

Project Number: 2-A0011.04

State Highway 1 and State Highway 29 Intersection Upgrade

Assessment of Effects on the Environment
Landscape and Visual Assessment

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Contents

Disclaimers and Limitations.....	2
Glossary of Abbreviations.....	3
1 Executive Summary.....	4
2 Purpose and Scope of this Report.....	4
3 Project Description.....	5
4 Description of the Existing Environment.....	6
5 Assessment Methodology.....	8
6 Landscape Concept Plan.....	8
7 Landscape and Visual Effects Assessment.....	9
7.1 Landscape Character and Values	9
7.2 Assessment of Landscape Effects.....	10
7.3 Assessment of Visual Effects	11
8 Recommended mitigation measures.....	17
9 Statutory Assessment.....	18
9.1 Introduction.....	18
9.2 Matamata-Piako District Plan	19
9.3 South Waikato District Plan.....	19
10 Conclusion and Recommendations.....	20

Appendices

Appendix A: NZILA Seven-Point Scale of Effects.

Attachments

SH1/SH29 Intersection Upgrade: Landscape Concept Plan
Overview Plan
View from Milky Way Farmhouse

Disclaimers and Limitations

This report ("**Report**") has been prepared by WSP exclusively for NZ Transport Agency Waka Kotahi ("**Client**") in relation to an application for a notice of requirements and regional resource consents ("**Purpose**") and in accordance with our contract with the Client dated May 2020. The findings in this Report are based on and are subject to the assumptions specified in the Report. WSP accepts no liability whatsoever for any reliance on or use of this Report, in whole or in part, for any use or purpose other than the Purpose or any use or reliance on the Report by any third party.

Glossary of Abbreviations

Abbreviation/acronym	Term
AEE	Assessment of Effects on the Environment
C2P	(SH1) Cambridge to Piarere
km	Kilometres
LVA	Landscape and Visual Assessment
m	Metres
m ²	Square Metres
MPDC	Matamata-Piako District Council
MPDP	Matamata-Piako District Plan
NoR	Notice of Requirement
P39	P39 Standard Specification for Highway Landscape Treatments; Waka Kotahi NZ Transport Agency
RMA	Resource Management Act 1991
SH(x)	State Highway (number)
SWDC	South Waikato District Council
SWDP	South Waikato District Plan
WRC	Waikato Regional Council
WRP	Operative Waikato Regional Plan
Waka Kotahi	Waka Kotahi NZ Transport Agency

1 Executive Summary

This report assesses landscape and visual effects associated with construction and operation of the proposed roundabout for the upgrade of the intersection of State Highway 1 (SH1) and State Highway 29 (SH29) near Piarere in the Waikato. The proposed roundabout alignment will move the intersection to the north-west, away from the closest receivers, although slightly closer to a single receiver to the north-west. This single sensitive receiver still maintains a long separation distance from the Project, where noise and vibration effects are minimal.

Consistent with the requirements of the Resource Management Act 1991 and Matamata-Piako and South Waikato District Plans, landscape and visual effects have been assessed using the current draft NZILA assessment guidelines. Consideration has also been given to the potential effect on Natural Character.

The Landscape and Visual Assessment outlines landscape context of the study area that surrounds the existing intersection and proposes a landscape concept plan that will guide the landscape and urban design aspects of the overall Project that will occur through Waka Kotahi's on-going partnership with Mana Whenua representatives. The assessment then addresses potential landscape and visual effects of the Project, recommends mitigation measures and considers relevant statutory planning matters.

The effect of the Project on natural character will be Neutral to Insignificant and any potential adverse landscape effects will be Minor negative to Neutral or Insignificant.

In terms of visual effects, relative to the closest dwelling which is on the east side of SH29 and has a clear view of the existing highway the effect will be Moderate Negative to Minor Negative. In terms of dwellings to the west of SH29, the next closest dwelling with a clear view of the existing highway, the effect will be Minor Negative. For dwellings further to the west, due to distance, the visual effect will be Neutral or Insignificant. Dwellings south of the proposed roundabout are screened from the existing highway and the visual effect will be Neutral or Insignificant.

Relative to views from the highway and of the construction phase, the visual effects will be expected and temporal and therefore Neutral.

Various landscape measures are recommended to avoid, remedy or mitigate any potential adverse landscape and visual effects (Section 8 of this report); for example, planting of the highway approach batters, the centre of the roundabout and the stormwater wetland and swales. Once these measures have been implemented and established, it is considered that any residual, adverse landscape and visual effects of the intersection upgrade will, at most, be Low, which equates to Minor negative.

2 Purpose and Scope of this Report

This report forms part of a suite of technical reports prepared for Waka Kotahi NZ Transport Agency (Waka Kotahi) for the State Highway 1 (SH1) and State Highway 29 (SH29) Intersection Upgrade Project (the Project). The purpose of this Landscape and Visual Assessment (LVA) is to inform the Assessment of Effects on the Environment Report (AEE) and support the two Notices of Requirement (NoRs) for alterations to designations to Matamata-Piako District Council (MPDC) and South-Waikato District Council (SWDC) and applications for regional resource consents to Waikato Regional Council (WRC).

A full description of the NoRs and regional resource consents required for the Project is provided in Section 1.4 of the AEE. A full description of the background and strategy for the Project is provided in Section 2 of the AEE.

The purpose of this report is to:

- assess any potential effects of the Project on landscape character¹ (landscape effects)² and amenity (visual effects)³ which may affect landscape values⁴. Effects may be positive or adverse.

This report includes discussion on the:

- Existing site and site context⁵ condition;
- Methodological approach used in rating the effects;
- Landscape Design Framework that addresses Mātauranga Māori relative to the site and covers techniques used to optimise the design of the Project in order to reduce any potentially adverse landscape effects;
- Assessment of natural character, landscape and visual effects following the Project (including positive effects);
- Methods proposed to lessen any potential adverse landscape and visual effects; and
- The Project's fit with the relevant statutory planning expectations.

The study area, which also equates to the Project's visual catchment is shown on the plan at **Attachment 1**.

3 Project Description

The Project involves the construction and operation of a new two lane roundabout connecting SH1 and SH29, north-west of the existing intersection of SH1 and SH29 at Piarere. The key components of the Project are:

- A two-lane roundabout with a 60 m diameter central island.
- Realignment of parts of the SH1 and SH29 approaches to connect to the new roundabout.
- The roundabout will be elevated approximately 3.5 m above the existing ground level to provide for cycle and pedestrian underpasses.
- A stormwater management system, including a wetland pond, wetland and planted swales and a discharge structure and associated rip rap armour.
- Construction activities, including a construction compound, lay down area and establishment of construction access.

A full description of the Project including its current design, construction and operation is provided in Section 6 of the AEE and shown in the Project Drawings in Volume 4: Drawing Set.

The final design of the Project (including the design and location of ancillary components such as stormwater treatment devices), will be refined and confirmed at the detailed design stage.

¹ Landscape 'character' includes the physical, associative and perceptual dimensions.

² 'Landscape effects' concern physical changes to the setting which may or may not be seen but are otherwise understood to exist. A landscape effect is a consequence of a change in landscape value/s.

³ 'Visual effects' are a subset of landscape effects. Visual effects are consequences of change on landscape values as experienced in views and are one tool to help understand landscape effects. Other senses contribute to amenity values such as sound and smell, however the visual is typically pre-eminent for most people.

⁴ Landscape 'value' is the relative regard (quality, meaning, importance, merit, worth) with which a landscape is held. Values may be physical, associative and perceptual.

⁵ The 'site' for the Project is considered to include the proposed roundabout and its immediate environs. The 'site context' is considered to include the study area.

4 Description of the Existing Environment

The geomorphological history of the study area is outlined in 'Landforms of New Zealand'⁶, the definitive text on the physical geography of our country.

The original outlet of the Waikato River to the sea was through the Hauraki lowlands, but details of its course before about 65,000 years ago are unclear. It was recognised by Healy (1946) that the early Waikato River drained through the valley now occupied by the Arapuni hydro-lake and into the Hauraki plains through the Hinuera Gap. The Gap is still fringed by river cliffs which are similar to those of present (Waikato) river gorges also cut in ignimbrite, and its floor is formed on sands and gravels of the older part of the Hinuera Formation, Hinuera-1. The sediments of this part of the Hinuera Formation were derived from the ashflow deposits and tephra associated with the eruptions of the Rotori Breccia (45,000-40,000 years B.P.) and the Mangaoni Lapilli Formations (circa 30,000 years B.P., Pullar et al., 1973)

Sometime around 20,000 years B.P. the Waikato (River) had build (sp.) up its sediments to such a thickness in the area of Piarere, at the western end of the Hinuera Gap, that the river diverted its channel into the Hamilton Basin through the Maungatautari Gap east of Cambridge.

This latter feature now contains the Karapiro hydro-lake, which has submerged the local section of the Waikato River trench and an unnamed tributary extends back towards the study area as seen in the cover photo of this report.

These two large geomorphological features are also the most notable landscape features within the broad vicinity of the study area. It is noted on the MPDC website under 'Natural Environment'⁷ that: *"The Hinuera Valley is an important regional feature due to its rarity and landscape features."* Its 'rarity' presumably relates to it being a relatively broad, linear valley that opens out at either end and the 'landscape features' are presumably the sections of cliff that are evident on either side of the mid-section of the valley. For instance, the cliffs are visible from SH29 at the Hinuera Stone Quarry, approximately 3 km north of the study area.

The historic cultural setting of the study area is expected to be addressed in the Projects' Cultural Values Assessment. The Project's archaeology report⁸ notes the following:

Intensive horticultural activity is recorded along the river terraces to the south of the project footprint and, to the west, horticultural sites dominate the recorded archaeological landscape. Fortified settlements (pā) are recorded in the archaeological landscape both in the hills to the north-west and east of the project and alongside the Waikato River.

No horticultural sites are known within the Project Footprint and there is no current visible evidence of other archaeological activity specifically in this location.

The landscape in the immediate vicinity of the study area includes pastoral farmland, predominantly dairy pasture within which there are scattered mature, deciduous shade trees common to Waikato dairy farms; being plane, oak, elm, poplar and similar exotic, deciduous tree species. There are various sections of trimmed boxthorn hedging along fencelines and farm driveways.

On the steep slopes dropping away to an unnamed tributary of the Waikato River immediately opposite the existing intersection is a dense cover of mixed exotic and indigenous vegetation that includes mature pine trees near the Waikato River. Approximately 700 m northwest of the existing intersection across open farmland is a stand of remnant kahikatea trees.

⁶ Landforms of New Zealand Edited by JM Soons & MJ Selby, Longman Paul, 1982.

⁷ <https://www.mpd.govt.nz/our-environment/natural-environment?highlight=WyJsYW5kc2NhcnVlXQ==>

⁸ Historic Heritage Assessment of Archaeological Effects: SH1/SH29 Intersection Upgrade - Waka Kotahi NZ transport Agency; prepared by Sain Keith Archaeology Ltd, April 2021

WRC's online Water Classification maps indicates an unnamed watercourse (Surface Water Class) on the western side of SH29. This watercourse is shown to start in the north-west of SH1 near the proposed roundabout location and head to the north intersecting with SH29. As access to this land is not available, the existence of this watercourse has not been confirmed. However, as aerial photos indicate that this watercourse exists, it has been assumed that it does.

An unnamed watercourse is noted as Surface Water Class on WRC's online Water Classification maps. It is shown to run along the eastern boundary of SH29 from the north to the boundary of SH1 in the north, the waterway also flows across SH29 heading west toward the proposed location of the roundabout. When the Project Ecologist undertook a site visit to the eastern side of SH29 in January 2021 the watercourse was not flowing.

The above watercourses eventually flow to the Waitoa Stream to the north of the Project area and is likely to have been a head water to the Waitoa Stream in the past.

The Project Ecologist confirms that these watercourses do not fall within the Regional Plan definition of Perennial Stream⁹. For the purposes of this Application, it is assumed that these watercourses fall with the Regional Plan definition of Ephemeral streams.¹⁰

A section of a Transpower NZ 110 kV transmission line runs in an east to west direction crossing SH29 approximately 350 m north of the existing intersection. Local supply powerlines follow the southern edge of SH1, crossing and re-crossing the highway just east of the existing intersection. The lines consequently connect to the local powerlines that run parallel but are set back from the eastern side of SH29. There are 13 light standards that illuminate the existing intersection at night.

There are two dwellings immediately south of the existing intersection; the closest on the Hawkes-Gillespie property (SA38B/65) being approximately 50 m from SH1 and set within a dense planting of trees and shrubs. This dwelling is also screened from SH1 by a trimmed hedge. The other dwelling on the Senior-Kinsman property (SA49D/651) is approximately 150 m southeast of the existing intersection at a level below the highway and enclosed by established pine shelterbelts.

There is a farmhouse on The Milky Way Ltd dairy farm (SA1701/33) that is approximately 400 m northeast of the existing intersection and is accessed directly off SH29, as is its associated milking shed, from a point approximately 280 m north of the existing intersection. West of SH29 there is a farmhouse on the Thistlehurst Dairy Ltd (TDL) dairy farm (SA69C/317) that is approximately 700 m west northwest of the intersection. There is another small farmhouse on this property a further 350 m to the west. The main TDL farmhouse is on rising land above this and approximately 1.2 km from the existing intersection. These three dwellings and the associated milking shed are all accessed from SH1 at a point approximately 600 m west of the existing intersection.

This access point is also the entranceway to Karapiro Heights. As noted on the MPDC website¹¹ this *"rural-residential subdivision is an example of the creation of lifestyle lots on the poorer quality soils of the District"*. Council notes that the *"subdivision was designed to provide 12 lots of varying sizes with extensive views over Lake Karapiro and its environments, at the same time as preserving the natural features of the land"*. Aerial photography shows that there are at least eight dwellings within the subdivision located on east-facing slopes that are likely to look down onto the Hinuera Valley and the study area. It is also noted that the retained vegetation within the subdivision, as well as garden and shelter plantings that have been developed around the dwellings are likely to frame or screen various outward views.

The lone community facility in the vicinity is the Piarere Hall, which is approximately 800 m north of the existing intersection.

⁹ A stream that flows all year round assuming average annual rainfall.

¹⁰ Streams that flow continuously for at least three months between March and September but do not flow all year.

¹¹ <https://www.mpd.govt.nz/our-community/history/99-council-documents/soe-report-1999/421-rural-development?start=4>

5 Assessment Methodology

The methodology for assessment is based on the Aotearoa New Zealand Landscape Assessment Guidelines¹² and utilises information obtained from both desktop study, as well as site / site context investigation through field study.

The assessment of landscape effects has been carried out while the design of the Project was being developed. In this way potential adverse effects could be identified early on and avoided through appropriate design.

The desktop study information has been utilised to help describe the Project, the site and contextual landscape and evaluate the key issues and potential landscape effects of the Project, including positive effects.

David McKenzie, the author of this LVA and Lucy Ashmore, Senior Landscape Architect, WSP, undertook a site visit to the Project area on 19 January 2021 to examine the landscape character and values of the area. During fieldwork, the degree of visibility of the study area and Project in relation to the existing intersection and The Milky Way Limited (SA170/33) and Watkins (SA646/95) properties to the east of the intersection was ground-truthed following the earlier desktop study. A comprehensive photographic record was taken at the time by David McKenzie.

One of the outcomes of the site visit was to fine-tune the extent of the receiving landscape following desktop study and to determine the locations of any potential viewing audiences.

Potential viewing audiences identified are likely to be the residents of The Milky Way Limited and TDL dairy farms, some residents of Karapiro Heights and the travelling public, as they will be able to see the proposed roundabout. The two dwellings immediately south of the existing intersection (being the Hawkes-Gillespie and Senior-Kinsman properties) appear to be fully screened from the intersection and therefore the Project.

With regards to the desktop aspect, technical information has been provided by WSP planners and civil engineers.

A seven-point scale of effects¹³ has initially been used in this LVA when assessing the potential adverse landscape effects arising from the Project. The effects scale ranges between: 'Very Low' to 'Low' to 'Moderate-Low' to 'Moderate' to 'Moderate-High' to 'High' to 'Very High'. (**Appendix A**).

For the purpose of aligning the above potential effect rankings relative to the AEE, the potential magnitude of each landscape effect has been equated to the terminology below:

Significant negative	Moderate negative	Minor negative	Neutral or Insignificant	Minor positive	Moderate positive	Significant positive
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Mitigation measures are discussed in **Sections 8** of the LVA.

6 Landscape Concept Plan

A draft **Landscape Concept Plan** at **Attachments** has been developed for the Project, based on the following key design principles:

- Developing an appropriate landscape design treatment within the environment to create an enhanced user experience and to signal to road users that a change is occurring encouraging slower speeds.

¹² Prepared by New Zealand Institute of Landscape Architects (NZILA) 8 December 2020 (currently in draft form).

¹³ As per the above.

- Ensuring the proposed roundabout is context-sensitive in terms of acknowledging Tāngata Whenua, landforms, land use, views and environment.
- Ensuring good design outcomes are achieved, utilising creative and innovative measures to integrate sustainable design measures including structures, drainage and ecology.
- Engaging long term/whole of life/maintenance considerations to inform plant selection and to minimise safety risk when maintaining the landscape

These design principles are consistent with Waka Kotahi's Urban Design Guidelines 'Bridging the Gap'¹⁴.

The concept design also carries through planting design themes and approaches that are consistent with corridors in the wider network, such as the Cambridge and the Huntly Sections of the Waikato Expressway.

The potential integration of a cultural narrative from concept through to the detailed design of the landscape and urban design aspects of the overall Project will occur through Waka Kotahi's on-going partnership with Mana Whenua representatives.

7 Landscape and Visual Effects Assessment

7.1 Landscape Character and Values

Under section 6(a), the RMA requires, as a matter of national importance the preservation of the natural character of the wetlands, lakes and rivers and their margins from inappropriate subdivision, use and development. In this case there are two minor, ephemeral waterways within the study area and the margin of a river close by that need to be considered.

Natural character is a combination of a place's natural characteristics. Elements of natural character relevant to the site may include such elements as:

- natural elements, processes and patterns;
- biophysical, ecological, geological and geomorphological aspects;
- the natural movement of water and sediment;
- places or areas that are wild or scenic;
- a range of natural character from pristine to modified; and
- experiential attributes.

Natural character is a combination of the above elements, and how they are perceived and experienced, which contributes to an overall finding on the degree of naturalness.

The two ephemeral waterways that discharge to the Waitoa Stream are seen as subtle undulations within farm paddocks that have been heavily modified by agricultural activities. These waterways contribute little to the natural character of the study area.

The Project, for the most part, will be physically outside of the 'Waikato River and its margins' and will actually 'step back' from the nearest edge of the Waikato River trench relative to the existing intersection. While there will be a limited amount of vegetation removal in creating an access track relative to the proposed stormwater discharge to the Waikato River, this will have a minimal effect on the natural character of the Waikato River or its margins.

¹⁴ Bridging the Gap – Urban Design Guidelines, Waka Kotahi NZ Transport Agency, 2013.

As the Project is a relatively small-scale roading feature within the scale of the Hinuera Valley located within highly modified farmland and replacing an existing, immediately adjacent roading feature, there will be no effect on the natural character of the Hinuera Gap. That is, any effects of the Project on natural character will be Neutral or Insignificant.

7.2 Assessment of Landscape Effects

Landscape effects concern physical changes to the setting which may or may not be seen but are otherwise understood to exist. Effects may be positive or negative (adverse). Landscape effects are also synonymous with effects on character and levels of amenity derived from landscape character or in other words - whether a change to the setting is appropriate or not. Landscape character results from a combination of landform, land cover and land use (or cultural patterns). As such, physical changes to the landscape from the construction of the proposed roundabout, the approach 'legs', the two pedestrian/cycle underpasses and a stormwater constructed wetland and wetland swales will include:

- Vegetation removal.
- Earthworks, including excavation and placement of fill material.
- Construction of the roundabout, its approach 'legs' and two pedestrian/cycle underpasses.
- Formation of stormwater constructed wetland, wetland swales, piped network and piped outlet to the Waikato River.
- Formation of sections of 2.5 m wide gravel pedestrian/cycle path.
- Construction of new stock fencing.
- Revegetation of disturbed areas, stabilised fill batters and stormwater constructed wetland and swales with local indigenous plant species and pasture, as appropriate.
- Installation of signage and way-finding relative to the broader pedestrian/cycle network.

There will be positive landscape effects associated with the Project. These will include:

- The removal of three short sections of highway, while re-purposing central sections of SH1 and SH29 as proposed property access; being approximately 4 m wide as opposed to approximately 7 m wide.
- The planting of local indigenous vegetation on the highway and roundabout batters and within the stormwater constructed wetland and swales.
- The planting of fast-growing exotic deciduous trees as potential 'bat roost' trees and to assist in demarcating the roundabout.

A positive landscape and urban design-related outcome of the Project is creating pedestrian/cycle linkage via the underpasses to the pedestrian/cycle network beyond the study area. These underpasses will provide a link into the existing cycling network of Waikato River Trails and opportunities for links to future planned trails.

The landscape within the study area of the Project is highly modified farmland dominated by roading infrastructure. The local topography is relatively flat, the water table is relatively high and there are various mature shade trees along fencelines and within the local paddocks.

The construction of the proposed roundabout will add a new roading feature with parts of the existing road formation removed and two narrower sections retained as proposed property access. The Project will involve a greater extent of ancillary infrastructure by way of stormwater treatment features. The Project also entails earthworks that will raise the central portion of the roundabout

up from existing ground level by almost 3.5 m. Given the high water table, this will allow the pedestrian/cycle underpasses to:

- Be free draining and avoid the need for pumping of stormwater from the underpasses.
- Have a clear through view so as to meet CPTED Principles.

The elevated roundabout with its approach 'legs' rising up to it will also improve the drainage of stormwater to the constructed wetland and wetland swales. These stormwater 'features' will form part of the landscape development of the Project; capturing amenity, biophysical and other associative items in their design.

Three exotic shade trees – plane trees (*Platanus* species.) - are likely to be removed from the TDL property to accommodate the SH29 approach 'leg' to the roundabout. Another three shade trees – Pin oak trees (*Quercus palustris*) – will be removed from The Milky Way Limited property to accommodate the southern/Tirau SH1 approach 'leg' to the roundabout. The location of these trees is shown on the **Overview Plan at Attachments**. In both cases, these trees are examples of the scattered shade trees common to both properties and the broader rural landscape. The potential landscape effect of this tree removal will be Very Low, which equates to Neutral or Insignificant.

The elevated nature of the roundabout will be a noticeable landform change within the immediate area of the existing intersection. However, in terms of the scale of this change, it equates to an isolated, central 'mound' that is about two-thirds of the height of one of the adjacent single storey farm houses located in the middle of the broad valley 'mouth'. The potential landscape effect of this landform change will be Low, which equates to Minor negative.

The stormwater outlet to Lake Karapiro will comprise an underground pipe directionally drilled down to lake level. There will be an outlet of the like at the base of the pipe to ensure a controlled discharge to the lake/Waikato River. Vegetation clearance will be approximately 1,000m² for the approximately 4m wide and 200m to 250m long access track. The track will be cut to 'work round' large trees and constructed to follow the contour from the stormwater wetland down to the outlet. Should heavy machinery be required for the construction of the outlet foundations and temporary works (to be determined following upcoming geotechnical investigations), it is anticipated that it will be craned in from the top of the bank to a cleared working platform adjacent to the outlet location. Vegetation clearance associated with temporary works is estimated to be in the order of 30 m² to 60 m². The potential landscape effect of this minor vegetation clearance will be Very Low, which equates to Neutral or Insignificant.

The Project has a small scale relative to that of the study area and the wider valley, along with minimal effect on landcover and is not introducing a new land use. Provided the recommended mitigation measures outlined in Sections 6 and 8 of this report, means that the landscape effect of the Project will be Low, which equates to Minor negative effects.

7.3 Assessment of Visual Effects

Visual effects are a subset of landscape effects and concern the effects on landscape values as experienced through views. An assessment of visual effects helps with understanding the levels of landscape effects.

The Project largely represents the 'relocation' of an existing feature and activity – the existing T-intersection and the transient movement and stalling back of traffic at the intersection – to a reconfiguration of this feature and activity. The end result being an elevated, two lane roundabout with traffic flowing onto, around and off the roundabout. While the elevation of the roundabout will increase its visibility, this will also act to 'signal' the roundabout to approaching traffic and the need to slow down.

7.3.1 Visual Catchment

The approximate extent of the visual catchment has been mapped on the Overview Plan at **Attachment 2** and is synonymous with the extent of the study area. While the Project will be potentially visible from beyond this area, such as from the hill tops further north along the Hinuera Valley, these views of the Project will be diluted with distance, intervening vegetation and the disruption to the view caused by the high volume of traffic travelling through the area.

7.3.2 Typical Audiences

There are few key representative viewpoints. Views to the Project will primarily be from:

- Private viewpoints – From properties adjoining both sections of the highway and potentially more distant views from locations within Karapiro Heights; and
- Public viewpoints - From the three highway approach 'legs.

7.3.3 Views from the East

Other than the SH1 eastern approach 'leg' from Tirau, there are no public viewpoints of the Project as seen from the east. The potential view from the highway is addressed below.

Regarding private views, The Milky Way Limited dairy farm occupies the flat land on the eastern side of the valley between SH1 and SH29. The property's farmhouse is set 200 m back from SH29 and accessed via a straight driveway that is also the milk tanker track. The property's dairy shed is another 200 m beyond the farmhouse. Along the south side of the driveway is a trimmed thorn hedge that is approximately 2.5 m - 3 m high. Refer to **Photo A** and **Attachments**.



Photo A: View from SH29 egress/dairy tanker track entrance towards The Milky Way Limited farmhouse

As shown in the **Viewpoint 1 Photo** at **Attachments**, from the front of the farmhouse there is a clear view to the highway, which is screened to the left by the thorn hedge. The hedge also screens the

existing intersection from the farmhouse, though many of the light standards at the intersection are visible above the hedge. To the right the section of SH29 back to the Piarere Hall is partially visible between the various shade trees in the intervening paddocks.

The **Viewpoint 1 Visualisation at Attachments** is based on the Viewpoint 1 Photo and shows the initial section of the roundabout's northern approach 'leg' as it starts to rise up to the roundabout. This section of new highway will be approximately 50 m more distant from the farmhouse than the current alignment is from this viewpoint.

Due to the height of the thorn hedge and intervening trees beyond the thorn hedge, plus distance, the elevated roundabout is not visible from the front of the farmhouse, but it is likely that larger vehicles will be visible. A curtain side truck is indicated in the middle left of the Viewpoint 1 visualisation. It is likely that the light standards associated with the roundabout will be visible above the hedge. However, with the use of LED luminaires, their light output will be directed to the highway and its immediate margins and light spill will be kept to a minimum.

The defunct section of SH29 to the north of the driveway egress will be uplifted and the batters of the approach 'legs' planted with indigenous plant species. A new connection off SH29 to The Milky Way Limited driveway will also be formed, which will also incorporate a road link to SH1 using the defunct section of SH29 to the south of the driveway egress. During the detailed design phase of the Project, consideration will be given to plant selection so that the highway batters and passing traffic on the highway are screened from the farmhouse, while ensuring that clear sightlines to and from the driveway egress are maintained.

Consideration will also be given to placing planting of an appropriate mature height and planted density to visually 'close-off' the 'straight line' of the defunct section of SH29 north of the driveway egress and to help guide southbound traffic around the sweeping approach curve to the roundabout.

In regard to the view from the front of The Milky Way Limited farmhouse, any potential adverse visual effects of the Project will be Moderate-Low, which equates to Moderate Negative to Minor Negative.

7.3.4 Views from the West

As with the views from the east, there are no public viewpoints to the west other than the SH1 western approach 'leg' from Cambridge.

The TDL dairy farm occupies the flat land on the west side of the valley between SH1 and SH29. The property has several farmhouses; the closest of which is set 700 m back from SH29 and 250 m from SH1. This property's main egress on SH1 also serves the other dwellings on the property and the dairy tanker track. The property's dairy shed is 600 m from the SH1 egress. This highway egress is immediately adjacent to but separate from the highway egress lane that serves the Karapiro Heights subdivision. The main farmhouse on the property is 600 m beyond the first farmhouse relative to SH29 and on a slightly elevated site.

The first farmhouse is visible from the egress to The Milky Way Limited property section of SH29 but is partially obscured by mature trees in the immediate vicinity of the farmhouse relative to the existing intersection. Various scattered, large shade trees in the intervening paddocks obscure the main farmhouse from this section of SH29, but it is visible from the existing intersection. Refer to **Photo B**.



Photo B: View from the SH29 approach to the existing intersection area towards the TDL property
(Red arrow = first farmhouse; Yellow arrow = main farmhouse)

A short distance to the west of the TDL/Karapiro Heights egress, SH1 drops away towards Lake Karapiro and its route through to Cambridge (as seen on the cover photo of this LVA) and the land rises up to the west and the broad ridge occupied by the Karapiro Heights rural-residential subdivision. The access lane rising into the subdivision is tree-lined for much of its length and then has open views to the east in its upper extent. Three houses on the main knoll of the subdivision look down towards the existing intersection, as does another house at the upper extent of the access lane; these houses are 1.2 km and 1.6 km from the intersection respectively. Refer to **Photo C**.



Photo C: View from the SH29 approach to the existing intersection area towards Karapiro Heights
(Red arrows indicate the four houses that can be seen from the existing intersection area)

Relative to the first farmhouse on the TDL property, the Project will be visible across the intervening paddocks where several large mature shade trees will partially break the view to the elevated roundabout and its northern and western approach 'legs'. The dwelling's setback of approximately 600 m from the roundabout, being the width of approximately five large paddocks in this property, will lessen the minor visual effects relative to this farmhouse. Any visual effects will decrease further once the landscape treatment on the north-western aspect of the Project has established over a five to seven year period.

With the main farmhouse having a setback of approximately 1.1 km from the proposed roundabout, the visual effect on this dwelling will be lessened further by distance. Similarly, for the dwellings at Karapiro Heights having a setback of 1.2 km to 1.6 km, distance, coupled with the proposed landscape treatment, once established, will diminish any potential adverse visual effect.

Any potential view to the Project from the Piarere Hall highway frontage and carparking area is partially obscured by two deciduous trees on the hall's immediate southern boundary. This, coupled with a setback distance of approximately 900 m from the roundabout, will limit the potential visual effects as seen from the hall.

In terms of the stormwater management features, the constructed wetland and the two wetland swales, along with the planted swales that lead to them will appear as an extension of the mitigation planting associated with the Project. These features will have minimal landscape and visual effects. The underground pipe from the constructed wetland and its outfall at lake level will not be visible.

Overall, the potential visual effects of the Project when seen from various points to the west will, be Low for the first farmhouse on the TDL property, which equates to Minor Negative. For the main farmhouse on the TDL property and the Karapiro Heights dwellings, due to distance, the visual effect will be Very Low, which equates to Neutral or Insignificant.

7.3.5 Views from the South

As previously mentioned, the two dwellings – the Hawkes-Gillespie and Senior-Kinsman dwellings – immediately south of the existing intersection are screened from SH1 by shelterbelts and hedges and the Senior-Kinsman dwelling to the southeast is also situated on a terrace below the highway. These factors will screen the Project from these dwellings. The proposed roundabout will also be approximately 100 m further away from these dwellings relative to the existing intersection. Refer to **Photo D**.



Photo D: View from the south-eastern SH1 approach leg to the existing intersection area towards the area of the south-eastern dwelling

(Note: The building roofline within the Senior-Kinsman property is level with/below the highway)

The existing intersection is not visible from the unnamed tributary of the Waikato River that forms a local inlet of Lake Karapiro due to the lake being within the Waikato River Trench and the intervening escarpment has a dense cover of mixed exotic and indigenous vegetation. For these reasons, the proposed roundabout will also not be visible from the lake.

Any potentially adverse visual effects relative to views from the south will be Very Low to Nil, which equates to Neutral or Insignificant.

7.3.6 Views from the Highway

Due to the highway alignment when approaching the proposed roundabout on SH1 from Tirau, the roundabout itself will not be visible until the motorist is approximately 300 m away. At this point, the highway will then be rising up onto the southern approach 'leg' of the roundabout. The broad extent of the roundabout will be visible from the approach 'leg' but it is expected that the motorist will be focussing on the impending 'Give Way' at the roundabout and the movement of other traffic.

The situation will be similar when approaching the roundabout on SH29 from the north with the highway alignment sweeping gently to the right/west once the motorist has passed the Piarere

Hall. For the SH1 approach from Cambridge, the highway alignment sweeps slightly left/north to meet the roundabout.

As opposed to the current situation where traffic on SH1 can sweep pass the intersection with SH29 at open road speed, the roundabout will be a distinct demarcation for all motorists; a specific traffic safety feature of the Project. This will be reinforced by the roundabout being elevated, which will help to 'signal' that there is a roundabout and the need for traffic to slow and potentially stop. The landscape treatment of the roundabout and its approaches will also assist with this 'signal' function, in that plantings of native tree and shrubs on and around the approach batters will act as a visual 'threshold' as traffic approaches the roundabout.

As previously mentioned, the proposed stormwater management features, the constructed wetland and the two wetland swales, along with the planted swales that lead to them will appear as an extension of the planted landscape mitigation associated with the Project. These 'features' will have minimal landscape and visual effects. The underground pipe from the constructed wetland and its outfall at river level will not be visible.

7.3.7 Construction Effects

The construction period for the roundabout is expected to be in the order of 18 months and there will be obvious landscape-related effects during this time. These will relate to site preparation and highway and roundabout formation earthworks, construction of the two underpasses and of the stormwater wetland, swales and discharge. There will also be the physical and visual activity of heavy machinery and related traffic management activities during the construction period.

While these activities will be industrial in nature within a rural landscape, the effect will be temporary, and the resultant works will be mitigated as outlined in Section 8.

8 Recommended mitigation measures

These following mitigation measures are recommended to be included in designation conditions:

Avoidance of potential adverse landscape effects have been achieved by:

- Locating the proposed roundabout as far as possible from the dwellings that are closest to the existing intersection – the Hawkes-Gillespie and the Senior-Kinsman dwellings -and the dwelling that has a direct view to the highway - The Milky Way Limited farmhouse.
- Ensuring that the elevated nature of the roundabout is kept as low as possible while still meeting the best CPTED and drainage outcomes relative to the cycle/pedestrian underpass design.

Remediation of potential adverse landscape effects will be achieved by:

- Refining the Landscape Concept Plan in partnership with Mana Whenua. The design of this concept plan will include the planting of the highway approach batters, the centre of the roundabout and the stormwater wetland and swales to 'remedy' the changes to the local landscape such as tree removal. The limited vegetation disturbance that will result from placing and accessing the stormwater discharge to the unnamed tributary of the Waikato River will also be 'made good'.

Mitigation of potential adverse effects will be achieved by:

- Ensuring that plantings on the various highway batters also provide screening relative to the local dwellings; the Milky Way Limited farmhouse, in particular.
- Ensuring the planting of fast-growing exotic deciduous trees as potential 'bat roost' trees and to replace those trees that have been removed.

- Ensuring the planting of indigenous plant species to mitigate disturbance to vegetation when creating the stormwater discharge to the unnamed tributary of the Waikato River

As with previous Waka Kotahi Waikato Expressway projects, detailed landscape plans will be prepared during the detailed design that address:

- The extent and location of landscape planting showing trees, shrubs, groundcover and wetland species, plant grades and spacings.
- Batter/embankment treatment and planting details.
- Stormwater wetland and swale treatment and planting details.
- Underpass form and aesthetic treatments.

It is recommended that the Proposal's landscape conditions reference Waka Kotahi's P39 Standard Specification for Highway Landscape Treatments (P39)¹⁵. The P39 specification has a range of performance criteria set down to achieve the quality landscape outcomes sought by Waka Kotahi. These include ground preparation expectations, eco-sourcing requirements, plant stock quality, species diversity, plant establishment expectations and establishment management requirements.

9 Statutory Assessment

9.1 Introduction

This section of the LVA considers the relevant provisions of the statutory policy statements and plans. It also comments on other relevant legislation.

The study area sits on the boundary of Matamata-Piako district and South Waikato district, with the majority of the Project within Matamata-Piako district, as shown in Figure 9.1. The surrounding land is zoned rural in both Councils' District Plans.

¹⁵ Waka Kotahi NZ Transport Agency: NZTA P39 Standard Specification for Highway Landscape Treatments, 2013.



Figure 9.1 Local Authority Boundaries

9.2 Matamata-Piako District Plan

The Matamata-Piako District Plan states at “3.1: *Natural environment and heritage – Landscape character: Objective 1: To retain and enhance the varied landscape qualities of the District*”.

The scale of the Project in the modified context of the Hinuera Valley is such that any potentially adverse effects on landscape character will be negligible. The proposed landscape mitigation measures will integrate the Project, along with its stormwater treatment features with the local, modified landscape. Once the Project has been constructed, any defunct sections of SH1 and SH29 will be rehabilitated.

9.3 South Waikato District Plan

Chapter 6 of the South Waikato District Plan relates to managing the district’s landscapes and indigenous biodiversity, with Objective 6.2.4 being:

O6.2.4: To preserve the natural character of wetlands, lakes and rivers (and their margins) in the district, and protect them from inappropriate subdivision, use and development.

In terms of the local landscape within the study area, there will be no natural character effects relative to the two highly modified water courses that the Project will alter. There will be localised stream diversions on both sides of the SH29 approach leg of the roundabout, but these will have the same ‘open drain’ appearance as is the case for the existing ‘upstream’ watercourse they will drain. The proposed piped stormwater discharge from the Cambridge ‘leg’ of the roundabout and its associated access track will have no effect on the natural character of the Waikato River.

Other relevant Objectives from Chapter 6 applicable to the Project are:

O6.2.8: To recognise and provide for the relationship Raukawa and the Te Arawa River Iwi as Tangata Whenua have with the Waikato River, sites of significance, taonga, wāhi tapu, and the landscapes of the district.

Mana Whenua will be involved in developing the Project's landscape design as the Project progresses, including the involvement of a cultural artist selected by Mana Whenua.

O6.2.9: To recognise and promote the intrinsic values of indigenous biodiversity and ecosystems.

As noted, the proposed landscape mitigation treatment for the Project will be required to meet P39. A stated Performance Criteria in P39 is:

"For biodiversity reasons locally, appropriate plants shall be specified. A minimum of 1% plant numbers in all planting shall be comprised of species with regional and/or national threat status of 'At Risk' and/or 'Threatened'."

The Objectives in Chapter 6 will be achieved through the following policies:

P6.3.10: Subdivision, use and development should be of a density, scale, intensity and in a location that preserves the natural character of wetlands, lakes and rivers and their margins, protects significant natural areas and maintains indigenous biodiversity in the district. In particular, consideration should be given to existing indigenous vegetation and habitat values, the restoration potential of an area, the ecological linkages with other significant natural areas and their potential for enhancement.

In terms of the Project's landscape treatment, provided the performance criteria in P39 are met, the batter, wetland and swale plantings will replicate natural plantings and 'return' a degree of indigenous biodiversity to the local area.

P6.3.16: To implement the Objectives of the Vision and Strategy for the Waikato River by managing subdivision and land use within areas with natural values and located within the River catchment in a way that restores and protects the health and wellbeing of the Waikato River, including by;

- a) identifying the Waikato River as an Outstanding Natural Landscape*
- d) including standards for earthworks, riparian management, silt and stormwater control*
- f) managing activities within natural areas.*

In regard to a), d) and f), any potential adverse natural character effects on a) will be Very Low, which equates to Neutral to Insignificant. For f), the appropriate standards will be integrated into the conceptual and detail design of the Project and will be carried through as part of the managed implementation of the Project.

Meeting these standards will be supported by implementing the mitigation measures recommended in Section 8.

10 Conclusion and Recommendations

In conclusion, the effect of the Project on natural character will be Neutral to Insignificant and any potential adverse landscape effects will be Minor negative to Neutral or Insignificant.

In terms of visual effects, relative to:

- Views from the East: For the Milky Way Limited farmhouse, which is the closest dwelling with a clear view of the existing highway – Moderate-Low, which equates to Moderate Negative to Minor Negative.
- Views from the West: For the first farmhouse on the TDL property, which is the next closest dwelling with a clear view of the existing highway- Low, which equates to Minor Negative. For the main farmhouse on the TDL property and the Karapiro Heights dwellings, due to distance, the visual effect will be Very Low, which equates to Neutral or Insignificant.

- Views from the South: For the Hawkes-Gillespie and Senior-Kinsman dwellings, which are screened from the existing highway - Very Low to Nil, which equates to Neutral or Insignificant

Relative to views from the highway and of the construction phase, the visual effects will be expected and temporal and therefore Neutral.

Various landscape measures are recommended to avoid, remedy or mitigate any potential adverse landscape and visual effects (Section 8 of this report); for example, planting of the highway approach batters, the centre of the roundabout and the stormwater wetland and swales. Once these measures have been implemented and established, it is considered that any residual, adverse landscape and visual effects of the intersection upgrade will, at most, be Low, which equates to Minor negative.

Appendix A

NZILA Seven-Point Scale of Effects

From Aotearoa New Zealand Landscape Guidelines; Prepared by New Zealand Institute of Landscape Architects (NZILA) 8 December 2020 (currently in draft form). The definitions come from NZILA national workshop discussions prior to the publication of the guidelines. These definitions are based on the Boffa Miskell effects descriptions that are considered by the profession to be best practice.

The following seven-point scale is used to describe effects:

- Very High: Total loss to the key attributes of the receiving environment and/or visual context amounting to a complete change of landscape character.
- High: Major change to the characteristics or key attributes of the receiving environment and/or visual context within which it is seen; and/or a major effect on the perceived amenity derived from it.
- Moderate-High: A moderate to high level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or have a moderate-high level of effect on the perceived amenity derived from it.
- Moderate: A moderate level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or have a moderate level of effect on the perceived amenity derived from it. (*Oxford English Dictionary Definition: Moderate: adjective-average in amount, intensity or degree*).
- Moderate-Low: A moderate to low level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or have a moderate to low level of effect on the perceived amenity derived from it.
- Low: A low level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or have a low level of effect on the perceived amenity derived from it. (*Oxford English Dictionary Definition: Low: adjective-below average in amount, extent, or intensity*).
- Very Low: Very low or no modification to key elements / features / characteristics of the baseline or available views, i.e. approximating a 'no-change' situation.



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STATE HIGHWAY 1 AND STATE HIGHWAY 29 INTERSECTION UPGRADE

LANDSCAPE AND VISUAL ASSESSMENT
ATTACHMENTS

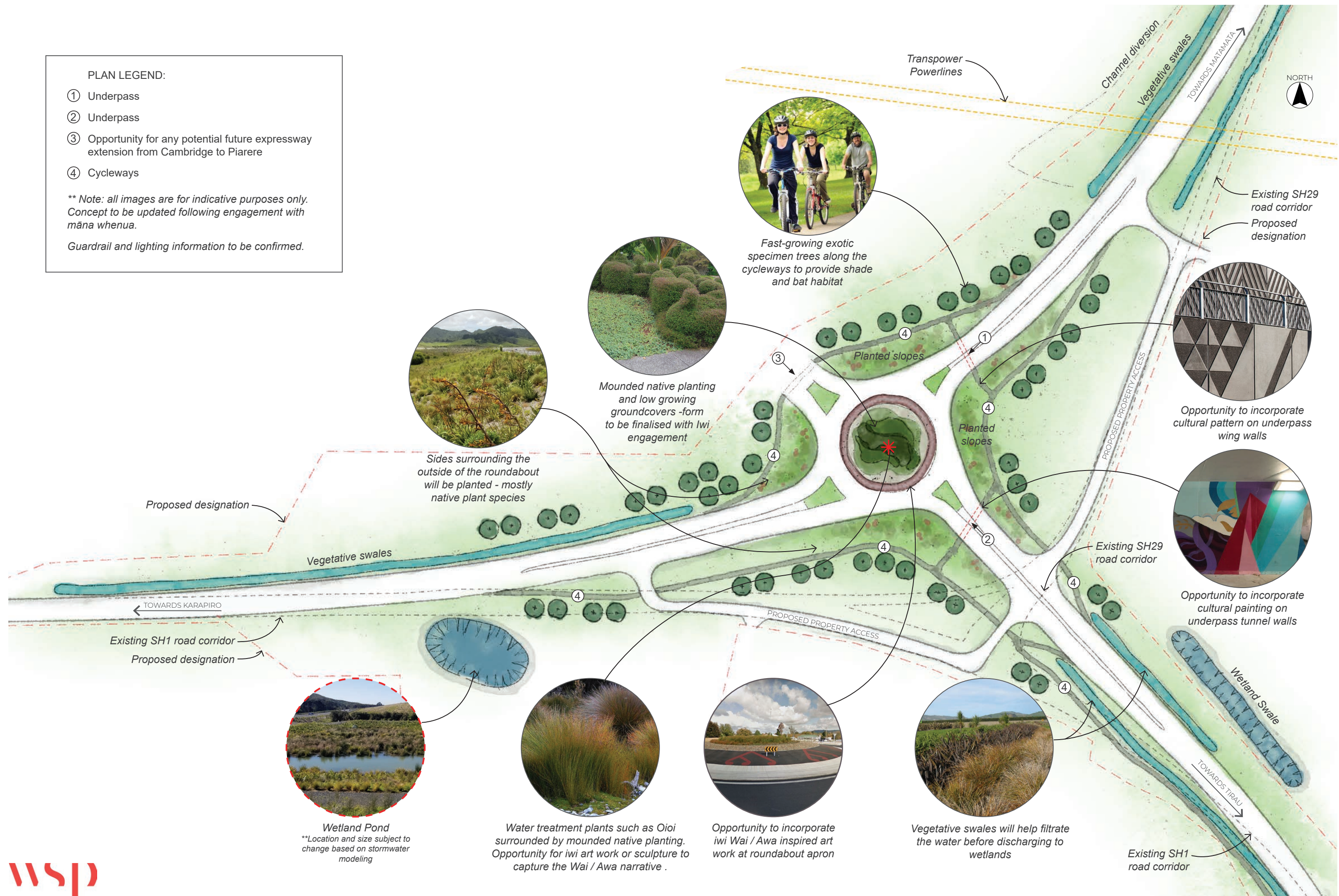


PLAN LEGEND:

- ① Underpass
- ② Underpass
- ③ Opportunity for any potential future expressway extension from Cambridge to Piarere
- ④ Cycleways

**** Note: all images are for indicative purposes only. Concept to be updated following engagement with māna whenua.**

Guardrail and lighting information to be confirmed.



LANDSCAPE CONCEPT PLAN | JULY 2021 | REV 2 (NTS)

SH1 / SH29 INTERSECTION UPGRADE - LANDSCAPE & VISUAL ASSESSMENT

DATE: July 2021 PROJECT NUMBER: 2-A0012.04





OVERVIEW PLAN

SH1 / SH29 INTERSECTION UPGRADE - LANDSCAPE & VISUAL ASSESSMENT

DATE: July 2021 PROJECT NUMBER: 2-A0012.04

LEGEND



Viewpoints / Photo Locations

Photo locations

Trees to be removed

Planted stormwater treatment swales

Shared Path

SCALE: 1:8000 @A3





Viewpoint 1: Existing situation



Viewpoint 1: Visualisation of Proposal



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