out the design principles and objectives for the proposed realignment and aims to ensure that a holistic approach to the design approach is achieved.

> *"urban design starts at the strategic phase of a project and continues through to the route selection and the design of a preferred alignment all the way through to detailed design. Urban design applies to all man-made elements of the transport network in both rural and urban environments."*[1]

This ULDF seeks to understand the nature and characteristics of this corridor, the existing and future nearby places, spaces, environments, networks, features, cultural landscape and iwi inputs. Within this environmental context, the ULDF considers the overarching objectives of the realignment project.

The purpose of the ULDF is to shape road design so that it better meets project objectives, minimises social and cultural impacts and enhances the way that users experience this section of SH2.

[1] Bridging the Gap (2013) NZTA, p.vii

To deliver the greatest benefits for the least cost urban design must be considered from the project planning stage.

## 1.3 Overarching Project Objectives for the Realignment

The below diagram taken from the Single-stage Business Case (SSBC) [2] sets out the 'Investment Objectives' and 'Investment Outcomes' of the project.

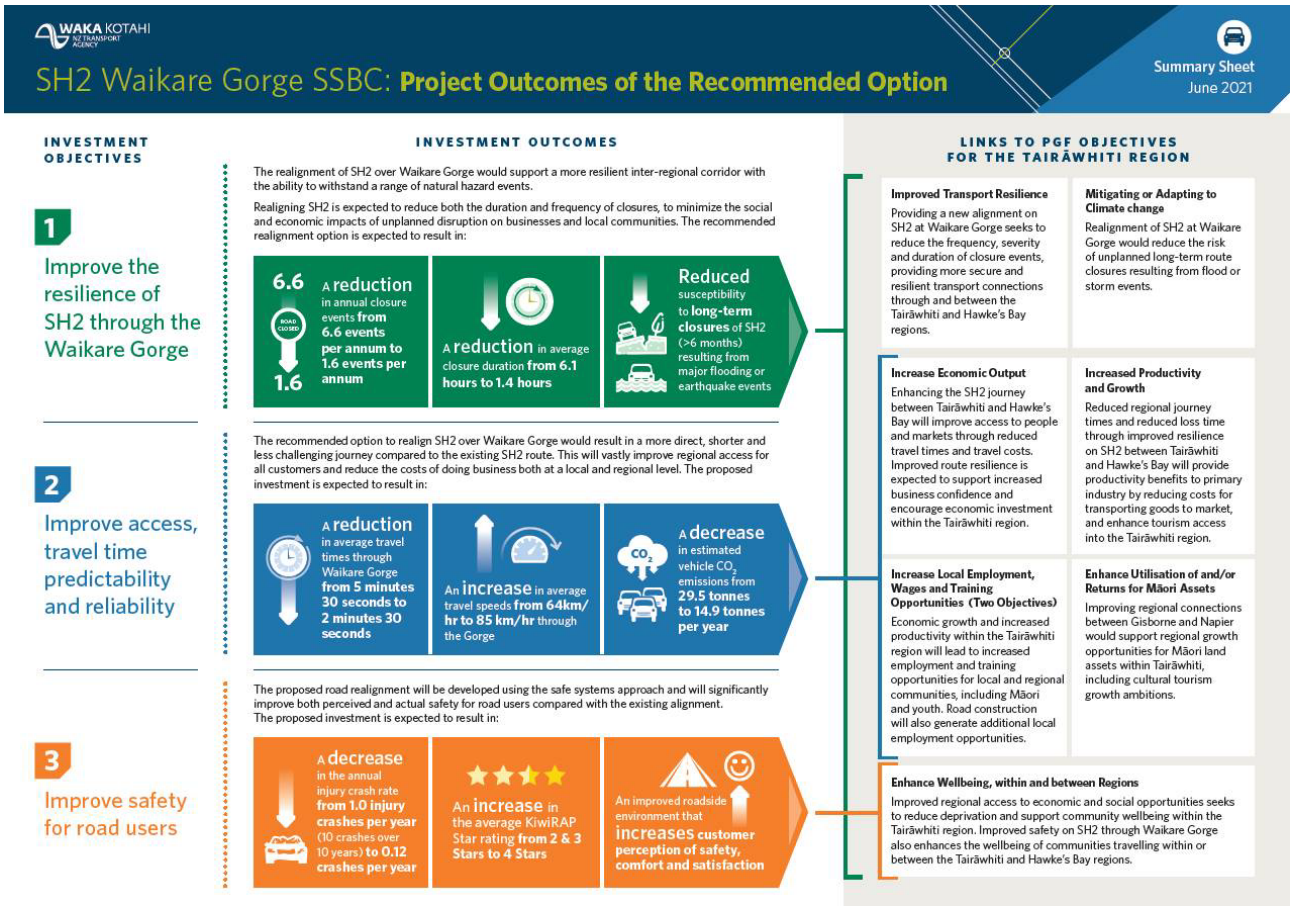



*Fig. 1.1 SH2: Waikari Gorge SSBC Project Outcomes of the Recommended Option*

## 1.4 (Urban) Landscape Design Philosophy and Related Objectives for the Corridor

The Urban Design Philosophy takes into account Waka Kotahi urban design guidance "Bridging the Gap", other relevant Waka Kotahi environmental guidance and identified local aspirations for the corridor. This Philosophy underpins the guidance contained within this ULDF.

### *1.4.1 Urban Design Philosophy*

The new alignment and bridge structure will be located in a relatively remote rural area, most often frequented by travellers moving between Napier-Hastings or Taupō , and the northern east coast towns of Wairoa and Gisborne. The Philosophy responds to the characteristics of journey and brevity that will typify the likely experience of most users, while also recognising the local uniqueness of the 'place' and inherent natural and built identity. The Urban Design Philosophy for this project is as follows:

[2] State Highway 2: Waikare Gorge Single Case Business Case, June 2021

*The alignment and bridge should deliver a safer and more memorable outcome for travellers passing through, and recognise and reflect the inherent natural, human and landscape values of this place. Views from the alignment should be plentiful, infrastructure impacts minimised, cultural features protected and/or emphasised, and reference made to the historic nature of this part of the journey.*

### *1.4.2 (Urban) Landscape Design Objectives*

Specific landscape and bridge design objectives have been identified for this rural corridor. These respond to the wider objectives of the Project, the urban and landscape design Philosophy, and to the rural, natural and human environmental context of the corridor. The following objectives will be used to develop an appropriate design response to the Project:

- Provide a robust and integrated design that is attractive, coherent, durable and innovative,
- Respond to the rural context, including designing earthworks and structures which complement the landform,
- Make a positive contribution to the community by providing access and connectivity, and minimises a 'barrier' effect,
- Highlight key features and locations along the route that celebrates natural, cultural and built heritage,
- Create a high-quality bridge crossing which considers aesthetics, accessibility and safety,
- Create a more natural look by integrating stormwater design and ecological planting.
- Improve the journey experience and respond to the heritage of the 'place', and
- Respond to New Zealand Crime Prevention Through Environmental Design (CPTED) Guidelines.

# 2 Contextual Analysis

## 2.1 Introduction

This section describes the main landscape, landuse and other features of the locality and associated issues influencing the corridor. Further detail can be sourced in the Landscape and Visual Assessment (LVA) [3] report.

Understanding 'context' is an important stage in preparation of a ULDF. It enables an essential understanding of the environment a project will sit within, and how it may be shaped using landscape and urban design techniques to secure an improved design and improved outcomes.

From the contextual study, design implications will be considered and applied to the Project.

[3] SH2 Waikare Gorge Realignment Landscape and Visual Assessment, prepared by WSP Napier, September 2022

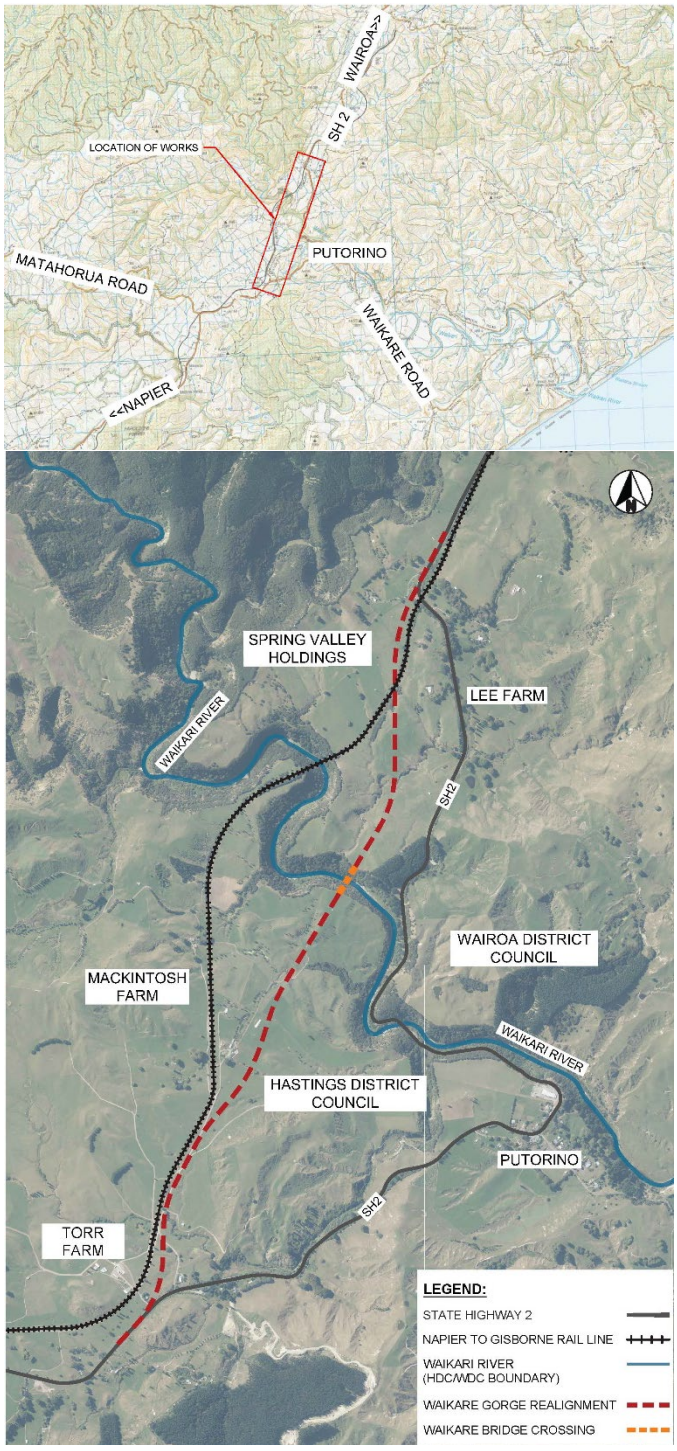



*Fig. 2.1: Location plan*

## 2.2 Landscape Context

The following viewpoint analysis from the LVA provides a good understanding of the local landscape and visual environment that the new alignment will be located within.

The immediate landscape context of the realignment is set within a mix of low-lying small plains, rolling hills and more rugged slopes. The steeply incised hill country further to the east and west contrast with the relatively flat terrain of the corridor.

The Waikari Gorge and river forms the primary natural feature within the study area and is a principal feature in the wider landscape. The river flows in an eastbound direction through the

Gorge, commencing its 35km long journey from its sources within the Maungaharuru Ranges to the river mouth with Hawke Bay. A number of tributaries, gullies and stream incisions define the surrounding hill slopes.

The elements within the Gorge that contribute to its inherent natural character include the steeply incised escarpment, large areas of vegetation patterns of high value (in terms of patterns and processes), river and riverbed. The Gorge landscape has high aesthetic values in terms of coherence and expressiveness, and its relative remoteness enhances the sensory qualities of the area. These natural elements contribute to its memorability at a local scale, and are therefore more sensitive to change and particularly vulnerable to disturbance and alteration. Therefore, changes to these elements will have potentially negative adverse effects on natural character values and should be avoided.
Apart from farming and existing infrastructure this rural area is characterised by minimal built development.

Land use also has an influence on landscape. A small number of farm dwellings, milking sheds, shearers dwellings and other ancillary buildings are dispersed throughout the area. The mainly pastoral landscape is highly modified with very little indigenous cover remaining. Small stands of exotic trees are scattered throughout the landscape. The small farming settlement of Putorino is, located at the southern entrance to the Gorge. Putorino currently has a resident population of approximately 100 people and operates as a local service centre for the surrounding rural communities.

The Napier to Gisborne Rail Line (railway line) is located to the west of the existing SH2 alignment, extending from Putorino Station Road to the existing McKenzie's Rail Overbridge. Whilst the alignment of SH2 largely follows the route of the Napier to Gisborne Rail Line between Gisborne and Napier, within the study area the state highway diverts away from the more direct route of the railway line and instead meanders along the foothills through Putorino township and across the Gorge at a location below the township and downstream from the proposed new alignment.

For cultural landscape and iwi inputs, please see 2.5 Natural Heritage Context and 2.6 Cultural Context below.

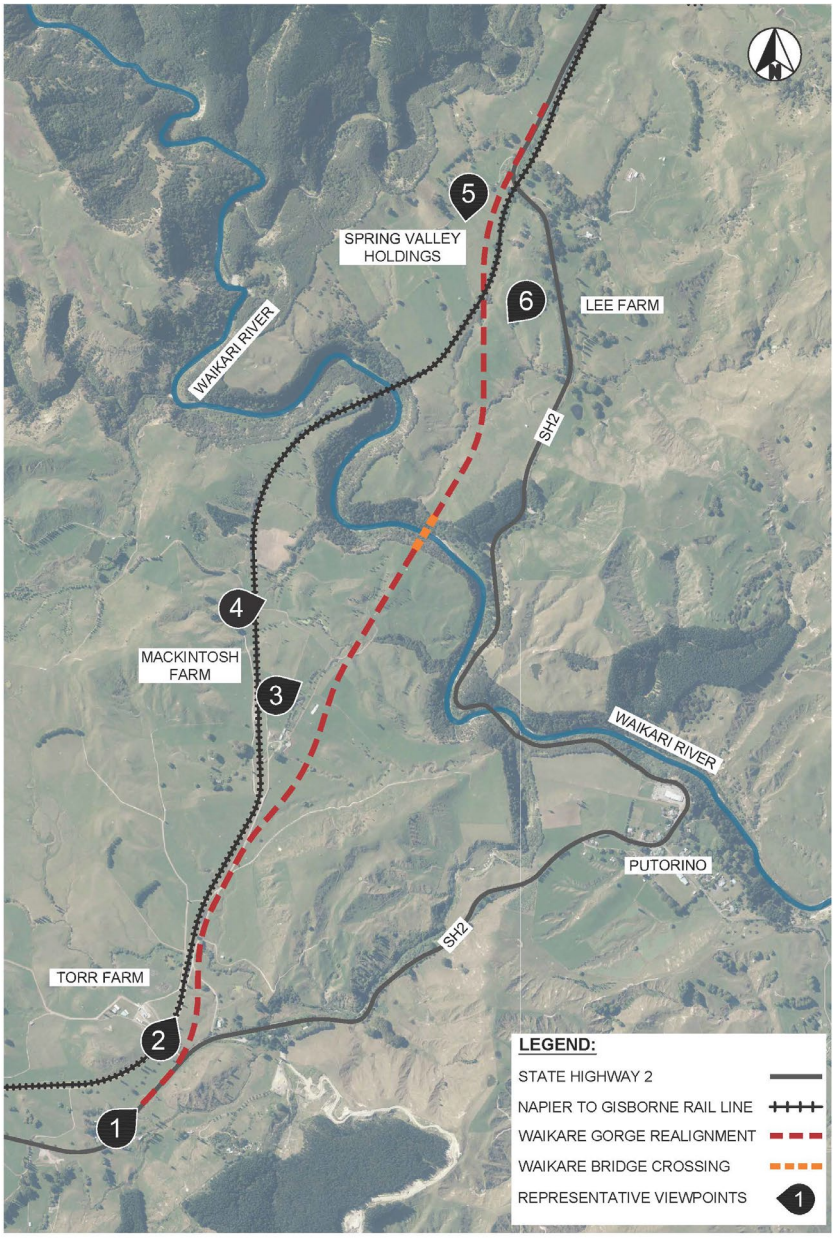



*Fig 2.2a: Photo viewpoint location*

*Fig 2.2b: Viewpoint 1: Representative view looking north east from the southern extent of the new alignment.*

*Fig 2.2c: Viewpoint 2: Representative view looking north from the Torr Farm dairy yard access track and farm accommodation along the proposed alignment.*

*Fig 2.2d: Viewpoint 3: Representative view looking east from the Torrs farm accommodation towards the proposed alignment in the mid distance and bridge crossing in the far distance.*

*Fig 2.2e: Viewpoint 4: Representative view looking west from the Mackintosh farm residential dwelling towards the proposed alignment in the mid distance.*

*Fig 2.2f: Viewpoint 5: Representative view looking west from the Spring Valley Holdings residential dwelling towards the proposed alignment in the mind distance and bridge crossing in the far distance.*

*Fig 2.2g: Viewpoint 6: Representative view looking south from the Lee farm residential dwelling towards the proposed alignment in the mind distance and bridge crossing in the far distance.*

These photos provide additional clarity on the user experience that might be available to road users. The southern extent contains closer features within the landscape, and the user experience will for the most part relate to close views from car windows. Further north the two bridge approaches have wider and more dramatic landscapes. In each much of the character will be set

by the approach to the Gorge and bridge itself. However, that sense of movement towards the structure and passage across it will itself be set within a dramatic landscape setting, featuring the Gorge and surrounding hills beyond.

## 2.3 Land Use Context

As identified above this is a relatively remote rural location, with agricultural land use predominant. A feature of land use is that it is interspersed with more confined rugged areas, such as the Gorge itself.

The above images provided give ample evidence of the predominance of rural farmland in this location. Agricultural land uses are typically grazing, with the surrounding areas for the most part occupied by rolling and rugged grasslands, interspaced by isolated stand of exotic trees such as poplars.

See also Movement Context (for rail and local/farm road land uses) and Natural Heritage Context (for vegetation areas).

## 2.4 Movement Context

Other notable land uses include the existing SH2 corridor (at the northern and southern ends of the alignment, but not particularly visible elsewhere), and the rail corridor. In this location the existing road and rail corridors have diverged. The new road alignment will be closer to the existing rail alignment, and will run alongside it for some distance. The presence of the rail corridor has the effect of reinforcing the corridor as a whole as the key movement corridor between the eastern settlements of Gisborne, Wairoa and Napier.

In addition to the rail corridor the area also features exiting local roads and farm tracks. These are unsealed access roads that provide important physical connections for farming activities, both to the existing SH corridor, and between farming activities.

*Fig 2.3: Above: Agricultural landuse and farm roads/tracks are key local landscape and movement features.*

Adding to the movement and connectivity character of the area, the now closed hotel at the southern end in the small rural settlement of Putorino has for some years provided a stopping place for journeyers heading either north or south, and was a stopping place for users of bus services. The history of Putorino and the Gorge area as a stopping place for this journey is significant in the heritage of this area.

The below text is taken from the 'Heritage Trails – Napier to Wairoa' brochure, as it's the 1930's image of the Hotel below it. The location is notably a long-recognised feature on the Napier-Wairoa road.

*"Putorino (58km) is mid-way between Napier and Wairoa and is the centre of a farming community. Originally settlement in this area was at the mouth of the Waikari River as this*

*was a stopping point for Maori canoes, whalers, coastal traders and other travellers who walked or rode the early tracks. European settlement began here in early 1860s. Around 1900 the inland road was formed bypassing Waikari River mouth. In 1902WaikareHotel opened for business at the new settlement of Putorino, 12km from the river mouth. "*

*Photo 2.1: The Waikare Hotel in the 1930's, with what may have been a former inter-regional bus service and passengers in the foreground*

## 2.5 Natural Heritage Context

The Waikare Gorge is a spectacular rugged heritage landscape feature and landmark that provides the surrounding area with a great deal of its local identify. The current narrow and winding road alignment descends down into and along this Gorge for a distance before ascending and re-emerging on the other side. It is an instantly recognisable feature on the journey between Napier and Wairoa, and well-known to regular users of the route. On the northern ascent from the Gorge views to the west extend across a mixture of farmland, gullies with native vegetation and hills further to the west.

The Gorge is also of great significance to local Māori, see below.

## 2.6 Cultural Context

The corridor was visited and assessed in three sections on 5th October 2020 and 23 November 2020. This formed a two-day cultural assessment walkover for the short-listed realignment options. The purpose of the walkover was to understand the potential impacts these options could have on cultural values. This information was then used to help inform the preferred option.

Representatives from Ngati Pahauwera - Chair, Kaitiaki Supervisor and Metaphysical Consultant carried out the first site walkover along with Project representatives from Waka Kotahi and WSP. The owner of the property Gary Mackintosh also attended. The walkover commenced at the southern end of the Mackintosh property adjacent to Putorino Station Road and progressed north towards the Waikare Gorge. The white alignment was assessed first followed by the orange alignment.

The walkover identified metaphysical presence was along sections of the proposed alignments. Also, in respect of the white alignment, a strong link was also identified between the gully/

waterway and a historic Pa situated on the hill bordering the western edge of the Lee property (adjacent the rail line). The project team advised that the white alignment will not impact the hill however the orange alignment would need to create a cutting into the back of the hill to form the road. The Kaitiaki Supervisor identified an area that was the likely location for seed/ plant cultivation. This area would not be impacted by the white alignment.

# 3 Urban Design Guidelines and Principles

Various guidelines and principles relating to landscape and urban design have been taken into account in the preparation of this ULDF. These and how they have been considered are set out below.

## 3.1 Waka Kotahi Urban Design Guidelines 'Bridging the Gap, 2013

The Transport Agency Urban Design Guidelines 'Bridging the Gap' are for project managers and consultants responsible for the planning, design and implementation of Waka Kotahi projects. This document provides policy and guidance for the integration of land use and transport, with the aim of seeking to improve what good urban design means in a transport project

Bridging the Gap sets out ten fundamental urban design principles. These principles reflect Waka Kotahi expectation for the integration of urban design in all phases of transport projects and the desired inter-disciplinary approach to addressing urban design issues. The document also incorporates the New Zealand Urban Design Protocol (2005), Crime Prevention Through Environmental Design (CPTED) requirements and provides Urban Design and Landscape Framework (ULDF) guidelines amongst other things.

### *3.1.1 Bridging the Gap in a Waikare Bridge Context*

Bridging the Gap contains specific guidance with respect to road bridges (reproduced below). The location increases, and decreases, respective significance of these guidelines. The restrictive location of the bridge itself and its approaches, mean that some aspects of the guidelines have less relevance, in particular underbridge experience, overbridge experience, and lighting. Most users will experience the bridge itself as they travel across it without stopping. For users approaching and passing across the bridge, location, content, form, colour and barriers will be amongst things potentially most notable and with the highest potential for impact, either positive or negative.

The new alignment itself, also contains several features of note with respect to the guidelines. Other than the bridge itself, these in particular relate to the ability to interact with the surrounding environment, whether by views out across it, or in respect of the ability to stop and experience it on foot. The Gorge itself, while significant is unlikely to be accessible from the new alignment, with access to the Gorge instead being from the old SH2 alignment. Directing users wishing to experience the Gorge towards what will become the old alignment and from there access to the Gorge will be important.

This section of the SH2 journey has long been a significant and notable 'stopping' point to break the journey. Few such opportunities exist between Wairoa and Napier. There could be an opportunity with the new alignment to consider a new stopping place, in effect replacing the one lost at Putorino township. This ULDF considers the opportunity for such facility as part of the alignment and approaches to the bridge structure itself, while noting for space and safety reasons that its development might need to be adjacent to, rather than within the alignment.

Ten fundamental urban design principles are defined in NZ Transport Agency's "Bridging the Gap" urban design guidelines as follows:

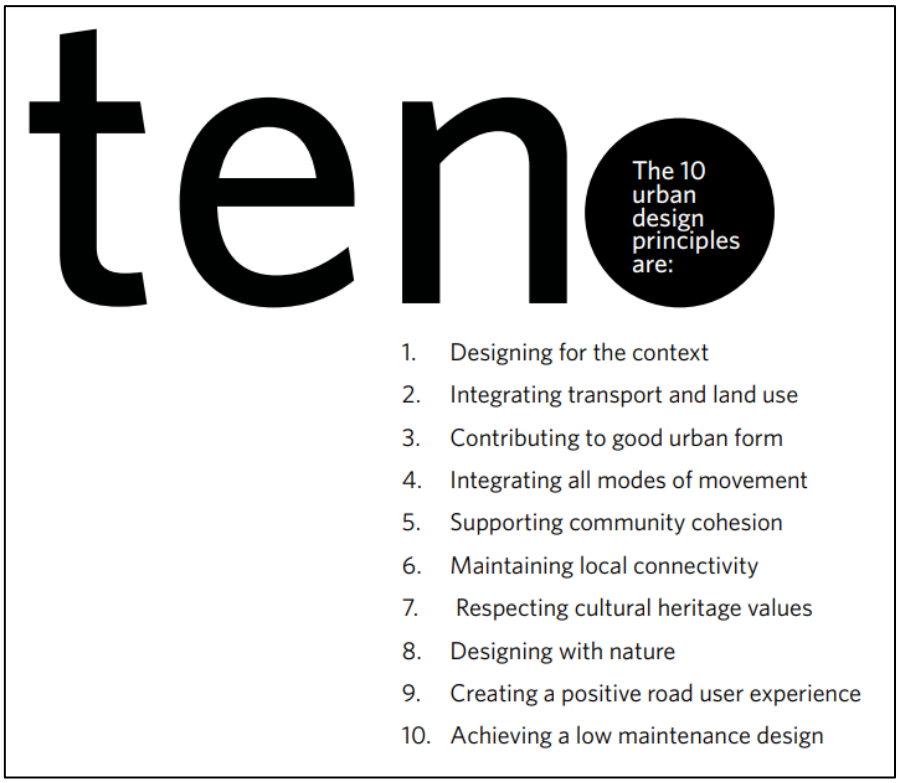



*Fig 3.1: 10 Urban Design Principles from 'Bridging the Gap'*

Bridging the Gap also contains specific guidelines for bridge structures, reproduced below. These are considered and addressed alongside the ten urban design principles in this ULDF.

## Urban design guidance

**The following guidance should guide the design of road bridges:**

**Location:** Bridge design starts with its location. Bridges that span waterways can dramatically change the landscape and bridges within or next to residential areas can appear out of scale and out of character. The role of the bridge in the overall project must be established from the early stages of route selection as it can influence the alignment.

**Context:** Bridges should complement their context. This means considering the topography, the rural or urban setting, any existing structures, visibility of the bridge and the distance and height to be spanned. Where a series of bridges will be seen in succession by road users, they should be consistent in form and recognizable as a 'family' of structures with individual variations reflecting the requirements of their specific settings. Feature bridges are suitable for special places, where they can act as landmarks.

**Views:** Bridges are both viewed objects and viewing platforms. The bridge can frame a new and unexpected vista contributing to appreciation of the surrounding landscape. Optimising views to, through and from the bridge will also help with orientation on the journey. This can be achieved by making the bridge design as slender and open as possible, and minimising the height of solid barriers by using a top metal rail. Bridges that are highly visible from roads and public spaces should be designed for these views.

**Underbridge experience:** Where pedestrians and cyclists are likely to travel under a bridge, the treatment of the soffit, piers and abutments should provide a safe, convenient and attractive environment. In urban areas with high levels of foot traffic, the underbridge experience will be particularly important and justify architectural treatments and feature lighting.

**Overbridge experience:** Where a bridge provides an elevated viewpoint from which the wider landscape can be appreciated or crosses an important landscape feature (river, gully, etc), the overbridge experience should be carefully considered. This may involve using a metal top rail to minimise the height of solid bridge barriers and maximize the view from the bridge for motorists. If pedestrians and cyclists are likely to travel over the bridge, it may be desirable to provide space where they can safely stop and enjoy the view.

**Form and proportion:** The height of the bridge, number of supports, distribution of spans and size of the various components should be carefully considered to create a simple, elegant whole and to minimise the bridge profile. Structural integrity, where the forces at play in the bridge are clearly reflected in its design, generally results in pleasing composition.

**Light and shadow:** A play of light and shadow on a bridge can reduce the apparent mass and bulk of the structure and balance its vertical and horizontal proportions. Sloping all or part of the outer face of the parapet outwards to catch the sunlight, and recessing beams to create a shadow line, will reinforce the horizontal lines in the bridge. Surface texture on barriers and retaining walls will create a finer level of detail.

**Texture:** Barriers should have minimum embellishments, with any surface patterns reinforcing the clean lines of the bridge. Any textures on retaining walls and barriers should relate to the speed of travel. Abstract, repetitive patterns are suitable to add interest, while not distracting driver. Where abutments will be visible by slow moving traffic, textures can be used on retaining walls to provide a finer level of detail and can reference the area's cultural or historical significance.

**Colour:** Colour offers opportunities to provide consistency to a family of bridges and to reinforce the landmark quality of a standalone structure. When used to highlight particular elements it should form part of a coherent, ordered composition. Colour must be used carefully as it draws the eye, especially in a rural setting.

**Lighting and drainage:** These bridge components must be considered early and integrated in the design of the structure. The external surface of the bridge should be free of drainage pipes or services. Lighting at night, like colour during the day, can be used to highlight all or parts of a feature bridge. Lighting design and selection should incorporate protection against vandalism.

**Maintenance:** It is important to select durable materials and finishes that do not significantly degrade in appearance over time. Where required, anti graffiti coating should be applied as part of the bridge construction phase to the full extent of piers and barriers to prevent patchy application and appearance at later stages.

**Barriers:** Barriers must be designed to respond to the bridge setting and to achieve a smooth transition between the structure and its approach. Barriers should have continuous lines that are not obscured or interrupted by non-structural elements. Their depth must be carefully proportioned in relation to the deck and superstructure. Barriers should be extended past the abutments to anchor the bridge in the landscape. Sloping the top of the barrier inwards towards the deck will minimise water staining on the outer face of the barrier.

**Abutments:** Open abutments should generally be used in rural areas to optimise views of the landscape. Landscaped sloped abutments are less likely to attract graffiti than retaining walls. In urban settings or when the corridor width is constrained, near vertical or vertical retaining walls are the most practical abutment options. The design of these retaining walls must present a high quality appearance if visible to approaching traffic, pedestrians and cyclists.

**Headstock:** These substructure elements should not be designed in isolation. Their design is integral to the overall form of the bridge. Structural systems that eliminate the need for headstock can lead to simpler, more elegant solutions.

**This guidance should be read in parallel with the NZTA Bridge Manual**

*Fig 3.2: Bridging the Gap Urban Design Guidance for State Highway Bridges*

## 3.2 Crime Prevention Through Environmental Design (CPTED)

Crime Prevention Through Environmental Design (CPTED) focusses on using the environment to reduce the attractiveness or opportunity to commit crime, therefore lessening the motivation to offend. CPTED identifies four overlapping CPTED principles and seven qualities of safer places, reproduced below. For this project CPTED measures will focus principally on any location or opportunity for travellers to stop or pause their journey, and exit their vehicles.

The remoteness of the location and the nature of the corridor and surrounding landuse suggest that key principles of interest will be natural surveillance, activity mix, sightlines, layout, and physical protection (target hardening). Typically for this type of location this would mean ensuring clear sightlines into the site from the road and adjacent activities, co-location of activities if possible, ensuring that any furniture is particular robust and unable to be moved, opportunities to reinforce 'place' and for wayfinding. These recognised CPTED factors have and should be further incorporated into the proposed outcome identified in this ULDF.


*Fig 3.3: The New Zealand Urban Design Protocol and the New Zealand CPTED Guidelines.*

### Four Overlapping CPTED Principles

| | |
|---|---|
| Surveillance | People are present and can see |
| Access Management | Attract people to some places, restrict from others |
| Territorial Reinforcement | Clear boundaries give 'ownership' |
| Quality Environments | Attract people and support surveillance |

### Seven Qualities of Safer Places

| | |
|---|---|
| Access: | Safe movement and connections<br>• Places with well-defined routes, spaces and entrances that provide for convenient and safe movement without compromising security. |
| Surveillance and sightlines: | See and be seen<br>• Places where all publicly accessible spaces are overlooked, and clear sightlines and good lighting provide maximum visibility. |
| Layout | Clear and logical orientation<br>• Places laid out to discourage crime, enhance the perception of safety and help orientation and way-finding. |
| Activity mix | Eyes on the street<br>• Places where the level of human activity is appropriate to the location and creates reduced risk of crime and a sense of safety at all times by promoting a compatible mix of uses and increased use of public spaces. |

| | |
|---|---|
| Sense of Ownership | Showing a space is cared for<br>• Places that promote a sense of ownership, respect, territorial responsibility and community. |
| Quality environments | Well designed, managed and maintained environments<br>• Places that provide a quality environment and are designed with management and maintenance in mind to discourage crime and promote community safety in the present and the future. |
| Physical protection | Using active security measures<br>• Places that include necessary, well-designed security features and elements |

## 3.3 Waka Kotahi Landscape Guidelines (Final Draft), 2014

The Transport Agency Landscape Guidelines replaces the Guidelines for Highway Landscaping. These guidelines recognise the important contribution landscape thinking, landscape planting, landscape design, implementation and management provides in the delivery of quality infrastructure. The guidelines outline the key considerations and critical steps to be followed when assessing, designing, constructing and maintaining highway landscape assets.

## 3.4 Waka Kotahi P39 Standard Specification for Highway Landscape Treatment, 2013

The Transport Agency P39 Standard Specifications for Highway Landscape Treatments sets out the minimum performance, quality and workmanship standards for landscape implementation of all highway projects. Alongside the specifications, it is anticipated there will be landscape plans and planting schedules produced, specific to the Project. These should form part of the construction contract and pricing package.

Suggested landscape design, planting, management and maintenance measures should comply with both the Transport Agency Landscape Guidelines and Transport Agency P39 Standard Specifications for Highway Landscape Treatments.

# 4 Integrated Vision for the Corridor

## 4.1 An integrated Urban and Landscape Vision

This section sets out the 'Vision' for the corridor. It includes a brief description of the proposed features of the corridor, and the (urban) landscape design elements of these features. This section also provides the necessary detail and guidance/recommendations in respect of these features to ensure that the intent of the (urban) landscape design Philosophy and Objectives are understood and carried through detailed design and implementation of the improvements.

Having considered the investment objectives and outcomes (relating to resilience, access, safety) for the realignment project in conjunction with environmental context, the following has been identified as the Integrated Vision for the corridor. This recognises the significance of the location, its heritage, the amenity of a possible stopping place, and the quality of journey experience.

*A safer alignment with a light footprint on the landscape that improves journey reliability, time and comfort, provides a memorable 'place' to pass*

*through and a valuable opportunity to stop and break the Napier-Wairoa journey.*

Vision for the Corridor

The design incorporates response to the key Waka Kotahi urban and landscape design principles that are relevant to the new corridor and to bridges, as well as recognising the key features of the project and wider landscape to provide an integrated design.

## 4.2 Delivering the Vision - Overview of how Key Urban and Landscape Design Principles will be Achieved

The following briefly provides an outline of how urban design and landscape principles are to be achieved, addressing objectives and a rural context. In a remote rural location such as Waikare Gorge, the experience has for the most part been directed at drivers and is thus more spaced, and relies on features at a greater scale as opposed to finer detail that would be missed. The exception being how a stopping place might be delivered (if this can be achieved within corridor constraints, or possibly adjacent to the corridor). Whether provided at greater (for occupants of moving vehicles) or finer (more specifically for possible stopping-place users) scale the outcomes are intended to respect and emphasise the significant feature of Waikare Gorge as a unique 'place', and the Napier-Wairoa journey as an experience.

Waka Kotahi ten principles of urban design have been considered in this context. Accordingly, much of the focus of the ULDF has been directed towards the most relevant and appropriate of these principles, being:

- rural context, and local landuse;
- connectivity;
- cultural heritage and values;
- designing with nature, and natural heritage;
- positive road user experience; and
- maintenance.

An outline of the design response against each of the principles is given below. More detail on these design outcomes can be found in section 5.

### *4.2.1 Rural Environment and Integration with Adjacent Activities*

It is important that the road corridor is well integrated into its surrounding environment. In this instance adjacent 'activity' is principally associated with agricultural (mostly stock) farming. This means that attention needs to be given to visual and physical integration of proposed earthworks, structures and new vegetation with existing rural landscape character.

Existing rural character and amenity can be maintained by repeating exiting landscape patterns, such as flat and rolling grasslands, and pockets of native vegetation, particular on steeper slopes, but also present in pockets elsewhere.

There is also an opportunity to identify and emphasise key locations of interest, such as the Gorge, stream crossings and viewshafts. This will reinforce a 'sense of place' associated with currently predominant land uses. In achieving the urban design principles, the corridor can be considered as a window onto the surrounding agricultural landscape. This contributes towards maintaining existing character and enhancing journey experience.

Physical integration is also important, as outlined below. There are elements of built heritage present in the current landscape, these are also discussed below.

### 4.2.2 Maintaining Local Rural Connectivity

As this is a relatively remote rural area characterised by large agricultural farming landuses, local connectivity principally relates to accessing agricultural activity, Putorino township, and significant parts of the natural and or cultural heritage environment such as the Gorge.

A number of stock underpasses will maintain practical access between farming properties that would otherwise be severed by the new route.

Where fish passage is required the new cross-drain culverts are designed to provide improved ecological connectivity for 'swimmers' and 'climbers'.

Access to the township of Putorino and the Gorge are to be provided via a connection to the current SH2 corridor, which will become a local road. There are other heritage features in this environment. These include a historic Pa situated on the hill bordering the western edge of the Lee property (adjacent the rail line) and a likely location for seed/plant cultivation. Access to these features in some cases may be improved, either by physical or visual access and identification as appropriate. In some instances, this may require further engagement with mana whenua.

### 4.2.3 Cultural Heritage

The new alignment and bridge structure have been selected after engagement with mana whenua. The bridge structure selection has responded in particular to a desire to avoid piles in the river, and to avoid disturbance to the sides of the Gorge. The alignment has also responded to recommendations form mana whenua to avoid more sensitive sites in the area

An objective of the Project is to take advantage of cultural heritage opportunities by 'storytelling' or highlighting features for the benefit of the local community and road users.

There are some heritage features in the landscape that may be able to be referenced in information boards, defined viewshafts or through other forms of storytelling. The ability to deliver these experiences is most likely only available if there is an opportunity for a stopping place to be established, or by incorporating simple patterns into the barriers.

### 4.2.4 Underlying Natural Heritage and Environment

The Gorge is a very significant feature of the landscape. Apart from the Gorge other noteworthy natural features in the wider landscape are the rolling hill country, Maungaharuru Range and a number of smaller streams and watercourses that flow into the Waikari River.

The route traverses the Gorge, Kings Creek and a number of smaller streams and watercourses. There is an opportunity to enhance the ecology and ecological value of the streams and watercourses. To achieve this a strong defined framework of native vegetation is proposed. This will not only improve ecology but also emphasise these key natural features as part of the Putorino locality. It is recognised that the revegetation will only occur within the designation however, discussions with landowners and regional council subsidies provide opportunities to enable additional stream planting in the future to strengthen this framework. Enhancements within the corridor have the potential to make a valuable contribution to a wider suite of enhancements.

Natural and low impact drainage systems such as vegetated swales are used where possible to both reduce potential impact from stormwater runoff, for amenity benefits, and to further contribute to the identity of the route.

### 4.2.5 Road-User Experience in a Dramatic and Memorable Heritage Landscape

The Gorge is a dominant feature within the Putorino landscape, with major influence on the landform, topography, landscape and ecology. It is already a very notable experience on the Napier – Wairoa journey. At present travellers pass down through the Gorge itself, with the new

alignment they will cross atop it by bridge. This will provide a different, dramatic perspective of the Gorge.

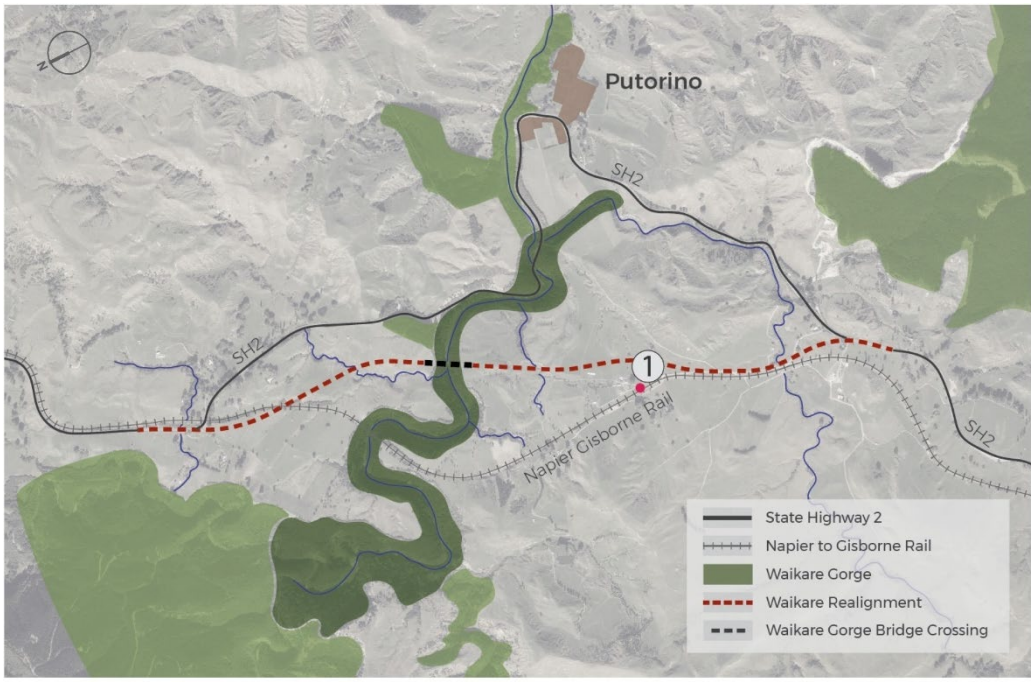
Landscape planting at the bridge approaches and integrated art on the concrete balustrades are incorporated into the bridge and approaches design. This is proposed to celebrate this dramatic environment and the significance of the Gorge within it.

Greater amenity will be able to be secured through revegetation and the use of enhanced hard landscape treatments. Native planting and the integration of artistic features will be positioned to inform and enhance the experience of road users. The deliberate and strategic positioning of vegetation will create, maintain and enhance important viewshafts.

Beyond the Gorge itself, this is an attractive landscape. It features rolling agricultural grasslands interspersed by more steep and rugged terrain, streams, and ribbons of native vegetation which follows the watercourses. The corridor as a whole will open an opportunity to look out onto this landscape with its built environment features such as farms and the rail corridor. These attractive views out from the corridor will be deliberately left as open as possible.

There may be an opportunity to provide a stopping place along and perhaps adjacent to the new corridor. Although this is not essential to deliver the Vision,, it would provide a likely highly valued comfort amenity to break the relatively long and often quite winding Napier-Wairoa journey. Minimal but convenient amenities at a stopping place would provide an opportunity to stretch legs, quell motion-sickness, just take a break or gain a small piece of understanding about this place.

There is a considerable amount of human (built and cultural) and natural heritage in this location. This can be celebrated though various means such as views, cultural art, or information boards (if a stopping place was able to be developed), as appropriate. Much of this heritage is currently little known outside the immediate area. Celebrating local cultural and built heritage lends an opportunity to add richness to the journey experience, and could make a very significant contribution to visible identity and ‘place’ for Putorino. In the event that a stopping place was able to be developed within or adjacent to the corridor, this could also replicate or reproduce the very long history of Putorino as a key stopping place on this journey, both for road and rail.




KEY

● Old Railway Building ① Potential Stopping Place / Rest Area

*Fig 4.1: Location plan showing the opportunity for a stopping place adjacent to the corridor. While not necessary, this would improve the experience of the journey and offer additional opportunity to celebrate ecological, built and cultural heritage.*

### 4.2.6 The Bridge as a Memorable 'Place'

The new overbridge spans the attractive natural environment of the Gorge, which is a significant ecological resource. By association the bridge will become a significant visual feature of the Gorge, the state highway, and the overall project. The slender and elegant bridge design complements its setting and the natural Gorge environment.

A shallow deck and minimal vertical support that avoids piers within the river-bed maintains views beneath the bridge deck up and down the river. The combination of native planting and bridge art reinforces the rich history and culture of the Gorge and its place in the Putorino locality. Furthermore, as a landmark feature it assists in developing and enhancing the crossing point as a milestone on the journey.

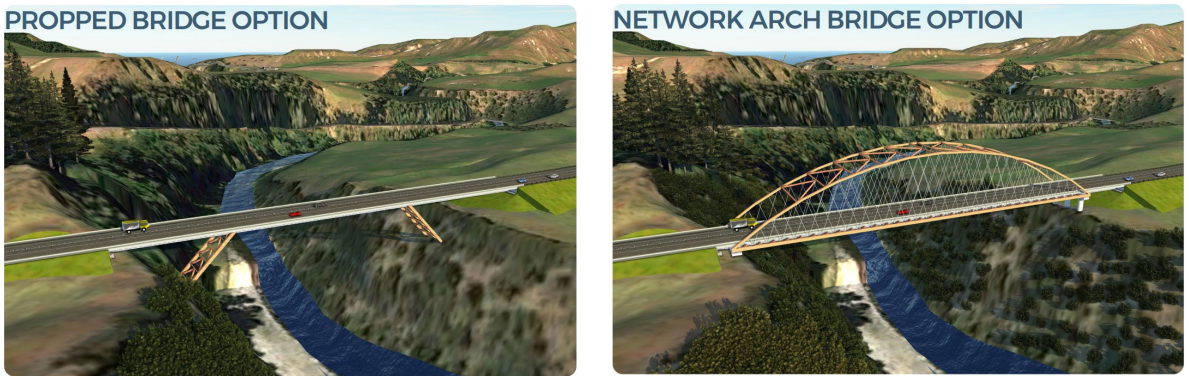



*Fig 4.2: Propped and the Network Arch (preferred) bridge options*

During the MCA process it was agreed that the no piers option will be developed as preferable for cultural, ecological and visual reasons. During this process the 'Network Arch' design was preferred over the 'Propped' design (used at nearby Matahoura Gorge further to the south). The Network Arch option with its more visible above deck features and gateway/threshold characteristics will be instantly memorable and supports landmark type opportunity.

### 4.2.7 Maintenance

Maintenance played a significant part in the consideration and eventual selection of a bridge structure. Early option selection was reduced in final consideration to two bridge structure options, (as shown above).

Each of these options had respective benefits and disadvantages. Ultimately cultural heritage played a significant part in selection with a strong desire from tangata whenua to avoid impacting the sides of the Gorge itself. This contributed to the selection of the 'Network Arch' bridge structure option.

A low maintenance core-ten steel option was ultimately selected as the preferred option. This option had significantly less disturbance of the sides of the Gorge, and is more durable.

# 5 Specific Design Outcomes for a Rural Corridor

## 5.1 Corridor Theme

An overall design theme and design narratives were developed that is consistent with the vision, objectives and principles of the corridor. The vision promotes a light touch on the landscape and a memorable place to pass through.

The theme took into account feedback from stakeholders, in particular adjacent landowners and mana whenua. It is also cognisant that this corridor for the most part will be experienced from within a moving vehicle. Apart from screen planting to mitigate visual effects, the theme is deliberately structured around views out towards the landscape, and the use of larger elements of built form.

## 5.2 Journey and Experience

The main structures that form part of the realignment include the Gorge bridge and Armco rail crossing. The bridge and rail crossing will have a direct visual effect on driver experience and the surrounding landscape. In order to address the visual prominence of the overbridge and to reinforce the strong relationship that the community have with the Gorge it is proposed to apply art integrated into the arch structure and relief detailing to the concrete balustrades. Native planting will also play an important role in screening the community from the new rail crossing, and in enhancing outlook across the new Kings Creek Crossing.

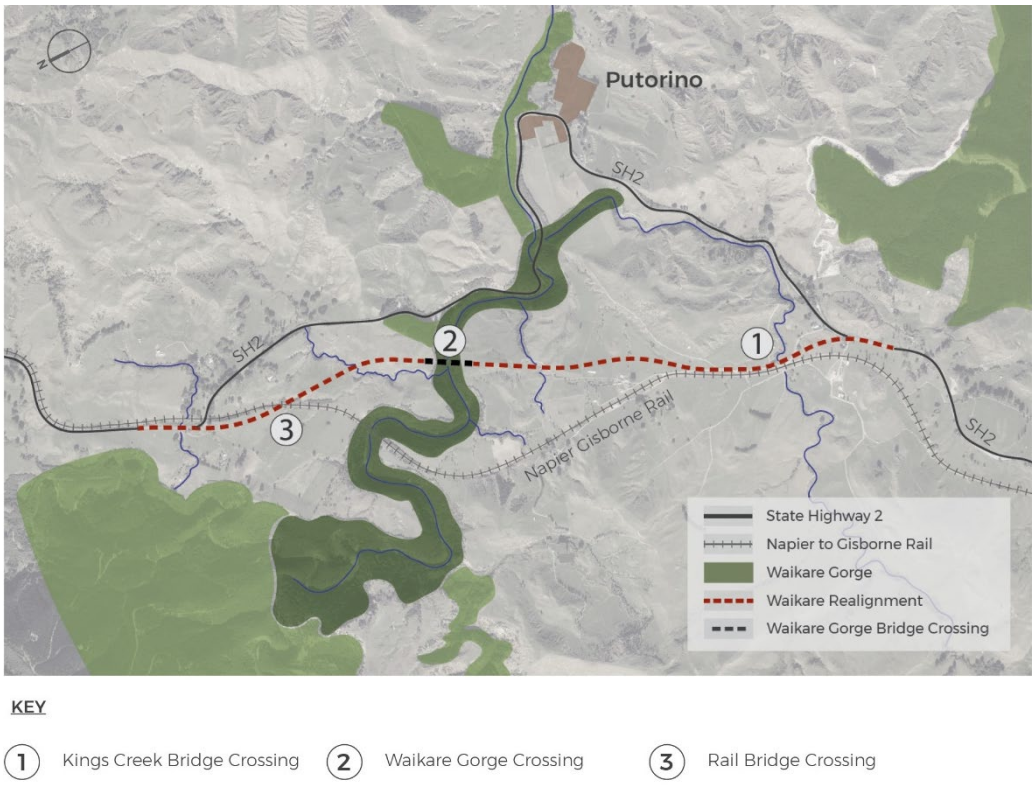



*Fig 4.3: Location plan illustrating the main structures that form part of the realignment*

### 5.2.1 Bridge Structure

The proposed Wakare Gorge bridge will become a very important visual element of the route corridor. The architecture, and in particular the design of the bridge balustrades, concrete safety barriers and enhancement planting will be used as a significant opportunity to improve the identity of the route, and promote a strongly defined transition point at the Gorge crossing.

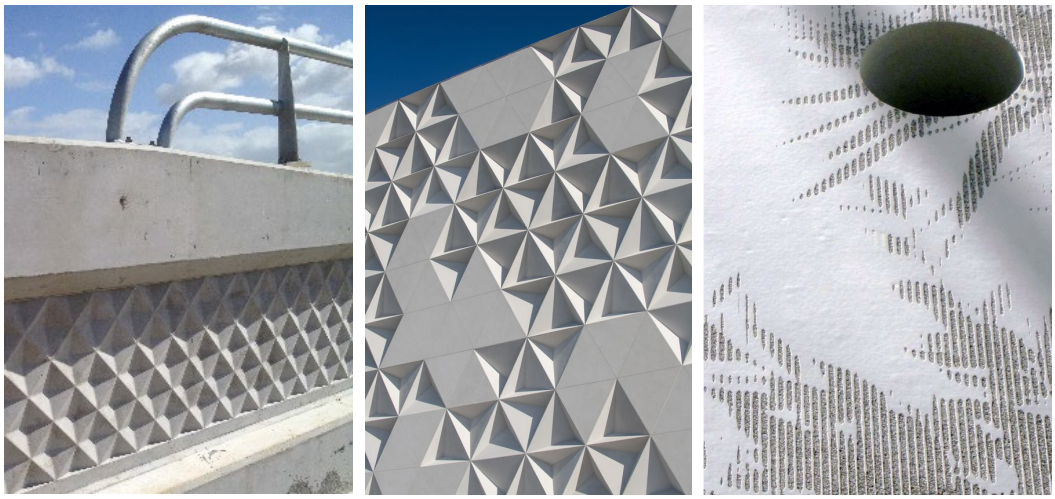


*Fig 4.4: Example of application of relief detailing that softens the visual impact of hard engineered structures and uses surface shadow effects to give changes in appearance at different times of the day. Patterning can reflect local characteristic features to further enhance local uniqueness and experience.*

The super structure is designed to be refined, elegant and slender in form, but still instantly recognisable and memorable as a feature on the journey. The use of the tall vertical arches will create a sense of anticipation on approach. These will reflect the crossing of the gorge itself by reinforcing the sense of traversing across a significant landscape feature of distance and depth. This experience can be further enhanced for users as they approach more closely and traverse the bridge. Small but clever design treatments on sections of internal surfaces such as the concrete balustrades and internal sides of concrete barriers are proposed. These could be themed, for example with patterning reflective of the Gorge's natural character.

Such use of art and cultural references will add considerably to journey experience, by lending a further degree of uniqueness and significance, and an experience that evolves slowly with proximity to the bridge structure, resulting in a memorable and recognisable 'place'. These are appropriate outcomes for a place of this significance, enhancing the transient experience of the user. Given the restrictions on providing safe access to the sides of the gorge itself at the bridge location, this enhancement may provide an alternate amenity benefit, and reinforce the rugged vertical 'cliff' characteristics of the site.

Low growing species are to be used on the bridge batters could also be used to better integrate the structure into its landscape and facilitate views towards the Gorge.

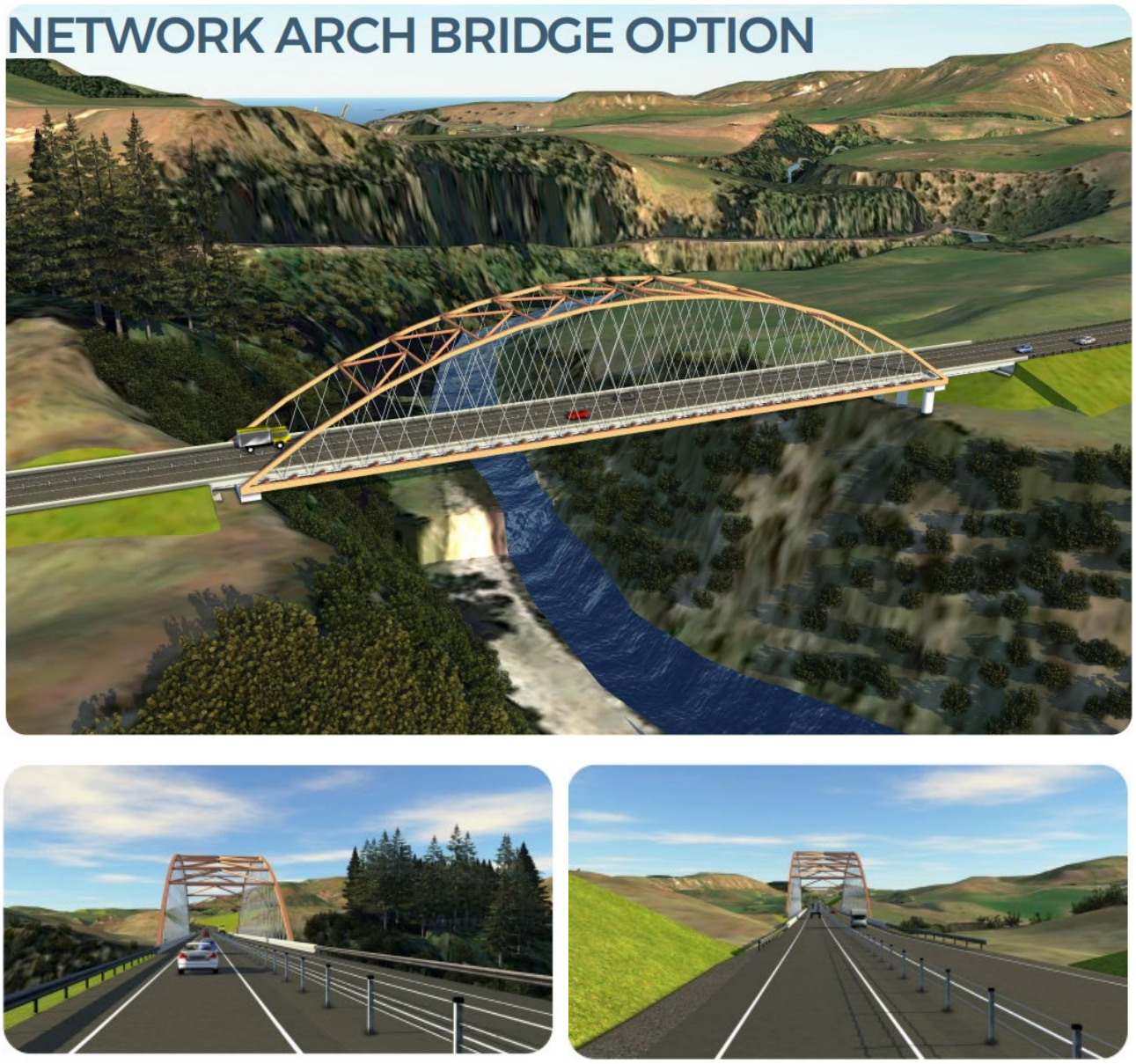



*Fig 4.5: The structure will be seen from along the alignment, creating a sense of anticipation and arrival, and then of traversing of a significant gap of length and depth.*

### 5.2.2 Other Structures

The remainder of the structures such as the Kings Creek bridge crossing, stock underpass and culverts are deliberately simple and unobtrusive. In these locations greater amenity is available from the surrounding landscape. Where culverts and/or headwalls are visible to road users native planting is used in specific locations to soften the appearance and improve the biodiversity of the watercourse.

Although the ARMCO tunnel design avoids vertical headwalls and is therefore visually recessive, a framework of native shrubs is used to anchor the crossing in the landscape and obscure the utilitarian, built elements of the convergence of the railway line and new route. These add to visual interest and contribute to the movement characteristics of the corridor and will be available in views for occupants of vehicles.

### 5.2.3 Fencing

Stock proof fencing will be installed along the length of the new route to define property boundaries, control access and prevent livestock from wondering onto the road. The fences will

be visually consistent with existing fences throughout the wider landscape and therefore blend into and contribute to the wider rural environment.

### *5.2.4 Stopping Places*

This location is essentially equidistant between the two closest significant urban settlements of Napier and Wairoa. While not essential to deliver the Vision, if able to be achieved the location of a stopping place in this section of the SH2 corridor would represent a desirable place to 'take a break' along a relatively isolated and winding section of state highway corridor.

If a stopping place is able to be provided along this section of the corridor it should be of sufficient size to enable several cars to stop and for passengers to 'stretch their legs'. As it cannot (for terrain and safety reasons) be located at the bridge itself, it should try and take advantage of a views towards the bridge structure, or out towards a landscape feature/s. These may include the Maungaharuru Range to the west, the Gorge itself, the rail line and an attractive rural countryside.

Cell phone coverage is available at this location, meaning it could also form part of the mobile phone stops being developed on the state highway network.

Any opportunity to provide resilient (ref CPTED guidelines) furniture such as picnic table/chairs should be exercised.

If space is available and it is appropriate to do so, information signage should be provided. This could take the form of one or more of the following:

- Route information (key settlements, topographical features, closest conveniences such as stopping areas and toilets, locations of interest)
- Heritage Information (such as the history of the Napier-Wairoa highway, Putorino Railway station and nearby rail line, cultural heritage features, natural heritage features, land use heritage such as farming).

*Potential Stopping Place Design Theme*

The shearers quarters located on Putorino Station Road to the south of the farm milking sheds is a nearby building with a significant heritage aligned to a local built heritage transport and community theme.

In the early 1900's this former railway station and building was moved from Putorino to Putorino Station Road. Even though the station activities fell into disuse over time, the following years have seen the railway building itself utilised as a school room, golf club house and kindergarten. The former railway station building is still in use today, as shearers quarters. The station consisted of two extra rails and two water towers used for steam trains. One of the water tanks is currently on display at Paekakiriki Station Museum near Wellington.

Added to rail activities, much transport also used the Waikari River to access the coast in order to utilise coastal shipping.

The historical rail activities associated with the locality provides a perfect opportunity to celebrate a unique and now little-known transport and settler heritage for this area. An opportunity exists to develop a theme that will draw inspiration from the rail history of the site and fit with the industrial character and function of a stopping point. This will reinforce the nature of the rest area as a 'place' on a heritage movement and supports its use as a picnic spot. Material selection should be representative of this theme and seek to clearly define the railway station narrative.

In addition to movement heritage, the Gorge has significant ecological and cultural heritage. Access to the gorge will not be available at the bridge, nor will pedestrian access be available to or across the bridge. Opportunity to recognise significant ecological, built and cultural heritage could instead be provided at the stopping place. This gives a safe opportunity to celebrate and

inform of natural, cultural and built heritage in a single appropriately located stopping place location.


*Photos 4.1, 4.2 and 4.3: Use of 'info boards' to explain ecological, cultural and built heritage*

For reasons of convenience and safety, it may be desirable to locate or co-locate facilities such as 'coffee carts', rubbish bins and toilets in this location. This may require making provision for secure utilities such as water and/or power.

CPTED principles can and should be applied to stopping place design. This should consider 'target hardening', overlooking, and defensible space. This should consider use of damage resistant materials for any furniture or facilities, careful location of facilities and 'carparks' to achieve overlooking to and from the state highway corridor and any nearby activities, and separation between facilities or furniture to allow defensible space.

## 5.3 Landscape and Planting

The most significant elements of the landscape that contribute to the corridor experience relate to rugged and rolling terrain, the Gorge and agricultural landuse. The design for the corridor strives wherever possible to maintain views out to these defining areas and features. The challenging terrain makes cut and fill inevitable. Rather than attempt to obscure these features the corridor theme seeks to optimise them by:

- using elevation of the road to optimise views outwards over the landscape, and
- using cuts (where present) to reference the ruggedness and challenges of the terrain, and

- using landscape planting that reflects a mix of agricultural landuse (grazing pastrure) and pockets of native vegetation on steeper banks and around water/wetland areas.

### *5.3.1 Planting Strategy*

The proposed landscape planting treatment of the route is informed by the vegetation characteristics and patterns of the surrounding landscape.

Landscape treatment of all the construction earthworks will become expensive to install and maintain. Consequently, the ULDF focuses on providing high quality revegetation outcomes in key strategic locations where landscape planting will reduce visual effects and provide environmental benefits and cost-effectiveness. The remainder of the disturbed areas along the route will be treated with grass to maintain existing rural pastoral character.

More generally along the new corridor, planting layouts that extend the pattern of the surrounding vegetation into the project footprint will be used. This will help to visually integrate the route with the surrounding landscape and improve the experience to locals and road users. Plant selection utilises a native palette that is complimentary to the existing vegetation patterns and is appropriate to the locality and growing conditions (hardiness, low water and maintenance requirements).

### *5.3.2 Planting around Stormwater Ponds*

Stormwater runoff from the realignment will be managed to reduce the potential effect of increased stormwater runoff volume on the surrounding environment.

This will be achieved through a combination of appropriate native plant material, and minor contouring and shaping of the highway corridor slopes and drainage network.Grassed conveyance swales, vegetated treatment swales, wetlands, kerb and channel and culverts (with fish passages where appropriate) will be utilised throughout the project site. See also Stormwater below.

## 5.4 Earthworks

The realignment traverses flat rolling landforms including the Gorge. In order to respond positively to these landform features the proposed earthworks are shaped to maintain the natural form and character of the wider landscape.

### *5.4.1 Batter Slopes*

Batter slopes are more gradual at a 4:1 gradient. Planting treatment on batters were strategically selected to respond to contextual features and massing of existing vegetation patterns. Where views of the surrounding are important, viewshafts will be maintained through the use of appropriate vegetation. A combination of low growing and larger plant species are used to frame views along important viewshafts.

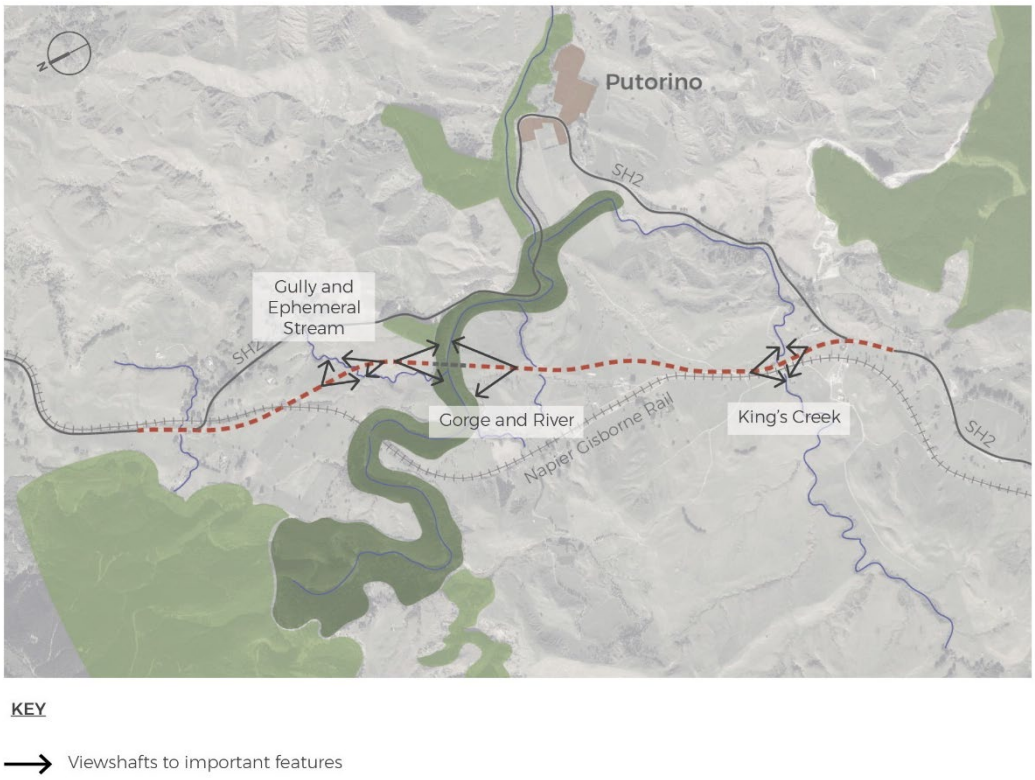



*Fig 4.6: Location plan showing the proposed viewshafts*

Similarly, bridge batter slopes will be formed at more natural gradients (4:1) to retain the natural characterising of the Gorge environment, allow mitigation planting and visually blend with the existing landform.

### *5.4.1 Cuttings*

The treatment of cuttings will play an important role in the overall appearance of the new alignment in the wider landscape. Rounding and feathering along the top of the cut will assist in tying the cutting into the 'rolling' topography of the surrounding landscape.

Cuttings will create challenging surface conditions to revegetate, particularly in this environment. Consequently, the Preliminary Landscape Plans (refer **Appendix A**) specifies a restrained palette of hardy, resilient native plants that will survive these harsh growing conditions in key strategic areas. This will minimise the visual effects the earthworks will have on the surrounding landscape and limit unnecessary use of vegetation that might otherwise itself result in visual impact, or limit opportunity for views out from the corridor, and/or unnecessary on-going maintenance (see also section 5.9).

Where possible, native vegetation and mulch will be used to stabilise construction earthworks however, erosion control blankets may be necessary on steep batters and will be necessary around the overbridge. Only blankets with a natural tan colour will be used to help it blend into the landscape.

Cuttings that are not revegetated will be grassed to be in keeping with the wider pastoral landscape and for cost-effectiveness.

### *5.4.1 Topsoil and Mulch*

A topsoil strategy and plan will be developed as part of the detailed design stage. All topsoil will have a 300 mm depth for shrub planting and 100 mm depth for grassed areas. Landscape fill to be ripped to allow topsoil to key in and topsoil will be track rolled to provide a compact but friable planting medium. All mulch will have a consolidated depth of 100 mm.

Propriety products such as biodegradable coconut or wool matting are required for slopes greater than 1:2.5.

## 5.5 Stormwater

The stormwater detention ponds will deliberately blend into the natural environment theme, by appearing as much as possible as natural small ponds/wetlands with native planning around the edges. Edges of planting will be deliberately softened to be more 'organic' or natural in appearance, and less visibly 'man-made'. This will be consistent with and contribute to a more rural character where waterbodies are more natural in appearance.

The stormwater treatment system includes 13 new ponds and a number of vegetated swales located in relatively close proximity to and on both sides of the carriageway. The use of vegetated swales and ponds to treat runoff provides an opportunity to improve water quality and to establish a positive landscape and ecological feature. Consistent with desired design outcomes, when established in place these will have an appearance not dissimilar to small natural wetland areas. Where possible these will also combine with native revegetation plantings to further enhance a natural appearance, improve aesthetic values of the realignment and to enhance opportunities for connected native green corridors, (refer **Fig 4.4** and **Fig 4.5**).

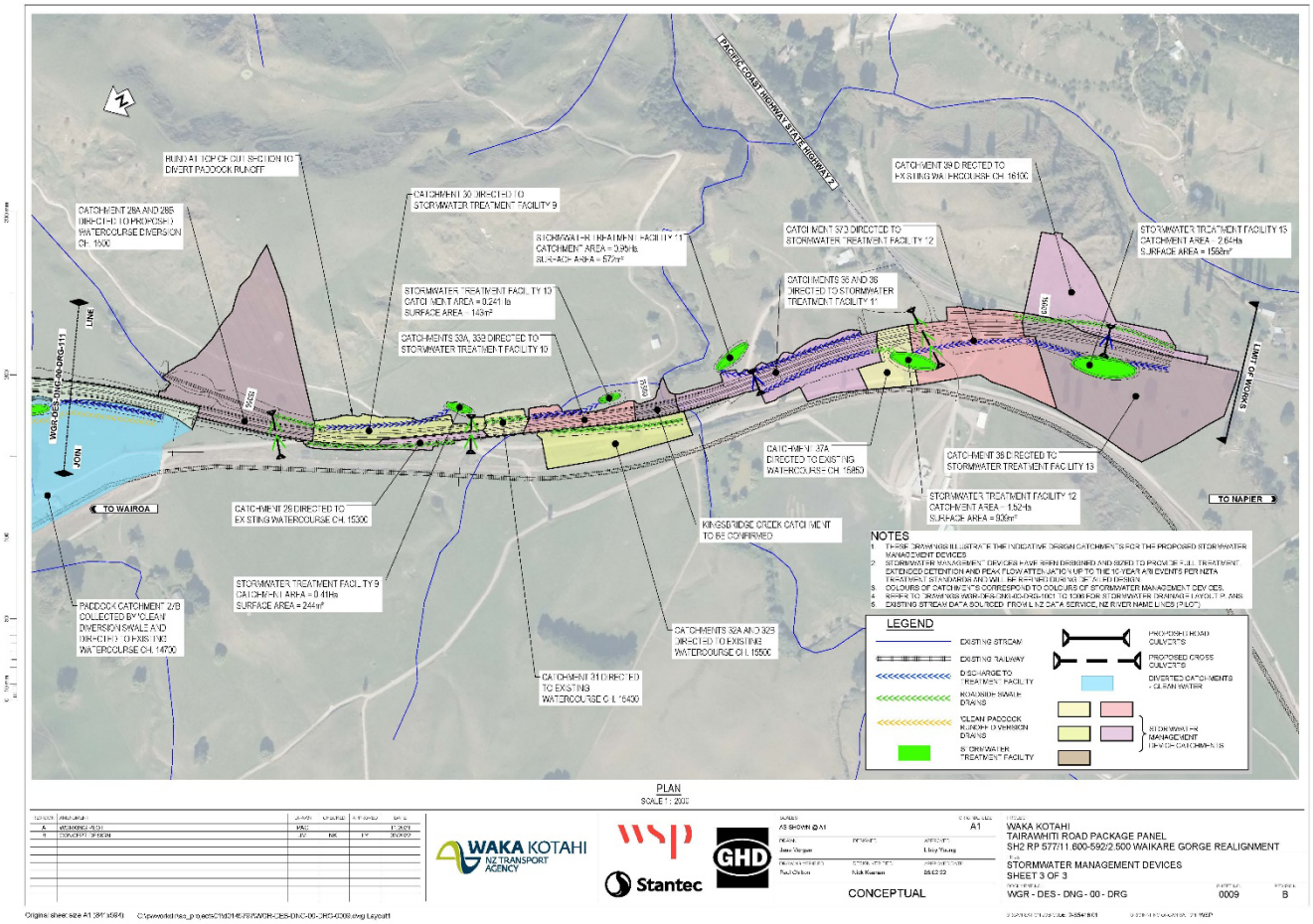



*Fig 4.7: Stormwater detention ponds (light green) will be located alongside the carriageway, shaped and planted with native species to give a more natural character and appearance*

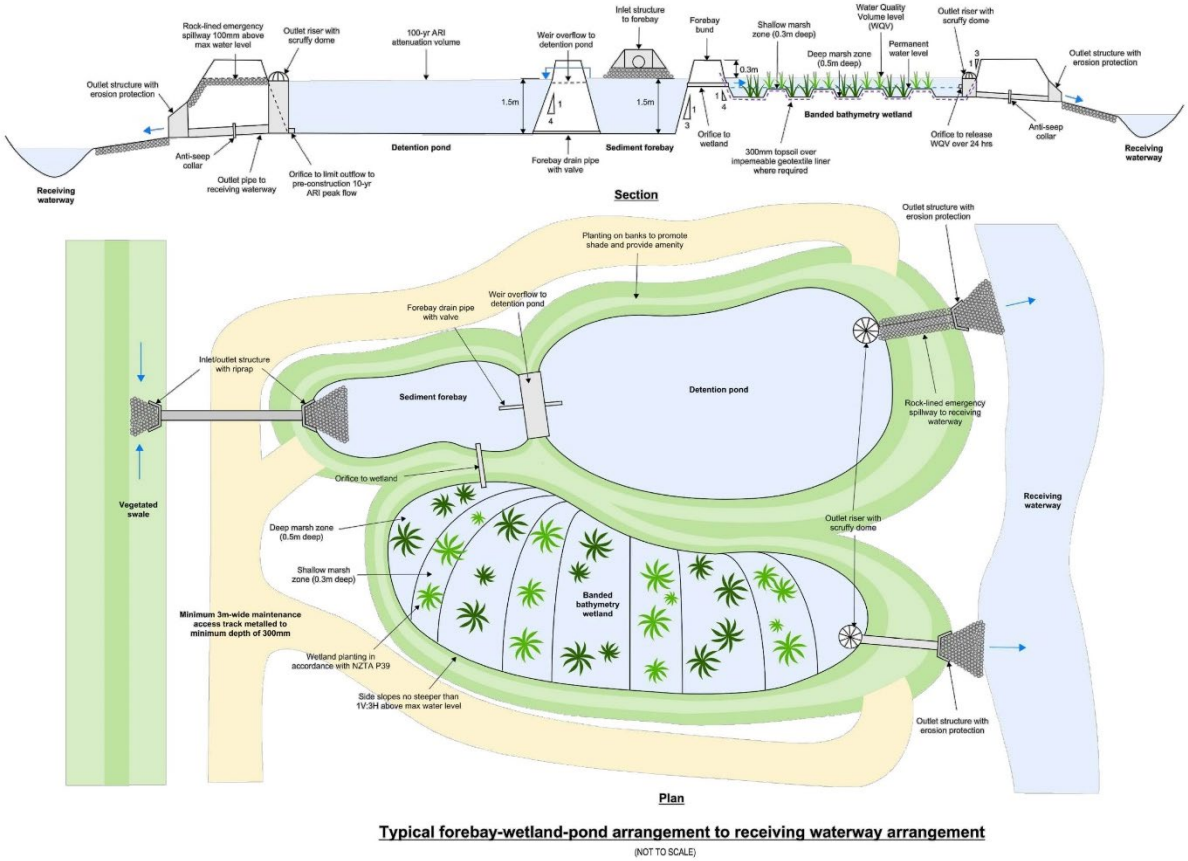



*Fig 4.8: Typical wetland design (Stantec) of the type that could be used along the new alignment*

*Photos 4.4 and 4.5: Examples of stormwater treatment pond planting*

## 5.6 Pedestrian and Cycle Links

No formal pedestrian and cycle links are proposed as part of the realignment. There may be integration of region wide networks, however this is expected to utilise existing SH infrastructure.

A minimum 1.5 m wide shoulder will be provided on both sides of the carriageway which will provide for experienced on-road cyclists. Only experienced cyclists are likely to be present in this remote location, and cyclist numbers are expected to be small. The width will provide a safe on-road cycling environment for these users.

## 5.7 Materials (other than the bridge)

Except for the new overbridge it is the intention that the materials and physical elements are simple in design, minimise the use of unnecessary embellishments, and consistent with a remote rural environment. All the materials were selected for longevity and robustness whilst giving a quality finish appropriate to the location.

### *5.7.1 Infrastructure Elements and Road Furniture*

Roading elements and furniture such as culverts, islands, concrete underpass, ARMCO railway culvert, barriers, lighting columns and signs are standardised, low key and avoid ornamentation to help them blend into the highway envelope. The selection of materials considered the following:

- Medians, splitter islands and other concrete structures utilise light coloured infill concrete (plain base concrete) or dark coloured infill concrete (3% - 5% charcoal oxide).
- Bass relief (rebate/imprinted/high-relief surface detailing) and coloured concrete e.g. red and green pigments are avoided.
- Concrete mixes and pigments that are easily replicated to ensure consistent treatment over time.
- All concrete work including kerb and channel to Waka Kotahi standards.

## 5.8 Safety

Planting position and size at maturity will not only maintain and improve safety along the alignment but also perceived safety by the public, creating an environment where users will feel comfortable and secure. Positioning of planting considered the following:

- Clear zones are kept free of solid obstacles and planted with frangible plantings.
- Adequate visibility is provided at intersections for the safety of the road users, and at any stopping place (if established). This is achieved through careful selection of low growing planting.

## 5.9 Maintenance

The long-term maintenance consideration of the proposed landscape treatments is fundamental to the design of an appropriate, practical and sustainable design solution and will be applied to the design.

Landscape design should establish long-term aims and objectives for landscape and feature management (as a continuous process) so as to optimise the life and value of the vegetation, maintaining, managing and improving safety, biodiversity, visual quality, stormwater runoff, pest, local air quality and Waka Kotahi business practices. Maintenance considered the following:

- Plant selection that will deliver whole of life value,
- Space created for practical mowing operations as part of the design,
- Co-ordinated with signage,
- Safety margin to mowing operators,
- Attractive but very low maintenance plant selection at any stopping place (if established), and
- ‘Gore’ areas with hard surfaces at the narrow ends, to avoid plant establishment and maintenance issues.

# 6 Summary - Waikari Realignment Design, Mitigation and Opportunity

*A safer alignment with a light footprint on the landscape that improves journey reliability, time and comfort, provides a memorable 'place' to pass through and a valuable opportunity to stop and break the Napier-Wairoa journey.*

## Vision for the Corridor

This ULDF sets out a Design Philosophy and Vision for the realigned SH2 corridor near Putorino and crossing the Waikari River Gorge. It sets out how the safer new alignment and bridge structure will add a positive memorable enhancement to the journey between Napier and Wairoa, consistent with Waka Kotahis' key urban design principles for road corridors and bridge structures, in particular:

- rural context, and local landuse;
- connectivity;
- cultural heritage and values;
- designing with nature, and natural heritage;
- positive road user experience; and
- maintenance.

Urban Design and Landscape mitigation measures will minimise the effects arising from the realignment due to changes to the landscape as a result of earthworks, the removal of vegetation, the formation of stormwater wetlands, placement of the Gorge overbridge and other smaller structures. They will also present several enhancement opportunities

Landscape mitigation measures will aim at integrating the proposed corridor and extension of the local road network into the surrounding landscape, whilst maintaining the rural character of the area. This includes minimising the effect of structures and considering their form and appearance.

Together with landscape mitigation, there are urban design opportunities to also deliver enhancements to the journey experience, and celebrate some local heritage features. Delivering high amenity outlook views of landscape features and land uses will enhance journey experience, and the new Gorge bridge structure gives an opportunity to add a new landmark feature. The possible development of a stopping place within or adjacent to the corridor could be an opportunity to replace and enhance that heritage lost at Putorino settlement. Its location could enable a higher amenity opportunity at an ideal location on the Napier-Wairoa journey able to draw on local natural, built and cultural heritage.

Landscape mitigation measures to be further refined through the detailed design process.

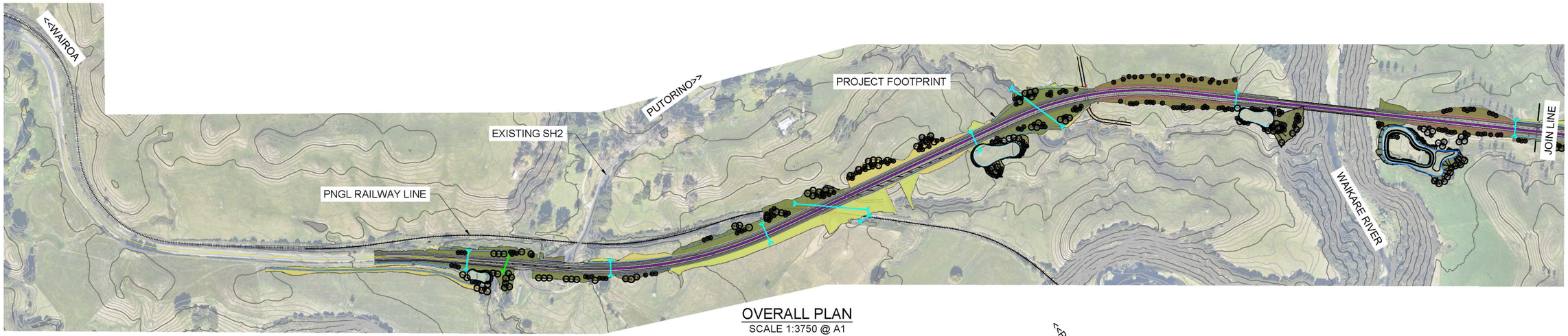
- Retaining as much of the existing vegetation as possible,
- Considering areas that establish or reinforce physical and visual links to adjacent planting areas,
- Returning as much productive land to pasture as possible once construction is complete,
- Considering the effects of the Project on adjacent property owners, for example, screening them from the new alignment and bridge,

- Utilisation of both exotic and native tree species to reflect the existing planted character of the area,
- Considering potential tree shading issues on residential properties and the realignment,
- Including of vegetation clear zones and frangible plant species to provide a high degree of visibility and maximise safety,
- Utilisation of vegetation to integrate the Waikari Gorge overbridge and approach embankments into the landscape,
- Incorporation of mitigation/wetland planting around the stormwater wetlands and along the grassed swales,
- Incorporation of planting on batters which are too steep to be regularly and safely mown (Refer to Transport Agency Landscape Guidelines for slope break requirements), and
- Identifying and maintaining views to key landscape features.

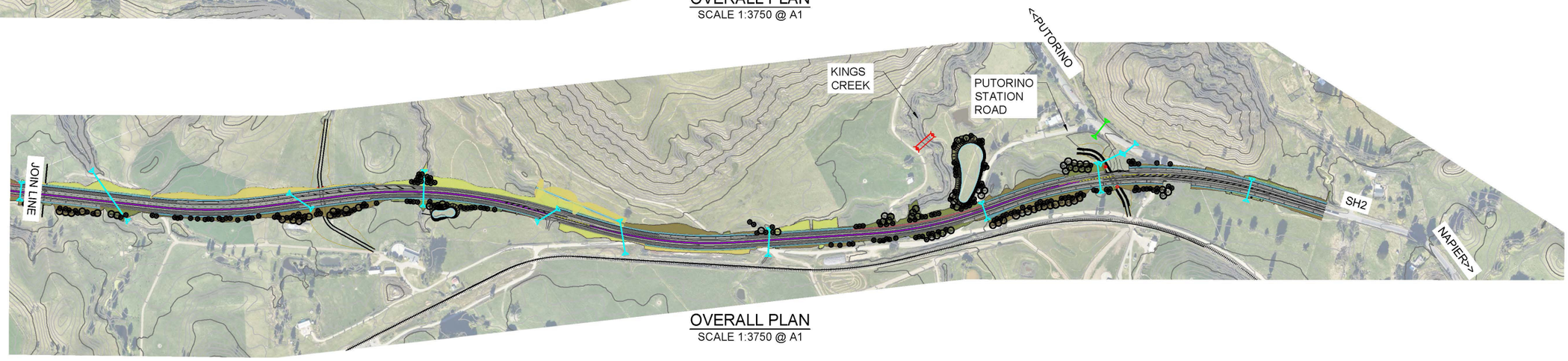
Urban design enhancements to be further refined through the detailed design process, (in addition to the landscape mitigation above).

- Incorporation of themed detailing or patterning on the new bridge structure
- Treatment of the new bridge structure as a 'landmark' on the journey, and the threshold/transition between Hastings and Wairoa Districts,
- Opportunities for high amenity natural feature and rural landscape outlook and views for users of the corridor,
- Opportunities to add additional green 'native' planting corridors into the surrounding landscape as part of landscape mitigation,
- Opportunity for a convenient stopping place and mobile phone opportunity in a strategic location mid-way between the urban areas of Napier and Wairoa, and
- Opportunities to celebrate local natural, built and cultural heritage of the area adjacent to the alignment.

# Appendix A
# Preliminary Landscape Plans




OVERALL PLAN
SCALE 1:3750 @ A1




OVERALL PLAN
SCALE 1:3750 @ A1

## SHEET INDEX



**LEGEND:**

| GENERAL | VEGETATION (300mm TOPSOIL) | SPECIMEN NATIVE TREES | SPECIMEN EXOTIC TREES |
|---|---|---|---|
| EXISTING VEGETATION TO BE RETAINED | GRASS | CORDYLINE AUSTRALIS | QUERCUS ILEX |
| | TREATMENT (SWALES & WETLANDS) | DACRYDIUM CUPRESSINUM | QUERCUS ROBUR |
| | LOW TO MEDIUM NATIVE SHRUB PLANTING | DACRYCARPUS DACRYDIOIDES | PLATANUS X ACERFOLIA |
| | MEDIUM TO LARGE NATIVE SHRUB PLANTING | PLAGIANTHUS REGIUS | |
| | | PODOCARPUS TOTARA | |
| | | SOPHORA MICROPHYLLA | |

## NOTES:

1. FINAL FENCE POSITION TO BE DETERMINED BY ENGINEER DURING CONSTRUCTION.
2. ALL NOTES SHALL BE READ IN CONJUNCTION WITH NZ TRANSPORT AGENCY P39 LANDSCAPE SPECIFICATIONS AND PLANT SCHEDULE 2/1/54/7204_9600-9621.
3. CONTRACTORS TO VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCING WORK.
4. FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED DIMENSIONS.
5. REFER TO TYPICAL CROSS SECTIONS FOR PLANTING LAYOUT AND PLANTING OFFSETS.
6. PLANTING LAYOUT TO BE CONFIRMED ON SITE PRIOR TO PLANTING BY PROJECT LANDSCAPE ARCHITECT.
7. WHERE GROUPS OF SHRUBS ARE SPECIFIED IN THE SCHEDULE THE GROUPS SHALL BE PLACED IN A RANDOM PATTERN ACROSS THE PLANT BED, UNLESS OTHERWISE SPECIFIED ON THE DRAWING SCHEDULE. PLANTING TO BE STAGGERED AND NOT PLANTED IN ROWS.
8. CONTRACTORS TO LIAISE AND GAIN AUTHORITY FOR WORKS WITH ALL SERVICE AUTHORITIES.
9. ON SLOPES GREATER THAN 1:2.5 ALL PLANTING AREAS TO BE TREATED WITH A BIODEGRADABLE EROSION CONTROL BLANKET.
10. ALL OTHER PLANTING AREAS (APART FROM SWALES, WETLANDS AND STREAM BED PLANTING) TO BE MULCHED WITH 100 mm DEPTH OF WOOD CHIP MULCH ON COMPLETION OF PLANTING.

| REVISION | AMENDMENT | DRAWN | CHECKED | APPROVED | DATE |
|---|---|---|---|---|---|

WAKA KOTAHI NZ TRANSPORT AGENCY

WSP Stantec GHD

| SCALES | | ORIGINAL SIZE |
|---|---|---|
| 1:3750 | | A1 |
| DRAWN | DESIGNED | APPROVED |
| P. BIRSE | S. STEYN | - |
| DRAWING VERIFIED | DESIGN VERIFIED | APPROVED DATE |
| - | - | - |

PRELIMINARY DESIGN

PROJECT
WAKA KOTAHI NZ TRANSPORT AGENCY
SH2 R.P. 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT

TITLE
LANDSCAPE PLANTING PLANS (DRAFT FOR PRICING)
SHEET 01 OF 15

| DOCUMENT NO. | SHEET NO. | REVISION |
|---|---|---|
| WGR - DES - LVA - 00 - DRG | 0001 | A |

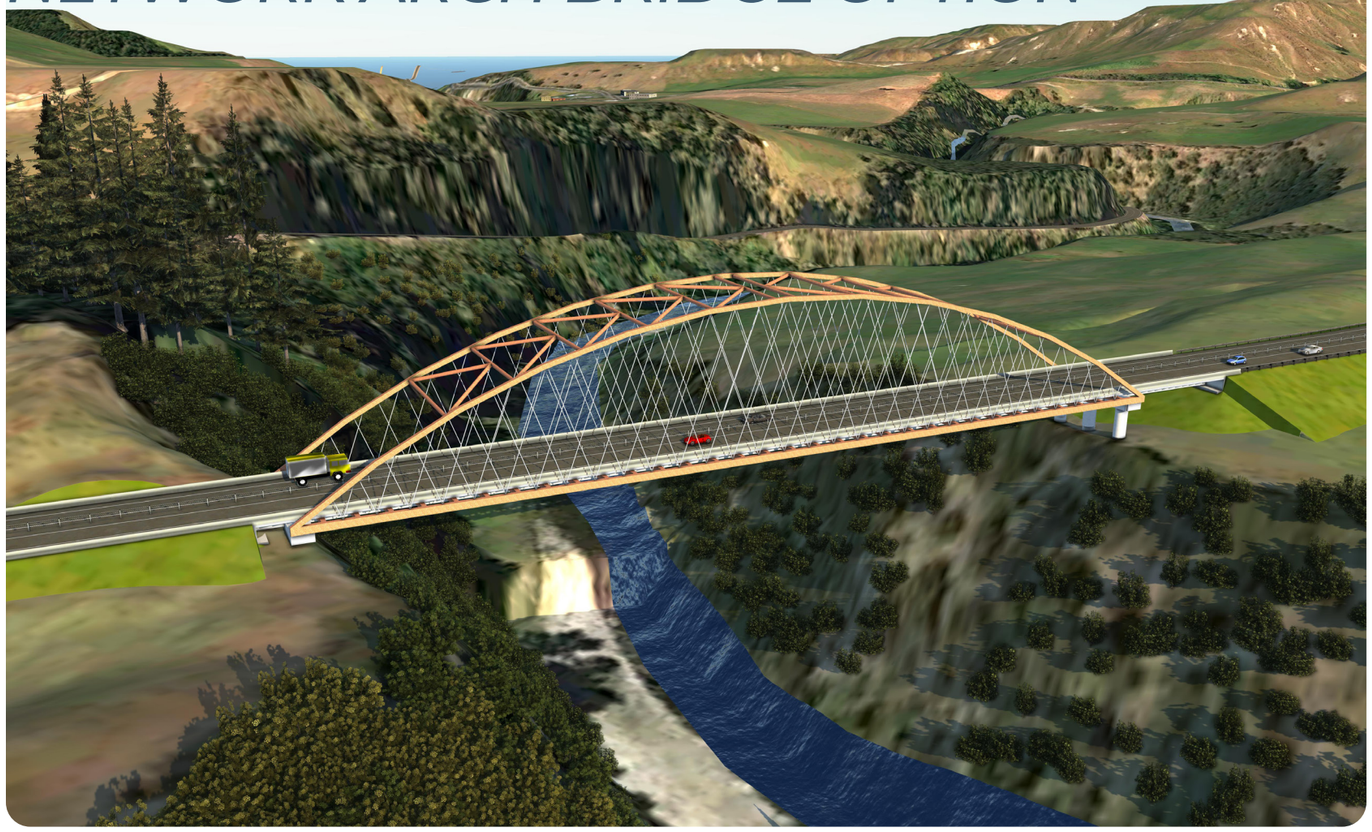
Original sheet size A1 (841x594) C:\12dS\data\WSPSYN\WGR - SH2 Waikare Gorge_26\04_Documentation\01_Drafting\02_Drawings\WGR-DES-LVA-00-DRG-0000_0015.dwg L001(A)

ORGANISATION JOB CODE: 2-S5416.01 ORIGINATING ORGANISATION: WSP

300 mm
200
100
50
0 10 mm

SH2 WAIKARE GORGE REALIGNMENT

# *NETWORK ARCH BRIDGE OPTION*



*OBLIQUE VIEW LOOKING EAST TOWARDS THE PROPOSED NETWORK ARCH BRIDGE AND PUTORINO IN THE DISTANCE*

*PERSPECTIVE LOOKING NORTH ALONG THE PROPOSED ARCH BRIDGE*

*PERSPECTIVE LOOKING SOUTH ALONG THE PROPOSED ARCH BRIDGE*

## DESCRIPTION

**A Network Arch bridge solution has a single main span of approximately 130m and is made from a steel and reinforced concrete deck slab suspended from steel arch chords using narrow hangers. The carriageway passes through the arches. There is short 20m approach spans at each end which is made of conventional precast concrete beams. The main span is piled close to the edge of the gorge to minimise the span length.**

WAKA KOTAHI
NZ TRANSPORT AGENCY

wsp

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