



Assessment of Landscape and Visual Effects

Alternative to the Brynderwyn Hills – Brynderwyn Hills section

13 July 2026

Revision B

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Glossary of Acronyms and Abbreviations

The glossary of acronyms and abbreviations, and defined terms tables in Volumes A and B of the Substantive Application apply to this report and should be referred to in addition to the table below.

Abbreviation / Acronym	Term
ONL	Outstanding Natural Landscape
NZILA	Tuia Pito Ora – New Zealand Institute of Landscape Architects

Glossary of Defined Terms

The glossary of defined terms tables in Volumes A and B of the Substantive Application apply to this report and should be referred to in addition to the defined terms below .

Abbreviation / Acronym	Term
Landscape	Landscape embodies the relationship between people and place. It is the character of an area, how the area is experienced and perceived, and the meanings associated with it.
Landscape character	Each landscape's distinctive combination of physical, associative, and perceptual attributes.
Landscape values	The reasons a landscape is valued. Values are embodied in certain attributes.
Landscape effect	An adverse or positive outcome for a landscape value as a consequence of changes to a landscape's physical attributes.
Visual effect	An adverse or positive outcome for a landscape value as experienced in views. Visual effects are a kind (a subset) of landscape effect.
Natural Character	An area's distinct combination of natural characteristics and qualities, including degree of naturalness.

1. Introduction

1.1. Purpose and scope of this report

This report provides an assessment of the actual and potential landscape and visual effects associated with the Brynderwyn Hills section of the Alternative to the Brynderwyn Hills project (the Project).

This assessment forms part of a suite of technical assessments prepared for the NZ Transport Agency Waka Kotahi (NZTA) to inform the Substantive Application under the Fast-track Approvals Act 2024 (FTAA) for the Project. This report should be read in conjunction with Volume A of the Substantive Application.

The scope of this assessment includes the following:

- The methodology applied in preparing the assessment.
- A description of the existing environment.
- Assessment of the actual and potential landscape and visual effects (including natural character effects) generated by the Project.
- Conclusion on the significance of effects.
- Recommended mitigation and conditions to manage and mitigate adverse effects.

1.2. Qualifications and experience

This landscape assessment report has been co-written by Gavin Lister and Matthew Jones. Their qualifications and experience are outlined below.

1.2.1. Gavin Lister

My name is Gavin Craig Lister. I am a landscape architect and urban designer. I am a founder and principal of Isthmus Group, a practice that specialises in landscape architecture, architecture, and urban design.

I have a Master of Urban Design degree from the University of Sydney, a post-graduate Diploma in Landscape Architecture from Lincoln College, and a Bachelor of Arts degree from the University of Auckland. I am a Fellow and registered member of Tuia Pito Ora – New Zealand Institute of Landscape Architects (NZILA) and have 38 years' experience as a landscape architect.

My experience with highway projects relevant to the Project includes:

- Mount Messenger Bypass, SH3, 2017-2018 and 2022-2025
- Ōtaki to North of Levin Road of National Significance (RoNS), 2011-2023
- Additional Waitematā Harbour Crossing Investigations, 2017-2018 and 2023
- Pūhoi to Warkworth RoNS – prepared Urban and Landscape Design Framework and acted as technical advisor to NZTA), 2014-2015 and 2018-2022
- East-West Link, Auckland, 2016-2017
- Transmission Gully RoNS, 2009-2012.

My experience with other infrastructure projects – where I provided technical design advice and assessments of effects – includes:

- Auckland Light Rail, 2022-2023.
- The Auckland Ferry Basin project (new Auckland Ferry Terminal), 2018 – 2019.
- Northern runway designation, Auckland International Airport, 2015-2019.
- Ten wind farms including the recently commissioned Waipipi Wind Farm, 2015-2019, the recently consented Kaiwaikawe Wind Farm, 2019-2021, and applications recently lodged for two wind farms (Huriwaka and Puke Kapo Hau).
- Tauhara II Geothermal Power Project; 2009-2011 and 2013.

- North Island Grid Upgrade Projects (400kV capable transmission line from Whakamaru to Auckland), 2004-2013.
- Advice to the Minister of Conservation on the proposed Milford-Dart Tunnel and Fiordland Link Monorail in relation to the World Heritage 'Statement of Universal Value', 2013. I also provided evidence for the Director General with respect to the proposed Mokihinui Hydro Project, 2010-2012, and the natural character provisions of the Northland Regional Policy Statement, 2014.

I am familiar with resource management matters with respect to the assessment of landscape, visual and natural character matters including the following experience:

- Provision of evidence to the Environment Court and Boards of Inquiry.
- Co-author with Rachel de Lambert and Alan Titchener of 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, June 2022.
- Author of 'NZTA Landscape and Visual Assessment Guidelines' (in NZTA Landscape Guidelines, Final Draft September 2014) and 'NZTA Urban Design Assessment Guideline' (in Bridging the Gap, NZTA Urban Design Guidelines, October 2013). I am currently engaged by NZTA to update these guidelines.
- Member of over 50 hearing panels as an accredited hearings commissioner, mostly for Auckland Council, but including hearings in Wellington City, Ruapehu District, Dunedin City, and Central Otago District, and one hearing under the COVID-19 Recovery (Fast-track Consenting) Act.

1.2.2. Matthew Jones

My name is Matthew Jones. I am a Principal landscape architect at Isthmus Group Ltd (IGL), based in Tāmaki Makaurau, Auckland. I have 20 years' experience as a landscape architect on a range of landscape design, landscape planning and management, and urban design projects.

I have a Bachelor of Landscape Architecture from Unitec and am a registered landscape architect with Tuia Pito Ora, New Zealand Institute of Landscape Architects (NZILA). I am a past member of the NZILA Board and past Chair of the Auckland Branch of the NZILA. I am a member of the Resource Management Law Association and an appointed panellist on the Auckland Urban Design Panel since 2017.

My experience includes assessments to assist applications for resource consent, structure plans and plan changes, and to assist with district plan provisions and policy review. My experience in such projects includes design, masterplanning, and landscape and visual assessments. My experience includes the following project types:

- Transport infrastructure projects, including Notice of Requirement (NoR) designations for local authorities and NZTA. Projects include Supporting Growth Alliance projects across Auckland, Auckland Light Rail, Additional Waitematā Harbour Crossing Investigations, the Northern Runway designation (Auckland International Airport) and both new and upgrades to public transport infrastructure in Auckland and Wellington.
- Energy generation and transmission infrastructure including Waipipi Wind Farm, Tauhara II Geothermal Power Project, the North Island Grid Upgrade Projects and various substations.
- Town centre spatial plans, masterplanning and rejuvenation projects across New Zealand.
- Subdivision developments, mixed-use and residential apartment buildings and terraced houses, and industrial and commercial development.
- Rural residential and urban masterplan designs.
- Plan change applications, and policy and District Plan reviews.
- Projects which include integrated catchment management and ecological enhancement.
- Parks and open spaces.

1.3. Code of Conduct

Although this Project is not being considered before the Environment Court, we (Gavin Lister and Matthew Jones) confirm that we have read the Code of Conduct for expert witnesses as contained in section 9 of the Environment Court Practice Note 2023. We agree to comply with that Code. We are satisfied that the matters which we address in this assessment are within our area of expertise, except where we state that we are relying on information provided by another person or expert. We have not omitted to consider material facts known to us that might alter or detract from the opinions we express.

2. Assessment Methodology

2.1. Assessment Framework

This assessment is based on the following standards, guidelines and approach:

- **Te Tangi a te Manu:** Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, 2022'. The assessment is consistent with the concepts, principles, and assessment approaches outlined in 'Te Tangi a te Manu. The specific method is tailored to the Project's landscape setting, the nature of the Project, and the regulatory context including that of the FTAA.
- **Definition of landscape** - The assessment uses the following definition of landscape: "Landscape embodies the relationship between people and place. It is the character of an area, how the area is experienced and perceived, and the meaning associated with it." Professional practice conceptualises landscape as the combination of its overlapping physical, perceptual and associative dimensions.
- **Landscape character and values** - The assessment describes the existing landscape character and values having regard to physical, perceptual and associative dimensions. The description is drawn from a range of documentary resources and observations on the ground. It focuses on those aspects relevant to assessing the effects of the Project.
- **Landscape and visual effects** - An overall assessment is made of landscape and visual effects for each of the following six landscapes (or 'landscape character areas') identified in the Proposed Designation¹:
 - Waipū
 - Northern approaches to the Brynderwyn Hills (Ahuroa and Waihoihoi River flood plains)
 - Brynderwyn Hills (northern slopes and summit)
 - Brynderwyn Hills (southern escarpment and Outstanding Natural Landscape (ONL))
 - Southern approaches to the Brynderwyn Hills (Maungaturoto valley)
 - Volcanic hills and Pukekararo Stream valley.

Landscape and visual effects are effects on landscape values. Effects are assessed by describing the nature of the effects on landscape values in each landscape, considering contextual factors that influence the degree and significance of the effects, and assigning an overall degree of effect against the following seven-point scale:

very low	low	low-moderate	moderate	moderate-high	high	very high
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- **Visual effects** - Visual effects are considered as a subset of landscape effects – the effects on landscape values as experienced in views.

Change and visibility are not adverse effects in and of themselves. Whether change and visibility are adverse effects, and the degree of such effect, depends on context.

Effects on views from properties are a particular aspect of visual effects. Visual effects have not been considered from properties within the Proposed Designation on the presumption that such properties will be purchased by NZTA. Visual effects have therefore been assessed for houses beyond the Proposed Designation. In those instances, effects are considered on visual amenity values of views from dwellings up to 400 m from the Proposed Designation boundary on a presumption that visual effects from distances greater than 400 m would likely be 'low-moderate' or less and would fall into the 'minor' category. For each property, assessments were made with respect to the Indicative Alignment and for a potential 'worst case' alignment adjacent to the Proposed Designation boundary. The effects were estimated from desktop analysis and road-side observation (i.e. without visiting private property). The assessments for each dwelling are tabulated within **Appendix B**.

¹ Section 3.2 'Landscape character and values' below provides a description and outline related to each of the six respective landscapes.

- **Effects on natural character** - The assessment considers the effects of the Project on the natural character of wetlands, and streams and their margins, within each of the six landscapes. In this way, the assessment addresses overlaps between effects on natural character and landscape values without unnecessary duplication. The method describes the natural characteristics and qualities of each wetland or stream – having regard to context, and to the biophysical and perceptual aspects. A level of natural character is assigned in terms of the natural characteristics and qualities present and extent to which the natural character is intact or modified. An assessment is made of the nature and degree of effect of the Project on overall natural character.
- **Envelope of effects** - The approach taken to assessing effects in this instance is to consider an envelope of effects that would be enabled by the Notice of Requirement. While the Indicative Alignment indicates the nature of the Project, including its scale and main features, this application provides flexibility for the final design to change within the Proposed Designation and for mitigation to adjust in response to those changes to ensure the level of effects remains as assessed. The recommended mitigation methods and proposed conditions in Section 5 establish outcome-based criteria that would ensure effects on the environment are adequately avoided, remedied or mitigated, regardless of the final design and construction methodology for the Project. As such, should the final alignment within the Proposed Designation change, the effects assessment, proposed mitigation and recommendations outlined in this report would remain appropriate.

3. Existing Environment

3.1. Overview

The Project covers the Brynderwyn Hills ('Brynderwyn Range', 'the Brynderwyns') and the north and south approaches to the Brynderwyns. It is a complex area crossing each of the four main land types encountered in the Northland Corridor: plains, greywacke ranges, low rolling hills, and volcanic hills.

As described above, the Project was divided into the following six landscapes for the purpose of describing existing landscape character and values, and assessing effects:

- Waipū
- Northern approaches to the Brynderwyn Hills (Ahuroa and Waihoihoi River flood plains)
- Brynderwyn Hills (northern slopes and summit)
- Brynderwyn Hills (southern escarpment and ONL)
- Southern approaches to the Brynderwyn Hills (Maungaturoto valley)
- Volcanic hills and Pukekararo Stream valley

Figure 1 below illustrates the locations of these six landscapes described. The Landscape Character and Values Plan "Key Plan, Figure A1" in **Appendix A** provides this figure in more detail.

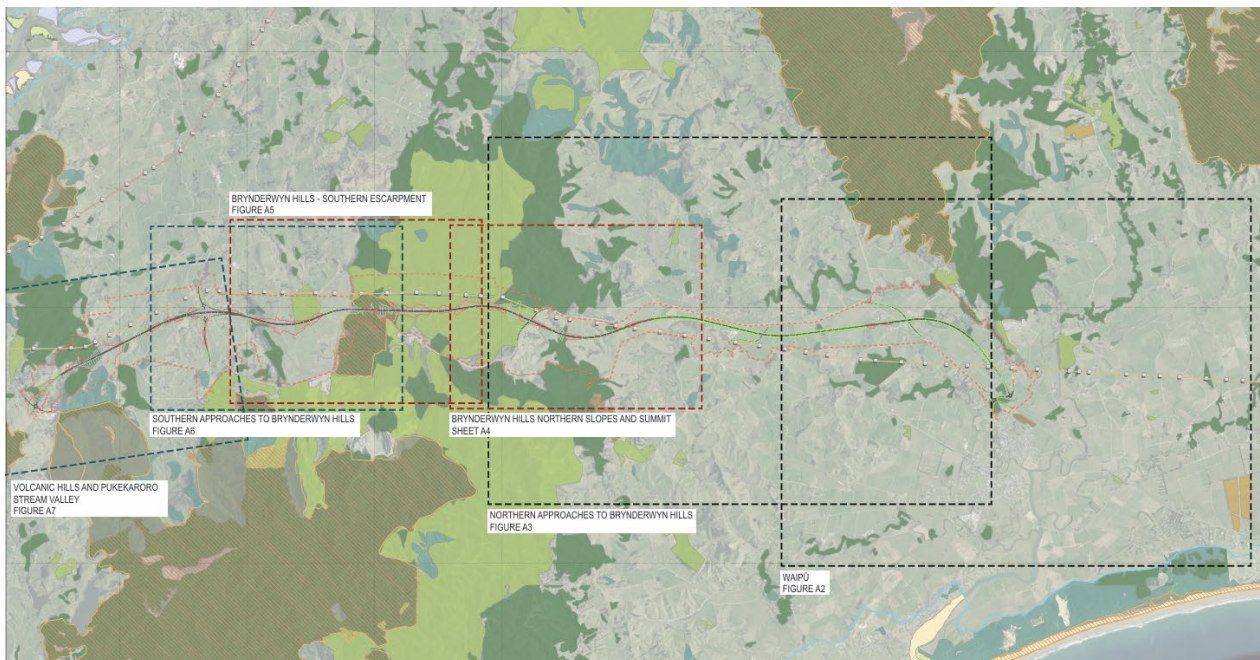


Figure 1: Key Plan illustrating the location of the six respective landscapes outlined above (not to scale, north right of image).

3.2. Waipū

Waipū is the main town near the Proposed Designation. We have treated Waipū as a distinct landscape because of its urban character in contrast to the rural and natural character of the rest of the Proposed Designation.

Waipū established around the navigation limit on the Waipū River. Part of its identity is its history as an organised Scottish settlement from Nova Scotia. The township has a high level of amenity that draws in part on its history. Waipū is a service centre for the surrounding area and is linked with the nearby beachside settlements of Waipū Cove and Langa Beach. State Highway 1 (SH1) previously passed through the main street and now bypasses the township to the west.

The proposed Waipū Interim Tie-in and Proposed Designation are in a relatively confined rural landscape between the SH1 bypass and the northern end of the Mareretū range of bush clad hills. This area is characterised by distinctive kahikatea / tōtara stands of native forest, and the tree lined course of the Ahuroa River which follows the toe of the Mareretū hills.

Figure 2 below illustrates the landscape character and values proximate to the Proposed Designation at Waipū. The Landscape Character and Values Plans “Waipū, Figure A2” in **Appendix A** provides this figure in more detail.

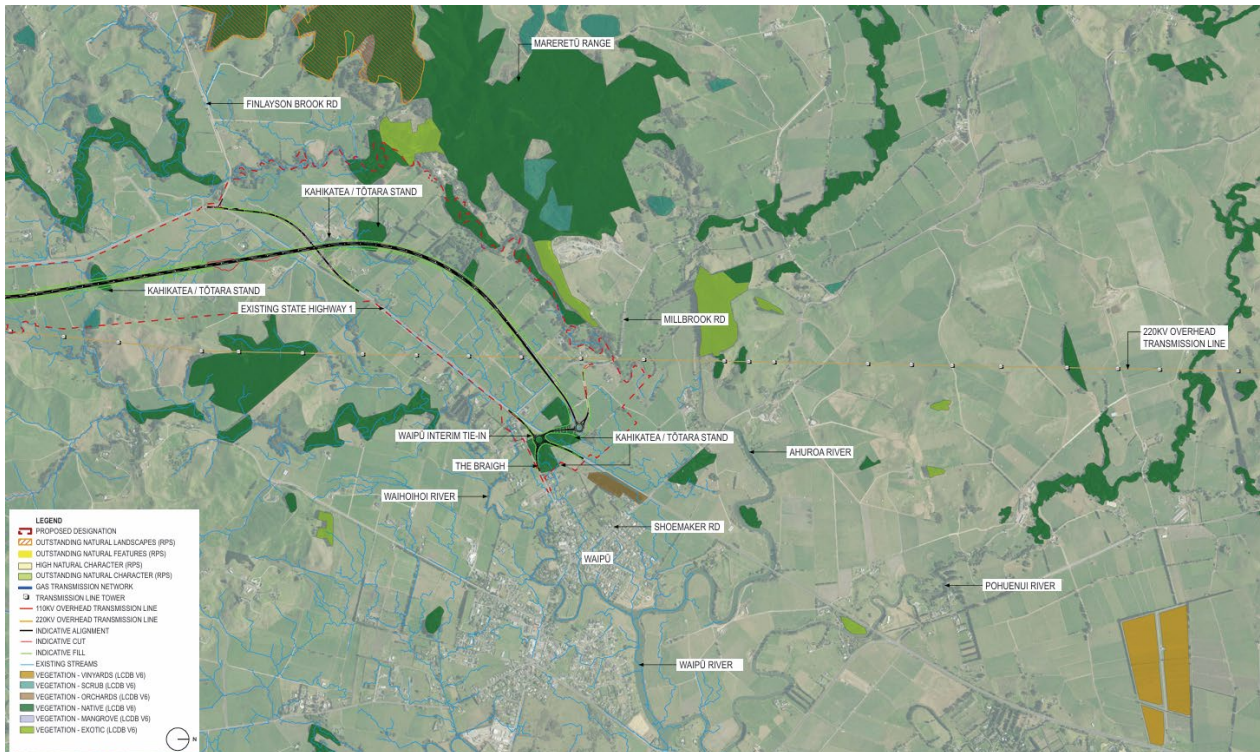


Figure 2: Plan illustrating the landscape character and values proximate to the Proposed Designation at Waipū (not to scale, north right of image).

3.3. Northern approaches to the Brynderwyn Hills

The northern approaches to the Brynderwyn Hills are along the alluvial plains of the Ahuroa and Waihoihoi Rivers. Both rivers flow into the tidal Waipū River at Waipū which, as noted, established at the navigation limit on the river.

Extensive areas of the river plains are prone to flooding. Part of the Proposed Designation, and existing SH1, are on slightly higher land between the two rivers.

The alluvial plains are intensive farmland, typically dairy farming, but including other productive land use such as a nursery and sheep stud. A characteristic feature is the occasional remnant stands of kahikatea and tōtara bush, and ribbons of such trees along the riverbanks. There is a reasonably close pattern of rural settlement (farmhouses and farm buildings) along the existing SH1 and side roads.

The low rolling hills framing the plains are underlain by Waitematā Group sedimentary rocks. They have subdued topography, rising to about RL40-60 within the corridor. The low hills are likewise characterised by improved pasture with pockets of remnant or regenerating bush. There are scattered farmhouses, and pockets of lifestyle properties.

The north-western side of the Ahuroa River valley is defined by the Mareretū range of hills which form a distinctive backdrop. The Mareretū hills are underlain by greywacke rock, have a steep face toward the corridor, and are clad in native forest. The hills rise to approximately RL 350 but are approximately RL100 at their north-eastern end (opposite the Waipū Interim Tie-in) where they are closest to the Proposed Designation. Most of the Mareretū range is identified as an ONL, although the northern end of the range

which forms the closest backdrop to the Proposed Designation is more modified and is excluded from the ONL.

The area has a pleasant rural appearance without being remarkable. Apart from the rivers, the key aesthetic features are the backdrops of the Mareretū range of hills to the north-west and the Brynderwyn range to the south at the head of the valley.

Figure 3 below illustrates the landscape character and values proximate to the Proposed Designation for the northern approaches to the Brynderwyn Hills. The Landscape Character and Values Plans “Northern Approaches to Brynderwyn Hills, Figure A3” in **Appendix A** provides this figure in more detail.

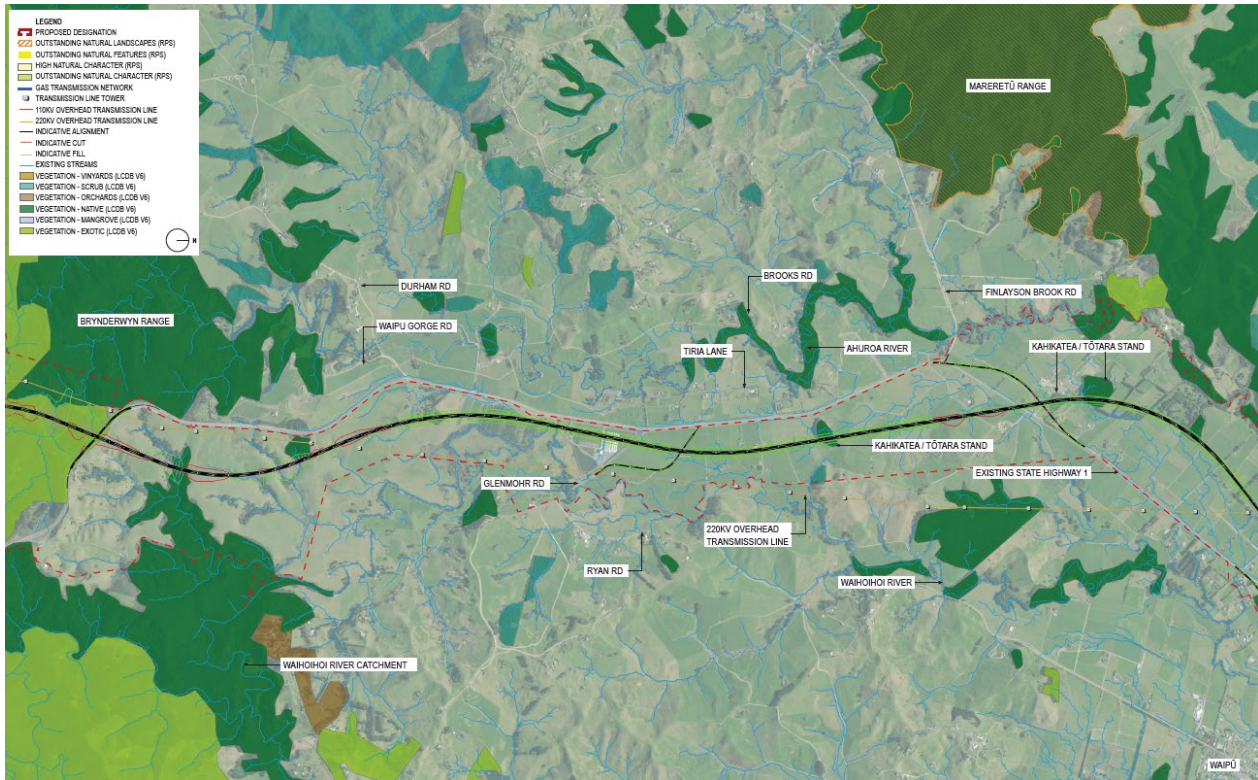


Figure 3: Plan illustrating the landscape character and values proximate to the Proposed Designation for the northern approaches to the Brynderwyn Hills (not to scale, north right of image).

3.4. Brynderwyn Hills (Northern Slopes and Summit)

The Brynderwyn range of hills are the main east-west barrier across the Proposed Designation, generally rising to between RL300 and RL400.²

The two sides of the range have different character, and have been considered separately for the purposes of this assessment:

- The northern slopes and summit of the range have somewhat shallower slopes and extensive pine plantation and farmland, with native bush mostly restricted to gullies.
- The southern escarpment (described below in Section 3.5), in contrast, is steep and is mostly covered in native kauri-podocarp broadleaf forest. It comprises an area that is classified as ONL which is traversed by both SH1 and the Proposed Designation.

On the northern side of the Brynderwyn Hills, SH1 climbs a long leading spur from the head of the valley of the Ahuroa and Waihoihoi Rivers. The spur divides the headwater catchments of the Ahuroa and Waihoihoi Rivers.

² RL (reduced level) is the height above the standardised vertical datum – in this instance New Zealand Vertical Datum 2016 (NZVD2016). For landscape purposes it can be approximated to height above sea level.

- The lower section of the Proposed Designation is on the west side of the spur in the Waihoihoi catchment below SH1. It is rolling farmland with areas of native bush in headwater gullies.
- The upper slopes of the Proposed Designation are on the east side of the spur – and east side of SH1 – in the Ahuroa catchment. It comprises steeper gullies and ridges across the summit of the range. It is covered in pine plantation.

Figure 4 below illustrates the landscape character and values proximate to the Proposed Designation for the northern approaches to the Brynderwyn Hills. The Landscape Character and Values Plans “Northern Approaches to Brynderwyn Hills, Figure A4” in **Appendix A** provides this figure in more detail.

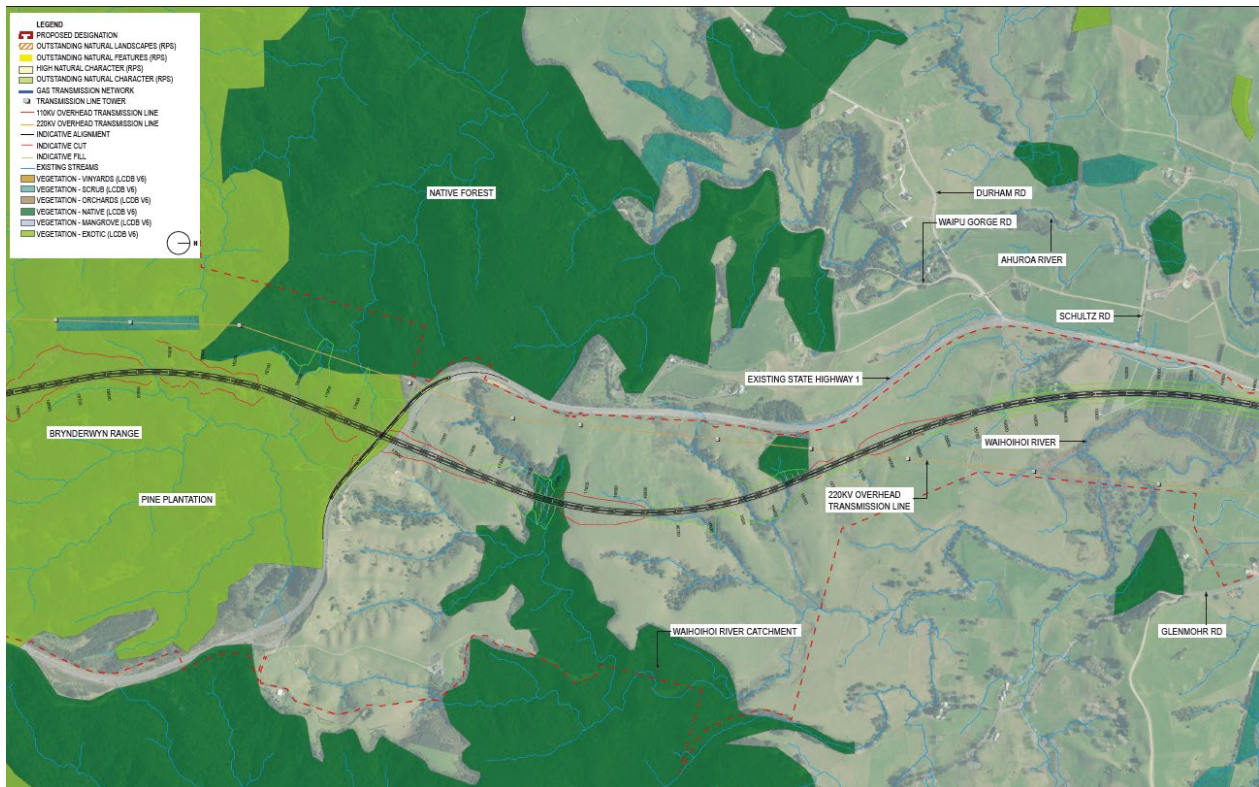


Figure 4: Plan illustrating the landscape character and values proximate to the Proposed Designation for the Brynderwyn Hills (northern slopes and summit) (not to scale, north right of image).

3.5. Brynderwyn Hills (Southern escarpment and ONL)

SH1 crosses the summit of the range at approximately RL280 and follows a winding course around sharper spurs on steep bush-clad southern escarpment of the Brynderwyns. Headwater tributary streams on the southern hillside in the vicinity of the corridor flow into the Piroa Stream which traces the toe of the escarpment. While streams in the valley to the south of the Brynderwyns typically flow southwest towards the Kaipara Harbour via the Wairau River, the Piroa Stream is unusual because it maintains a course through the Waipū Gorge to the Ahuroa River on the north side of the range.

Other relevant features include the Atlas Quarry which is a large greywacke quarry on the southern face of the Brynderwyn range east of SH1.

The Proposed Designation traverses an approximate 300 m – 400 m wide gap between SH1 and the National Grid transmission line to the west of SH1.

Figure 5 below illustrates the landscape character and values proximate to the Proposed Designation for the Brynderwyn Hills (southern escarpment). The Landscape Character and Values Plans “Brynderwyn Hills – Southern Escarpment, Figure A5” in **Appendix A** provides this figure in more detail.

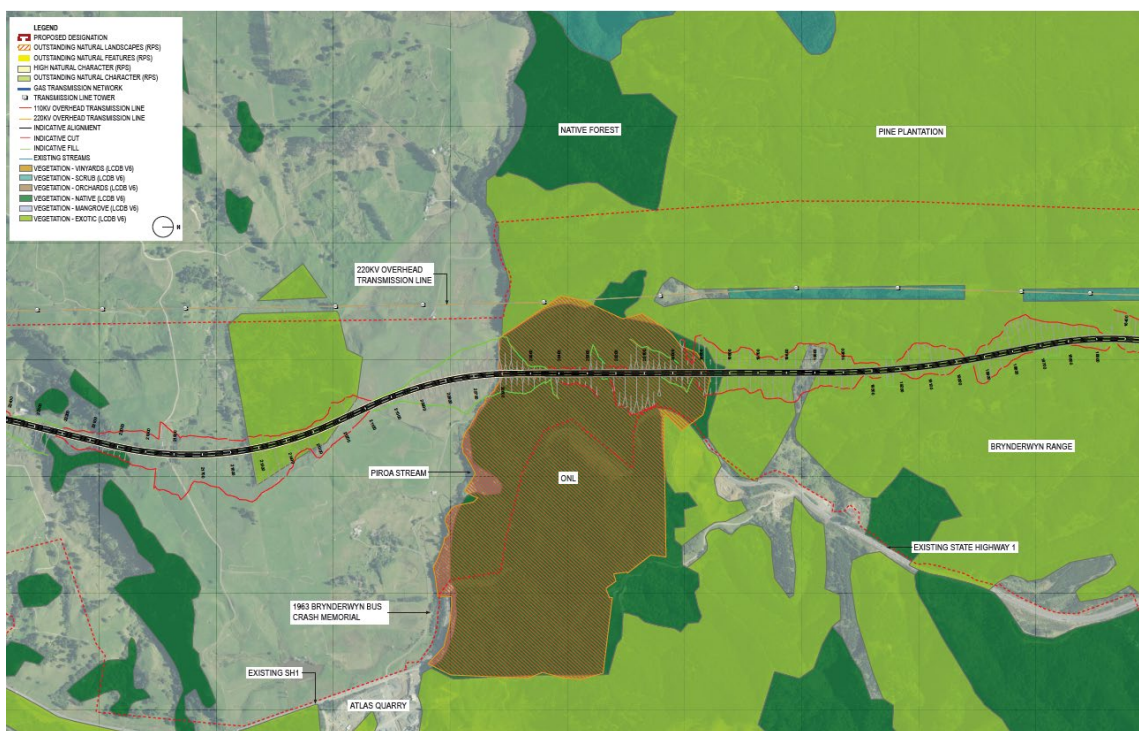


Figure 5: Plan illustrating the landscape character and values proximate to the Proposed Designation for the Brynderwyn Hills (southern escarpment) (not to scale, north right of image).

Much of the Brynderwyn Range is classified as an ONL in the Regional Policy Statement for Northland (RPSN), Whangārei District Plan and Kaipara District Plan. ONLs in the vicinity of the Brynderwyn Range are depicted in Figure 6 below, which is a screen capture from the RPSN page on the Northland Regional Council (NRC) GIS site. The figure indicates the main part of the 'Brynderwyn Range and bush margins' ONL (the largest ONL area depicted) and the smaller outlier part of that ONL which is centred on SH1. The 'Brynderwyn Range and bush margins' ONL extends almost the full length of the range – some 20 km – but is mostly confined biased to the southern escarpment of the range and other bush clad areas. It excludes the plantations that occupy much of the north side of the range and sections of the summit.

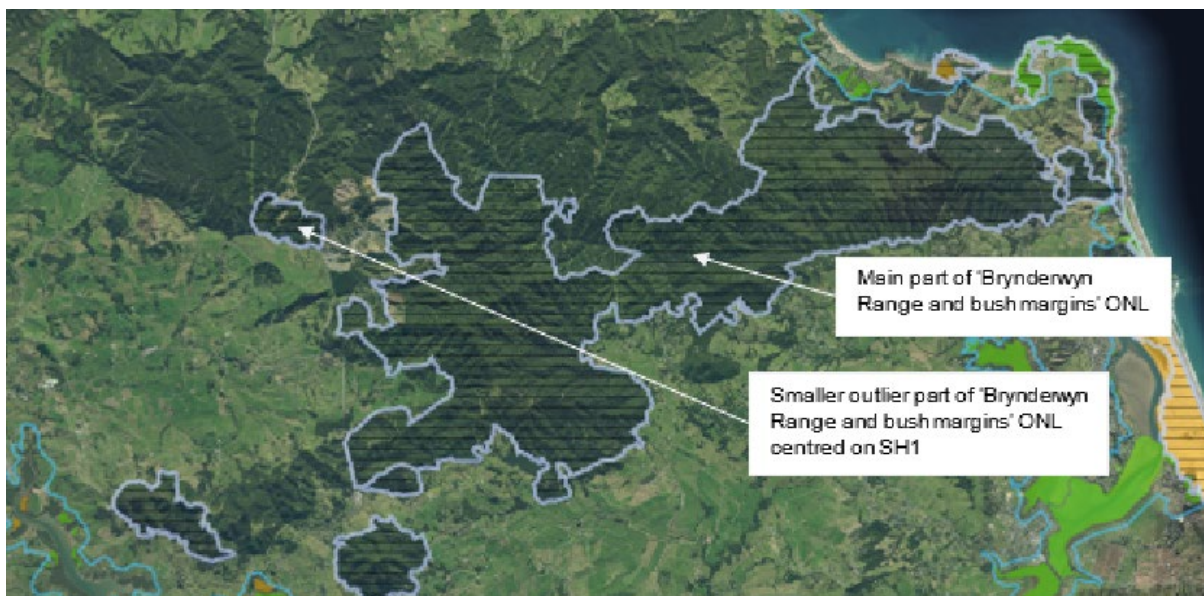


Figure 6: Brynderwyn Range and bush margins ONL, depicting the small section centred on SH1 (callouts on screen capture from Regional Policy Statement page on NRC public GIS site) ³ (not to scale, north top of image)

³ Note, this figure is not provided within Appendix A.

A separate area of the ONL is centred on the existing SH1. It is Crown land, owned by NZTA, that we understand was acquired for highway purposes, prior to it being classified as an ONL. Bush has regenerated on the balance of the land since the highway was built in the 1930s. While the land is lumped with the overall 'Brynderwyn Range and bush margins' ONL, it is relatively small and an outlier. There is a 1.3 km gap, occupied by the Atlas Quarry, between the SH1 ONL and the rest of the Brynderwyn Range ONL. The distinction is important because the SH1 ONL has specific landscape character and values that revolve around the presence of the existing SH1 alignment.

The character and values of the ONL are described in worksheets which sourced from 'Outstanding Natural Landscapes' (2014), Littoralis Landscape Architecture and Simon Cocker Landscape Architecture, for the NRC and linked to the Northland RPSN GIS. The worksheets describe the Brynderwyn Range and then evaluate the range against natural science, aesthetic, and experiential criteria. Because the characterisation and evaluation are made of the whole range, a selective approach is necessary to identify those aspects relevant to smaller outlier part of the ONL – especially given that the latter area is distinct because it is centred on SH1 in contrast to the rest of the range.

Relevant excerpts from the description include:

The ranges extend for some 20 km across the region in an east – west direction, the succession of high points along its ridge rising to a height of some 300 – 400 m.

Whilst the ranges are generally aligned in an east-west direction, they extend to the south at the midwestern end, to include the highest point – Cattlemount, at 430 m. The 'projection' of elevated land also includes the dacite domes of Pukepohatu (Bald Rock), south of Cattlemount, and Pukeareinga to the west. Pukekaroro lies slightly separated to the south. This localized cluster of volcanic features, identified as separate outstanding landscapes, contribute to the vividness and drama associated with the ranges on their southern side.

The ranges also form a perceptual barrier between the Kaipara and Whangārei Districts and are regarded as an 'iconic' landform, most visible where State Highway 1 snakes between the elevated landform before ascending and descending the ranges.

The ranges display a greater sense of impact and drama when viewed from the south rather than the north.

The ranges rise sharply from the surrounding rolling landform and the contrast in topography and vegetation serves to accentuate and increase the prominence and influence of the landscape.

At the western end of the ranges, the combined presence of the elevated range, Bald Rock, Pukekaroro and Pukeareinga, further to the west dominate the State Highway and strongly influence the character of the road corridor.

Values extracted from the worksheets that best reflect those of the smaller outlier part of the ONL can be summarised as:

- Distinctive barrier and landmark experienced by users of SH1
- Natural values and naturalness of the discrete area of bush
- Visual backdrop to the surrounding areas (i.e. from the Maungaturoto valley to the southwest)

3.6. Southern approaches to the Brynderwyn Hills

The southern approaches to the Brynderwyn Hills are across a broad valley of low rolling farmland underlain mainly by Northland Allochthon rocks. State Highway 12 (SH12) runs down the middle of the valley perpendicular to the Proposed Designation. The Project will have a grade-separated interchange with SH12, 1.5 km west of the current intersection with SH1. Maungaturoto is a further 5 km west on SH12.

The valley has several small stream catchments that are headwater tributaries of the Wairau River, which flows into a tidal arm of the Kaipara Harbour. There is an 80 m bush-clad scarp on the northern bank of one of these tributary streams (referred to as the 'Mayflower main' stream).

The farmland is characterised by dairy farming, including a pattern of limestone surfaced stock races. There are scattered houses, milking sheds, and other farm buildings accessed from SH12. The only other road in the vicinity of the Proposed Designation is Brynderwyn Road – a short, unsealed, no-exit road.

Aesthetically, the valley itself is unremarkable: its aesthetic qualities rely on the backdrop of the Brynderwyns on the north side of the valley and a line of volcanic hills and domes on the south side of the valley.

Figure 7 below illustrates the landscape character and values proximate to the Proposed Designation for the southern approaches to the Brynderwyn Hills. The Landscape Character and Values Plans “Southern Approaches to Brynderwyn Hills, Figure A6” in **Appendix A** provides this figure in more detail.

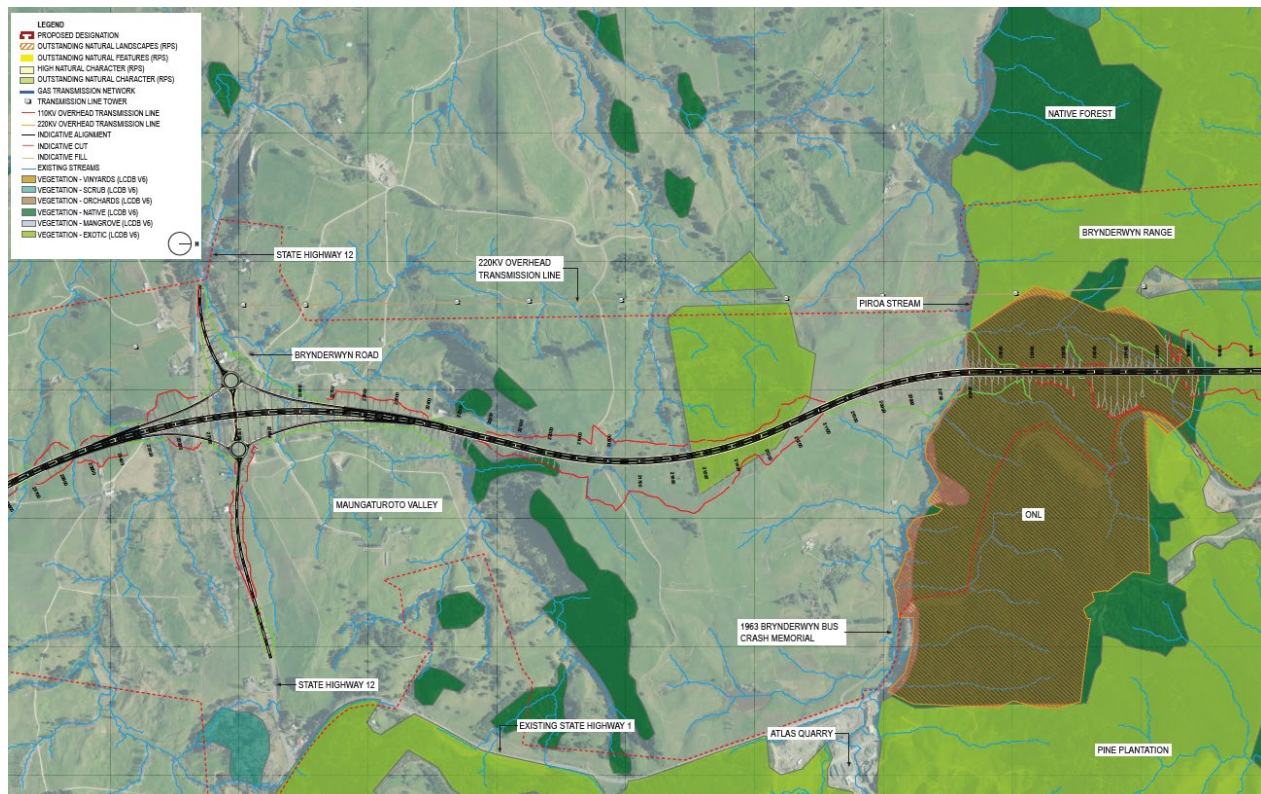


Figure 7: Plan illustrating the landscape character and values proximate to the Proposed Designation for the southern approaches to the Brynderwyn Hills (not to scale, north right of image).

3.7. Volcanic Hills and Pukekaroro Stream valley

A line of volcanic hills (part of the Coromandel Group volcanics) extends across the Project between the Brynderwyn range in the east and the Kaipara Harbour in the west. The hills are mainly clad in native bush. They include several distinctive domes. Of these, Pukepohatu (Bald Rock) and Pukekaroro are prominent landmarks adjacent to both SH1 and the Proposed Designation. Both domes are identified as ONLs. The landscape values listed in the worksheets include their striking and memorable form, visibility from SH1 and surrounding areas, their native forest cover, and the contrast with the surrounding flat rural landscape and industrial concrete yard. It is understood that Pukepohatu and Pukekaroro have cultural significance, including wāhi tapu associated with Te Ika a Ranginui battle between Ngāti Whātua and Ngāpuhi during the Musket Wars.

The Proposed Designation crosses a saddle where the hills are comparatively low and narrow. The National Grid transmission line uses the same saddle. South of the saddle, the Project is aligned along a small and secluded valley of a tributary of Pukekaroro Stream. The valley is farmland, ringed with native bush, and occasional houses. An adjacent downstream valley includes the Kohatu Toa eco-village although the village is separated from the Proposed Designation by an intervening spur.

At the southern extent of the Proposed Designation an interim roundabout at an intersection with SH1 and Baldrock Road is proposed. The future Te Hana to south of the Brynderwyn Hills Section is anticipated to

continue through the gap between Pukepohatu (Bald Rock) and Pukekaroro, roughly parallel with Baldrock Road.

Figure 8 below illustrate the landscape character and values proximate to the Proposed Designation for the volcanic hills and Pukekaroro valley. The Landscape Character and Values Plans “Volcanic Hills and Pukekaroro Stream Valley, Figure A7” in **Appendix A** provides this figure in more detail.

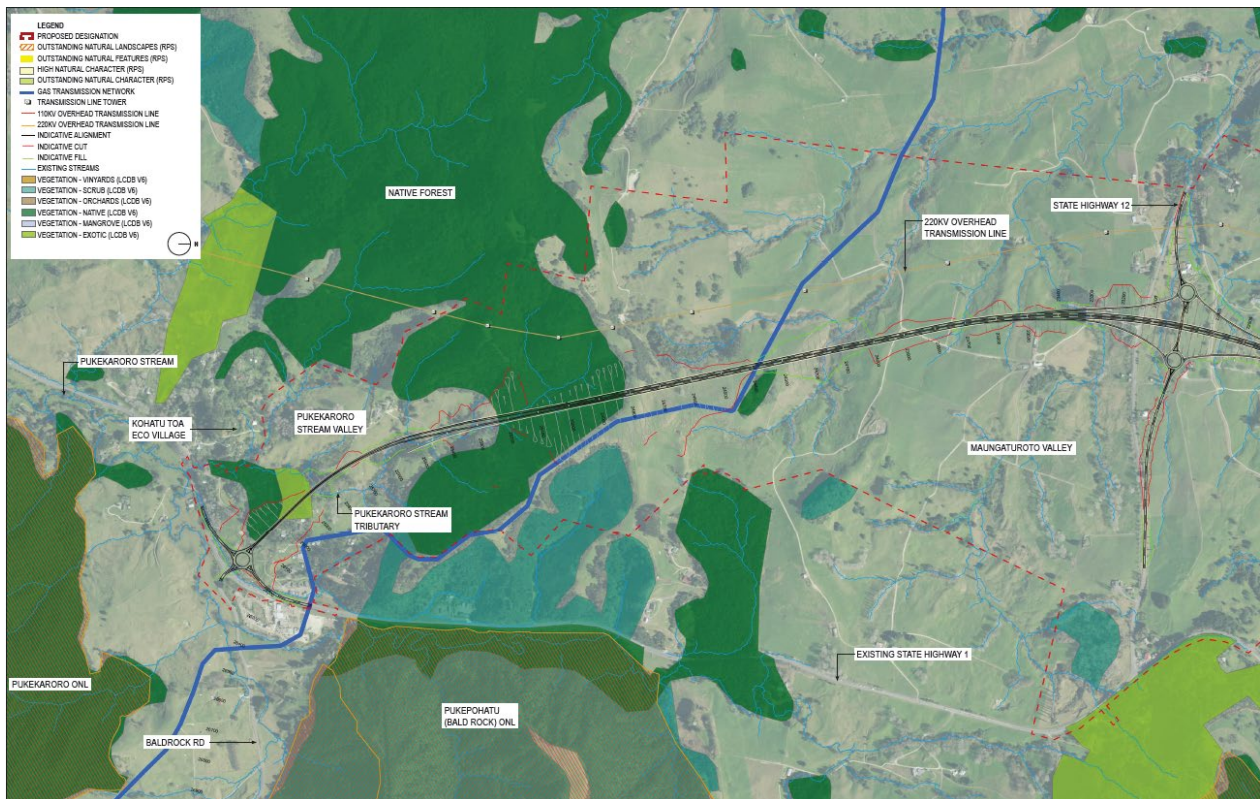


Figure 8: Plan illustrating the landscape character and values proximate to the Proposed Designation for the volcanic hills and Pukekaroro valley (not to scale, north right of image).

4. Assessment of Landscape and Visual Effects

4.1. Overview

This section of the report assesses the actual and potential effects of the Project on landscape, visual amenity and natural character.

A major highway such as the Project will have unavoidable adverse landscape, visual and natural character effects. Factors that contribute to potential effects of the Project include the need for the road to cross the barrier of the Brynderwyn Hills and to negotiate a path through the line of volcanic hills and domes north of Kaiwaka, and the requirement to elevate the road out of the floodplains of the Ahuroa and Waihoihoi Rivers.

Potential effects, however, have been avoided and reduced through the selection of the Proposed Designation. In our opinion, the Proposed Designation fits the regional landscape pattern, and helps avoid or reduce potential adverse effects, because:

- It follows the valley of the Ahuroa and Waihoihoi Rivers on the northern approaches to the Brynderwyn range of hills.
- It climbs a leading spur on the northern flanks of the Brynderwyns.
- It crosses the summit of the range at a modified location between SH1 and the National Grid transmission line.
- It passes through the volcanic hills south of the Brynderwyns at a saddle where the hills are relatively low and the native bush cover relatively narrow.
- It passes through a landscape that has developed in response to, and in the context of, the existing SH1, while at the same time, the Indicative Alignment is typically offset enough to avoid the pattern of settlement along the existing highway, and is parallel to, and mostly between, the existing highway and the National Grid transmission line.

We assess the effects of landscape, visual amenity and natural character, prior to mitigation, at a finer scale for each of the six landscapes identified in the existing environment section above.

4.2. Waipū

The section is localised and considers the Proposed Designation, Indicative Alignment and Waipū Interim Tie-in with respect to the town and its surroundings.

The area is within Earthworks Zone 1.

4.2.1. Relevant characteristics of the Project

The Project has the following characteristics relevant to assessing landscape and visual effects:

- An Interim Tie-in is proposed to the west of Waipū, between the township and the Ahuroa River.
- The indicative design for the Interim Tie-in comprises two roundabouts and a realignment of Millbrook Road. One roundabout is adjacent to SH1 just north of the current intersection of SH1 and The Braigh. It connects SH1 with The Braigh and the realigned Millbrook Road. The other roundabout is approximately 300 m north of the current Millbrook Road. It connects the Project main alignment with the realigned Millbrook Road.

4.2.2. Effects on landscape and visual amenity values of Waipū township

The Project avoids effects on Waipū township itself because:

- The Proposed Designation is on the inland (western) side of Waipū so that it will not affect the historic connection between Waipū and the coast.
- The Proposed Designation locates the Project (apart from connections to local roads) on the far side of the existing SH1 bypass that defines the western outskirts of the town.
- The Project would be visually screened from the town.

- At the same time, the proposed Waipū Interim Tie-in would retain a connection between the town and what will become the new SH1.

4.2.3. Effects on landscape and visual amenity values of rural landscape west of Waipū

The area west of Waipū is a relatively confined landscape. It is an area of farmland approximately 600 m wide contained between the Mareretū range of hills and the SH1 Waipū Bypass. The landscape values of this area are enhanced by the backdrop of bush-clad hills, the tree-lined Ahuroa River that traces the toe of the hills and stands of kahikatea and tōtara forest within the plains.

The Project would have the following potential adverse landscape effects on this area prior to mitigation:

- The highway and Interim Tie-in would impart an infrastructure character on the rural area.
- The Interim Tie-in would potentially cause the partial loss of distinctive stands of kahikatea / tōtara forest at the entrance to Waipū.
- As noted above, adverse visual effects are not considered from houses within the Proposed Designation because it is assumed that such properties will be acquired.

The visual effects on views from houses outside the designation would depend on the final design and alignment. Based on the Indicative Alignment and Interim Tie-In design, we consider there would be 'moderate-high' adverse effects on views from one house outside the designation, and 'moderate' adverse effects on the views from two further houses. These three houses are opposite the proposed Interim Tie-in between SH1 and The Braigh and the adverse effects arise from the roundabout and partial loss of the kahikatea / tōtara stand in their outlook. Planting replacement kahikatea / tōtara adjacent to the roundabout as recommended in section 5 of the report would mitigate such effects. We consider the effects on views from other houses outside the designation would be 'low-moderate' or less, summarised in Table 1.

Table 1: Summary table of visual effects from houses adjacent to the Proposed Designation at the Waipū Interim Tie-in

Degree of effect	Interim Tie-in
very high	-
high	
moderate-high	1
moderate	2
low-moderate	2
low	6
very low	-

Figure 9 below illustrates the locations of the respective houses outlined above within the Housing Inventory (Table B- 1 in **Appendix B**) proximate to Waipū. The Landscape Character and Values Plan "Figure A8, Housing Inventory A" in **Appendix A** provides this figure in more detail.

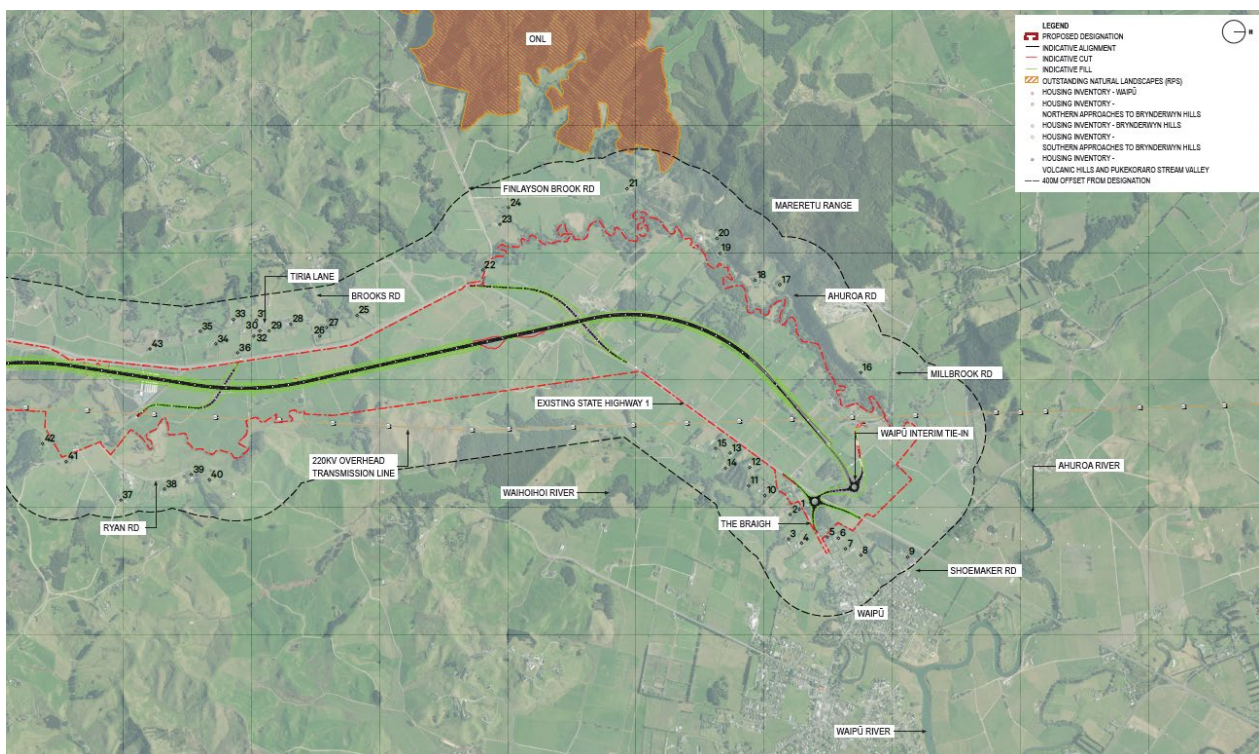


Figure 9: Plan illustrating the locations of the respective houses outlined above within the Housing Inventory proximate to Waipū (not to scale, north right of image).

The adverse landscape and visual effects of the Waipū Interim Tie-in, prior to mitigation, would be tempered by the fact that the Proposed Designation, in the area where the Interim Tie-in is indicated, is relatively contained between Waipū and the low hills on the opposite side of the Ahuroa River to the west.

4.2.4. Effects on natural character

The relevant section of the Ahuroa River is immediately downstream of the Millbrook Road bridge, Natural characteristics and qualities of this part of the Ahuroa River, and human aspects that detract from natural character, include:

- Its location on the lower reaches of the river, including wide meanders across the floodplain.
- Its tidal relative width and tidal nature. The section of the river is approximately 13 m – 20 m bank to bank at high tide. The river has a muddy bed and exposed margins according to tide.
- Its moderate flows – the Earth Sciences (NIWA) Rivers Map estimates the mean flow is approximately 1.5 cumecs.
- Its important ecological functions, as noted in the Assessment of Effects on Freshwater Ecology (Appendix D7 of Volume B of the Application)
- Its margin vegetation of mostly native shrub species along the riverbanks, including an area of revegetation.
- Its context in dairy farmland, within a settled landscape including farm buildings and the Millbrook Road bridge.

We consider the section of river has moderate natural character. It has substantial natural characteristics and qualities, and these are balanced by substantial human modifications.

The Project would largely avoid effects on this section of the Ahuroa River downstream of the Millbrook Road bridge. While the boundary of the Proposed Designation is along the riverbanks, it is not proposed to replace the existing Millbrook Road bridge. The realigned Millbrook Road would connect to the existing approaches to the bridge. The Indicative Alignment depicts the realigned Millbrook Road connected to the main alignment at a roundabout approximately 350 m away from the riverbanks. Any potential effects on physical or perceptual aspects of natural character would be buffered by the intervening farmland and margin vegetation. We consider any adverse effects on natural character would be 'very low'.

(The effects on natural character of the Ahuroa River upstream of the Millbrook Road bridge is addressed in the following section of this report.)

4.2.5. Summary of effects prior to mitigation

The Proposed Designation is appropriate from an overall landscape and visual amenity values perspective. It avoids adverse effects on Waipū and confines adverse effects to a relatively localised landscape immediately west of Waipū.

There would be potentially 'high' adverse landscape and visual effects from the loss, or partial loss, of distinctive kahikatea / tōtara stands at the gateway to Waipū. The degree of effect would depend on the extent of clearance required by the final design.

There would also be 'moderate-high' adverse effects on views from one house and 'moderate' effects from a further two houses.

Such effects could be mitigated by measures recommended in Section 5 of this report.

4.3. Northern approaches to the Brynderwyn Hills

This section covers the floodplain valley of the Ahuroa and Waihoihoi Rivers. This section, together with Waipū discussed above, coincide with Earthworks Zone 1.

4.3.1. Relevant characteristics of the Project

The Project has the following characteristics relevant to assessing landscape and visual effects:

- South of the Waipū Interim Tie-in, the Proposed Designation is on the floodplain of the Ahuroa River west of SH1. The Proposed Designation then swaps to the floodplain of the Waihoihoi River on the east of SH1 just north of Finlayson Brook Road.
- The Indicative Alignment is on a low embankment along the floodplains of the Ahuroa and Waihoihoi Rivers to provide resilience against flooding. The Proposed Designation is across floodplains for approximately 6 km between the Waipū Interim Tie-in and the toe of the Brynderwyn Hills. The embankment is indicated as typically between 1-3 m high.
- South of the Waipū Interim Tie-in, the Indicative Alignment is initially 400-500 m to the west of the current SH1, and it follows a sweeping curve to cross the current highway 550 m north of the intersection between SH1 and Finlayson Brook Road. Existing SH1 is indicated as being realigned and crossing over the Indicative Alignment on an overbridge.
- South of the SH1 overbridge, the Indicative Alignment is offset typically between 80 and 350 m to the east of the current SH1.
- Glenmohr Road is depicted in the indicative design as being realigned and crossing over the Indicative Alignment on an overbridge (Chainage (CH) 13800) to an intersection with SH1 300 m south of the existing intersection.
- South of CH15600, the Proposed Designation climbs the northern slopes of the Brynderwyn Hills, which is covered in the following section.

4.3.2. Effects on landscape and visual amenity values

Prior to mitigation, the Project would have the following potential adverse effects on landscape and visual amenity values within the corridor.

- The Project would intensify the influence of infrastructure on the rural character of the existing corridor. It would duplicate the existing highway and have a larger scale and different character given the proposed road's four lanes, higher speed geometry, limited access, and grade-separation. Such effects would be most pronounced where the new highway is closely parallel to the existing SH1, as depicted in the Indicative Alignment between the Glenmohr Road overpass (~CH 13700) and CH 15100.
- The Indicative Alignment passes through four stands of kahikatea/tōtara forest (three are to the north of the SH1 overbridge and one to the south), that are characteristic features of the area. It would

require partial removal of the stands. It would be difficult to avoid the stands given the constraints posed by the locations of the Waipū Interim Tie-in, the SH1 overbridge, and the Waihoihoi River.

- The elevation of the embankment means the proposed road would be slightly more prominent compared to the at-grade elevation of the existing SH1 across the flood plain. However, the degree of effects would be limited by the modest height of most of the embankment – it would retain the general appearance of an at-grade road. Conversely, the slight elevation would have some benefit for views from the proposed road – including views along the valley and to the surrounding hills – especially to the backdrop Mareretū and Brynderwyn ranges.
- The two overbridges depicted in the indicative design – at SH1 near Finlayson Brook Road and at Glenmohr Road – would be prominent given the flat and open landscape. The overbridges would have localised effects on visual amenity values.
- Based on the Indicative Alignment, we consider there would be ‘moderate-high’ adverse effects on views from one house outside the designation, and ‘moderate’ adverse effects from one additional house. We consider the effects from other houses outside the designation would be ‘low-moderate’ or less. Table 2 summarises such effects. Given the distance of the houses from the Indicative Alignment and inherent constraints within the Designation Boundary and design requirements, we consider it unlikely that the final horizontal and vertical alignment would differ significantly from the Indicative Alignment to such an extent that those properties might be affected to a greater degree.

Table 2: Summary table of visual effects from houses within 400 m of the Proposed Designation boundary on the northern approaches to the Brynderwyns

Degree of effect	Houses within 400 m of Proposed Designation Boundary
very high	-
high	-
moderate-high	1
moderate	1
low-moderate	4
low	18
very low	6

Figure 10 below illustrate the locations of the respective houses outlined above within the Housing Inventory (Table B-2 in **Appendix B**) in the Northern Approaches to the Brynderwyn Hills. The Landscape Character and Values Plans “Figure A9, Housing Inventory B” in **Appendix A** provides this figure in more detail.

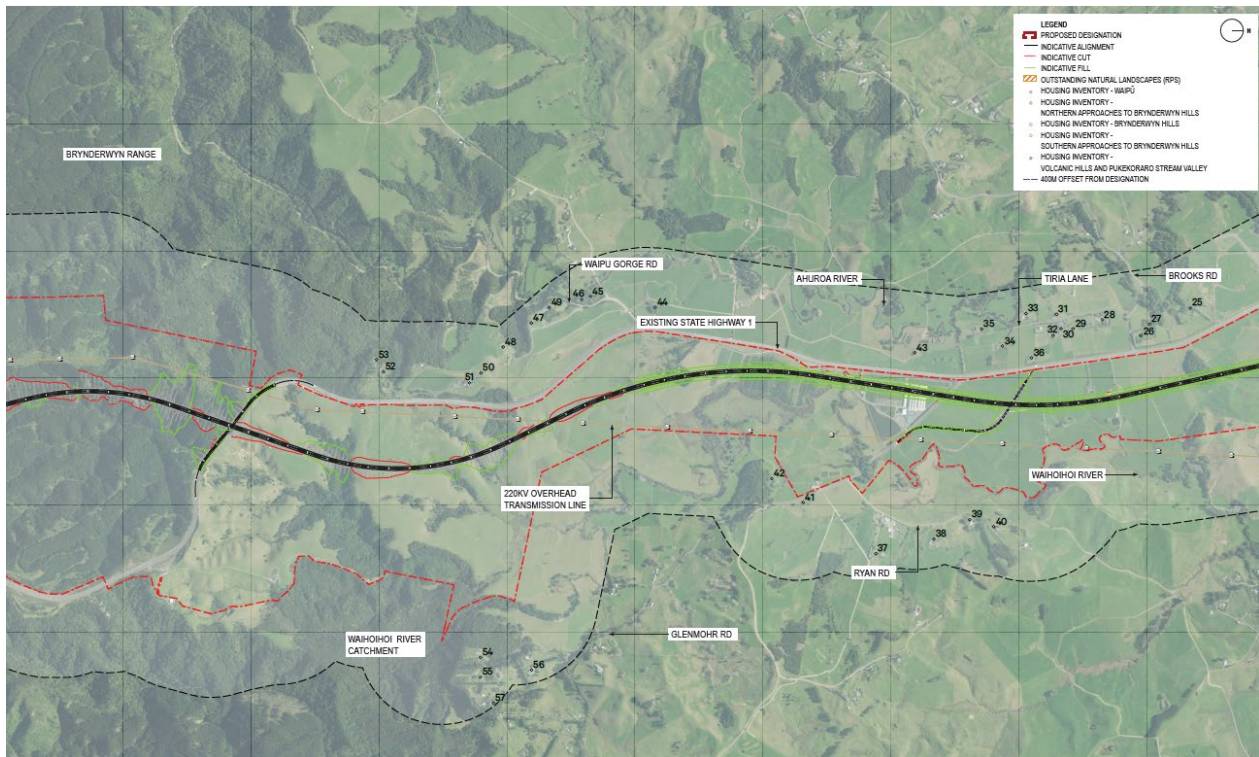


Figure 10: Plan illustrating the locations of the respective houses outlined above within the Housing Inventory in the Northern Approaches to the Brynderwyn Hills (not to scale, north right of image).

The adverse landscape and visual effects in this section have been tempered by the following:

- The Proposed Designation aggregates effects to the existing corridor already modified by infrastructure.
- The Proposed Designation being located to the east side of SH1 (north and south respectively of where the designation crosses SH1) minimises the number of houses affected.

Overall, the Project would have a 'moderate' degree of effects on overall landscape and visual amenity values prior to mitigation but would have 'high' localised effects on the kahikatea / tōtara stands. There would be 'moderate-high' adverse effects on the views from one house and 'moderate' effects on the views from an additional one house.

4.3.3. Effects on natural character

The Ahuroa and Waihoihoi Rivers (to the east and west of the Indicative Alignment respectively) – and their minor tributaries – are key natural features of the northern approaches to the Brynderwyns.

Ahuroa River

Natural characteristics and qualities of the Ahuroa River upstream of Millbrook Road include:

- A natural, meandering course that has tidal influences in the lower reaches in the vicinity of the Proposed Designation, including a soft bed and muddy margins.
- Ribbons of vegetation along the riverbank in places on its lower course – typically kahikatea and tōtara.
- Its moderate size – the NZ River Maps site estimates the mean flow at approximately 1.0 cumecs upstream of Millbrook Road.
- Its alignment with the west side of the valley including along the toe of the northern end of the Mareretū range of hills, and along the toe of spurs towards the Brynderwyn Hills.
- The many tributaries rising on the bush-clad backdrop of the Mareretū hills, as well as on farmland and plantation on the Brynderwyn Hills.
- The distinctive characteristic (when considering the river as a whole), that headwaters on the opposite side of the Brynderwyn Range maintain a course through the Waipū Gorge.

- Human influences that detract from natural character include the farmland setting for much of the river (including comparatively intensive dairy farming), infrastructure and settlement along the valley (including the existing SH1), and exotic plantation in parts of the catchment.

We consider the Ahuroa River in the vicinity of this section of the Project has moderate natural character. The substantial natural characteristics and qualities are balanced by substantial human modifications.

The Project would avoid and reduce potential adverse effects on the natural character of the Ahuroa River for the following reasons:

- The Proposed Designation does not cross this section of the Ahuroa River (the river forms the western boundary of the Proposed Designation north of Finlayson Brook Road).
- While the Proposed Designation extends to the river north of Finlayson Brook Road, the dense band of native bush along the river margins provides a physical and visual buffer. It is assumed that this vegetation would be retained. (In the unlikely event that the vegetation buffer was to be removed, a specific reassessment would be required.)
- The width of the Proposed Designation could also accommodate reasonable separation distance from the river. While the Proposed Designation extends as far as the river north of Finlayson Brook Road, the constraints posed by the locations of Waipū Interim Tie-in and the direction of the Proposed Designation south of Finlayson Brook Road means it is unlikely the road would be built close to the river. For example, the Indicative Alignment south of the Waipū Interim Tie-in is approximately 200 – 400 m from the river and south of Finlayson Brook Road the Proposed Designation is on the opposite side of the existing SH1 from the Ahuroa River.
- It is assumed that runoff from the proposed road would pass through artificial wetlands to minimise effects on discharging water to the river. Similarly, that sediment discharge would be managed during construction.

For these reasons, there would be a 'low' degree of adverse effect on the natural character of the Ahuroa River south of Millbrook Road on the northern approaches to the Brynderwyns.

Waihoihoi River

Natural characteristics and qualities of the Waihoihoi River include:

- Its pairing with the Ahuroa River on opposite sides of the valley.
- The proximity of the Ahuroa and Waihoihoi Rivers in the area between Brooks Road and Waipū Gorge Road where the two rivers come close together and their floodplains merge.
- Its natural, meandering course.
- Its incised course in the floodplain, and soft bed (sands and sediments) in its middle reaches within the Proposed Designation. The Assessment of Effects on Freshwater Ecology⁴ notes that the sediments are held by submerged rafts of exotic *Egeria* macrophytes.
- Its small to moderate size – the NZ River Maps site estimates the mean flow as approximately 0.5 cumecs in its middle reaches in the vicinity of the Proposed Designation. The Assessment of Effects on Freshwater Ecology⁵ gives the wetted width between 5 and 8 m.
- The limited vegetation along the riverbanks in the middle reaches. The river has a ribbon of exotic species such as willow, with some mixed native species such as tōtara and kahikatea, and lower bankside scrub and weeds.
- A moderate size raupō wetland adjacent to the river in the middle of the flood plain within the Proposed Designation (Wetland 8 (CH15400) in the Assessment of Effects on Freshwater Ecology⁶).
- The 'high' freshwater ecological value of the wetland and middle reaches of the Waihoihoi River as assessed in the Assessment of Effects on Freshwater Ecology.⁷ The river is described in that assessment as good tuna (eel) habitat and the gateway for indigenous migratory fish.

⁴ Appendix D7 of Volume B of the Application.

⁵ Ibid.

⁶ Ibid.

⁷ Volume B, Appendix D7 of the Substantive Application

- A modified landscape context including farmland and settlement on the low rolling hills in the middle reaches nearest the Proposed Designation, and infrastructure such as existing SH1 and the transmission line along the valley (the transmission line spans the raupō wetland).
- Headwater tributaries in a mix of bush and plantation on the northern slopes of the Brynderwyn hills.

We consider the Waihoihoi River has moderate natural character in its middle reaches in the vicinity of the Proposed Designation. The natural characteristics and qualities are balanced by human modifications and influence – mostly the farmland setting and presence of infrastructure.

Adverse effects on the natural character of the Waihoihoi River would be localised in the area south of Glenmohr Road where the gap between the Ahuroa and Waihoihoi Rivers is narrowest. South of Finlayson Brook Road, the existing SH1 generally follows the higher ground between the Ahuroa River and Waihoihoi River. The Proposed Designation is immediately to the east of SH1. The Waihoihoi River is within the Proposed Designation where the two rivers are closest together between CH 14600 and 15200. At this 'pinch point' there is only about 250 m between the two rivers. There is under 40 m between SH1 and a meander loop of the Waihoihoi River. The Indicative Alignment is configured as close as practicable to SH1 at this location to minimise impacts, but it nevertheless encroaches over the river meander and would require a diversion of the river. It would have a 'high' localised adverse effect on natural character.

If the alignment were to shift further east within the Proposed Designation, away from SH1, it would have to cross the Waihoihoi River twice. The effects of this change would depend on whether the design entailed bridges or culverts, and the proximity of the road to the river between the two crossings. There would potentially be 'very high' adverse effects, although such effects would be reduced if bridges were used, and a buffer of native vegetation were planted between the road and river as discussed under mitigation below.

Consideration was also given to natural character effects on a Waihoihoi River tributary known as Robertsons Stream. The stream is heavily modified. The sections within the Proposed Designation comprise drainage canals in farmland, and a channelised course approximately 1 m wide parallel to SH1 in the vicinity of the Indicative Alignment overpass. We consider Robertsons Stream has low natural character because its limited natural characteristics and qualities are far outweighed by modifications. The Project would require diversion and/or reforming of channels but would have 'low' effects on natural character.

4.3.4. Summary of effects prior to mitigation

The Proposed Designation is appropriate on the northern approaches to the Brynderwyns – it avoids and reduces potential adverse effects.

In the context of a new four-lane road, the Indicative Alignment would have 'moderate' adverse effect on landscape and visual amenity values in this section of the corridor but with 'high' localised effects with respect of the kahikatea / tōtara stands.

There would be 'low' adverse effects on the natural character of the Ahuroa River, and 'high' but localised effects on the natural character at a meander loop of the Waihoihoi River.

There would be potentially 'moderate-high' effects on views from one house, and 'moderate' effects on the view from an additional one house.

Each of these effects could all be mitigated by measures recommended in Section 5 of this report.

4.4. Brynderwyn Hills northern slopes and summit section

The section covers the northern slopes and summit section of the Brynderwyn Range and is characterised by farmland and pine plantation. The bush clad southern escarpment is considered separately below (Section 4.5) given its different character and identification as an ONL.

4.4.1. Relevant characteristics of the Project

The Project has the following characteristics relevant to assessing landscape and visual effects on the northern slopes and summit section of the Brynderwyns:

- The Proposed Designation follows a leading spur south of CH 15700 (i.e. south of the unformed section of Waipū Gorge Road) parallel with and just below SH1. The spur is the watershed between

the Waihoihoi River to the east and the Ahuroa River to the west – the Proposed Designation is therefore within the Waihoihoi River catchment on the northern slopes until it reaches SH1.

- The Proposed Designation crosses a sequence of headwater gullies – tributaries of the Waihoihoi River. The Indicative Alignment, for example, climbs from RL25 to RL140 on fill embankments across the gullies and box cuttings through the intervening secondary spurs. The gullies contain fingers of native bush, and the spurs are in pasture.
- Indicative spoil disposal sites are depicted in the northern slopes section. The sites are in gullies immediately below the existing SH1 and east of the Indicative Alignment. The gullies are in farmland and mostly comprise pasture with occasional trees and scattered scrub. One gully is in pasture and has more extensive scattered trees and areas of regenerating shrubland.
- The Proposed Designation crosses SH1 to the west side of the main spur at CH 17700 (about halfway up the hill). SH1 marks the watershed between the Waihoihoi River catchment and that of the Ahuroa River. It also marks a boundary between farmland on the northern slopes and the exotic plantation across the summit of the Brynderwyns.
- The summit section comprises sharp ridges and deep gullies – headwater tributaries of the Ahuroa River. There are ribbons of native vegetation in the base of some of the deep gullies within the pine plantation.
- Grade separation is proposed between the Indicative Alignment and SH1. For example, the Indicative Alignment depicts the road as approaching a SH1 from the north in a 10 m deep box cutting. The road would pass beneath SH1 on a short fill embankment and box cut. The Indicative Alignment is then depicted on a fill embankment up to 40 m high above one of the main streams (CH 18000). It is then depicted in a box cut approximately 1.8 km long (CH 18100 – CH 19900) and up to approximately 60 m deep at one point. The box cut daylights briefly to cross gullies at CH 18450, CH 18950, and CH 19250.
- Based on Geotechnical advice, the assumption is that the steep cut and fill batters in this area are not able to be topsoiled and planted but will be left to weather and regenerate naturally. The advice is that the Waipapa Group in the Brynderwyn Hills summit area is deeply weathered greywacke and that cut batters in this material are anticipated to be formed at a grade of 2.5H:1V for stability. It would not be practicable to retain topsoil and planting on these surfaces given Northland conditions. Competent rock could be encountered during construction in the deeper parts of cuttings in which case the lower parts of cuttings could potentially be constructed as steeper rock faces with a gradient of 1H:1V. Measures such as rock bolts or mesh would likely be required to stabilise the faces depending on what is encountered. The large fill embankments in this area are anticipated to be formed of rock material with steep batters between 1H:1V and 2H:1V and the edges reinforced with geogrid. It would similarly not be practicable to topsoil and replant such batters. They would be left to weather and regenerate naturally. It is therefore assumed that bare faces would remain visible on cut and fill batters for an extended time following construction, gradually softening and becoming naturally colonised by vegetation over decades.
- Indicative spoil sites are located in the summit section. The sites are in steep gullies either side of the Indicative Alignment. All the sites are currently clad in plantation, but with areas of regenerating native understorey, especially along the watercourses at the bottom of the gullies. Two sites would extend the fill embankment on the Indicative Alignment at CH 18000 into adjacent small tributary gullies cut off by the embankment. Similarly, two sites would fill small tributary gullies cut off by the small embankment on the Indicative Alignment at CH 18450. Indicative spoil sites are depicted as filling the stream network upstream of the fill embankment on the Indicative Alignment at CH 18950. Indicative sites are depicted as filling the small watercourses 'beheaded' by the long box cut on the Indicative Alignment between approximately CH 19450 and CH 19990. The final site is in the head of the 'Piroa western tributary' stream which drops down the escarpment in the ONL. The indicative spoil disposal site is outside the ONL, is adjacent to SH1, and is currently in plantation with some regenerating native vegetation understorey. It is understood that some of the spoil sites on the Brynderwyn summit area may not be required if surplus spoil could otherwise be used for a fill embankment across the Piroa Stream.

Figure A10 in **Appendix A** illustrates the indicative spoil siles sites in the context of the Indicative Alignment and Proposed Designation across and south of the Brynderwyn Range.

4.4.2. Effects on landscape and visual amenity values

The Project would have the following potential adverse effects on landscape values on the northern slopes and summit section of the Brynderwyns:

- The road would be a prominent feature on the farmland slopes below SH1. It would intensify the transport character of the corridor and detract from rural amenity values. The cut and fill batters especially would amplify the road's prominence with respect to landform.
- The Project would detract from the natural values of the streams and bush in the headwater gullies of the Waihoi and Ahuroa Rivers. Such effects would be compounded by disposal of surplus spoil in the gullies. These effects are discussed further under 'natural character' below.
- The lower elevation of the road and the extent of box cuts would limit the extent of views to Bream Bay from the highway compared to those from SH1. However, the Indicative Alignment, for example, would still provide views to Bream Bay as it emerges onto the northern slopes below the SH1 underpass. As northbound travellers emerge from the SH1 underpass, the views would be focused straight ahead to Manai and Bream Head.
- The relatively shallow 2.5H:1V cut batter slopes anticipated because of the geotechnical characteristics of the rock would increase the earthworks footprint compared to roads constructed in more competent rock. The necessity of allowing the cut batters to naturally weather and become colonised by vegetation means that such softening of the batters will occur over decades – estimated at between 30 – 40 years or more to establish a continuous shrubland canopy. The footprint of the cut batters, in conjunction with the extent of spoil disposal required in the steep terrain, would amplify the potential effects prior to mitigation, especially in the summit area.
- If competent rock is encountered during construction that would allow for steep rock faces in the lower parts of cuttings, the footprint of such works could be reduced. In addition, for motorists, the rock faces themselves would be attractive features that express the geology of the area. The aesthetic qualities of such rock faces would be subject to measures taken to ensure the stability of the rock – for example, the use of rock bolts, fixed mesh, and mesh drape in preference to sprayed concrete.
- The impracticality of planting the relatively steep and reinforced fill batters (1H:1V to 2H:1V) discussed above, means such batters will retain a hard engineered appearance through this area for an extended period. On the other hand, the steep batters would reduce the potential footprint and extent of vegetation clearance compared to a shallower conventional fill batter slopes (for example 3H:1V).
- Based on the Indicative Alignment, we consider the effects on views from houses outside the designation would be 'low' or 'very low'. The effects on houses within 400 m of the Proposed Designation boundary are summarised in Table 3 below. The potentially affected properties are on a low ridge west of the existing SH1. Given the inherent constraints within the Designation Boundary and design requirements, we consider it unlikely that the final horizontal and vertical alignment would differ significantly from the Indicative Alignment, to such an extent that those properties might be affected to a greater degree.

Table 3: Summary table of visual effects from houses within 400 m of the Proposed Designation Brynderwyn Hills northern slopes

Degree of effect	Houses within 400 m of Proposed Designation Boundary
very high	-
high	-
moderate-high	-
moderate	-

Degree of effect	Houses within 400 m of Proposed Designation Boundary
low-moderate	-
low	5
very low	9

The adverse landscape and visual effects have been tempered by the following factors:

- The Proposed Designation aggregates the effects to the existing infrastructure corridor – avoiding a greenfield landscape. The Indicative Alignment, for example, is parallel to – and largely between – the existing SH1 and the National Grid transmission line.
- The pine plantation would reduce visibility of the Project across the summit section during much of each crop rotation. Alternatively, any potential revegetation with native species in the summit section as mitigation would likewise reduce visibility of the Project. While the earthworks required would be extensive in order to traverse the deep gullies and sharp ridges across the summit of the Brynderwyns, the extent of box cuts indicated with the Indicative Alignment would at the same time embed the road below the landscape surface and reduce visibility. For example, the Indicative Alignment is approximately 30 m lower than SH1 across the summit of the range, and most of the summit section is in box cut or enclosed within a filled gully.

In summary, the Project would have ‘moderate’ effects on the overall landscape and visual amenity values of the northern slopes of the Brynderwyns, and ‘moderate-high’ effects on the overall landscape and visual amenity values of the summit area prior to mitigation.

4.4.3. Effects on natural character

The watercourses on the northern slopes and summit section of the Brynderwyns are headwater tributaries of the Waihoihoi River and Ahuroa River respectively.

Waihoihoi River tributaries

Natural characteristics and qualities include:

- Their location near the watershed. The tributaries rise on the slopes just below the watershed spur that SH1 follows.
- The close pattern of gullies and small size of the watercourses. The Indicative Alignment, for example, crosses five depressions between the Waipū Gorge Road ‘paper road’ and SH1, but it appears that only two may have intermittent streams – ‘Waipū north tributary’ at CH16500 and ‘Waipū south tributary’ at CH17120. The Assessment of Effects on Freshwater Ecology⁸ describes the ‘Waipū north tributary’ as rising in pasture and flowing under ‘loose’ native bush in the gullies in a series of steep and flat sections including small pools and waterfalls. In the area likely to be impacted by the Indicative Alignment it is typically between 0.5 m and 1.2 m wide, with banks up to 6 m wide, and comprising runs and riffles across a bed of sediment, cobbles, and gravels. It assesses the stream as having low ecological value. The Assessment of Effects on Freshwater Ecology⁹ characterises the ‘Waipū south tributary’ as being intermittent at the point where it is crossed by the Indicative Alignment, and ephemeral upstream of that point. It describes the stream as commonly around 1 m wide within banks 2 m wide, with long runs and short steep sections of riffle and pool. The bed is described as cobbles and sediment on bedrock. The stream is described as having reasonable native forest cover. It assesses the stream as having moderate ecological value.
- The pattern of modified native forest and scrub within the gullies, within a modified farmland context. The gullies are unfenced.
- The presence of existing infrastructure (SH1 and the transmission line) within the setting of the gullies.

⁸ Volume B, Appendix D7 of the Substantive Application

⁹ Volume B, Appendix D7 of the Substantive Application

Most of these watercourses have 'low-moderate' natural character. Their limited natural characteristics and qualities of the streams are outweighed by human modifications – mostly because of the farmland setting. We consider the 'Waipu south tributary' (CH 17120) to have 'moderate' natural character because it has natural characteristics and qualities that provide higher ecological value.

The fill embankments and culverts would detract from natural character by loss of sections of natural stream and clearance of native vegetation. Such effects would be relatively localised and mostly of a 'low-moderate' degree but would be of 'moderate' degree on the 'Waipū' south tributary.

Disposal of spoil in the sites indicated would have 'low' adverse effects on natural character. The sites are ephemeral headwater gullies in farmland and have 'low' natural character.

Ahuroa River tributaries

Natural characteristics and qualities of the headwater tributaries of the Ahuroa River on the summit section of the Brynderwyns include:

- Proximity to the watershed. As noted, SH1 – which is the boundary of the Proposed Designation – approximates the watershed at the top of the catchment.
- The close pattern and deeply incised nature of the gullies – the streams are roughly 40-60 m below the adjacent spurs which are characterised by sharp ridgelines.
- The mix of occasional permanent streams in larger gullies, along with intermittent and ephemeral watercourses.
- Natural and varied stream beds, including boulders, stones and finer hard materials.
- Indigenous vegetation in the bottom of gullies, but in the context of predominant pine plantation and subject to forestry operations which are anticipated to entail clear felling in the future.
- Modest ecological values. The Assessment of Effect on Freshwater Ecology¹⁰ assesses two of the tributaries in the summit area (the 'northern pine tributary' at CH17990 and 'mid pine tributary' at CH 18950) as having moderate ecological value. The report describes the 'northern pine tributary' (CH 17990) as the larger of the perennial tributaries in the summit section. The stream is described as having a pine canopy with a mixed broadleaf shrub and tree fern cover on the banks. The channel is described as an average 1.85 m wide between 3 m wide banks. The stream comprises runs and pools with occasional 'fast run almost riffle' sections. The bed is bedrock, with large and small cobbles, and sediment. The report describes the 'mid pine tributary' (CH 18950) as also a perennial stream under pine plantation with native shrub species along the banks, and as relatively complex with cascades, pools, riffles and runs. The channel is described as typically 1.2 m wide between 2 m wide banks. The bed is typically bedrock with cobbles and sediment.

We consider the tributaries in the pine planation in the summit section have a mix of 'moderate' and 'low-moderate' natural character. The two larger streams have greater natural characteristics and qualities which are balanced by human modifications – mostly because of the plantation setting including the disturbance that can be anticipated during harvesting. The limited natural characteristics and qualities of the smaller gullies are outweighed by the same human modifications.

As noted, the Proposed Designation crosses several deep gullies and sharp ridges. The Indicative Alignment, for example, has fill embankments and culverts over the two larger streams in the summit section of the Brynderwyns. It depicts a large embankment across the 'northern pine tributary' (CH 18000) – and a relatively small embankment across the mid pine tributary' (CH 18950). The fill embankments and culverts would reduce natural character through loss of natural stream length, interruption of the valley landform, and removal of natural native vegetation that is regenerating beneath the pine plantation. Such effects would be relatively localised. Revegetating the fill batter slopes and adjacent disturbed sections of the stream banks would mitigate perceptual aspects of natural character.

The disposal of surplus spoil within the adjacent gullies would likewise have adverse effects on natural character through loss of natural watercourse, modification of landform, and removal of the limited natural vegetation. Indicative spoil sites largely avoid the 'northern pine tributary' and its upstream catchment. In that case, the effects on natural character would be 'low-moderate'. On the other hand, indicative spoil

¹⁰ Ibid.

sites occupy most of the upper catchment of the 'mid pine tributary' although the sites avoid the stream below the Indicative Alignment. In that case, the effects on natural character would be 'moderate-high'.

Overall, the works would potentially have 'moderate-high' adverse effects on natural character prior to mitigation in those instances where there is a combination of fill embankment and extensive spoil disposal.

4.4.4. Summary of effects prior to mitigation

In the context of a new four-lane road, there would be 'moderate' potential adverse landscape and visual effects with respect to the northern slopes. There would also be potentially 'moderate' potential adverse effects on natural character of the headwater tributaries of the Waihoihoi River on the northern slopes.

There would be 'moderate-high' potential adverse landscape and visual effects on the summit section of the Brynderwyns, and 'moderate-high' potential adverse effects on natural character of the headwater tributaries of the Ahuroa River on the summit section prior to mitigation. The greater adverse effects on the summit area are because of the combination of the large cut batters and fill embankments, and the extensive disposal of surplus spoil in the gullies.

Some of these potential effects could be mitigated by measures recommended in Section 5 of this report.

4.5. Brynderwyn Hills southern escarpment (ONL)

As noted above, the southern escarpment of the Brynderwyn Hills is considered separately from the northern slopes and summit area because of its different character and values, and because it is classified as an ONL.

4.5.1. Relevant characteristics of the Project

The Project has the following characteristics relevant to assessing landscape and visual effects:

- The Proposed Designation crosses the ONL for approximately 800 m from where the pine plantation gives way to bush at the ridge above the ONL to the Piroa Stream (CH 19800 to CH 20600 on the Indicative Alignment).
- The Indicative Alignment is depicted in a long and deep box cut through the pine plantation north of the ONL (discussed above) and would appear as a slot in the ridgeline at the top of the ONL.
- The Indicative Alignment crosses a deep and steep-sided stream (western Piroa tributary at CH 20040) immediately after emerging from the box cutting. It is depicted crossing the stream on a fill embankment up to approximately 21 m high with a 211 m long culvert.
- The Indicative Alignment is then benched across a spur for a distance of approximately 300 m (CH 20150 – 20450) with a cut batter on the uphill side up to approximately 60 m high.
- The Indicative Alignment continues on a fill embankment that descends as a 700 m long ramped fill embankment (CH 20450 – 21050) that crosses the Piroa Stream and continues until it meets existing ground level in the farmland south of the Piroa Stream (addressed in the following section). The fill embankment is depicted as up to 53 m high where it crosses the Piroa Stream (CH 20620). The stream is depicted as being in culverts approximately 212 m long.
- As noted above, based on Geotechnical advice, the assumption is that the steep cut and fill batters in this area cannot practicably be topsoiled and planted but will be left to weather and regenerate naturally. The advice is that the Waipapa Group in the Brynderwyn Hills summit area is deeply weathered greywacke and that cut batters in this material are anticipated to be formed at a grade of 2.5H:1V for stability – on which it would not be practicable to topsoil and replant. Competent rock could be encountered during construction in the deeper parts of cuttings in which case the lower parts of cuttings could potentially be constructed as rock faces with a gradient of 1H:1V. Measures such as rock bolts or mesh would likely be required to stabilise the faces depending on what is encountered. The large fill batters in this area, including that of the ramped embankment over the Piroa Stream, are anticipated to be formed of rock material. They would have steep batters between 1H:1V and 2H:1V with the edges reinforced with geogrid. It would similarly not be practicable to topsoil and replant such batters, and they would be left to weather and regenerate naturally. It is therefore assumed that bare

faces would remain visible on cut and fill batters for an extended time following construction, gradually softening and becoming colonised by vegetation over decades.

4.5.2. Effects on landscape and visual amenity values

The Project would have the following potential adverse effects on landscape values in general (specific ONL values are focussed on separately below):

- It would detract from natural values because of the need to clear a path through native forest. The cut and fill batters would have a more expansive footprint than the road itself. The extent of the batters would be increased by the steep terrain and the shallow cut batter slopes necessitated by the incompetent nature of the weathered rock. For example, the Indicative Alignment depicts extensive earthworks in the box cut through the ridge at the top of the ONL (CH 19800 – 20000) and in the side cut above the benched section south of the gully (CH 20150 – 20450). The impracticality of replanting the cut batters means that they will re-naturalise slowly over several decades – estimated at between 30 – 40 years or more. The steep terrain means it is not practicable to construct the cut batters at an even shallower gradient that would enable replanting. Such an approach would result in even further clearance of maturing forest. The batters depicted above the benched section of the Indicative Alignment (CH 20150 – 20450), for example, already chase the slope of the hillside as high as the existing SH1 in places.
- The extent of the batters would likewise detract from aesthetic values. The fact that the alignment through the ONL is benched on a hillside means the side cut batters would be more visible than would be the case with box cuts.
- If competent rock is encountered during construction that would allow for steep rock faces in the lower parts of cuttings, the footprint of such works could be reduced. In addition, for motorists, the rock faces themselves would be attractive features that express the geology of the area. The aesthetic qualities of such rock faces would be subject to measures taken to ensure the stability of the rock – for example, the use of rock bolts, fixed mesh, and mesh drape in preference to sprayed concrete.
- The impracticality of planting the relatively steep (1H:1V – 2H:1V) and reinforced fill batters means such batters will retain a hard engineered appearance through this area. On the other hand, the steep fill batters would reduce the potential footprint and extent of vegetation clearance compared to shallower conventional fill batter slopes (for example 1V:3H). With respect to legibility of the landform, the ramped fill embankment depicted in the Indicative Alignment across the Piroa Stream would cut across the natural landform of the Brynderwyn escarpment, the toe of which is traced by the Piroa Stream.
- The Indicative Alignment would detract from the natural character and values of the ‘western Piroa tributary’ (CH 20500) because of the footprint of the fill embankment and associated works and consequent loss of native forest and a stream with high natural character. This is addressed in more detail below under natural character.
- The Project would have cumulative effects in conjunction with the prominent cut batters higher up on the hillside that were constructed as part of the emergency works to remediate the existing SH1.

Such landscape and visual effects will be tempered by the following factors:

- The Proposed Designation aggregates effects to the existing corridor. The Indicative Alignment, for example, threads a 300 – 400 m gap between SH1 and the National Grid transmission line.
- The Proposed Designation has relatively low public visibility – it is typically a small part seen in distant views of the wider Brynderwyn Hills Range. Except for views from SH1 (which are constrained by topography and bush), the nearest public roads are more than 2 km away to the southwest. Maungaturoro is more than 5 km away. The low view angle from such distances means that views from the southwest are frequently limited by rolling topography and trees.
- The potential prominence of the Indicative Alignment is partly reduced by its being lower in the landscape than the existing SH1. For example, the cut batter depicted above the benched section of the Indicative Alignment is on the same spur as SH1 (i.e. at the outside hairpin bend) but is below the existing road.

- Similarly, the potential prominence of the ramped fill embankment would be reduced by its low elevation in the landscape and the surrounding rolling topography. The uphill end of the ramp is depicted in the Indicative Alignment as entering the hillside at about a third of the height between the Piroa Stream and the skyline ridge. The embankment would have very limited public visibility.

Overall, there will be 'high' adverse effects on the landscape's natural and amenity values, and on the values of the ONL which are discussed in more detail below.

4.5.3. Effects on natural character

The relevant waterbodies in this section are the Piroa Stream and two tributary streams within the ONL.

Piroa Stream

Natural characteristics and qualities of the Piroa Stream include:

- Its distinctive course which traces the toe of the Brynderwyn range, collecting the tributary streams flowing off the escarpment to the north, and subsequently cutting through the Waipū Gorge to the opposite side of the range.
- The sharp contrast between the steep bush-clad escarpment on the north bank and the rolling farmland on the south bank – noting that there are ribbons of shrub vegetation along the southern bank.
- The mixed land use within the catchment. The headwaters include a mix of bush, plantation, farmland, and the Atlas quarry (located east of SH1).
- The bank-to-bank course within a defined channel with what appears a strong and relatively quick flow. The NIWA NZ Rivers Map database estimates the mean flow within the Proposed Designation to be 0.16 cumecs. The Assessment of Effects on Freshwater Ecology describes the stream as commonly 3-4 m wide and flowing between banks 4-6 m apart. It is described as comprising mostly run habitat, with faster sections and slower glides. The bed is described as bedrock with boulders, a mix of cobble sizes, and gravel – with areas of sediment.
- The Assessment of Effects on Freshwater Ecology assesses the stream as having moderate ecological value. It notes that the Piroa Waterfall restricts fish passage to this part of the stream.

We consider the relevant section of Piroa Stream in the vicinity of the Proposed Designation has moderate natural character. Its natural characteristics and qualities are balanced by human modification.

The Project would detract from the stream's natural character. The fill embankment and culverts depicted in the Indicative Alignment would reduce the length of natural stream bed, disrupt the natural processes, and interrupt the spatial form of the stream valley along the toe of the escarpment.

Western Piroa Tributary stream at CH 20040

Characteristics and qualities of the 'western Piroa tributary' within the ONL include:

- Its relatively short length, steep gradient, and location near the catchment watershed. The stream drops 190 m in elevation over approximately 1.2 km.
- Deeply incised nature of the valley. The stream is incised roughly 80 m to 100 m below the adjacent spurs.
- Its natural course, and varied stream bed including bedrock, boulders, stones, finer hard material and sediment. The stream includes cascades, runs, riffles and pools. The Assessment of Effects on Freshwater Ecology notes that the lower section of the tributary is relatively flat. It comments that there is a higher proportion of sediment given the native forest setting which it puts down to erodible banks, high storm velocities, and historic plantation logging.
- The extent of native forest landcover within the stream catchment. While the upper part of the catchment includes pine plantation and the existing SH1, approximately 70% of the stream length is within the ONL and native forest. However, it is second growth forest. Aerial photos from around the time the current SH1 was built in the 1930s depict farmland and regenerating scrub. This section of the escarpment appears to have regenerated from around this time and the forest is currently maturing.

- Its ecological value – the Assessment of Effects on Freshwater Ecology assesses the stream as having high ecological value.

We consider the stream has ‘high’ natural character. While not pristine, the natural characteristics and qualities far outweigh the modifications and human influence.

The Proposed Designation necessitates crossing the stream. The Indicative Alignment indicates a fill embankment with a 211 m culvert and a footprint that would require clearance of native forest along the stream margins and on adjacent slopes. The surplus spoil disposal in the modified headwater gully outside the ONL (SP 12) would contribute to effects on the upper catchment.

The Indicative Alignment would have ‘high’ adverse effects on the natural character of the stream. The Indicative Alignment indicates that the ramped fill embankment over the Piroa Stream would just avoid the confluence between the stream and Piroa Stream, but there is potential for a different alignment to affect a greater length of stream and potentially to have ‘very high’ adverse effects.

Eastern Piroa Tributary

The second stream within the ONL – the ‘eastern Piroa tributary’ – is not crossed by the Indicative Alignment, but the ramped fill embankment would encroach over the lower reaches of the stream at its confluence with the Piroa Stream. The ‘eastern Piroa tributary’ stream has similar natural characteristics and qualities to that of the ‘western Piroa tributary’ (CH 20400):

- It has a relatively short length, steep gradient, location near the catchment watershed. The upper catchment is above SH1 so that the stream passes under the existing highway in a culvert.
- It is deeply incised in a steep valley.
- It retains a natural course, and varied stream bed including boulders, stones and sediment – with runs, pools, and cascades. The Assessment of Effects on Freshwater Ecology describes the stream as ranging from very steep with small waterfalls in the upstream sections, to relatively flat with small runs and pools in the lower sections nearer the main Piroa Stream.
- Its catchment is within maturing native forest landcover.

We consider the eastern Piroa tributary stream similarly has ‘high’ natural character. While small and not pristine, the natural characteristics and qualities far outweigh the modifications and human influence.

The Indicative Alignment indicates a fill batter encroaching over approximately 100 m of the lower stream – which would require a diversion and for the confluence with the Piroa Stream to occur within a culvert connection.

The Indicative Alignment would have ‘high’ adverse effects on the stream’s natural character. There is potential for the final alignment to be further to the east which would affect a greater length of the stream and would have ‘very high’ adverse effects on natural character. There is also potential for the final alignment to be further to the west which could avoid the ‘eastern Piroa tributary’ but at the expense of greater effects on the ‘western Piroa tributary’ as discussed above.

Overall, taken together, the Project would have ‘high’ adverse effects on the natural character of the Piroa Stream and its two tributaries within the ONL.

4.5.4. Effects on ONL values

As discussed above, while the ONL crossed by the Proposed Designation is a discrete area, it is lumped together as an outlier part of the much larger ‘Brynderwyn Range and bush margins’ ONL in the Regional Policy Statement and District Plans.¹¹ A careful reading of the worksheets is therefore necessary to identify the characteristics and values relevant to the Project area – especially given that the outlier section has some key differences from the rest of the ONL. The values described in worksheets that best reflect the specific section of ONL are summarised as:

- Naturalness and natural values.

¹¹ The ‘Brynderwyn Range and bush margins’ ONL straddles Whangārei and Kaipara Districts. The relevant part of the ONL traversed by the Proposed Designation is within Whangārei District.

- Experiential value of the Brynderwyns as a distinctive barrier, landmark, and gateway to the mid-north.
- Aesthetic value of the range as a backdrop to the surrounding area.

The highway – and the bush setting of the highway – are essential to the experiential value of the Brynderwyns as a distinctive barrier and gateway. This distinguishes the outlier section of ONL from the rest of the Brynderwyn Range ONL. Key characteristics are that the outlier ONL is an area of bush-clad escarpment traversed diagonally by the existing highway. The outlier ONL is Crown land that was acquired for the purpose of a road over the Brynderwyns. After the road was built in the 1930s, the balance of the land was left to regenerate to bush. The experience of the existing SH1 has for decades therefore comprised of a steep and winding road through bush. This value has been diminished to some extent by the emergency works carried out to reinstate SH1 following the storm damage in 2023. Prominent features of SH1 now are the large cut batters, engineered hillsides, and a large works area at the top of the ONL.

Effects on the identified ONL values listed above are as follows:

Naturalness

The Project would unavoidably detract from the natural values of the ONL because of the need to clear a new corridor through the pocket of native bush in addition to the corridor of the existing SH1. The potential effects are amplified by the steepness of the topography, the geotechnical conditions, and the consequent large cut batters, and therefore wide footprint. As discussed above, the fill embankments would also detract from the natural character of the Piroa Stream and its tributaries within the ONL.

As discussed, the natural value of the bush as an ONL is tied to the experience of crossing the Brynderwyns – the experience of travelling through native bush – as well as its biophysical or ecological value. Also, the effects on naturalness are moderated by nature of the forest given that it is not old-growth forest but has regenerated since the existing highway was constructed in the 1930s.

The experience of the range as a distinctive barrier, landmark, and gateway to the mid-north

The Project would retain the experience of the range as a distinctive barrier, landmark, and gateway – but in a different form. The Project would not recreate the current experience of a winding road and cresting the top of the range. However, while the Indicative Alignment is straighter, the road will still climb steeply on both sides of the range and would cross the summit in deep box cuts. The highway would still have the sense of crossing a natural barrier. Travelling north, the ramped embankment depicted in the Indicative Alignment climbs and cuts perpendicular into the escarpment framed by bush-clad hills on either side albeit the road would be enclosed by cut batters that will soften and naturalise gradually over decades – as occurred with the existing SH1.

Aesthetic value of the range as a backdrop to the surrounding area

The relevant area with respect to the value of the range as a backdrop is the Maungaturoto valley to the south and south-west. As discussed above, it is the whole western end of the Brynderwyn range and its skyline that is relevant to its aesthetic value as a backdrop rather than just the outlier ONL which is only a small part of that backdrop. Factors that reduce potential effects on the backdrop include the distance of public views, the extent to which views are limited by intervening rolling terrain, and that the Project would be seen in context with the existing SH1 and Atlas Quarry. The Indicative Alignment, for example, is at a lower elevation than SH1 or the Atlas Quarry and is embedded in box cuts below the skyline. While it would have cumulative effects, the proposed road would be less prominent than either the existing highway or quarry with respect to the aesthetic value of the range as a backdrop.

Conclusion on effects on the values of the ONL

The Project would retain the aesthetic value of the Range as a backdrop, and the experiential value of the Range as a distinctive barrier, landmark, and gateway to the mid-north – albeit in a different form to that of the existing road. It would unavoidably detract from naturalness (including the natural character of the streams) which, in the context of the ONL values, is tied to the experience of crossing the Range. Overall, it would have a 'high' degree of adverse effects on the ONL values prior to mitigation.

4.5.5. Summary of effects prior to mitigation

Prior to mitigation, there would be 'high' adverse landscape and visual effects within this section of the Project caused mostly through the clearance of bush, encroachment into natural streams, and the implications of these on ONL values. The key ONL values are natural values and naturalness in the context of the experiential values of crossing the Brynderwyns by road.

There would similarly be 'high' adverse effects on natural character of the Piroa Stream and its two tributaries within the ONL.

Measures to mitigate such adverse effects are outlined below in section 5.

4.6. Southern approaches to Brynderwyn Hills

This section covers the wide valley south of the Brynderwyns. The valley extends to the south-west towards Maungaturoto. As discussed above, the valley is rolling farmland, typically dairy farming. It is flanked by the Brynderwyn Range to the north and east, and a line of volcanic hills (including Pukeareinga and Pukepohatu) to the south.

While the valley is divided into separate Earthworks Zones (3 and 4) to avoid haulage across SH12 which runs down the middle of the valley, it is a single landscape.

4.6.1. Relevant characteristics of the Project

The Project has the following characteristics relevant to assessing landscape and visual effects:

- The Proposed Designation crosses the top end of the valley parallel to SH1.
- The flexibility of the road alignment is somewhat constrained by the location of the proposed SH12 interchange in the middle of the Proposed Designation and the crossing points on either side of the valley. The Indicative Alignment, for example, roughly follows the centre of the Proposed Designation and is typically offset about 900 m – 1100 m from SH1.
- As discussed above, the Indicative Alignment descends from the Brynderwyn escarpment on a fill embankment that descends as a 500 m long ramp (CH 20450 – 20950) until it meets existing ground level in the farmland south of the Piroa Stream. The fill embankment is depicted as up to 54 m high where it crosses the Piroa Stream.
- Upon meeting existing ground level, the Indicative Alignment enters a box cutting through a low rolling hill. The cutting is depicted as 1.1 km long and typically between 10 – 33 m deep. The box cutting emerges (at CH 22200) through a high scarp (approximately 80 m high) and continues as a fill ramp and across rolling country to the SH12 interchange.
- The proposed SH12 interchange is depicted in the vicinity of Brynderwyn Road approximately 150 m north of the current SH12. The Indicative Alignment depicts a full diamond interchange with the main alignment passing under a SH12 overbridge.
- South of the SH12 interchange, the Proposed Designation continues for approximately 1 km across rolling farmland to the line of volcanic hills on the south side of the valley. The Indicative Alignment, for example, traverses several small embankments and cuttings in the rolling terrain – and then climbs a ramped fill embankment to enter a box cutting through a saddle in the volcanic hills. The ramp is 400 m long and up to 28 m high across a small stream (CH 24100). (The box cutting through the saddle is assessed in the following section.)
- Indicative spoil sites are identified within the valley, noting that the areas north and south of SH12 are in different Earthworks Zones. (Cut and fill balances are self-contained either side of SH12.)
- Indicative spoil sites are identified in Earthworks Zone 3 north of SH12. The sites are located either side of the Indicative Alignment. Some are within rolling farmland, mostly along small ephemeral watercourses and some sites are depicted as overfilling of fill batters on the Indicative Alignment. One site would require a diversion of the main 'Mayflower' stream.
- Indicative spoil sites are also identified in Earthworks Zone 4 south of SH12. The sites are located either side of the Indicative Alignment. They are in rolling terrain and encompass small watercourses and wetlands that are in pasture.

4.6.2. Effects on landscape and visual amenity values

The Project would have the following potential adverse effects on landscape and visual amenity values prior to mitigation:

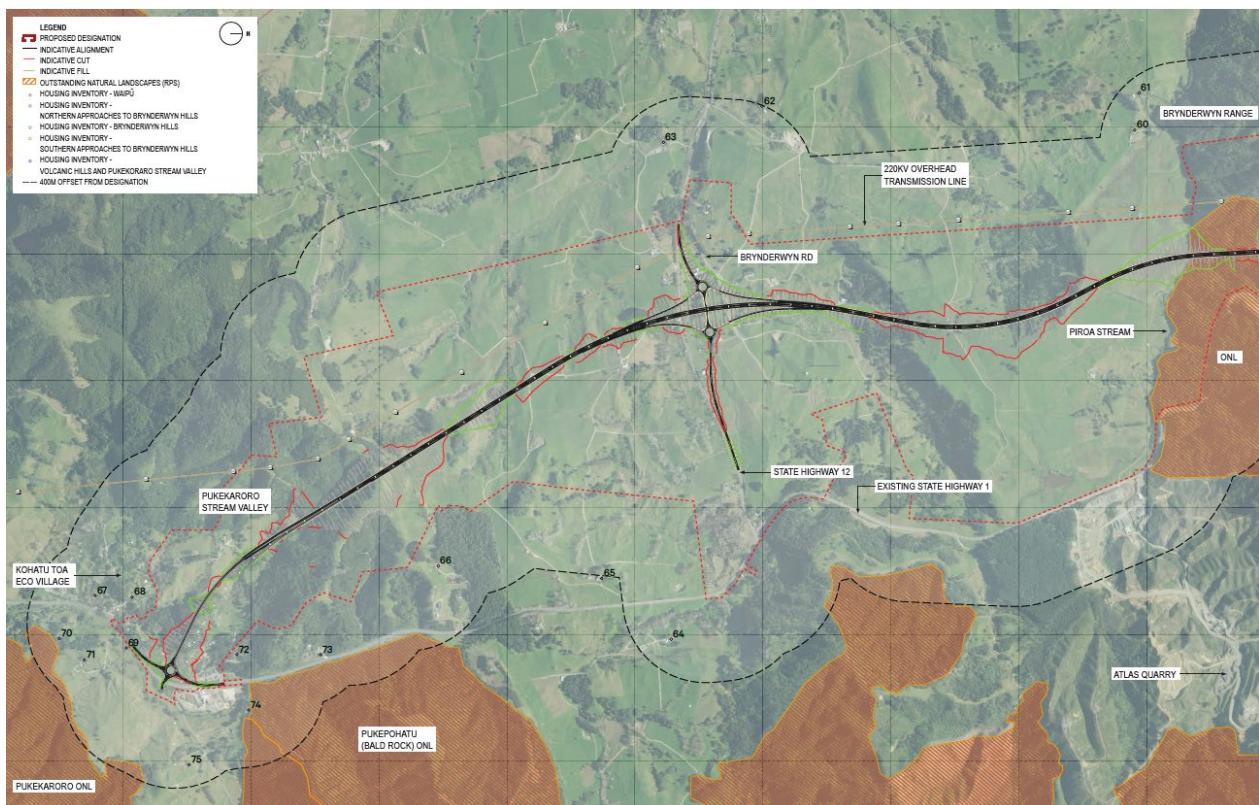
- The road would detract from natural landscape values through modifications to landform, clearance of areas of native vegetation and occasional groups of trees, and modifications to small streams and wetlands.
- Likewise, spoil disposal would impact ephemeral watercourses and wetlands. These effects are detailed under the 'natural character' heading below.
- The scale and character of the road and interchange would detract from the farmland character and amenity values.
- Unplanted cut and fill batters would exacerbate the visual amenity effects of the road generally.

Based on the Indicative Alignment, we consider there would be 'moderate' adverse effects on views from 1 house outside the designation. While that house is quite distant, in this case it is oriented to views that would include the high ramp and cutting into the escarpment. We consider the effects on other houses outside the designation would be 'low-moderate' or less. If the final horizontal and vertical alignment were to differ significantly from the Indicative Alignment, a re-assessment would be required for those properties that might be affected to a greater degree to determine any mitigation required. Table 4 below sets out an assessment of effects on views from houses within 400 m of the Proposed Designation.

Table 4: Summary table of visual effects from houses within 400 m of the Proposed Designation on southern approaches to Brynderwyn Hills

Degree of effect	Houses within 400 m of the proposed Designation Boundary
very high	-
high	-
moderate-high	-
moderate	1
low-moderate	-
low	1
very low	5

Figure 12 below illustrates the respective houses outlined above within the Housing Inventory (Table B-4 in **Appendix B**) in the southern approaches to the Brynderwyn Hills. Figure A11 in **Appendix A** provides this figure in more detail.



The potential adverse landscape and visual effects would be tempered by the following:

- The Proposed Designation is within a modified valley landscape and is relatively intensive farmland (i.e. typically dairy farming).
- The Proposed Designation is perpendicular to the pattern of rolling ridges and watercourses so that modification to landform would typically consist of box cuts and fill embankments. The box cuts would help embed the road in the rolling topography.
- The landforms are not noteworthy. The most distinctive feature is the 80 m scarp above the 'main Mayflower stream' (east of CH 22300). As noted above, the scarp is perpendicular to the Proposed Designation and cannot be avoided. The Indicative Alignment crosses the western end of the scarp where effects would be minimised. It is aligned with a pasture spur that intercepts the scarp, avoiding the bush cover. The scarp would therefore retain its legibility and natural values.
- Except for Piroa Stream which is addressed in the previous section, the Proposed Designation crosses three small streams / wetlands, all of which are tributaries of the Wairau River. The watercourses are in farmland and have relatively modest natural character. (The effects on natural character of the streams and wetlands are detailed separately below.)
- The aesthetic values derive mainly from the backdrop hills on either side of the valley. Otherwise, the valley has unremarkable rural amenity values.
- The Proposed Designation aggregates effects with the existing pattern of infrastructure near the top of the valley. The Proposed Designation is located between the current SH1 and National Grid transmission line.
- The Proposed Designation is low in the landscape. The location of the indicative SH12 interchange, for example, is some 40 m lower than the current SH1 intersection at Brynderwyn (RL60 vs RL100) and 1 km away. The Indicative Alignment is similarly low in the landscape and embedded in box cuts where it crosses low ridges. The most elevated features – the two earthwork ramps depicted in the Indicative Alignment – are where the Proposed Designation climbs into the hills on either side of the

valley. The Indicative Alignment is relatively constrained in these locations by topography and the transmission line.

- The Proposed Designation does not interrupt the pattern of local roads apart from the short no-exit Brynderwyn Road.
- The memorial to the 1963 Brynderwyn bus crash is within part of the Proposed Designation. While construction traffic could have a temporary effect on contemplative qualities of the area, the memorial would be buffered from locations in which the new road could feasibly be located. For example, the memorial is approximately 700 m from the Indicative Alignment and buffered by an intervening ridge. The Project would not affect the memorial's context adjacent to Piroa Stream at the toe of the hillside below SH1.

In summary, there would be 'moderate' adverse effects on the overall landscape and visual amenity values of the valley prior to mitigation, and potentially 'moderate' effects on the views from one house outside the designation.

4.6.3. Effects on natural character

As mentioned above, the Proposed Designation crosses three streams and several smaller ephemeral watercourses. The streams are tributaries of the Wairau River which in turn flows into an arm of the Kaipara Harbour. They do not have recorded names. We have used the same names as those used in the Assessment of Effects on Freshwater Ecology and identified them also by chainage on the Indicative Alignment. The streams all flow through farmland, and sections of the watercourse bed are characterised as wetland.

Wairau Tributary – 'Main Mayflower Stream' (CH 22300)

Natural characteristics and qualities of the stream include:

- Its small size. Within the Proposed Designation in the vicinity of the Indicative Alignment, the Assessment of Effects on Freshwater Ecology describes it as perennial with a defined channel typically 2 – 6 m between banks. It describes the stream as being shallow and having a typical width of 1 m. It has a soft bed described as a mix of cobbles over sands, gravels and sediment. It comprises mainly runs with occasional pools.
- Its location near the head of the catchment – it rises below the existing SH1 just outside the Proposed Designation.
- Its course along the toe of an 80 m high scarp which coincides with a finger of sedimentary rock that is proud of the surrounding land. The scarp and subsequent stream appear to be a response to geology. The scarp has indigenous forest (tōtara podocarp forest with nikau and occasional kauri).
- Its farmland setting. The stream is not fenced, and the bed of the watercourse either side of the channel is pasture. Notwithstanding the pasture setting, there is native bush cover on the scarp discussed above, and scattered native trees along the stream margins, and on smaller tributaries in the eastern part of the Proposed Designation (i.e. upstream of the Indicative Alignment). In the western part of the Proposed Designation (i.e. downstream of the Indicative Alignment), the watercourse flows through farmland with scattered exotic trees along the margins.
- Its moderate ecological value as assessed in the Assessment of Effects on Freshwater Ecology.

We consider the relevant section of stream where it is crossed by the Indicative Alignment currently has low-moderate natural character because the extent of modification outweighs the limited natural characteristics and qualities – although it has 'moderate' natural character further upstream along the base of the scarp.

The Indicative Alignment avoids the section of the stream where it is flowing at the base of the scarp. Instead, it is depicted as crossing the stream at the location of the SH12 interchange and therefore requiring a long culvert beneath the main alignment and ramps. Indicative spoil sites also cover an adjacent section of the stream upstream of the interchange which would require a diversion potentially over several hundred metres. The stream in this area is in open farmland. It is not fenced, the bed is pasture, and the margins are pasture with scattered exotic trees.

The Project would affect natural character of the stream by reducing the length of natural stream bed (albeit modified) and introducing prominent infrastructure.

Overall, the Project would further reduce the stream's 'low moderate' natural character. It would reduce it to 'low' natural character prior to mitigation.

Wairau Tributary – 'Puriri Downs Stream' (CH 23300)

Natural characteristics and qualities include:

- Its small size – the stream appears to be intermittent within the Proposed Designation. It has a defined channel but is not permanently flowing.
- Its location near the head of the catchment – the stream rises on the hill on the opposite side of the existing SH1 a short distance east of the Proposed Designation.
- Its farmland setting. The stream is not fenced, and the bed is pasture. The margins are pasture with scattered exotic trees.
- The Assessment of Effects on Freshwater Ecology describes the stream in the vicinity of the Indicative Alignment as being highly modified. The channel is described as 1.5 m wide when surveyed, on average 300 mm deep with some deeper pools, and the bed comprising soft sediments. The bank vegetation is described as full of pest plants, including tradescantia and arum lily, along with occasional willow and a few cabbage trees. The report assesses the stream as having low ecological value.

We consider the relevant section of Wairau tributary stream has overall 'low-moderate' natural character because the extent of modification outweighs the limited natural characteristics and qualities.

The Indicative Alignment is depicted as crossing the stream at the edge of the SH12 Interchange where a culvert would be required beneath both the main alignment and the on/off ramps.

The Project would affect natural character by reducing the length of natural stream bed (albeit modified) and introducing prominent infrastructure. The interchange would detract from perceptual as well as physical aspects of natural character.

The indicative spoil disposal in tributary ephemeral watercourses would have additional effects on natural character although the watercourses are depressions in rolling farmland that have 'low' natural character.

Overall, the Project would further reduce the stream's 'low moderate' natural character. It would reduce it to 'low' natural character prior to mitigation.

Wairau Tributary – 'Wetland 24' (CH 24150)

A raupō wetland occupies a reach of a Wairau tributary in the middle of the Proposed Designation. Natural characteristics and qualities of the wetland include:

- Its form as a sharply contained wetland within an incised valley. The wetland occupies the valley floor upstream of a farm culvert. The Assessment of Effects on Freshwater Ecology (Appendix D7 of Volume B) describes the wetland ('Wetland 24') as 30 m wide and fed from seeps of two headwater tributaries.
- Its location near the head of the catchment – the watercourse has a small upstream catchment, rising in the basin immediately to the east and south immediately upstream of the wetland, and comprising pasture.
- The legibility of the wetland area which is dominated by raupō.
- Its farmland setting. The watercourse and wetland are not fenced. The margins are pasture with scattered exotic trees (mainly willow) and occasional remnant native trees.
- Its ecological value. Although the Assessment of Effects on Freshwater Ecology assesses the condition of the wetland as only fair, it assesses it as having high value.

We consider that the relevant section of stream and wetland has overall 'moderate' natural character because the modest natural characteristics and qualities are balanced by the extent of modification.

The Project would affect natural character because the footprint of the road would occupy part of the wetland and / or stream length, including indicative spoil disposal upstream of the Indicative Alignment, and because the road would introduce prominent infrastructure to a rural setting. The Indicative Alignment crosses the top part of the valley so that a section of wetland might be retained downstream of the fill embankment. It would reduce that part of the stream network to 'low-moderate' natural character.

The Project would have 'moderate' adverse effects on the natural character of the three streams and / or wetlands within the vicinity of the Project prior to mitigation.

4.6.4. Summary of effects prior to mitigation

Prior to mitigation, and in the context of a new state highway, there would be 'moderate' adverse effects on overall landscape and visual amenity values, and 'moderate' effects on views from one house. There would be 'moderate' adverse effects on natural character of the three streams and / or wetlands.

Each of these potential adverse effects could be mitigated by measures recommended below in section 5.

4.7. Volcanic hills and Pukekaroro Stream valley

This landscape area covers the southern end of the Project including the saddle in the volcanic hills, a headwater valley of the Pukekaroro Stream south of the saddle, and the interim intersection with the SH1 opposite Baldrock Road.

4.7.1. Relevant characteristics of the Project

The Project has the following characteristics relevant to assessing landscape effects:

- The Proposed Designation is centred on a saddle in the range of volcanic hills, and a small headwater valley of the Pukekaroro Stream south of the saddle.
- The Indicative Alignment, for example, crosses the saddle in a 750 m long box cutting up to ~70 m deep (CH 24400 – 25150) and emerges at the head of the Pukekaroro Stream valley on the southern side of the cutting. It descends a benched cut and fill embankment along the middle of the valley (CH 25150 – 25600) for 450 m. The Indicative Alignment would require a diversion of the Pukekaroro Stream along the toe of the fill batters, and culverts where the road criss-crosses the stream.
- As with the Brynderwyn Hills area, based on Geotechnical advice referred to above, the assumption is that the steep cut and fill batters in the volcanic saddle area cannot practicably be topsoiled and planted but left to weather and regenerate naturally. The advice is that the dacite rock in the volcanic saddle area comprises sandy silts that are highly erodible when exposed, and that cut batters in this area are anticipated to be formed at a grade of 2H:1V with 5 m wide benches each 15 m of vertical cut. The advice is that it is impracticable for topsoil to be retained and planted in these situations. Likewise, large fill batters in this area are anticipated to be formed of rock material with steep batters between 1H:1V and 2H:1V and the edges reinforced with geogrid. It would similarly not be practicable to topsoil and replant such batters. They would be left to weather and regenerate naturally. It is therefore assumed that bare faces would remain visible on cut and fill batters for an extended time following construction through the volcanic saddle area, gradually softening and becoming colonised by vegetation over decades.
- The southern end of the Project comprises an Interim Tie-In with SH1. The Indicative Alignment depicts a roundabout intersection with SH1 and a road approximately 600 m long that transitions from two lanes at the roundabout and the four-lane main alignment. The tie in section of road is depicted as crossing the Pukekaroro headwater stream on a fill embankment and passing through a small hill in a box cutting. The roundabout is on the inside of the bend of the existing SH1 opposite Bald Rock Road which would also be connected to the roundabout.
- It is anticipated that future stages of the wider Northland Corridor Project continue to the south through the gap between Pukepohatu (Bald Rock) and Pukekaroro.
- An indicative spoil disposal site is indicated in a tributary gully on the west side of the Pukekaroro headwater valley – i.e. west of the Indicative Alignment. It mostly comprises regenerating bush and scrubland with a lower area in pasture.

4.7.2. Effects on landscape and visual amenity values

The Project would have the following potential adverse landscape and visual effects in the volcanic hills and Pukekaroro Stream valley section prior to mitigation:

- The Project would detract from natural values through the saddle because of the extensive landform modification and clearance of native bush. The Indicative Alignment, for example, has a long and deep box cut through the saddle and would require clearance of a large area of bush at the saddle.
- The large cut batters will also detract from aesthetic values through the saddle. They will visually stand out because they will appear as a wide gap in an otherwise bush clad skyline. For example, the Indicative Alignment depicts a box cutting approximately 300 m wide. The impracticality of replanting the cut batters means that they will only re-naturalise slowly over several decades – estimated at between 30 – 40 years or more. It is not practicable to construct cut batters at shallower gradients to enable topsoiling and planting because it would not only require clearance of further bush but would also be constrained by the existing National Grid transmission line and First Gas line.
- The Project would detract from the natural values within the headwater valley of the Pukekaroro Stream because of the modifications required to the landform within the valley, the clearance of vegetation, and the requirement for diversions of the stream itself. This is discussed further in Section 4.7.3 below.
- Spoil disposal would further affect natural values through the clearance of regenerating bush, and changes to landform and filling of ephemeral watercourses.
- The Project would also compromise the comparatively high rural amenity values of the valley. It would change the character from that of a secluded rural valley encircled by bush, to that of a rural valley dominated by the highway along its centre. The valley's intimate scale would serve to both amplify the change in character and to contain the adverse effects.
- Based on the Indicative Alignment, we consider there would be 'moderate' adverse effects on views from one house beyond the designation. That house would have views along the existing SH1 towards the proposed roundabout from approximately 200m. The effects on other houses beyond the designation would be 'low-moderate' or less. Given the distance of the houses from the Indicative Alignment and inherent constraints within the Designation Boundary and design requirements, we consider it unlikely that the final horizontal and vertical alignment would differ significantly from the Indicative Alignment to such an extent that those properties that might be affected to a greater degree than that assessed.

Table 5: Summary table of visual effects from houses within 400 m of the Proposed Designation in the volcanic hills section (bracketed value indicates the degree of effect with respect to the Indicative Alignment)

Degree of effect	Houses within 400 m of the Proposed Designation
very high	-
high	-
moderate-high	-
moderate	1
low-moderate	2
low	3
very low	3

The adverse landscape and visual effects have been tempered by the following factors.

- The saddle is amongst the lowest crossing points of the volcanic hills. The existing ground level on the Indicative Alignment, for example, is RL160, 16 m lower than the immediate knoll to the east and some 60 m lower than the immediate hills to the west. The saddle is 60 m lower than the framing hills further east on the far side of SH1 and 130 m lower than the highest framing hill further to the west. The Proposed Designation therefore allows for a comparatively good fit with landform.
- The saddle is amongst the narrowest area of native forest along the volcanic hills. The Indicative Alignment, for example, traverses bush that is approximately 450 m wide. Elsewhere the bush is

typically between 700 m and 1.4 km wide. Lower crossing points, such as adjacent to the current SH1, are enclosed by native bush (There is a cleared strip along a spur between the Indicative Alignment and current SH1, but the strip is cleared for the gas pipeline and therefore not appropriate for the road.)

- The Proposed Designation passes through a gap between ONLs. It traverses an area that is more modified and where infrastructure and settlement is concentrated. Specifically, the Proposed Designation is between the existing National Grid transmission line and the cleared corridor of the First Gas line at the saddle.
- While the adverse effects on visual amenity values would be amplified by the intimate scale and high amenity values of the headwater valley of the Pukekaroro Stream, the secluded nature of the valley also means such visual effects are confined and localised.

In summary, there would be 'moderate-high' adverse effects on landscape and visual amenity values of the saddle and valley prior to mitigation. There would be potential moderate effects on the views from one house.

4.7.3. Effects on natural character

Pukekaroro Stream Headwater Tributary

The Proposed Designation encompasses headwater tributaries of Pukekaroro Stream. Downstream of the area, the Pukekaroro Stream circles the toe of Pukekaroro volcanic dome, passes through Kaiwaka, and eventually flows into an arm of the Kaipara Harbour. Natural characteristics and qualities of the relevant section of stream include:

- The native bush landcover of the catchment headwaters at the saddle and along the line of volcanic hills (mainly regenerating kānuka forest). The stream then flows through farmland within the Proposed Designation and continues through farmland and Kaiwaka township further downstream.
- The stream's defined channel, and natural course within the valley.
- The stream's small size but apparently permanent flow - It had a steady flow during the November site visit. NIWA NZ River Maps database estimates a mean annual flow of only 0.009 cumecs in the relevant section of the stream.
- A setting that comprises a mix of farmland with regenerating native bush on the higher slopes. The farmland has scattered exotic and native trees, and small plantations. The stream is shaded by trees for much of the valley – with pasture beneath the trees.
- The stream's moderate ecological value: The Assessment of Effects on Freshwater Ecology describes the channel as typically 1 m wide between defined banks. It describes the bed as comprising a mix of substrates, with over half being covered in sediment, along with cobbles and gravels and areas of bedrock. It has few pools and shallow flows during summer. The report therefore considers it has limited fish habitat and moderate ecological value.

We consider that the relevant section of Pukekaroro Stream tributary within the Proposed Designation has 'moderate' natural character – the moderate natural characteristics and qualities are balanced by human modification.

The Project would result in substantial modification to the stream:

- The Proposed Designation is aligned with the stream in a relatively confined valley. The Indicative Alignment, for example, crosses the main stem of the stream once and would require diversion along the toe of fill batter near the top of the valley.
- The extent of native bush within the headwater catchment would be reduced – mainly from the saddle area. The indicative spoil disposal site would result in additional bush clearance of regenerating vegetation.
- The road would be a dominant feature of the stream valley, detracting from perceptions of natural character.

The Project would have a 'moderate-high' level of effect on the natural character of the section of the Pukekaroro Stream prior to mitigation. The stream within the headwater valley would be reduced from

‘moderate’ to ‘low’ natural character – the natural characteristics and qualities would be outweighed by human influences.

4.7.4. Summary of effects prior to mitigation

The Proposed Designation is appropriate because, in the context of fitting a new state highway through the line of volcanic hills, it confines and reduces potential effects.

The Project would have ‘moderate-high’ adverse effects on landscape and visual amenity values within the immediate landscape prior to mitigation, and ‘moderate’ adverse effects on the views from one house. It would have a ‘moderate-high’ degree of effect on the natural character headwater of the Pukekaroro Stream.

Each of these potential adverse effects could be mitigated by measures recommended below in section 5.

4.8. Temporary landscape and visual effects during construction

Landscape and visual effects would be amplified during construction, including the following actual and potential temporary effects:

- Potential effects on the natural character of streams because of erosion and sediment discharge from exposed ground.
- Potential effects on natural values through additional vegetation clearance to enable construction beyond the clearance required for the finished road. For example, additional clearance of native bush may be required for temporary construction access or to accommodate sediment control devices.
- Visual effects because of the greater footprint and raw appearance of bare earth during construction compared to the finished Project.
- Additional visual effects arising from construction yards and storage sites. Such areas typically display such characteristics as hardstand areas, and the untidy and temporary appearance of relocatable buildings (i.e. portacoms), stored materials and machinery.

Such effects would be tempered by the following:

- The temporary nature of such construction related effects.
- The assumption that exposed ground and stormwater runoff would be effectively managed, including stabilisation of earthworks through re-grassing. Such matters are outside the scope of this assessment (see Construction Water Assessment attached as Appendix D10 of Volume B). However, such measures would reduce temporary visual effects as well as reducing sediment discharge.
- The removal and making good of construction yards following construction.
- That while construction activities would have adverse visual effects, passersby may also find them interesting. For example, passersby might take an interest in the progress of the Project and anticipate its completion and subsequent benefits.

4.8.1. Summary of temporary effects

In summary, adverse landscape and visual effects would be amplified during construction as with any infrastructure project. Such effects would be acceptable because they would be temporary and would be regarded as an unavoidable aspect of providing the Project.

Additional mitigation of such landscape and visual effects is not considered necessary.

5. Recommended Mitigation

5.1.1. Waipū Interim Tie-in

Prior to mitigation, there would be 'high' potential adverse landscape and visual effects through the loss, or partial loss, of kahikatea / tōtara stands around the Waipū Interim Tie-in. The loss of the trees is a consequence of the need to accommodate the Interim Tie-In, realignment of Millbrook Road, and reconfiguration of the intersection of Millbrook Road, SH1, and The Braigh. The effects entail a loss of natural landscape values and a loss of amenity values because the stands are a distinctive gateway feature to Waipū. The loss of stands would also contribute to potential 'high' adverse visual effects on views from nearby houses. It is understood there would also be adverse effects on ecological values. The degree of these effects would depend on the extent of clearance required by the final design.

These effects could be collectively mitigated by planting replacement kahikatea / tōtara stands around the Interim Tie-in. Replacement planting may be carried out around remnant portions of the existing stands to extend the remnants and buffer their edges. It may entail fencing to protect the stands from stock. Replacement planting carried out on the eastern side of the roundabout at the intersection of SH1 and The Braigh would also soften views from affected houses.

The recommended landscape outcomes for such planting are to replace the stands of bush removed, to re-establish the kahikatea / tōtara stands as a distinctive gateway to Waipū, to soften the Interim Tie-in, and provide a buffer between the Project and adjacent houses on The Braigh.

The benefits of such mitigation would be realised incrementally. While the planting would mitigate some effects in the short term (i.e. softening the Interim Tie-in and providing a buffer from nearby properties) fuller mitigation of the gateway kahikatea / tōtara stands would be realised incrementally over decades as the trees mature.

5.1.2. Northern approaches to Brynderwyn Hills

Prior to mitigation, there would be potential 'high' localised adverse landscape and visual effects because of the partial loss of four kahikatea / tōtara stands in this section of the route (three between the Waipū Interim Tie-in and SH1 and one south of SH1). There would be potential 'high' localised adverse effects on the natural character of the Waihoi River because of the likelihood that the road would encroach on a river meander south of Glenmohr Road. There would be potential 'moderate' adverse effects on overall landscape and visual amenity values because of the scale and appearance of the road through this section of rural landscape (including the slight elevation of the road on a low embankment, and the prominence of two overpasses). There would be potential 'moderate-high' adverse effects on views from 1 house outside the designation, and 'moderate' adverse effects on views from 2 houses, depending on the final alignment.

These effects could be mitigated by:

- Replacement planting of kahikatea / tōtara on the floodplain together with fencing to prevent stock access. Planting could be carried out around remnant portions of the existing stands to extend the remnants and buffer their edges, and to fill gaps between the remnants and the Project. Adjacent fill batters of the Project may be revegetated in native species. The benefits of such mitigation would occur incrementally as the vegetation matures.
- Revegetating the batters of the proposed SH1 and Glenmohr Road overpasses in native species soften their appearance. Locating replacement kahikatea / tōtara stands (see above) on the flood plain adjacent to the overpass ramps could have the dual mitigation of helping to visually anchor to the overpasses. The recommended landscape outcome would be visual anchoring of the overpasses by adjacent stands of trees, and partial screening and softening of the overpass ramps. Planting adjacent to the Glenmohr Road overpass could also have dual benefit in helping mitigate visual effects from houses on the opposite side of SH1 (see below).
- Revegetating the fill batters in native shrub and tree species on the west side of the Project to mitigate adverse effects on amenity values because of the proximity of the Project to existing SH1, and to mitigate visual effects in views from houses on the opposite side of SH1 in the vicinity of the Glenmohr Road overpass. For example, planting the western fill batters between CH 12800 and CH

15600 on the Indicative Alignment would effectively provide a buffer from SH1, houses on the opposite side of SH1, and would contribute to softening views of the Glenmohr Road overpass.

- Constructing and naturalising a diversion of the Waihoihoi River to mitigate the effects of the Project on the natural character of the Waihoihoi River. Such mitigation would maintain the same river length, mimic natural meander forms, and be naturalised with planting of native margin vegetation. It could include planting of appropriate native margin species (including kahikatea and tōtara) to provide a buffer between the highway and the river (for example, between CH 14600 and CH 15100 on the Indicative Alignment). It could similarly include revegetating fill batters with native shrub and tree species as a visual buffer (for example between the Glenmohr Road overpass and CH 15600 on the Indicative Alignment).

The mitigation of the diversion of the Waihoihoi River would reduce adverse effects to 'moderate' or less as soon as the diversion is constructed, naturalising works are carried out, and the wetland and margin vegetation is established. This outcome would be expected within 2 years of construction.

The remaining mitigation described above would reduce adverse effects to 'moderate' or less once revegetation planting of native species has achieved a closed canopy 3 m high which would be expected after 10 years. During this time the benefits of the mitigation would increase, and the adverse effects diminish, incrementally. Full mitigation of the kahikatea / tōtara stands would be realised in the longer term once tall trees have matured.

5.1.3. Brynderwyn Hills northern slopes and summit section

Prior to mitigation, there would be 'moderate' potential adverse effects on the landscape and visual amenity values of the northern slopes, and 'moderate-high' potential adverse effects on the summit section. Such effects relate to the extent of landform modification through the large footprint of cut and fill batters and spoil disposal. There would also be 'moderate' potential adverse effects on the natural character of headwater tributaries of the Waihoihoi River on the northern slopes, and 'moderate-high' potential adverse effects on the natural character of headwater tributaries of the Ahuroa River on the summit section of the Brynderwyn Hills prior to mitigation.

These effects could be mitigated by:

- Applying measures to the steep cut and fill batter slopes to initiate natural weathering and colonisation by vegetation such as applying hydroseed mixes containing native pioneer species, and hydro-mulching.
- Revegetation with native species of all spoil disposal sites in the summit area (all such sites being in gullies) including the margins of watercourse diversions associated with spoil disposal. Such revegetation would be designed to provide for succession to native forest. Intended outcomes would be to mitigate the loss of natural values including natural character of streams. The spoil sites on the northern slopes north of SH1 could be rehabilitated as pasture to tie in with adjacent farmland.

The benefits of such mitigation would be realised incrementally. Mitigation outcomes would be partly realised, and adverse effects reduced to moderate or less, once revegetation has achieved a closed canopy 3 m high which would be expected after 10 years. During this time the benefits of the mitigation would increase, and the adverse effects diminish, incrementally. The benefits would continue to increase as the vegetation matures.

5.1.4. Brynderwyn Hills southern escarpment (ONL)

Prior to mitigation, there would be potentially 'high' adverse effects on the landscape values of the ONL on the southern escarpment of the Brynderwyn Hills. Such effects would occur with respect to natural values (including the perception of naturalness), the experience of crossing the range on a road through native forest, and the aesthetic value of the range as a skyline backdrop. Likewise, there would be potentially 'high' effects on the natural character of the Piroa Stream and its two tributary streams on the escarpment within the ONL. Such natural character effects would occur especially because of fill embankments across the streams, bush clearance, and stream diversions.

The effects on ONL values and natural character could be mitigated by:

- Applying measures to the steep cut and fill batter slopes to initiate natural weathering and colonisation by vegetation such as applying hydroseed mixes containing native pioneer species, and hydro-mulching.
- Revegetating and fencing the southern bank of the Piroa Stream across the width of the Proposed Designation with a 10 m wide band of native margin species to mitigate effects on the natural character of the stream. Such revegetation would be designed to provide for succession to native forest with species typical of natural streamside forest in the area. The intended outcomes would be to enclose the stream in native forest and prevent stock access.
- Overfilling the fill batters of the embankment south of the Piroa Stream and restoring the subsequent shallower slopes to pasture.
- Avoiding surplus spoil disposal within the ONL.
- Revegetating the summit area with native bush in replacement of pine plantation. The intended outcome is to increase the spatial extent of the ONL values – namely the natural values (including perceptions of naturalness) and the experience of travelling on a road through native forest across the Brynderwyn Range. The benefits of such regeneration would be realised incrementally. Mitigation outcomes would be partly realised once revegetation has achieved a closed canopy 3 m high which would be expected after 10 years on areas of natural or imported soil, and between 30 and 40 years on cut and fill batters where there is reliance on natural establishment and revegetation. During this time the offset benefits would increase incrementally and would continue to increase as the vegetation matures. As noted, natural revegetation can be ‘kick-started’ with the application of hydroseed mix that includes native pioneer species.

While revegetation in the early years would soften the Project, fuller mitigation would be achieved incrementally as the forest matures. For instance, the adverse effects on ONL values may be ‘moderate’ or less after 30 - 40 years when the cut batters have regenerated sufficiently to create a continuous shrubland canopy and natural appearance. The time lag during which such vegetation reestablishes could be offset by carrying out revegetation over a wider area across the Brynderwyn Hills summit as suggested above which would expand the ONL values over a wider area.

5.1.5. Southern approaches to the Brynderwyn Hills

Prior to mitigation, there would be ‘moderate’ adverse landscape and visual effects within the valley south of the Brynderwyn Hills, and ‘moderate’ adverse effects on the views from one house. There will be ‘moderate’ adverse effects on the natural character of three streams and/or wetlands crossed within the Proposed Designation. These effects could be mitigated by the following:

- Revegetating with native species the cut and fill batters where the road crosses the bush-clad scarp north of the ‘main Mayflower Stream’ (CH 22000 – CH 22400 on the Indicative Alignment). Such revegetation would be designed to provide for succession to native forest. The intended outcome is that the planting is consistent with the bush on the scarp and softens the appearance of the road.
- Revegetating with native species the fill batters of the embankments where the road crosses the two main streams south of SH12 (‘Puriri Downs Stream’ (CH 23300), ‘South Wairau Tributary - Wetland 24’ (CH 24150), and adjacent sections of stream margins at these locations. The outcomes are to naturalise the embankments and mitigate effects on perceptions of natural character.
- Revegetating areas with native species within and adjacent to the SH12 interchange to visually anchor the interchange in the landscape and soften its appearance.
- The ‘moderate’ adverse effects on views from the single house would be mitigated by measures discussed in the previous section, namely the revegetation of cut batters where the highway crosses the escarpment,

The benefits of such mitigation would be realised incrementally. The effects would be reduced to ‘low-moderate’ or less once revegetation has achieved a closed canopy 3 m high which would be expected after 10 years. The effectiveness of the mitigation would increase incrementally during this time. The effectiveness would continue to increase as the vegetation matures beyond 10 years.

5.1.6. Volcanic Hills and Pukekaroro Stream

Prior to mitigation, there would be potentially 'moderate-high' adverse landscape and visual effects and localised 'high' adverse effects through the bush-clad saddle area. There would be potentially 'moderate-high' adverse effects on the natural character of the stream. There would potentially be moderate adverse effects on views from one house.

The 'high' adverse effects at the saddle would occur because of the scale of earthworks, clearance of bush, and its prominence on the ridgeline in views from the Maungaturoto valley. The 'moderate-high' adverse effects would occur because of the effects on natural values (including clearance of bush for spoil disposal, the diversion required for the headwater tributary of the Pukekaroro Stream) and effects on amenity values within the confined valley. These effects could be collectively mitigated by:

- Applying measures to the steep cut and fill batter slopes to initiate natural weathering and colonisation by vegetation such as applying hydroseed mixes containing native pioneer species, and hydro-mulching.
- Naturalising the diversions of the Pukekaroro Stream with 10 m wide native margin planting either side of the stream.
- Planting with native species to soften the roundabout at the intersection of SH1 and the Interim Link Road. Such outcomes could be achieved with shrub species configured to ensure clear sightlines for safety reasons.

As with other planting, the benefits of such revegetation would be realised incrementally. The effects would be reduced to 'low-moderate' or less once planted revegetation has achieved a closed canopy 3 m high. Such an outcome would be expected after 10 years with area that can be topsoiled and planted, and after 30 – 40 years or more with cut and fill batters where it is necessary to rely on natural weathering and revegetation. The effectiveness of the revegetation in mitigating adverse effects would increase progressively. The adverse effects would gradually diminish during this time. The effectiveness would continue to increase as the vegetation matures.

5.1.7. Views from houses

Measures recommended above would mitigate adverse effects on views from those dwellings within 400 m of the Proposed Designation assessed as subject to 'moderate' or greater adverse effects. The assessments were undertaken with respect to the Indicative Alignment. Given the distance of the houses from the Indicative Alignment and inherent constraints within the Designation Boundary and design requirements, we consider it unlikely that the final alignment would differ significantly from the Indicative Alignment to such an extent that those properties might be affected to a greater degree than that assessed.

5.2. Summary of assessment

The Proposed Designation fits the regional landscape pattern, and partly avoids and reduces potential adverse effects:

- It passes through a landscape that has developed in response to, and in the context of, the existing SH1. At the same time, the Indicative Alignment is typically offset to avoid the development along the existing highway and is parallel to, and mostly between, the existing highway and the National Grid transmission line.
- It passes inland of Waipū, avoiding the more sensitive connections between Waipū and the coast.
- It follows the natural route along the valley of the Ahuroa and Waihoihoi Rivers on the northern approaches to the Brynderwyn range of hills.
- It climbs the northern flanks of the Brynderwyns by following the leading spur at the head of the valley.
- It crosses the summit of the range at a modified location between SH1 and the National Grid transmission line.
- It passes through the volcanic hills south of the Brynderwyns at a saddle where the hills are relatively low and the native bush cover is at its narrowest.

Nevertheless, a major highway such as the Project would have unavoidable adverse landscape, visual and natural character effects. Factors that exacerbate potential effects include the need for the highway to cross the steep Brynderwyn Hills barrier, to negotiate a path through the line of bush-clad volcanic hills north of Kaiwaka, and the earthworks required to elevate the road above the floodplains of the Ahuroa and Waihoihoi Rivers. The most significant potential adverse effects would be:

- Loss of distinctive kahikatea / tōtara stands at the entrance to Waipū.
- Diversion of a meander loop of the Waihoihoi River.
- Effects on the values of the ONL on the southern escarpment of the Brynderwyns.
- Effects on the bush clad volcanic hills and tributary valley of the Pukekaroro Stream.
- Effects on views from a small number of individual houses.

Table 6 provides a summary of landscape and visual effects and effects on natural character prior to and following recommended mitigation. The table includes an estimate of the time required to achieve mitigation.

Table 6: Summary of effects on landscape and visual amenity values and natural character (where applicable) prior to and following recommended mitigation over time

Landscape Area	Pre Mitigation	Post recommended mitigation level of effect	Timescale to reduce level of effect
Waipu Interim Tie-in	'High' localised (landscape/visual) 'Very low' (natural character)	Low-moderate or less	Mitigation of some effects realised incrementally over 10+ years and the balance over 40+ years
Northern approaches to Brynderwyn Hills	'Moderate' with localised 'High' at kahikatea-tōtara stands (landscape/visual) 'Low' for Ahuroa, localised effects at Waihoihoi river (natural character)	Low-moderate or less	Mitigation of some effects realised over 2 years, and the balance incrementally over 10+ years
Brynderwyn Hills northern slopes and summit section	'Moderate' northern slopes section (landscape/visual) 'Moderate' Waihoihoi tributaries (natural character) 'Moderate-high' summit section (landscape/visual) 'Moderate – High' Ahuroa tributaries (natural character)	Moderate or less	Mitigation of some effects realised incrementally over 10 years+ and the balance over 30 – 40+ years
Brynderwyn Hills southern escarpment (ONL)	'High' (landscape/visual) 'High' (natural character)	Moderate or less	Mitigation of some effects realised incrementally over 10+ years, the balance over 30-40+ years
Southern Approaches to the Brynderwyns	'Moderate' (landscape/visual) 'Moderate' (natural character)	Low-moderate or less	Mitigation realised incrementally over 10+ years
Volcanic Hills and Pukekaroro Stream	'Moderate- High' and localised 'High' (landscape/visual) 'Moderate-High' (natural character)	Moderate or less	Mitigation of some effects realised incrementally over 10+ years, the balance over 30-40+ years

The following sections summarise the effects, and recommended mitigation, in each of the six landscapes:

5.2.1. Waipū

The Proposed Designation is appropriate from an overall landscape and visual amenity values perspective. It avoids adverse effects on Waipū and confines adverse effects to a relatively localised landscape immediately west of Waipū.

There would be 'high' potential adverse landscape and visual effects from the loss, or partial loss, of distinctive kahikatea / tōtara stands at the gateway to Waipū in order to accommodate the Waipū Interim Tie-in. Effects include adverse impacts on views from a small number of dwellings in the vicinity. Recommended mitigation to address such effects comprises replacement planting of kahikatea / tōtara around the interim tie-in.

5.2.2. Northern Approaches to Brynderwyns

The Proposed Designation on the northern approaches to the Brynderwyns is appropriate – it avoids and reduces potential adverse effects by following the existing corridor along the valley of the Ahuroa and Waihoihoi Rivers.

There would be 'moderate' potential adverse effects on landscape and visual amenity values in this section of the corridor potentially be 'moderate-high' and 'moderate' adverse effects on the views from two dwellings. Recommended mitigation is revegetating fill batters with native species in certain locations – at the two overpasses, and the west facing batters where the highway is close to the existing SH1.

There would be potentially 'high' localised effects with respect to partial clearance of kahikatea / tōtara stands. Recommended mitigation is replacement replanting of kahikatea / tōtara stands.

There would be 'high' localised effects on the natural character of the Waihoihoi River because of diversion of a meander loop. Recommended mitigation includes recreating an equivalent meander loop, restoring natural wetlands and riparian vegetation, and configuring native planting to provide a buffer between the river and road.

5.2.3. Brynderwyn Hills Northern Slopes and Summit Area

There would be 'moderate' potential adverse landscape and visual effects with respect to the northern slopes and 'moderate-high' potential adverse effects with respect to the summit area of the Brynderwyns prior to mitigation. The greater adverse effects on the summit area are because of the combination of the cut batters and fill embankments, and extensive disposal of surplus spoil in the gullies.

There would also be potentially 'moderate' potential adverse effects on natural character of the headwater tributaries of the Waihoihoi River on the northern slopes and 'moderate-high' adverse effects on natural character of the headwater tributaries of the Ahuroa River on the summit section prior to mitigation.

Recommended mitigation includes applying hydroseed / hydromulch treatments to cut and fill batters to initiate natural weathering and revegetation, revegetating the disturbed land either side of the road (including spoil disposal sites) that is able to be topsoiled and planted, and naturalising stream diversions with respect to channel form and riparian vegetation.

5.2.4. Brynderwyn Hills Southern Escarpment (ONL)

There would be 'high' potential adverse landscape and visual effects on the ONL values on the southern escarpment of the Brynderwyns, and 'high' effects on the natural character of the Piroa Stream and two of its tributaries within the ONL. The relevant ONL values are natural values (including perceptions of naturalness), and the experience of crossing the range on a road through native forest. The Project would retain the experiential value of the Range as a distinctive barrier, landmark, and gateway to the mid-north – albeit in a different form to that of the existing road. It would unavoidably detract from naturalness and from the experience of crossing the range through native forest.

Recommended mitigation includes applying hydroseed / hydromulch treatments to cut and fill batters to initiate natural weathering and revegetation, revegetating the disturbed land either side of the road that is able to be topsoiled and planted, and replanting a 10 m wide riparian strip on the south side of the Piroa Stream. There would be partial mitigation during early years, but full mitigation of the ONL values would have been realised incrementally over decades as the vegetation matures. The ONL values could also be offset by naturalising the summit of the Brynderwyns which would compensate for the time lag in re-establishing a native vegetation cover – in the long term it would extend the ONL values over a larger area and extend the experience of travelling through native bush over a longer section of road.

5.2.5. Southern Approaches to the Brynderwyns

The Proposed Designation is appropriate across the eastern end of the Maungaturoto valley. The landscape within the valley is unremarkable. The alignment of the Proposed Designation would aggregate effects with the existing pattern of infrastructure; the designation being located between the current SH1 and National Grid transmission line.

There would be 'moderate' adverse effects on overall landscape and visual amenity values. There would be potential 'moderate' adverse effects on views from one house.

There would be 'moderate' adverse effects on natural character of the three streams and /or wetlands that are tributaries of the Wairau River.

Recommended mitigation includes revegetation cut and fill batters with native species where the road crosses the bush-clad scarp north of the 'main Mayflower Stream, and of fill batters where the road crosses the 'Puriri Downs Stream' and 'Wetland 24'.

5.2.6. Volcanic Hills

The Proposed Designation is an appropriate way to fit a new state highway through the line of volcanic hills north of Kaiwaka – and having regard to potential alignments of the Northland Corridor Project further to the south. The designation reduces effects by crossing the hills at a relatively low saddle and where the native bush cover is comparatively narrow. It confines effects within a small valley on the southern side of the hills.

The Project would have potential 'moderate-high' adverse effects on landscape and visual amenity values within the immediate landscape prior to mitigation, with potential localised 'high' adverse effects at the large cutting through the saddle. It would potentially have 'moderate' adverse effects on the views from one house. It would have 'moderate-high' effects on the natural character headwater of the Pukekaroro Stream.

Recommended mitigation includes applying hydroseed / hydromulch treatments to cut and fill batters to initiate natural weathering and revegetation, revegetating the disturbed land either side of the road (including spoil disposal sites) that is able to be topsoiled and planted, and naturalising stream diversions with respect to channel form and riparian vegetation.

6. Conclusion

While the Project would have some unavoidable adverse landscape and visual effects, potential adverse effects have been partly avoided and reduced by the selection of the Proposed Designation.

The potential adverse effects that remain (prior to mitigation), include some that would be 'very high' or 'high'. Most notably, those on the values of the ONL (including the natural character of the Piroa Stream and its tributaries), on stands of kahikatea / tōtara forest at the gateway to Waipū, on natural character of a localised section of the Waihoihoi River, and on the bush through the volcanic saddle at the head of the Pukekaroro Stream.

Such effects could all be mitigated through the measures recommended, which largely entail revegetation with native forest or stream margin species in places where there is existing topsoil or it is practicable to apply and plant topsoil, and the application to steep cut and fill batters of hydroseed / hydromulch treatments to initiate natural weathering and regeneration with colonising species. The effectiveness of such revegetation in mitigating adverse effects will be realised incrementally over time – there is typically some mitigation benefit as soon as vegetation is established, and the degree of mitigation continues to increase as the vegetation matures:

- Effects on general landscape and visual amenity values and on natural character would be mitigated so the residual effects would be 'low-moderate' or less once revegetation has achieved a closed canopy 3 m high, which would be expected after 10 years in situations with topsoil and planting, and after 30 – 40 years or longer where there is reliance on naturally established revegetation. The effects would be incrementally diminishing during this time.
- Mitigation of effects on the ONL values specifically depends on replacement of semi-mature forest. While revegetation in the early years would soften the effects of the Project, fuller mitigation would be incrementally achieved over decades. For instance, the adverse effects on ONL values may be 'moderate' or less after 30 – 40 years when a shrubland canopy should be established on the cut and fill batters that merges with more established native forest on nearby undisturbed land. The lag in time taken to achieve mitigation could be offset by carrying out revegetation over a wider area across the Brynderwyn summit, which would expand the ONL values over a wider area at the top of the Brynderwyns.
- Likewise, mitigation of the gateway kahikatea / tōtara stands at Waipū depends on replacement of the existing tall semi-mature trees. While revegetation with replacement trees in the early years would mitigate some effects, fuller mitigation would be achieved incrementally as the trees mature.

APPENDICES



Appendix A

Drawings

Appendix B

Visual Effects from Dwellings - Housing Inventory

Appendix B – Visual Effects from Dwellings - Housing inventory

The tables below set out an assessment of visual effects on views from dwellings within 400 m of the Proposed Designation boundary. The cut-off was applied on the presumption that effects would be low-moderate or less for dwellings beyond 400 m of the Proposed Designation.

The report recommends mitigation in instances where effects on views are ‘moderate’ or greater – often overlapping with mitigation recommended for other landscape effects. The effects and recommended mitigation were assessed with respect to the Indicative Alignment. Given the distance of the houses from the Indicative Alignment and inherent constraints within the Designation Boundary and design requirements, we consider it unlikely that the final alignment would differ significantly from the Indicative Alignment, to such an extent that those properties might be affected to a greater degree than that assessed.

Plans illustrating the locations of the respective houses relative to the Proposed Designation and Indicative Alignment can be found in **Appendix A**.

B.1. Waipū

Table B-1: Waipū Housing Inventory

Housing Inventory #	Address	Distance ¹²	Visual effect	Degree
1	89A The Braigh		House orientation unclear. The house is close to The Braigh which is the main entrance to Waipū township from the south. The current intersection between The Braigh and SH1 is a short distance (130 m) to the west. The property also has outlook to the kahikatea / tōtara stand. The Proposed Designation is on the front property boundary. The Indicative Alignment depicts a roundabout approximately 50 m from the nearest corner of the property that would connect The Braigh, SH1 and the Interim-Tie In. There would be a loss of a part of the kahikatea / tōtara stand that is in the outlook. The visual effect of the roundabout and its traffic would be offset by the section of The Braigh directly in front of the house becoming a local property access so that most traffic would be further away. Prior to mitigation, the effects would be ‘moderate-high’. The effects could be mitigated by replacement planting of kahikatea / tōtara stand between The Braigh and the roundabout as recommended in section 5 of the report.	Moderate-high
2	89 The Braigh	50 m	House on rear section behind 89A The Braigh. Appears oriented to northwest and northeast to garden setting. Foreground trees, and neighbouring property, would screen most views.	Low
3	69 The Braigh	150 m	While the Proposed Designation is on the front property boundary, the house is set back. It appears oriented to the northeast. Foreground trees would filter views to northwest towards Project. The Indicative Alignment depicts a roundabout connecting The Braigh, SH1 and the Interim-Tie In approximately 50m from the nearest corner of the property, and 220 m from the house. It depicts loss of a part of the kahikatea / tōtara stand that is in the outlook. Prior to mitigation, the effects would be ‘moderate’. The effects could be mitigated by replacement planting of kahikatea / tōtara stand between The Braigh and the roundabout as recommended in section 5 of the report.	Moderate

¹² Between dwelling and Indicative Alignment

Housing Inventory #	Address	Distance ¹²	Visual effect	Degree
4	57 The Braigh	90 m	While the Proposed Designation is on the front property boundary, the house is set back. along the property frontage, the house is set back beyond a paddock on the road frontage. House appears oriented to the northwest toward the Project and northeast. Foreground trees would filter views to northwest towards the Project. The Project would not change the nature of The Braigh as the entrance road to Waipū. The Indicative Alignment depicts a roundabout connecting The Braigh, SH1 and the Interim-Tie In approximately 130m from the nearest corner of the property, and 220 m from the house. It depicts loss of a part of the kahikatea / tōtara stand that is in the outlook. Prior to mitigation, the effects would be 'moderate'. The effects could be mitigated by replacement planting of kahikatea / tōtara stand between The Braigh and the roundabout as recommended in section 5 of the report.	Moderate
5	64 The Braigh	0 m	Suburban section. House orientation unclear. Proposed Designation runs alongside boundary of the property. The Indicative Alignment depicts the Interim Tie-in comprising two roundabouts. One roundabout is approximately 180m away but would be screened on the opposite side of a kahikatea / tōtara stand. The other roundabout is approximately 300m away on the far side of SH1 – the views would be filtered by scattered stands of kahikatea / tōtara. Mitigation is not recommended.	Low-moderate
6	58 The Braigh	0 m	Suburban section. House appears to be oriented northeast away from the Project. There are foreground trees and hedging to the northwest in the direction of the Project. The Proposed Designation follows the southwest and northwest property boundaries. The Indicative Alignment depicts the Interim Tie-in comprising two roundabouts. One roundabout is approximately 210 m away but would be screened on the opposite side of a kahikatea / tōtara stand. The other roundabout is approximately 280 m away on the far side of SH1 – the views would be filtered by scattered stands of kahikatea / tōtara. Mitigation is not recommended.	Low-moderate
7	48B The Braigh	100 m	House appears oriented to north and east away from the Project. There are foreground trees and hedging to the northwest in the direction of the Project. The Proposed Designation comes close to the northwest corner of the property. The Indicative Alignment depicts the Interim Tie-in comprising two roundabouts. One roundabout is approximately 300 m away but would be screened on the opposite side of a kahikatea / tōtara stand. The other roundabout is approximately 330 m away on the far side of SH1 – and the views would be filtered by scattered stands of kahikatea / tōtara. Mitigation is not recommended.	Low
8	48A The Braigh		House appears oriented to north away from the Project. There are foreground trees and hedging to the west and northwest in the direction of the Project. The Indicative Alignment depicts the Interim Tie-in comprising two roundabouts. One roundabout is approximately 400 m away to the south but would be screened on the opposite side of an existing kahikatea / tōtara stand. The other roundabout is also approximately 400 m away on the far (western) side of SH1 – and the views would be filtered by scattered stands of kahikatea / tōtara. Mitigation is not recommended.	Low
9	62 Shoemaker Road		Property appears to have three dwellings. Orientation unclear. The property is on the western outskirts of Waipū township adjacent to the Waipū Bypass (SH1). The Proposed Designation is on the opposite side of SH1. However, the new road is constrained by the location of the Waipū Interim Tie-in and the 6curve of the Proposed Designation to the north. The Indicative Alignment, for example, depicts the Waipū Interim Tie-in 400 m west of the dwellings, and the Indicative	Low

Housing Inventory #	Address	Distance ¹²	Visual effect	Degree
			Alignment 250 m to the west. A dense foreground orchard of macadamia trees will screen the Project from the property. If the orchard were not there, remnant kahikatea / tōtara trees would filter the distant views to the interim tie-in.	
N/A	Properties north of The Braigh	Varies	Other properties on the north side of The Braigh within 400m of the Proposed Designation would have views from similar angles to those from 64, 58, and 48B The Braigh. but would be further away and would be buffered by the intervening properties. The adverse visual effects would be 'Low'. Mitigation is not recommended.	Low
N/A	Properties south of The Braigh	Varies	Other properties on the south side of The Braigh within 400 m of the Proposed Designation would have views from similar angles to those from 89A, 69, and 57 The Braigh. but would be further away, would be buffered by the intervening properties, and screened to a greater extent by the kahikatea / tōtara stand. The adverse visual effects would be 'Low' or 'Very low'. While mitigation is not necessary, those properties would nevertheless benefit from the mitigation recommended in section 5 for the properties above.	Low or Very low

B.2. Northern approaches to the Brynderwyn Hills

Table B-2: Northern approaches to the Brynderwyn Hills Housing Inventory

Housing Inventory #	Address	Distance	Visual effect	Degree
10	3781 SH1	150 m	Appears to be two dwellings on property, oriented northwest and north toward the Project. Appears that foreground hedging would soften views toward the Project. The Indicative Alignment depicts the Interim Tie-in to the north beyond foreground houses. It depicts the main alignment approximately 450m to the northwest. The property would also benefit from the reduction in traffic on the existing SH1. No mitigation is recommended.	Low
11	3783 SH1	500 m	House is on a rear property set back from SH1 and screened by foreground trees which would limit visual effects. The Indicative Alignment, for example, is over 500 m away, with views filtered by both foreground and midground trees.	Very low
12	3785 SH1	430 m	House appears oriented northwest in the direction of the Project. The Proposed Designation on the opposite side of the existing SH1. The Indicative Alignment is approximately 430 m away and softened by trees in the midground.	Low
13	3817 SH1	440 m	House appears oriented northwest in direction of Project. Proposed Designation is on opposite side of the foreground of the existing SH1. The Indicative Alignment is approximately 440 m away, beyond the foreground SH1, midground transmission line, and softened by midground trees.	Low
14	3819 SH1	560 m	House is on a rear property set back from SH1 and with foreground trees and the neighbouring house providing a buffer. The Indicative Alignment is approximately 560 m away, beyond the midground SH1 and transmission line, and softened by foreground and midground trees.	Very low

Housing Inventory #	Address	Distance	Visual effect	Degree
15	3821 SH1	540 m	House appears oriented northeast and northwest toward the Project. Foreground trees would filter views. The Indicative Alignment is 540 m away, beyond the foreground SH1, midground transmission line, and softened by foreground and midground trees.	Very low
16 – 21	85 Millbrook Road and 112, 123, 159, 164, 179 Ahuroa Road	Varies	These six properties are on the west bank of the Ahuroa River and are within 400m of the Proposed Designation which traces the river. However, the Indicated Alignment would be distant (400 m – 770 m) and any views would be screened by the dense band of vegetation along the river banks.	Very low
22	7 Finlayson Brook Road	460 m	Property is at the intersection of SH1 and Finlayson Brook Road. House appears oriented to northwest to a well treed garden setting. The Proposed Designation follows two sides of the property. However, the Indicative Alignment is approximately 460m to the northeast and the SH1 overbridge is depicted approximately 700 m north of the property. Views of both would be filtered by the foreground trees. SH1 is depicted as being realigned to the north of the property on the approaches to the overpass, but the road would be no closer. At the same time, visual amenity would benefit from fewer vehicles on the existing SH1.	Low
23	36 Finlayson Brook Road	700 m	House appears oriented northwest away from the Project. The Proposed Designation is to east and northeast on opposite side of Ahuroa River. However, the Indicative Alignment is approximately 700m away. The SH1 overpass is depicted approximately 750m away, and the realignment of SH1 approximately 450 m away. A band of trees along the margins of the river would filter or screen all views.	Very low
24	38 Finlayson Brook Road	750 m	Two dwellings appear oriented northwest and northeast. Proposed Designation is to east and northeast on opposite side of Ahuroa River. However, the Indicative Alignment is approximately 750 m away. The SH1 overpass is depicted approximately 800m away, and the realignment of SH1 approximately 500 m away. A band of trees along the margins of the river would filter or screen all views.	Very low
25	4068 SH1	300 m	House appears oriented to northwest. Proposed Designation is to east on opposite side of SH1. However, the Indicative Alignment is approximately 300 m away. Foreground trees and hedging and midground kahikatea / tōtara stand would soften views and provide perspective depth. The visual amenity values of the property would also benefit from reduction in traffic on existing foreground SH1.	Low
26	10 Brooks Road	220 m	House appears oriented north and east. Proposed Designation is to east on opposite side of SH1. However, the Indicative Alignment is approximately 220m away. Foreground trees and hedging would soften and partially screen views., for example, is 220 m away (moderate). The visual amenity values of the property would also benefit from reduction in traffic on existing foreground SH1. Outlook along the designation to the northeast is partly screened by midground kahikatea / tōtara stand.	Low-moderate
27	12 Brooks Road	270 m	House appears oriented north. Proposed Designation is to east on opposite side of SH1. Foreground trees would filter views. Neighbouring property provides a buffer and additional screening. The Indicative Alignment is 270 m away. Views from the property would also benefit from reduction in traffic on existing foreground SH1.	Low

Housing Inventory #	Address	Distance	Visual effect	Degree
28	11 Tiria Lane	320 m	Appear to be two dwellings, oriented northeast and east. Proposed Designation is to east on opposite side of SH1. The Indicative Alignment is approximately 320 m away. Foreground trees and hedging, and midground hedging would filter views. The layering of vegetation would provide perspective depth. Views from the property would also benefit from reduction in traffic on existing foreground SH1.	Low
29	25 Tiria Lane	300 m	House appears oriented northwest with side outlook to northeast toward Project. Proposed Designation is on opposite side of SH1. The Indicative Alignment is approximately 300 m away. Relatively open outlook – although midground hedging would filter views and provide perspective depth. Views from the property would also benefit from reduction in traffic on existing foreground SH1.	Low-moderate
30	33 Tiria Lane	310 m	House appears oriented north and east toward Project. Proposed Designation is to east on opposite side of SH1. The Indicative Alignment is approximately 310 m away. Relatively open outlook – although midground hedging would filter views and, together with SH1, provide perspective depth. There would also be views to the southeast toward the realigned Glenmohr Road and overpass depicted in the Indicative Alignment. Such views would be buffered by the intervening property at 4164 SH1. Views from the property would also benefit from reduction in traffic on existing foreground SH1.	Low-moderate
31	38 Tiria Lane	390 m	House appears oriented northeast (toward Project) and northwest. Proposed Designation is to east on opposite side of SH1. The Indicative Alignment is approximately 390 m away. Views from the house would be buffered by foreground buildings and vegetation on the neighbouring properties (33 and 39 Tiria Lane), and midground hedgerows along SH1.	Low
32	39 Tiria Lane	310 m	House appears oriented northeast (toward Project) and northwest. Proposed Designation is to east on opposite side of SH1. The Indicative Alignment is approximately 310 m away. Foreground trees would filter views, and midground hedgerows would further screen the Project. The layers of vegetation would also provide perspective depth. Views from the property would also benefit from reduction in traffic on existing foreground SH1.	Low
33	48 Tiria Lane	380 m	House appears oriented north and west. Proposed Designation is to east on opposite side of SH1. The main alignment depicted in the Indicative Alignment is approximately 380 m away. Double rows of midground hedging would filter views. Views to the east would also include the realigned Glenmohr Road and overpass depicted in the Indicative Alignment. Such views would be further buffered by the intervening property at 4164 SH1. Views from the property would also benefit from reduction in traffic on existing foreground SH1.	Low
34	57 Tiria Lane	240m	House appears oriented north and east (toward Project). Proposed Designation is to east on opposite side of SH1. The Indicative Alignment is approximately 240 m away. Views to the northeast would also include the realigned Glenmohr Road and overpass depicted in the Indicative Alignment. Foreground orchard and midground hedging would filter and partially screen views. Views from the property would also benefit from reduction in traffic on existing foreground SH1.	Low-moderate
35	58 Tiria Lane	220 m	House appears oriented north and east (toward Project). Proposed Designation is to east on opposite side of SH1. The Indicative Alignment is approximately 300 m away. Views to the northeast would also include the realigned Glenmohr Road and overpass depicted in the Indicative Alignment. Foreground hedging would screen views. The neighbouring property (57 Tiria Lane) would provide a further buffer towards the indicative Glenmohr Road overbridge. Views from the property would also benefit from reduction in traffic on existing foreground SH1.	Low

Housing Inventory #	Address	Distance	Visual effect	Degree
36	4164 SH1	170 m	House appears oriented east, north and west. The current SH1 is in foreground to east. Proposed Designation is on the opposite side of SH1. The Indicative Alignment is approximately 170m away on the opposite side of the current highway. The outlook to the southeast would also be along the realigned Glenmohr Road to the overpass depicted in the Indicative Alignment. The relocated intersection with Glenmohr Road is depicted opposite the property. Foreground trees would soften views and provide perspective depth. The reduction in traffic on the existing foreground SH1 would offset the adverse visual effects of the new intersection and views of the Project. The adverse effects prior to mitigation would be 'moderate-high'. Mitigation recommended in section 5 (planting of native species on the ramp fill batters) to mitigate adverse effects on visual amenity values would also mitigate adverse effects on views from the property.	Moderate-high
37	24 Ryan Road	800 m	House is elevated and appears oriented northeast and northwest with outlook over the valley toward Project. Proposed Designation is approximately 300m away on opposite side of Ryan Road. However, the main alignment depicted in the Indicative Alignment, for example, is 800m away, and the Glenmohr Road overpass over 900m away, and the nearest part of the realigned Glenmohr Road is over 600m away. While the property would have an elevated view, the outlook is over farm buildings and yard at the toe of the property. The Project would be distant and seen in the context of a valley landscape that includes the existing SH1 and midground transmission line.	Low
38	50 Ryan Road	650m	House appears oriented northeast and northwest (toward Project) with slightly elevated outlook over the valley toward Project. The Proposed Designation follows the convoluted course of the Waihoi River approximately 250m away at its nearest. However, the Indicative Alignment depicts the main alignment as approximately 650 m away, the Glenmohr Road overpass approximately 700m away, and the nearest part of the realigned Glenmohr Road over 500m away. The Project would be distant and seen in the context of a valley landscape beyond the midground Waihoi River and in the context of the midground transmission line and existing SH1.	Low
39	62 Ryan Road	150 m	House appears oriented northwest and southwest with outlook over the valley toward the Project. The Proposed Designation is approximately 150 m away. However, the Indicative Alignment depicts the main alignment and Glenmohr Road as approximately 540 m away, and the nearest part of the realigned Glenmohr Road approximately 400 m away. The Project would be distant and seen in the context of a valley landscape beyond the Waihoi River and in the context of the midground transmission line and existing SH1.	Low
40	74 Ryan Road	570 m	House is elevated and appears oriented north and west with outlook over the valley toward the Project. The Proposed Designation follows the convoluted course of the Waihoi River approximately 200m away at its nearest. However, the Indicative Alignment depicts the main alignment and Glenmohr Road overpass as approximately 650 m away, and the nearest part of the realigned Glenmohr Road approximately 570m away. The Project would be distant and seen as part of a broad valley landscape beyond the midground Waihoi River and in the context of the midground transmission line and existing SH1.	Low
41	95 Glenmohr Road (red roof)	580 m	House appears oriented north and west. It is elevated with outlook toward the Project to the west. The Proposed Designation is on the opposite side of Glenmohr Road. However, the Indicative Alignment, is approximately 580m from the property. The Project would be part of the valley landscape beyond the Waihoi River and in context with the existing SH1 and midground transmission line.	Low

Housing Inventory #	Address	Distance	Visual effect	Degree
42	90 Glenmohr Road	480 m	The house is the 'McKenzie-Fraser House' which is a Historic Place Category 2 in the Heritage New Zealand Pouhere Taonga register, and a Category B Built Heritage item in the Whangārei District Plan. It is elevated with its back against a stand of native bush. It is oriented northwest with outlook along valley toward the Project. The property slopes to the northwest to the Waihoihoi River. The Proposed Designation boundary crosses approximately 20 m in front of the property – 50 m in front of the house. However, the Indicative Alignment is approximately 480 m from the house in a side view to the west, and approximately 600 m away in the outlook to the northwest in front of the house. The Project would be part of the valley landscape beyond the midground transmission line and Waihoihoi River, and in the context of the existing SH1.	Low
43	4212 SH1	210 m	Two-storey house on the banks of the Ahuroa River. It appears oriented north, east and west – including outlook to northwest to the river. The Proposed Designation is to east on opposite side of SH1. However, the Indicative Alignment is approximately 210 m away. Views to the northeast would also include the realigned Glenmohr Road and overpass (~420 m) depicted in the Indicative Alignment. Foreground garden, and midground trees and hedging would soften views towards Project. Layering of vegetation would contribute to buffer and perspective depth. Mitigation recommended in section 5 to mitigate adverse effects on visual amenity values (planting of native species on the ramp fill batters and on the fill batters of the main alignment where it closely parallels the existing SH1) would also mitigate adverse effects on views from the property.	Moderate
44	8 Waipū Gorge Road	320 m	House is near the intersection of SH1 and Waipū Gorge Road. House appears oriented north and west to garden setting. Proposed Designation is to east on opposite side of SH1. The Indicative Alignment is approximately 320 m away. Foreground trees would filter views. Views from the property would also benefit from reduction in traffic on existing foreground SH1.	Low

B.3. Brynderwyn Hills northern slopes and summit section

Table B-3: Brynderwyn Hills northern slopes and summit section Housing Inventory

Housing Inventory #	Address	Distance	Comment	Degree
45	30 Waipū Gorge Road	450 m	House is at a low elevation on the banks of the Ahuroa River. Appears oriented northwest. Proposed Designation to northeast on the opposite side of SH1. The Indicative Alignment is 450m away. Low intervening ridge and foreground vegetation would screen views.	Very low
46	38 Waipū Gorge Road	470 m	House is at a low elevation on the banks of the Ahuroa River. Orientation unclear. Proposed Designation is to northeast on opposite side of SH1. The Indicative Alignment is 470m away. Low intervening ridge and foreground vegetation would screen views.	Very low
47	37 Waipū Gorge Road	430 m	House is elevated on a low ridge. Appears oriented northeast with wide outlook over the valley in the direction of the Project. The Proposed Designation is approximately 290 m away on opposite side of SH1. The Indicative Alignment is 430 m away. The Project would be reasonably distant and seen in the context of the existing corridor, beyond the midground existing SH1 and transmission line.	Low

Housing Inventory #	Address	Distance	Comment	Degree
48	37A Waipū Gorge Road	280 m	House is elevated on low ridge. Appears oriented north. The Proposed Designation is approximately 280m away on the opposite side of SH1. The Indicative Alignment is 430 m away. It appears that views of the Project would be screened by topography and foreground bush. In any glimpses, the Project would be reasonably distant and seen in the context of the existing corridor, beyond the midground existing SH1 and transmission line.	Very low
49	39 Waipū Gorge Road	300 m	House is on low ridge but appears that topography and foreground stand of bush would screen any views. Proposed Designation is 300m away. Indicative Alignment is 480 m away on far side of SH1 and transmission line.	Very low
50	4476 SH1	330 m	House is elevated on ridge. Appears oriented northeast towards open outlook over the valley and towards the Project. The Proposed Designation is 150 m away on the opposite side of SH1. The Indicative alignment is approximately 330 away. The Project would be reasonably distant and seen in the context of the existing corridor, beyond the midground existing SH1 and transmission line.	Low
51	Neighbouring house to SE of 4476 SH1	300 m	House is elevated on ridge. Appears oriented northeast towards Project. Proposed Designation is to northeast at 100m and on the far side of the existing SH1. The Indictive Alignment is approximately 300m away. It appears that foreground topography and bush would screen views of the Project. In any glimpses the Project would be reasonably distant and seen in the context of the existing corridor, beyond the midground existing SH1 and transmission line. The nearest sections of the Indicative Alignment to the northeast are depicted in box cut which would further limit prominence.	Low
52	4482 SH1	400 m	House is elevated on low ridge with potential views of the Project on the hills to the east. The house appears to be oriented to the northeast to bush setting. Proposed Designation is 140m to the east and on the opposite side of the existing SH1. Indicative Alignment is 400 m away in a box cutting and beyond transmission lines. Intervening vegetation would further soften views.	Low
53	4484 SH1	480 m	House appears oriented to north to bush setting. Proposed Designation is 200 m to the east on opposite side of SH1. Foreground vegetation appears likely to screen views. Indicative Alignment is 480 m away, in box cut, and beyond transmission lines. There is a secondary dwelling lower on the property, closer to the Proposed Designation. The Indicative Alignment is 400 m away. It appears that any views would be glimpsed through foreground vegetation.	Very low Low
54	232 Glenmohr Road	900 m	House is approximately 190 m from Proposed Designation which traces boundary of a large property on the opposite side of the Waihoi River. However, it is distant (approximately 900 m) from the Indicative Alignment and any views would be screened by foreground bush.	Very low
55	234 Glenmohr Road	1 km	House is approximately 250 m from the Proposed Designation which traces boundary of a large property on the opposite (southern) side of the Waihoi River. However, it is distant (approximately 1 km) from the Indicative Alignment and any views would be screened by foreground bush.	Very low
56	240 Glenmohr Road	1 km	House is approximately 300m from Proposed Designation which traces the boundary of a large property on the opposite side of the Waihoi River. However, it is distant (approximately 1 km) from the Indicative Alignment and any views would be screened by foreground bush.	Very low
57	322 Glenmohr Road	1 km	House is approximately 390m from Proposed Designation which traces the boundary of a large property on the opposite side of the Waihoi River. However, it is distant (approximately 1 km) from the Indicative Alignment and any views would be screened by foreground bush.	Very low

B.4. Southern approaches to Brynderwyn Hills

Table B-4: Southern approaches to Brynderwyn Hills Housing Inventory

Housing Inventory #	Address	Distance	Comment	Degree
60	2941C SH1	600 m	The house is slightly elevated and appears oriented north and east towards the Project. The main body of the Proposed Designation is approximately 400m to the east on the far side of the transmission line. The Indicative Alignment is approximately 600 m away. It would comprise the ramped embankment over the Piroa Stream and the cutting into the escarpment. A low rolling ridge would screen parts of the road at lower elevation, but the ramped embankment would be prominent because of its height (54 m above the stream – although the apparent height would be reduced by the intervening rolling topography which is approximately 20m higher than the stream), and the cut batters on the escarpment would also be prominent. We consider this combination of factors would lead to 'moderate' adverse visual effects despite the distance. The road would nevertheless be seen in context of the foreground transmission line and backdrop existing SH1. The measures recommended in section 5 to mitigate effects on ONL landscape values would also serve to mitigate potential effects on views from this property. There is a dogleg in the boundary of the Proposed Designation that at its nearest point is approximately 220m away. However, the dogleg is to accommodate works north of the escarpment in the summit area. The road could not feasibly be built in this area.	Moderate
61	2941D SH1	310 m (550 m)	The house appears oriented to the north but also has outlook to the northeast toward the Project. The main body of the Proposed Designation is approximately 580m to the east on the far side of the transmission line. The Indicative Alignment is approximately 780 m away. It would comprise the ramped embankment over the Piroa Stream and the cutting into the escarpment. Foreground trees would soften views and provide perspective depth. The road would be seen in context of the foreground transmission line and backdrop existing SH1. For this combination of factors, we consider the effects would be 'low' despite the nature of the works. Nevertheless, the measures recommended in section 5 to mitigate effects on ONL landscape values would also serve to mitigate any potential effects on views from this property. As above, there is a dogleg in the boundary of the Proposed Designation that at its nearest point is approximately 310m away. However, the dogleg is to accommodate works north of the escarpment in the summit area. The road could not feasibly be built in this area.	Low
62	218 SH12	830 m	House appears oriented northwest away from the Project. The nearest corner of a dogleg of the Proposed Designation is approximately 360 m away. The Indicative Alignment depicts the road approximately 860 m away, and the nearest roundabout of the SH12 interchange at approximately 830 m. Views would be screened by foreground trees and midground low rolling ridge.	Very low
63	195 SH12	380 m	House appears oriented to north. The Project is to the east. The Proposed Designation is approximately 380 m away. However, the Indicative Alignment depicts the road approximately 800 m away, and the nearest roundabout of the SH12 interchange at approximately 680 m. A midground stand of bush and stands of exotic trees would screen views of interchange. Views would be limited to distant views (>900 m) of the road to the southeast beyond intervening rolling topography, transmission line, and scattered trees and sheds.	Very low

Housing Inventory #	Address	Distance	Comment	Degree
64	2682 SH1	1.3 km	House appears to be oriented to the north and west toward the Project. The Proposed Designation is approximately 250m to the northwest with the Indicative Alignment approximately over 1 km away. The intervening landscape includes rolling topography and large established trees within the adjacent catchments which will largely screen views.	Very low
65	2669 SH1	970 m	House appears oriented north and west towards the Project. Proposed Designation is approximately 390 m to the west. However, the Indicative Alignment is approximately 970 m away. Views would be across rolling terrain – the Indicative Alignment to the west and northwest is depicted as largely embedded in box cuts. The SH12 interchange would be approximately 1.2 km away. Views would also be filtered by foreground and midground trees. The potentially most prominent section would be the fill embankment and cutting through the saddle approximately 1.2 km to the southwest, but such views would be intercepted by intervening topography and vegetation.	Very low
66	2587 SH1	500 m	There are several dwellings on the property. The Proposed Designation is approximately 130 m from the nearest house with appears to be oriented north away from the Project. The Indicative Alignment is approximately 500 m to the west, and at its nearest is in a deep box cut through the saddle on the line of hills. Views to the Project would be screened by an intervening ridge and foreground bush.	Very low

B.5. Volcanic hills and Pukekaroro Stream valley

Table B - 5: Volcanic hills and Pukekaroro Stream valley Housing Inventory

Housing Inventory #	Address	Distance	Comment	Degree
67	2395E SH1	440 m	(Green roof) House appears oriented northwest and northeast. Proposed Designation is approximately 120m to the north – the nearest part of the designation would provide for the end of tie-in works on the existing SH1. However, the Indicative Alignment is approximately 440m away and would be screened by an intervening ridge and trees.	Very low
68	Kohatu Ecovillage	0 m	Cluster of dwellings on small separate lots within a larger common lot. (The Proposed Designation crosses part of the common lot but in an area without dwellings and comprising a separate valley.) Approximately eight dwellings, which typically appear to be oriented north and northwest towards the Project. The Proposed Designation adjoins the boundaries of the nearest lots. However, the Indicative Alignment is approximately 230 m away and screened by an intervening ridge and trees. The adjacent section of the Indicative Alignment is also depicted in box cut except for the short embankment over the Pukekaroro Stream.	Low
69	2414 SH1	360 m	House is elevated on the hillside on the toe of Pukekaroro. Appears oriented north. Open outlook towards the Project. The Proposed Designation is approximately 210 m to the west – the nearest part of the designation would provide for tie-in works on the existing SH1. The Indicative Alignment depicts a roundabout approximately 360 m away at the intersection of the interim link road, SH1 and Baldrock Road. The elevated viewpoint means the roundabout would be reasonably prominent. However, it would not look out of place in the context with the existing SH1 where periodic upgrade works might be reasonably anticipated. It would also be seen in the context of the Absolute Concrete works which would remain the most prominent feature of the valley. The rest of the Indicative Alignment would be screened behind the hill opposite the property.	Low-moderate

Housing Inventory #	Address	Distance	Comment	Degree
70	2372 SH1	500 m	House is on toe slope of Pukekaroro adjacent to the existing SH1. Appears oriented north toward the Project, however it is set within established vegetation which will provide screening of the Project. The Indicative Alignment depicts a roundabout approximately 500 m northeast of the dwelling at the intersection of the interim link road, SH1 and Baldrock Road. Where visible, the roundabout would be seen in the context with the existing SH1 where periodic upgrade works might be reasonably anticipated. The rest of the Indicative Alignment would be screened behind the hill opposite the property to the north.	Low
71	2416 SH1	180 m	House is on toe slope of Pukekaroro adjacent to the existing SH1. Appears oriented northeast toward Project. The Proposed Designation follows the property boundary with SH1 – the nearest part of the designation would provide for tie-in works on the existing SH1. The Indicative Alignment depicts a roundabout approximately 180 m northeast of the dwelling at the intersection of the interim link road, SH1 and Baldrock Road. Such works may result in removal of vegetation on the hillside opposite the property, which would affect outlook. However, the roundabout would be seen in the context with the existing SH1 where periodic upgrade works might be reasonably anticipated. The rest of the Indicative Alignment would be screened behind the hill opposite the property.	Moderate
72	2471 SH1	230 m	House is within a clearing surrounded by plantation. Appears oriented northeast. The Proposed Designation follows the property boundary approximately 20 m from the house. The Indicative Alignment depicts the nearest part of the interim link road approximately 230 m to the south within a deep box cut through the intervening hill. Likewise, the roundabout depicted 280 m to the south would also be screened. There would be potential views across the valley to the Indicative Alignment approximately 270 m – 370 m away. Such views would be largely screened by foreground vegetation.	Low-moderate
73	2523A SH1	500 m	House appears oriented north. The Proposed Designation is approximately 140 m away at the crest of a bush clad ridge to the west and south. The Indicative Alignment is approximately 500 m – 600 m away beyond the ridge.	Very low
74	33 Baldrock Road		House appears oriented northwest and northeast away from the Project. The Proposed Designation is approximately 200 m away – the nearest part of the designation would provide for tie-in works on the existing SH1. The Indicative Alignment depicts a roundabout approximately 350 m to the southwest at the intersection of the proposed interim link road, SH1 and Baldrock Road. However, any views would be on the far side of the foreground Absolute Concrete works and would be filtered by foreground planting.	Very low
75	40 Baldrock Road	400 m	House appears oriented northwest. The Proposed Designation is approximately 280 m away. The Indicative Alignment depicts a roundabout approximately 400 m to the west at the intersection of the proposed interim link road, SH1 and Baldrock Road. The view angle is along the alignment of the link road box cut through the hill opposite. Views would be largely screened by foreground vegetation. The works would be seen in the context of the midground Absolute Concrete works.	Low