IN THE MATTER OF	the Resource Management Act 1991
AND	
IN THE MATTER OF	applications for resource consents and notices of requirement in relation to the Ōtaki to North of Levin Project
BY	**WAKA KOTAHI NZ TRANSPORT AGENCY**
	Applicant

ŌTAKI TO NORTH OF LEVIN HIGHWAY PROJECT

TECHNICAL ASSESSMENT D:

LANDSCAPE, VISUAL AND NATURAL CHARACTER

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LIST OF ACRONYMS

CEDF	Cultural and Environmental Design Framework
CH	Chainage (reference distance along project north to south)
HDP	Horowhenua District Plan
KCDP	Kāpiti Coast District Plan
MCA	Multi criteria analysis
MCI	Macroinvertebrate community index
NOR	Notice of Requirement
NZILA	Tuia Pito Ora / New Zealand Institute of Landscape Architects
NIMT	North Island Main Trunk railway
NZUP	New Zealand Upgrade Programme
Ō2NL	Ōtaki to North of Levin Highway Project (the Project)
ONL	Outstanding natural landscape
ONFL	Outstanding natural feature or landscape
PC4	Plan Change 4 (Tara-Ika Growth Area) to Horowhenua District Plan
PNRP	Proposed Natural Resources Plan (Greater Wellington Regional Council)
SAL	Special amenity landscape
SUP	Shared use path

EXECUTIVE SUMMARY

1. This technical assessment assesses the actual and potential effects of the Ōtaki to North of Levin Highway Project (the "**Ō2NL Project**") on landscape, visual, and natural character values. The assessment supports the notices of requirement for designations ("**NoRs**") and application for resource consents for the Ō2NL Project.

2. I had input to shaping the Ō2NL Project since 2011, including input to consideration of alternatives with respect to the designation alignment and related matters, and to the proposed urban and landscape design measures.

3. A new highway through a landscape such as Horowhenua must unavoidably have some adverse landscape, visual, and natural character effects. However, I consider potential significant adverse landscape effects have been avoided and reduced through the selection of an eastern route and detailed alignment. The proposed designations follow what is considered the best fit from a landscape perspective at a district level.

4. The Ō2NL Project also fits landscape patterns at a finer scale within the constraints of engineering geometry for such a road. Such a fit helps reduce effects on natural and human aspects of landscape character and will contribute to aesthetic coherence between the highway and landscape. Nevertheless, there will be some unavoidable residual adverse effects on landscape character and amenity values, most notably at 'Manakau Downlands'[1] and the area on the north-east outskirts of Levin.

5. While minimising adverse visual effects on amenity values from individual properties was a factor in selecting the preferred alignment, the Ō2NL Project will unavoidably require the removal of some dwellings and have significant adverse visual effects on others. Mitigation is recommended for those properties assessed as having adverse effects that are *moderate* or greater. Such mitigation will be largely provided through the broad scale planting proposed for landscape and natural character reasons, but there are instances where additional specific mitigation is required.

6. The selection of an eastern route also substantially avoids potential adverse natural character effects by avoiding areas with significant natural character

[1] Manakau Downlands is one of the 'landscape domains' (landscape character areas) identified in the Horowhenua District Plan. It is the area south and east of Manakau village including Manakau Heights Drive, Mountain View Drive, and Eastern Rise.

values in the western part of the districts. The river, streams and wetlands crossed by the highway range between *low-moderate* and *moderate-high* natural character value. I consider the natural character in each of the six main river or stream catchments will be maintained having regard to existing natural character, the modified context, the functional need for the highway to cross the water bodies, the consequentially unavoidable effects of the highway on perceptions of naturalness in the vicinity at such locations, and measures proposed to rehabilitate and restore the natural characteristics and qualities. The proposed measures will continue to increase the natural character of the main streams over time.

7. Mitigation measures are proposed to address specific landscape, visual and natural character effects. Importantly, potential mitigation measures have been developed and coordinated through the draft Cultural and Environmental Design Framework ("**CEDF**"). The CEDF has been developed partnership between Waka Kotahi and the Project iwi partners (various hapū of Ngāti Raukawa ki te Tonga and Muaūpoko Tribal Authority). It establishes key principles for the mitigation of the landscape and visual effects of the Project and illustrates potential design and mitigation options across different disciplines including cultural matters, stormwater design, stream diversion design, stream retirement planting, terrestrial ecological planting, earthworks contouring and rehabilitation, landscape restoration, and planting for mitigation of visual amenity. It also follows a whole-of-landscape approach intended to result in an overall landscape outcome that is greater than the sum of the parts. Ultimately, applying the key principles through the development of a final CEDF will 'soften' the Ō2NL Project, help tie it into the landscape, and improve the landscape's biophysical processes and patterns.

8. I consider the potential adverse landscape, visual, and natural character effects have been avoided to a substantial degree by the selection of the proposed route. Measures proposed to address the unavoidable remaining adverse effects, coordinated into a whole-of-landscape approach through the CEDF, will effectively mitigate such effects and contribute some positive landscape outcomes. I consider this to represent a best practice approach to integrating a new highway into the landscape.

INTRODUCTION

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

10. I have been involved with the "Ō2NL Project" since 2011 providing input to the route selection process and working alongside many of the specialists involved in the Project. I have also provided input to the CEDF, the principal author of which is Lisa Rimmer from our practice.

Qualifications and experience

11. I have the following qualifications relevant to this assessment:

12. Master of Urban Design from the University of Sydney;

    (a) Post-graduate Diploma in Landscape Architecture from Lincoln College;

    (b) Bachelor of Arts from the University of Auckland; and

    (c) Fellow and registered member of Tuia Pito Ora – New Zealand Institute of Landscape Architects ("**NZILA**").

13. I have 34 years' experience as a landscape architect.

14. I have provided design input and assessed the effects of similar transport projects to the Ō2NL Project, including:

    (a) Auckland East-West Link urban highway, 2016-2017.

    (b) Transmission Gully highway, 2009-2012.

    (c) Mount Messenger Bypass, SH3, 2017-2018 and 2022.

    (d) Petone to Grenada highway investigations, 2018.

    (e) Additional Waitematā Harbour Crossing investigations, 2017-2018.

    (f) Urban and Landscape Design Framework for Ara Tūhono, the Pūhoi to Warkworth highway, and technical advisor to Waka Kotahi, 2014-2022.

15. Other infrastructure projects where I have provided technical design advice, design input, and assessment of effects include:

(a) The Auckland Ferry Basin project (new Auckland Ferry Terminal), 2018 – 2019.

(b) Nine wind farms including the recently commissioned Waipipi Wind Farm, 2015-2019, and recently consented Kaiwaikawe Wind Farm, 2019-2021.

(c) Tauhara II Geothermal Power Project; 2009-2011 and 2019.

(d) Northern runway designation, Auckland International Airport, 2015-2019.

(e) North Island Grid Upgrade Project (400kV capable transmission line from Whakamaru to Auckland), 2004-2013.

(f) Other transmission projects including the undergrounding of the Otahuhu to Whakamaru A & B transmission lines at Flat Bush, 2018, North Taranaki Interconnection Project 2018-2020, input to the Transpower Auckland Strategy, 2017, and Waikato Upper North Island Voltage Management Project, (2018-2022).

(g) I provided 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 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.

16. I am also familiar with resource management matters with respect to the assessment of landscape, visual and natural character matters. I have provided evidence to the Environment Court and Boards of Inquiry on numerous occasions. I had input to the following technical guidance documents:

(a) 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 Waka Kotahi to update these guidelines.

(b) Co-author of '*Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines*', Tuia Pito Ora New Zealand Institute of Landscape Architects, June 2022.

17. I have participated in approximately 45 hearing panels as an accredited hearings commissioner.

Code of conduct

18. I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2014. This assessment has been prepared in compliance with that Code, as if it were evidence being given in Environment Court proceedings. In particular, unless I state otherwise, this assessment is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Purpose and scope of assessment

19. Waka Kotahi is giving NoRs for designations to the Horowhenua District Council ("**HDC**") and the Kāpiti Coast District Council ("**KCDC**") and is applying for the necessary resource consents from Manawatū-Whanganui Regional Council ("**HRC**") and the Greater Wellington Regional Council ("**GWRC**") for the Ō2NL Project. The Ō2NL Project is part of the New Zealand Upgrade Programme ("**NZUP**") and has the purpose to "improve safety and access, support economic growth, provide greater route resilience, and better access to walking and cycling facilities" (Vol. II, Section 1).

20. The new state highway route was selected following a staged multi-criteria analysis ("**MCA**") of route, interchange, and local road options. The process involved a consideration of landscape, visual, and natural character matters alongside the investment and project objectives, environmental, archaeological, built heritage, and social impacts, amongst other factors.

21. This technical assessment is one of a suite of technical assessments prepared for the Ō2NL Project and assesses the actual and potential environmental effects of the Project on landscape, visual, and natural character values.

22. The assessment outlines the proposal, describes the existing landscape, identifies the relevant landscape matters, and assesses landscape and

visual effects of the Project. It describes the natural character of those rivers/streams and wetlands that are crossed by the proposed designations, and the effects of the Project on natural character.

23. The assessment also outlines the measures taken to avoid adverse effects, including route selection, and the subsequent measures proposed to remedy and mitigate residual adverse effects. It refers to the separate CEDF that draws these measures into an integrated design framework. The CEDF was prepared in partnership with the Project Iwi Partners and has a goal of realising positive effects as well as remedying and mitigating those effects that cannot be avoided.

24. The assessment draws on analysis relating to earlier assessments of alternatives. Further details and analysis of the Project are provided in separate Appendices that comprise the following:

    (a) Appendix D.1 describes the methodology.

    (b) Appendix D.2 reviews provisions to identify relevant landscape and natural character matters to help frame the assessments.

    (c) Appendix D.3 assesses visual effects for dwellings affected by the Project.

    (d) Appendix D.4 comments on the photo simulations of the Project from representative viewpoints.

PROJECT DESCRIPTION

25. The Ōtaki to north of Levin highway Project ("**Ō2NL Project**" or "**Project**") involves the construction, operation, use, maintenance and improvement of approximately 24 kilometres of new four-lane median divided state highway (two lanes in each direction) and a shared use path ("**SUP**") between Taylors Road, Ōtaki (and the Peka Peka to Ōtaki expressway ("**PP2Ō**") and State Highway 1 ("**SH1**") north of Taitoko/Levin.

26. The Ō2NL Project is described and depicted in Volume II Part B of the documentation that supports the NoRs and applications for resource consent. The following is a summary of the features relevant to assessing landscape, visual and natural character effects.

    (a) a grade separated diamond interchange at Tararua Road, providing access into Levin;

(b) two dual lane roundabouts located where Ō2NL crosses SH57 and where it connects with the current SH1 at Heatherlea East Road, north of Levin;

(c) four lane bridges over the Waiauti, Waikawa and Kuku Streams, the Ohau River and the North Island Main Trunk ("**NIMT**") rail line north of Levin;

(d) a half interchange with southbound ramps near Taylors Road and the new Peka Peka to Ōtaki expressway to provide access from the current SH1 for traffic heading south from Manakau or heading north from Wellington, as well as providing an alternate access to Ōtaki;

(e) local road underpasses at South Manakau Road and Sorenson Road to retain local connections;

(f) local road overpasses to provide continued local road connectivity at Honi Taipua Road, North Manakau Road, Kuku East Road, Muhunoa East Road, Tararua Road (as part of the interchange), and Queen Street East;

(g) new local roads at Kuku East Road and Manakau Heights Road to provide access to properties located to the east of the Ō2NL Project;

(h) local road reconnections connecting;

(i) McLeavey Road to Arapaepae South Road on the west side of the Ō2NL Project;

(ii) Arapaepae South Road, Kimberley Road and Tararua Road on the east side of the Ō2NL Project;

(iii) Waihou Road to McDonald Road to Arapaepae Road/SH57; and

(iv) Koputaroa Road to Heatherlea East Road and providing access to the new northern roundabout;

(i) the relocation of, and improvement of, the Tararua Road and current SH1 intersection, including the introduction of traffic signals and a crossing of the NIMT;

(j) road lighting at conflict points, that is, where traffic can enter or exit the highway;

(k) median and edge barriers that are typically wire rope safety barriers with alternative barrier types used in some locations, such as bridges that require rigid barriers or for the reduction of road traffic noise;

(l) stormwater treatment wetlands and ponds, stormwater swales, drains and sediment traps

(m) culverts to reconnect streams crossed by the Ō2NL Project and stream diversions to recreate and reconnect streams;

(n) a separated (typically) three metres wide SUP, for walking and cycling along the entire length of the new highway that will link into shared path facilities that are part of the PP2Ō expressway (and further afield to the Mackays to Peka Peka expressway SUP);

(o) spoil sites at various locations along the length of the Project; and

(p) five sites for the supply of bulk fill /earth material located near Waikawa Stream, the Ohau River and south of Heatherlea East Road.

27. The following is a brief description of the designation alignment from north to south (see Figure D.1):

(a) From the tie in with the existing SH1 on Levin's north-west outskirts near Heatherlea East Road, the proposed designation is aligned to the north of Levin to where it intersects with SH57 (to Palmerston North).

(b) The proposed designation then follows a large arc around the north-east corner of Levin, returning to an alignment more or less parallel with Arapaepae Road between Queen Street East and Kimberley Road. The alignment is roughly 100m east of the existing edge of Levin.

(c) The proposed designation follows an 'S'-shaped alignment south of Kimberley Road to cross the Ohau River and follow an alignment near the toe of the foothills at the back of the coastal plains.

(d) The proposed designation passes 'behind' Manakau, and crosses the valley of the Manakau and Waiauti Streams,

(e) The designation swings in an arc to the west around the toe of Pukehou hill to tie in with the existing Wellington Northern Corridor near Taylors Road.

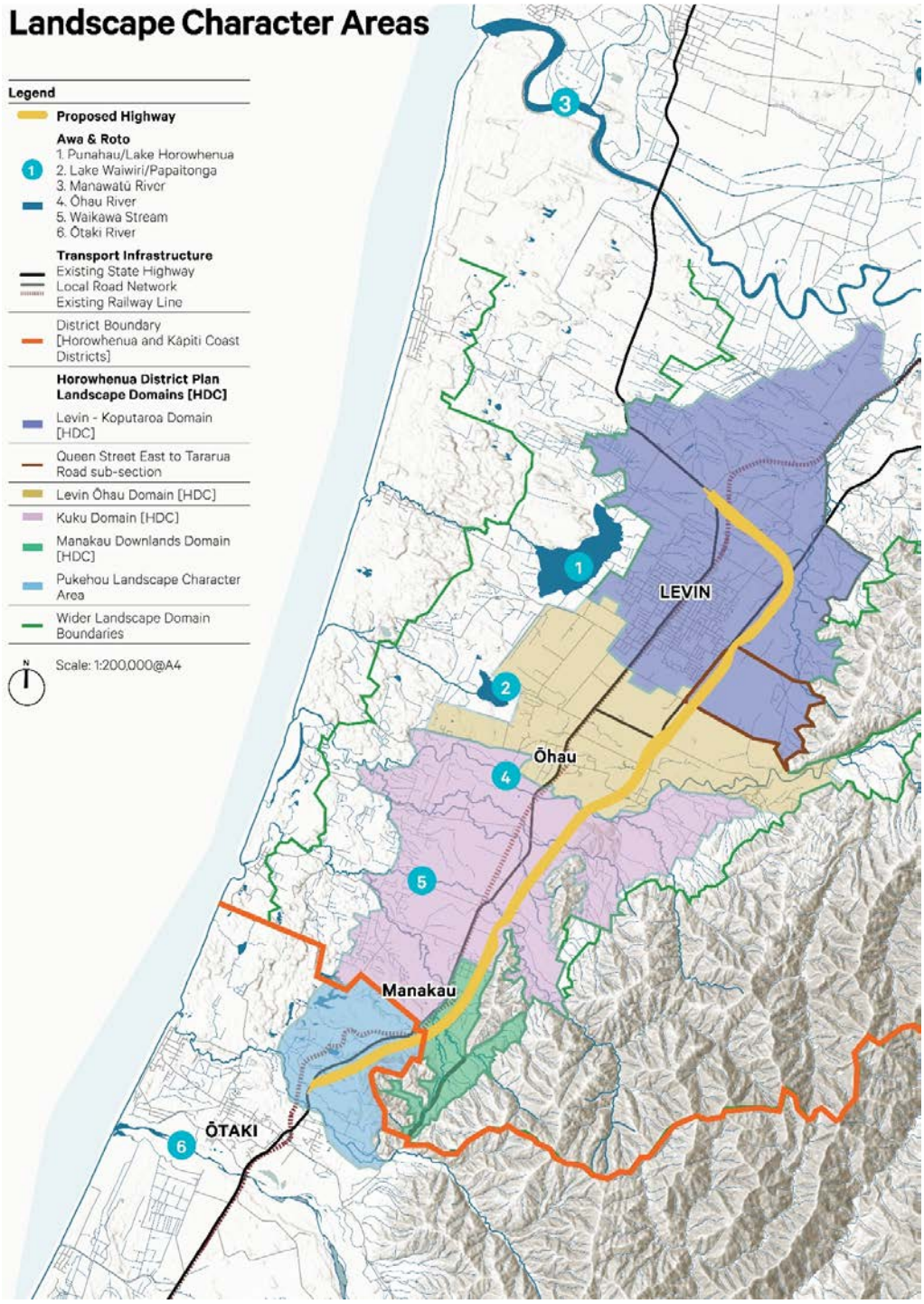

Figure D.1: Landscape Character Areas

28. The SUP will be generally aligned parallel to the highway component of the Project and will be accessed at each local road intersected by the Project. The alignment will be, as follows:

    (a) on the west side of the highway between the northern end of the Project and the junction of Ō2NL and SH57;

(b) on the east side of the highway between the Ō2NL/SH57 junction and Muhunoa East Road;

(c) on the west side of the highway between Muhunoa East Road and Manakau; and

(d) adjacent to the existing SH1 from a point south of Staples Bush.

29. The designation does not set a fixed highway design but provides flexibility of alignment and design that will be finalised as part of detailed design. Consideration of effects and mitigation at a fine scale will be addressed through an Outline Plan of Works ("**OPW**"). However, a concept design has been prepared for the highway to demonstrate that the designation is sound and to provide a basis for effects assessments. The concept design has been used as a practical basis for the photo simulations (provided in the Drawings and Plans in Volume III) and for assessing the overall landscape, visual, and natural character effects of the Ō2NL Project.

30. I have referred to the following in undertaking this assessment:

(a) the concept design provided in Plans and drawings (provided in Volume III);

(b) Mr Jamie Povall's Design and Construction Report provided as Appendix Four to Volume II;

(c) the Cultural and Environmental Design Framework ("CEDF**"**) (provided as Appendix Three to Volume II);

(d) Cultural Impact Assessments prepared by hapū of Ngāti Raukawa ki te Tonga and the Muaūpoko Tribal Authority provided in Volume V;

(e) Mr Andrew Craig's Hydrology and Flooding assessment provided as Technical Assessment F in Volume IV;

(f) Dr Jack McConchie's Hydrogeology and Groundwater assessment provided as Technical Assessment G in Volume IV;

(g) Mr Keith Hamill's Water Quality assessment provided as Technical Assessment H in Volume IV;

(h) Mr Nick Goldwater's Terrestrial Ecology assessment provided in Technical Assessment J in Volume IV; and

(i) Dr Alex James' Freshwater Ecology assessment provided in Technical Assessment K provided in Volume IV.

31. The landscape character areas and natural character catchments are shown on Figures D.1 and D.2, and also in drawings provided in Volume III.

32. Environmental design is described in the CEDF (see below) which is being developed in a partnership between Waka Kotahi and the Project Iwi Partners. The CEDF coordinates measures relating to the different environmental disciplines (including ecology, stormwater, archaeology, noise, social matters) in an integrated design under the direction of an overall project vision and principles that incorporate iwi values and aspirations.

33. This assessment of landscape, visual, and natural character matters is undertaken from a landscape perspective that is informed through partnership with the Project Iwi Partners. However, assessment of effects from a cultural perspective will be provided by the Project Iwi Partners themselves (cultural impact assessments are provided in Volume V and the role of the iwi in the Project is described in Part A of Volume II).

34. Further details of the Project are provided below in the sections discussing the landscape effects on each of the six landscape character areas traversed by the proposed designations, and effects on natural character for each of the six principal river/stream catchments traversed.

METHODOLOGY

35. The assessment methodology is detailed in **Appendix D.1**. The methodology is consistent with '*Te Tangi a te Manu: Aotearoa New Zealand* Landscape *Assessment* Guidelines', published by Tuia Pito Ora/NZ Institute of Landscape Architects, June 2022. The assessment adopts the definitions, concepts, principles, and broad approaches described in those Guidelines.

36. The specific method for assessing landscape and visual matters is summarised as follows:

(a) Brief description of the aspects of the Ō2NL Project relevant to landscape, visual, and natural character effects.

(b) Review of relevant provisions of the statutory plans to help frame the assessment. The review is detailed in **Appendix D.2**.

(c) Summary of input to Project shaping to avoid and reduce potential adverse landscape and natural character effects.

(d) Assessment of the effects on landscape character and values for each of the six landscape character areas. The assessment also describes mitigation within each area.

(e) Assessment of the visual effects on amenity values. This draws on an estimate of effects from individual dwellings, without and with mitigation, which is detailed in **Appendix D.3**.

(f) Description of the integrated landscape plan and CEDF that coordinates the landscape design and mitigation.

37. The area traversed by the Ō2NL Project falls into six principal river and stream catchments, which are considered the proper scale to assess natural character matters. The specific method for assessing natural character matters is summarised as follows:

(a) Analysis of the natural characteristics and qualities, and an assessment of overall natural character, for each catchment.

(b) A description of the elements of the Ō2NL Project (such as proposed designation alignment, bridges, culverts) relevant to effects on natural character.

(c) An assessment of effects on natural character with respect to natural characteristics and qualities.

(d) Description of proposed mitigation (restoration and rehabilitation).

(e) An assessment of the net natural character.

38. Natural character was assessed through workshops that provided specialist input on natural hydrological processes, aquatic ecology, water quality (including stormwater), terrestrial ecology, landscape, cultural and CEDF matters. The input helped to describe the existing natural characteristics and qualities (including degree of natural character), recommend measures to mitigate effects on natural character, and assess net natural character.

39. Consideration was given to both the immediate areas around where the proposed designation crosses each stream, and to the wider contexts of the whole stream and surrounding landscape. Such nested scales allow for consideration of context and a nuanced approach to assessing both existing natural character and effects on natural character. For example, it recognises that some effects (typically those that are experiential) are often localised and others (such as water quality) affect all downstream areas.

STATUTORY CONSIDERATIONS

Landscape and visual matters

40. As discussed above, the plan provisions are reviewed in **Appendix D.2**. While the provisions are listed to help frame the landscape, visual, and natural character assessment, it is not intended that this assessment address the provisions from a planning perspective. In summary, those provisions relevant to landscape and visual matters include the following:

    (a) There are no identified outstanding natural features or landscapes ("**ONF**"/"**ONL**") in proximity to the Ō2NL Project.

    (b) The Horowhenua District Plan ("**HDP**") has an objective (2.2.1) to maintain and enhance rural character and amenity. The HDP identifies 'landscape domains' (or landscape character areas) with specific policies for each domain based on their character. The Ō2NL Project traverses four domains and the assessment of landscape and visual effects is organised geographically in response to these domains.[2] One of the domains, 'Manakau Downlands', is identified as an area of 'High Landscape Amenity' with an objective that regard is had to such landscapes. The related policy is to have regard to maintenance and enhancement of the amenity values of the landscape, to any positive effects of landscape and biodiversity enhancement, and to the ability of the existing landscape to absorb development.

    (c) The area within Kāpiti Coast District that is traversed by the Ō2NL Project has been identified in this assessment as 'Pukehou landscape character area' for the purpose of assessing the effects of the Project. The Kāpiti Coast District Plan ("**KCDP**") has an objective (DO-O11) to maintain and enhance the unique character and amenity values of the

[2] This assessment subdivides the northern landscape domain, Levin-Koputaroa, into two subsections so as to separately address the area of the planned Tara-Ika urban development covered by PC4 east of Levin.

district's distinct communities. The characteristics and qualities relevant to productive rural areas (such as that traversed by the proposed designation) are described as "productive rural areas, characterised by openness, natural landforms, areas and corridors of indigenous vegetation, and the primary production activities". The KCDP includes provisions recognising the benefits of infrastructure but including an objective to avoid, remedy, and mitigate adverse effects of such infrastructure.

(d) KCDP Schedule 5 identifies Pukehou as a 'Special Amenity Landscape' and lists its values. The proposed designation skirts Pukehou and does not encroach into the area identified.

Natural character matters

41. The proposed designation crosses six principal river/stream catchments,[3] all but one of which fall within the Manawatū-Whanganui Region (Horizons) and Horowhenua District. The Waitohu Stream catchment falls with the Wellington Region (GWRC) and Kāpiti Coast District.

42. The Horizons One Plan ("**One Plan**") describes natural character in terms of its constituent characteristics and qualities (see the discussion on natural character at 6.1.2 and Policy 6-8 (c)).

(a) Objective 6-2 (a) is that "the characteristics and values of…(ii) the natural character of the coastal environment, wetlands, rivers and lakes and their margins are protected from inappropriate use and development".

(b) Objective 6-2 (b) is that "adverse effects, including cumulative adverse effects, on the natural character of the coastal environment, wetlands, rivers and lakes and their margins are avoided in areas with outstanding natural character, avoided where they would significantly diminish the attributes and qualities of areas with high natural character, and avoided, remedied or mitigated in other areas."

(c) Objective 6-2 (c) is to "promote the rehabilitation and restoration of the natural character of the coastal environment, wetlands, rivers and lakes and their margins."

[3] From north to south these comprise the catchments of the Koputaroa Stream, Ohau River, Kuku Stream, Waikawa Stream, Manakau and Waiauti Streams, and Waitohu Stream.

43. Policy 6-8 (a) of the One Plan is that the natural character of such areas "must be preserved and these areas must be protected from inappropriate subdivision, use and development. Policy 6-8(b) is that "the natural character of these areas must be restored and rehabilitated where this is appropriate and practicable".

44. Policy 6-9 is that, with respect to the natural character of such areas, "subdivision, use or development must generally (but without limitation) be considered appropriate if it:

(a) is compatible with the existing level of modification to the environment;

(b) has a functional necessity to be located in or near the…wetland, river or lake and no reasonably practicable alternative locations exist;

(c) is of an appropriate form, scale, and design to be compatible with the existing landforms, geological features and vegetation;

(d) will not, but itself or in combination with effects of other activities, significantly disrupt natural processes or existing ecosystems; and

(e) will provide for the restoration and rehabilitation of natural character where that is appropriate and practicable."

45. The HDP likewise lists detailed considerations for assessing natural character under section 3.3 Lakes, Rivers, Wetlands and Other Water Bodies. Objective 3.3.1 is "to protect the natural character of lakes, rivers, wetland and other water bodies from inappropriate use, and development." Policy 3.3.2 is to "identify priority lakes, rivers, wetland and other waterbodies with high natural character and conservation, recreation, cultural, amenity and intrinsic values." The Ohau River, which is traversed by the Ō2NL Project, is listed in Schedule 12 as a high priority waterbody. The river is described as "having natural, ecological, natural hazard, recreational/access, and cultural values." Policy 3.3.4 is to "ensure subdivision, use and development protects the natural character of lakes, rivers, wetlands and other water bodies and maintain and enhance their special values by having regard to the following matters in assessing proposals:

(a) extent to which natural processes, elements and patterns that determine the area's natural character are sustained, and/or restored and rehabilitated;

(b) degree of change to landform and relief;

(c) degree of protection of vegetation cover and patterns, including use of a buffer;

(d) compatibility with existing level of modification to the environment;

(e) functional necessity to be located in or near the water body and no reasonably practicable alternative locations exist;

(f) ability to mitigate any potential adverse effects of subdivision, use, and development; and

(g) provision of public amenity and access to land acquired by Council for reserve purposes.

46. The Greater Wellington Proposed Natural Resources Plan (Appeals Version) ("**PNRP**") takes a somewhat similar approach to that of the One Plan. Objective O17 is that "the natural character of the coastal marine area, natural wetlands, and rivers, lakes and their margins is preserved and protected from inappropriate use and development."

47. Policy P25 generally seeks to avoid adverse effects on areas with '*outstanding*' natural character, to avoid significant adverse effects in areas with '*high*' natural character, and to avoid, remedy or mitigate adverse effects on natural character in other areas.

48. The Waitohu Stream is not listed in Schedules A1-3 of 'outstanding water bodies', although it is recognised in Schedule F1 as having significant indigenous ecosystems.

49. The PNRP likewise includes provisions promoting restoration of vegetated riparian margins. Objective O27 is that "vegetated riparian margins are established, maintained or restored to enhance water quality, aquatic ecosystem health, mahinga kai and indigenous biodiversity of rivers, lakes, natural wetlands…".

50. The PNRP also includes objectives relating to integrated management and sustaining and restoring the mauri of water bodies that are relevant to natural character considerations. Objective O1 is that "air, land, freshwater bodies and the coastal marine area are managed as integrated and connected resources; ki uta ki tai – mountains to the sea". Objective O3 is that "Mauri particularly the mauri of fresh and coastal waters is sustained

and, where it has been depleted, natural resources and processes are enhanced to replenish mauri."

EXISTING ENVIRONMENT

51. The following section is a brief overview of the existing landscape. Further relevant detail is provided below in the Assessment of Effects section of this assessment for each of the landscape and natural character areas. This assessment also draws on further detail provided in the CEDF.

52. The relevant landscape context is the Horowhenua plains, backdropped by the Tararua Range/foothills to the east, and bordered by the Tasman Sea sand-dune country to the west. The context extends from the Manawatū River in the north to the Waitohu Stream and Ōtaki in the south.

Physical setting

53. The plains are a combination of outwash terraces from the Tararua Range and former seabed and marine sands raised by tectonic activity. The outwash terrace that slopes between the Arapaepae range east of Levin and Punahau (Lake Horowhenua) is Kei te Whakahoro te Whenua (the great hill slide) from which the name Horowhenua derives.

54. Streams and small rivers originating in the Tararua Range flow directly across the plains to the coast. The most notable are the Ohau River, and the Kuku, Waikawa, Manakau, Waiauti, and Waitohu Streams. They typically have meandering channels in stony beds that reflect their origins in the greywacke foothills of the Tararua Range. Other smaller tributaries and ephemeral watercourses rise within the plains or on the foothills. The Koputaroa Stream follows a different pattern from the rest of the streams. It rises on the Arapaepae Range east of Levin and flows northwards along the toe of the hills to the Manawatū River. The Koputaroa Stream has extensive wetlands in its lower course. The proposed HDC designation crosses some of the headwater tributary gullies on the terraces north of Levin.

55. There are numerous wetlands and dune lakes in the band of sand dune country at the western edge of the plains, the largest and most notable of which are Punahau (Lake Horowhenua), Waiwiri (Lake Papaitonga), and the cluster referred to as 'Forest Lakes' (including Lake Kopureherehere, Lake Waitawa, and Tōtara Lakes). Punahau and Waiwiri discharge by the Hokio Stream and Waiwiri Stream respectively, both of which carve paths

through the sand dune country. It is understood that the plain's permeable substrate means there are relatively high levels of infiltration and ground-water flow, which are relevant to the dune lakes.

56. The plains originally supported lowland rainforest dominated by species such as tōtara, rimu, and tawa. The wetter soils, such as around the toe of Pukehou and on the upper tributaries of the Koputaroa Stream, would have been characterised by kahikatea pukatea forest.

History

57. Muaūpoko whakapapa to the original tangata whenua who occupied the area from Manawatū to Te Whanganui a Tara (Wellington). Muaūpoko are descendants of Tara, the eponymous ancestor of the Ngāi Tara iwi.

58. Ngāti Raukawa migrated into the area from the Waikato in the 1820s during upheaval associated with the musket wars. They were invited to settle in the Horowhenua through their whānaunga Ngāti Toa.

59. Traditional Muaūpoko settlement was extensive along the coastline and waterways. Punahau (Lake Horowhenua) and Waiwiri (Lake Papaitonga) were key centres. There were also some inland settlements. Artificial pā islands were constructed within Punahau and the area was also known for distinctive tree-top pā. Such pā were centres of a cultural landscape comprising the natural resources and pathways between the ranges and the coast. It included the coastal area and dunes, the estuaries, streams, and wetlands, forest clearings, and traditional paths some of which followed the ridges behind the plains and other penetrating valleys into and across the Tararua Range.

60. Raukawa settled widely through the area. Marae in proximity to the proposed designations include Tūkorehe Marae and Ngāti Wehi Wehi Marae near Kuku and North Manakau respectively.

61. The phrase ki uta ki tai expresses the holistic and integrated nature of the landscape between the mountains and the sea, which is especially relevant given the pattern narrow plain sandwiched between the sea and backdrop mountains that characterise the Horowhenua.

62. Early Pākehā activity occurred along the coastal transport route. One of the catalysts for widespread Pākehā settlement of the inland plains was construction of the Wellington Manawatū Railway (now the North Island

Main Trunk Railway) in the 1880s, which cleared a corridor through the forest. The forest was then felled, and the plains converted to agriculture within decades. There is social history associated with the sawmills and their tramways radiating through the area. The Prouse homestead ('Ashleigh') at Queen Street East is associated with one of the sawmilling families.

63. Levin, Ohau, and Manakau were planned townships established in conjunction with the railway. Each was laid out on a 'four-square' grid. Ohau and Manakau have remained as villages with historic character. Levin, on the other hand, is the major service town and light industrial centre for the Horowhenua. The planned Tara-Ika urban development provided for by Plan Change 4 (adopted 29 June 2022) would further expand Levin beyond the town's current eastern edge.

64. The predominant road pattern is a main spine (State Highway 1) that links the settlements along in the middle of the plains, with side roads (often no-exit roads) running to either the coast or the mountains.

Current characteristics

65. The plains are now an agricultural landscape comprising dairy farming, extensive areas of market gardening, pockets of orchards, glasshouses, poultry farms, and a vineyard. There are small pine plantations within the sand dune country and on the backdrop hills. The productive uses are interspersed with pockets of lifestyle or rural-residential development.

66. Only occasional stands of the former tall indigenous forest remain, their natural values amplified as remnants of the forest that once clothed the plains. Those in the vicinity of the proposal include 'Staples Bush' and 'Pukehou Bush' [CH[4] 31100], two small stands near 'Ashleigh' (the Prouse homestead) at Queen Street [CH16400-CH16500], Browns Bush[5] (CH20600) and two stands at Muhunoa East Road [CH21800].[6] Notable remnant lowland bush stands with public access in the wider area are Waiopehu Reserve on Queen Street East, and Prouse Bush at Tōtara Street in Levin. The former's 9-hectare extent is sufficient to contain a network of paths.

[4] CH refers to "Chainage", a standardised reference distance along the Project from north to south indicated on the Project plans.
[5] Protected by a covenant with the QEII National Trust
[6] Including the Hugh and Edna Campbell private reserve.

67. Aesthetically the dominant feature is the backdrop Tararua Range and foothills, which provide a steep eastern escarpment to the plains, with paths into the interior along rivers and ridges. The Range is highlighted in certain lights (such as late evening sun) and when covered with occasional winter snow.

68. Pukehou is a prominent landmark at the southern end of the Ō2NL Project Area. It is a steep faced, symmetrical hill that stands proud of the rest of the foothills. It has important associations for tangata whenua. Other foothills are also distinctive landmarks. They include the Arapaepae ridge east of Levin, Ōtarere (which is a prominent sentinel overlooking the Ohau River), Poroporo (which is a range of hills with a small peak behind Kuku)[7] and the Hanawera Ridge behind Manakau.

69. While the Range and foothills are prominent features, the area's aesthetic qualities include the proximity of the Tararua Range to the coast across a sharply defined outwash plain and barrier of sand dunes. Key features are the dune lakes. Both Punahau (Lake Horowhenua) and Waiwiri (Lake Papaitonga) are especially significant to tangata whenua. While Punahau has suffered from pollution and the removal of its surrounding forest/wetlands, Waiwiri is still largely framed by bush and natural wetlands.

70. Recreational attributes of the landscape include those associated with the ranges, rivers/streams, lakes, and remnant stands of bush. The Tararua Range are a natural wilderness accessed along the streams emerging from the mountains, particularly the Ohau River and Waikawa Stream. Roads accessing entry points to the forest park include North Manakau Road, Muhunoa East Road, and Gladstone Road (via both Queen Street and Tararua Road). Te Araroa, the national trail, travels along the Range, passing relatively close to Levin (there is access along Gladstone Road and Queen Street East between Levin and the trail).

71. The Ohau River and Waikawa Stream have waterholes used for swimming. The most notable riverside reserve is Kimberley Reserve, which is a stand of bush and picnic area on the north bank of the Ohau River.

[7] Atkins suggests the name Poroporo refers to the foothills being sliced from the Tararua Range (by the Ohariu Fault) and further diced by the Kuku and Waikawa Streams,

LANDSCAPE, VISUAL, AND NATURAL CHARACTER ISSUES

72. Having reviewed the nature of the Ō2NL Project, the existing landscape values, and the relevant provisions, I consider the main landscape, visual, and natural character matters to be assessed are:

    (a) Avoiding or minimising potential adverse landscape, visual, and natural character effects through Project shaping including selecting an appropriate route and design from potential alternatives.

    (b) Consideration of the effects of the Project, and measures to remedy and mitigate adverse effects, including:

        (i) identifying the existing landscape character and values;

        (ii) assessing the effects of the Project on landscape character and amenity values and proposing measures to remedy and mitigation adverse effects (having regard to the landscapes' physical, associative, and perceptual aspects);

        (iii) assessing visual effects with respect to public and private views and proposing measures to mitigate adverse effects; and

        (iv) assessing landscape and visual effects during construction.

    (c) Consideration of the effects of the Project on natural character, and measures to remedy and mitigate adverse effects, including:

        (i) identifying the existing natural character (including the level of naturalness);

        (ii) analysing the potential effects of the Project on natural character, and designing restoration and rehabilitation measures where appropriate and practicable to maintain natural character; and

        (iii) assessing the residual or net natural character.

73. The following sections of the assessment address these matters in turn.

PROJECT SHAPING AND AVOIDING AND MINIMISING EFFECTS

74. I provided landscape input to comparisons of alternative routes since 2011. Such comparisons were informed by a baseline assessment of the study area's landscape (which helped identify constraints), and investigations as

the route was narrowed down. These analyses are set out in a series of MCA reports.[8]

75. In summary, western routes were not favoured from a landscape perspective. The western part of the study area is the heart of a cultural landscape focused on Punahau (Lake Horowhenua) and Waiwiri (Lake Papaitonga). A highway in this area would pass close to those features, or through the sensitive sand dune country between those features and the coast, or between Punahau and Levin township.

76. Central routes were also not favoured from a landscape and urban design perspective. The central part of the study area is where settlement has coalesced around the existing State highway. A new highway in this area would pass close to (or through) the smaller settlements (Manakau, Kuku, Ohau) and would have significant impacts passing through Levin or (as mentioned above) between Levin and Punahau.

77. Eastern routes were considered preferable, acknowledging that all routes presented difficulties. An eastern route would typically cross open and less closely settled farmland, could be aligned at the back of the plains through the area south of the Ohau River, and would pass on the less sensitive (from a landscape and natural character perspective) eastern side of the Levin urban area.[9]

78. Combining routes in different corridors was also considered, such as the central corridor (west of the NIMT) in the south of the study area, transitioning to an eastern corridor in the north. Such routes are constrained by the Forest Lakes area, and an area with stands of bush and relatively close pattern of settlement on the north bank of the Ohau River. It would also weave across the landscape patterns.

79. Alternative alignments within the eastern part of the study area were then compared at a finer scale. Such analysis was carried out section-by-section to allow for combinations.

80. In addition to alternatives for the main alignment, consideration was given to alternative options for the location and form of interchanges, for reconnecting the local road network, and aspects such as the form and

[8] Multi-criteria analysis reports are listed on the Project website https://www.nzta.govt.nz/projects/wellington-northern-corridor/otaki-to-north-of-levin/o2nl-proposed-new-highway/technical-reports/ (accessed 14 October 2021).
[9] Acknowledging that the east side of Levin nevertheless has important landscape values, and also now provides for the planned Tara-Ika urban development area.

location of connections between Levin and the planned Tara-Ika development. These matters were assessed in MCA processes that are summarised in Part E and in Appendices Five and Six of Volume II.

81. Taken as a whole, the proposed eastern route avoids more significant adverse effects that would arise with western or central routes. The eastern route is considered to achieve a best fit with the landscape. Most sections of the proposed detailed alignment of the proposed designation within the eastern route also reflect the preferred alignment from a landscape perspective.

82. Nevertheless, the highway will have some adverse landscape, visual, and natural character effects. Measures to mitigate such effects are described in this assessment and are coordinated within the CEDF also discussed below.

ASSESSMENT OF LANDSCAPE AND VISUAL EFFECTS

Effects on landscape character and amenity values

83. Any major roading project such as a state highway will have some adverse effects on landscape character and amenity. Such effects arise from the nature of such highways including:

(a) the scale of the civil engineering footprint, and the constraints on the highway's horizontal and vertical alignment;

(b) the severance caused by their limited access nature;

(c) the visual effects associated with volumes and speed of traffic (and including lights at night-time); and

(d) the visual effects of the required ancillary elements such as safety barriers, lights, and prominent signs.

84. Such effects are addressed through the Project shaping that avoids potential adverse effects in the more sensitive parts of the districts (as described in the previous section), selection of an alignment that appropriately fits the landscape within the eastern route, and a design to mitigate the residual adverse effects.

85. The following sections of the assessment address each of the six landscape character areas from north to south, with the Levin-Koputaroa landscape character area divided into two parts (see Figure D.1 for plan of

landscape character areas).[10] Each section describes the existing landscape character and values, the relevant aspects of the Project, the effects (including the extent to which the alignment fits the landscape), the proposed mitigation, and the residual or net effects.

(a) Levin-Koputaroa landscape character area (north and north-east of Levin part from tie-in with existing SH1 to Queen Street East)

Existing landscape character and values

86. This area is part of the Levin-Koputaroa landscape character domain and covers the rural outskirts north and north-east of Levin. The topography is rolling terraces etched with gullies, with the prominent backdrop of the Tararua Range. It is the catchment of the Koputaroa Stream. Unlike the other streams which flow across the plains perpendicular to the highway, the Koputaroa Stream flows north along the toe of the hills to the Manawatū River. Its lower course is sluggish, has extensive wetlands, and is prone to flooding. While the main Koputaroa Stream rises on the Arapaepae Range, it also has headwater gullies north of Levin that are crossed by the highway. These gullies are typically characterised by a mix of small dams and artificial ponds, channelised watercourses, wet pasture, and remnant natural wetlands

87. The area is a mixed rural fringe including productive farmland, intensive rural uses (such as horticulture and chicken farm), and rural-residential pockets. It is reasonably well treed. The area has a pleasant rural character influenced by proximity to Levin and the presence of existing infrastructure including SH1 and the NIMT railway in the west, and SH57 in the east.

88. Policies in the Horowhenua District Plan specific to this landscape domain are (emphasis added):

> *Policy LK1: "Manage the scale, intensity, size and design of subdivision and land development to ensure that it reflects and responds to the* ***varied and undulating topography****,* ***productive capacity*** *and* ***open views*** *that contribute to the landscape character and qualities of the Levin-Koputaroa Domain.*"

[10] As noted, these comprise the four landscape domains identified in the HDP that are traversed by the Ō2NL Project and the balance area that falls in the Kāpiti Coast District. The northern-most landscape domain (Levin-Koputaroa) is further subdivided into two sections in order to separately address the area that now falls within Tara-Ika planned urban development enabled by PC4 to the HDP.

*Policy LK4: "Ensure that the **natural habitats**, particularly remnant indigenous forest areas and **wetland areas**, are identified and protected from inappropriate subdivision and development.*

Project

89. The proposed designation within this landscape character area is aligned north and east of Levin. It includes the following relevant aspects:

(a) The tie-in with SH1 will be a roundabout in open fields in the angle between Heatherlea East Road and the Avenue.

(b) The proposed designation crosses the NIMT obliquely on an overbridge approximately 8m in elevation above existing ground level.

(c) The proposed designation crosses farmland between Heatherlea East Road and the junction with SH57. It is aligned parallel with the northern outskirts of Levin, and roughly parallel with a pattern of gullies.

(d) There is a roundabout intersection with SH57 (Arapaepae Road) on Levin's north-east outskirts.

(e) The proposed designation then follows a sweeping arc beyond Levin's north-east corner to bring the highway around so that it is aligned more or less parallel with Arapaepae Road at the point where the alignment crosses Queen Street East.

Adverse effects within the landscape character area

90. The Ō2NL Project will be major infrastructure that will inevitably detract from the existing rural landscape character and amenity values. The elements with the greatest potential adverse effects (prior to mitigation) will be the NIMT overbridge, the roundabout interchange with SH57, and the curving alignment through the Waihou Road area.

(a) The NIMT overbridge must cross the rail line at an oblique angle with ramps rising to approximately 8m high. It will be a dominant structure in its immediate locality at the end of Sorensons Road.

(b) A roundabout intersection with SH57 (rather than a grade separated interchange) was selected to signal the end of the Wellington Northern Corridor and a reversion to a lower level of engineering conditions. However, the configuration of the roundabout and its approaches is at

odds with the existing landscape grain including disrupting the current straight alignment of Arapaepae Road/SH57. This is unavoidable given the sweeping approach from the south and the need for safe sightlines and stopping distances.

(c) The need for the new Ō2NL highway to skirt north and east of Levin in a wide curve will also disrupt existing landscape patterns in the Waihou Road area and result, if not mitigated, in some significant adverse effects on character and amenity in this locality. It will require removal of all houses from the west side of the eastern leg of Waihou Road (ie the 'back leg' of the Waihou Road loop), disrupting the community of houses on that section of road, and severing the local road connections. It will require a new local road to link the disconnected section of Waihou Road and McDonald Road with Arapaepae Road, and result in a more circuitous connection between this area and Levin. Such effects are a consequence of the highway needing to change direction (from east-west to north-south) and to accommodate sightlines for safe approaches to the SH57 roundabout as discussed above.

(d) Lights will be required around the two roundabout intersections and their approaches. While the lighting will affect night-time darkness in the vicinity – especially to nearby houses – such lighting is not uncommon at rural highway intersections. Three of the four Ō2NL intersections are on the fringes of the Levin urban area and will be seen in that context. The balance of the Ō2NL Project will not be lit including the long stretch between Tararua Road and the tie-in at Taylors Road.

91. Notwithstanding such adverse effects (prior to mitigation), the following aspects of the Project will contribute to reducing its potential adverse effects:

(a) The tie in with the existing SH1 near Heatherlea East Road is a relatively unobtrusive location that neatly connects existing roads.

(b) The location of the NIMT railway overbridge is reasonably unobtrusive. It has relatively low visibility beyond its immediate surroundings because it is set back from the existing SH1.and other through roads.

(c) The proposed designation north of Levin is in the middle of the rural area between Roslyn Road and Heatherlea East Road and lies beyond

the ends of the two no-exit roads (Fairfield Road and Sorensons Road). Such an alignment reduces potential effects on patterns of settlement and land use – acknowledging that there will nevertheless be impacts on several properties at the ends of the two no-exit roads.

(d) The proposed designation north of Levin follows the topographic grain, generally along a terrace finger (or spur) that minimises encroachment into headwater gullies of the Koputaroa Stream.

(e) While the proposed designation's curving alignment around the north-east corner of Levin unavoidably cuts across landscape patterns, it nevertheless follows the topography and avoids encroaching onto the main Koputaroa Stream.

92. In summary, the proposed designation will achieve a reasonably good fit with the landscape north of Levin between SH1 tie in and SH57, with modest effects on natural processes and localised effects on landscape character and amenity values. The magnitude of adverse effects in this area will be *moderate*.[11] However, the alignment is more disruptive to landscape patterns and amenity values on Levin's north-east corner between SH57 and Queen Street East. The magnitude of adverse effects prior to mitigation in this area will be *high*.

Mitigation measures

93. Proposed mitigation entails:

(a) Establishing vegetation on the short section of new link road between Koputaroa Road and Heatherlea East Road. The purpose is to screen counterflowing local traffic from SH1 (CH10000 to 10150).

(b) Contouring spoil around the roundabouts to anchor these features into the landscape.

(c) Planting the high fill batters on the overpass ramps to soften views of the highway and traffic (CH10400 to 11400). Such planting will be relatively low on the south-west side to maintain sightlines between the highway and SUP.

[11] Italicised descriptors of magnitude refer to the 7-point rating scale described in Appendix D.1, page 3.

very low	low	low-mod	moderate	mod-high	high	very high

Refer also to Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines, NZILA, paragraphs 6.16 – 6.24.

(d) Restoring wetlands and swamp forest near the end of Sorensons Road and restoring riparian vegetation along the stream just to the west of the SH57 roundabout. These measures are to address natural character matters described further below. They will be integrated with planting of the fill batters CH11450-12100 and merged with the stormwater wetlands.

(e) Planting fill batters on the low embankment between CH12400 and the SH57 roundabout (CH13050), and on the SH57 approaches to the roundabout.

(f) Naturalising the stormwater wetlands and detention basins adjacent to the SH57 roundabout. Naturalisation is to entail contouring the form of the wetlands, naturalised margin planting, and merging the wetlands with restoration of adjacent watercourses. Planting will be tailored to the different conditions that will be found in these devices (including standing water, wet forest types, and detention areas occasionally inundated). The stormwater margin planting will soften forms of the wetlands and transition into tall perimeter trees. It will be integrated with planting on the highway fill batters (CH13200-13900).

(g) Tall screen planting around the roundabout intersection between Ō2NL and SH57.

(h) Planting parallel with Waihou Road to soften views of the highway from properties on the east side of that road (CH14000-15000). Spoil will be formed into a contoured bund to assist screening and noise mitigation.

(i) Establishing an avenue of trees on Waihou Road and the realigned link road between Waihou Road and Arapaepae Road (CH13200 to 14850). The purpose is to visually separate the local road from the highway and soften views toward the highway from the east (filter views, increase perspective depth, and contain views within the local corridor). The proposed avenue of trees will also follow the curve of the highway and help visually anchor the highway.

Residual effects assessment

94. The proposed mitigation measures will reduce the magnitude of the effects described above such that the magnitude of residual adverse effects on landscape character with mitigation will be *low-moderate* north of Levin and *moderate-high* in the Waihou Road area north-east of Levin.

(a) Levin-Koputaroa landscape character area (east of Levin and Tara-Ika part from Queen Street East to Tararua Road).

Existing landscape character and values

95. This section also falls within the Levin-Koputaroa landscape domain but is differentiated because it is the area on the flat terrace east of Levin that is earmarked for the planned Tara-Ika urban development. The landscape has the following characteristics:

(a) flat and generally open terrain, overlooked by the Arapaepae (Kohitere) hills backdrop;

(b) distinctive terrace landform between the Arapaepae hills and Waipunahou (Lake Horowhenua) known as Kei te Whakahoro te Whenua (the great hill slide) from which the name of the district derives;

(c) absence of permanent streams

(d) adjacency to Levin;

(e) adjacency to SH57 (Arapaepae Road), which is a limited access highway along the eastern edge of Levin;

(f) the Prouse homestead ('Ashleigh'), which has historic values and two adjacent remnant stands of bush; and

(g) the Tara-Ika urban development planned for the area between Queen Street East and Tararua Road, which is enabled by Plan Change 4 to the HDP.

96. The most relevant of the specific policies relating to this part of the Levin-Koputaroa landscape domain is Policy LK4. In addition, given that this area shares physical characteristics with the adjoining Levin-Ohau landscape domain, it is considered that Policy LO1 relating to the latter domain is also informative (emphasis added):

*Policy LK4: "Ensure that the **natural habitats**, particularly **remnant indigenous forest areas** and wetland areas, are identified and protected from inappropriate subdivision and development*

Policy LO1: "Manage the scale, intensity, size and design of subdivision and land development to ensure that it reflects and

*responds to the **flat and terraced landform**, **productive capacity** and **open views** that contribute to the landscape character and qualities of the Levin-Ohau Domain."*

Project

97. Aspects of the Ō2NL Project relevant to landscape and visual effects include the following:

(a) The proposed designation is more or less parallel with SH57 (Arapepae Road) and the eastern edge of Levin. The slight deviations from a straight alignment are to enable the designation to thread between two stands of bush adjacent to the Ashleigh homestead.

(b) Queen Street East will cross Ō2NL on a bridge, connecting with the existing roundabout at the intersection of Queen Street East and Arapaepae Road. The bridge will deflect from Queen Street East's straight alignment (by curving to the north) to achieve the required grade. It will incorporate a separate pedestrian and cycle bridge to the north of the vehicle bridge.

(c) There will be a full diamond interchange at Tararua Road. Tararua Road will cross above the Ō2NL on a bridge.

(d) The SUP will be aligned on the eastern side of Ō2NL.

(e) There are no permanent streams in this section. The high permeability of the gravels means the water mainly flows as groundwater. It is understood groundwater from this area feeds Punahou (Lake Horowhenua). The Project will include culverts to accommodate intermittent overland flows.

(f) Stormwater wetlands are proposed at CH16600-16800, adjacent to the western stand of bush, and at the Tararua Road interchange.

Project shaping with respect to PC4 Tara-Ika

98. The alignment to the east of Levin will separate the existing town from most of the "Tara-Ika Growth Area" provided for by Plan Change 4 ("**PC4**") to the HDP. The plan change anticipates approximately 3500 homes and includes a structure plan that indicates:

(a) a central commercial zone for a local centre;

(b) a central public open space with an overlay that provides for a school;

(c) the anticipated Ō2NL highway; and

(d) bridge connections with Levin across Ō2NL on Tararua Road and Queen Street East, a potential future connection on the central spine road aligned with Liverpool Street, and two additional cycle / pedestrian connections between the three road connections.

99. I understand that the development envisaged by PC4 will require resource consents, and therefore that development does not form part of the 'existing environment' for the purposes of this assessment. Nevertheless, this assessment has had regard to the intended future development of Tara-Ika, which has also informed the shape of the Ō2NL Project through this area.

100. Consideration was given in earlier assessments to the impact of alternative Ō2NL alignments on potential urban development of this area. In summary:

(a) Alignments through the middle of this area (for example along the former transmission line) would have been appropriate for a smaller urban area than provided for in PC4. In that circumstance, such an alignment would have formed a boundary between the urban area and a lifestyle area to the east. However, such an alignment would compromise the larger urban development envisaged by PC4 and structure plan.

(b) Alignments in the east of this area (ie at the eastern edge of Tara-Ika) are constrained by the Waiopehu Reserve, a close pattern of lifestyle properties, and the Koputaroa Stream.

(c) The proposed alignment parallel with Arapaepae Road enables Tara-Ika to be developed as a coherent neighbourhood around a neighbourhood centre as indicated on the structure plan but does present challenges for connections between Tara-Ika and the existing Levin urban area.

101. Consideration was also given to alternative vertical and horizontal alignment options for the Queen Street East and Tararua Road connections.

(a) The proposal to maintain connections on both Queen Street East and Tararua Road is preferred from a landscape perspective because these

two roads provide the best east-west connections into the centre of Levin. An additional third connection on the alignment of the spine road depicted on the Tara-Ika structure plan is also supported.

(b) Consideration was given to realigning Queen Street East to a new intersection with Arapaepae Road approximately 500m north of the existing intersection. That option was not preferred from a landscape perspective. Rather, the proposed option (maintaining connectivity along the current Queen Street East) is supported (this is discussed further below).

(c) Consideration was given to constructing Ō2NL in a trench east of Levin which would have enabled local connections to remain at grade on their current alignments and reduced visual (and noise) effects. That alternative was not pursued because of high groundwater levels and for cultural reasons including effects on the intrinsic values of the Kei te Whakahoro te Whenua landform.

Adverse effects on the landscape character area

102. The following attributes of the Project contribute to its 'fit' with the landscape, and the extent to which it avoids and reduces potential impacts on the planned Tara-Ika urban development:

(a) The proposed designation allows for the Tara-Ika urban development area to be developed as a coherent neighbourhood around a neighbourhood centre on the east side of the highway (notwithstanding the connectivity challenges acknowledged above).

(b) The proposed designation allows for the remaining land between the Ō2NL highway and existing SH57 to be developed as an urban area fronting a potentially re-purposed Arapaepae Road once its state highway status is revoked.

(c) The proposed designation is generally square to the cadastral grid which helps facilitate efficient land development.

103. All connections will require elevated bridges over the Ō2NL Project. The elevation of the bridges will detract to some extent on connectivity, especially for pedestrians and cyclists, and have localised adverse visual effects.

104. The proposed Queen Street East overbridge will nevertheless retain connectivity and a key element of Levin's urban form. For context, Queen Street is the central cross axis of Levin's historic four-square urban form. It connects the town's central intersection with Punahau (Lake Horowhenua) to the west and the Tararua Range to the east. It is the central street of only three (with Tararua Road and Roslyn Road) that link the town's main street (existing SH1) and Arapaepae Road. Queen Street is therefore important to the town's urban form, landscape connections, physical connections, legibility, and sense of place. The proposed option will maintain these connections along Queen Street East although the bridge will deviate from the straight alignment to a northward curve to achieve the required grades. Options for pedestrians and cyclists comprise paths integrated with the bridge or a separate adjacent foot and cycle bridge. The proposal maintains connectivity and retains sightlines along the Queen Street axis. While the best landscape option would be to maintain Queen Street East at grade on its existing straight alignment, the proposal is the preferable option of those where the Ō2NL highway is at grade.

105. The proposed Tararua Road interchange is in an appropriate location on the southern outskirts of Levin. Lighting required for the Tararua Road Interchange and its approaches will be seen in the context of the Levin urban area. Tararua Road provides access to industrial zoned area on the south side of the town. As noted above, it also connects to Levin's main street (existing SH1). It is proposed that the current intersection between Tararua Road and the existing SH1 be realigned to remove the current dogleg at the crossing of the NIMT which would further strengthen connectivity and legibility.

106. While the Ō2NL Project will help enable the development of Tara-Ika, it will also have potential impacts on amenity values of the planned urban development and its connectivity with the existing town. Again, that future development is not part of the existing environment and as such its relationship with the Ō2NL Project will be a matter for consideration when development is proposed.

107. Overall, the magnitude of potential adverse effects prior to mitigation on the existing landscape will be *mod-high*. These potential effects can be partly addressed through design (see below).

Measures to provide for integration between the Ō2NL Project and Tara-Ika

108. While the development envisaged at Tara-Ika is not part of the existing environment, there are measures that I recommend be implemented as part of the Ō2NL Project to provide for the integration between the Ō2NL Project and Tara-Ika. Those measures include the following:

(a) Planting a band of dense vegetation through the whole section Queen Street East to Tararua Road (CH16150 – 18250) to screen and soften views to the highway. On the east side of the highway, the screen planting will be a 10m band between the SUP and the highway[12] (including within the planted swale)[13] and a 3m band of low planting on the east side of the SUP.

(b) Planting screening vegetation on the fill batters around the overbridges at Queen Street East and Tararua Road to soften these structures.

(c) Extending vegetation around the stand of bush between the highway and Arapaepae Road. This will comprise a contiguous area of indigenous revegetation incorporating a large stormwater wetland area south of the bush, and an ecological offset area between the bush and Queen Street East (refer to Mr Nick Goldwater's Terrestrial Ecology Report: Technical Assessment J provided in Volume IV).

(d) Naturalising the stormwater wetlands including contouring the form of the wetlands and naturalised margin planting.

109. While it is beyond the scope of the designation, and relies on the developer of Tara-Ika, potential measures that I consider could be adopted to integrate that planned future urban development with the Ō2NL Project include:

(a) Coordinating the layout of adjacent urban development to the final highway configuration. It is anticipated that the boundaries of the

[12] The SUP is to be open on its east side (preferably to a parallel single-loaded local street although this is outside of the Project as it links to Tara-Ika) for CPTED and access reasons. In the event Tara-Ika properties backed on to Ō2NL the plan would need to be adjusted so that the SUP was visible from the highway and dense screening was on the eastern side of the SUP. There is ample space in the designation for either option but the preference is to plan for and integrated and more desirable outcome with Tara-Ika.

[13] In the area opposite Ashleigh, the planting plans indicate a narrower band of planting (8m wide) which encompasses the planted swale. This is a particular case because the owners of Ashleigh want screening but also to maximise the residual land between their boundary and the SUP. The design is therefore a narrower band of planting, and row of trees along the east side of the SUP. The design in this area is likely to continue evolving in response to on-going discussions with the owners of Ashleigh.

proposed designation will be adjusted following detailed design and construction.

(b) Designing the local streets adjacent to the highway with houses on one side of the street only (ie 'single-loaded') as illustrated in the Tara-Ika masterplan so that outdoor living areas are on the opposite side of the houses to the highway. Medium density terrace housing, for example, would suit such an approach because such attached buildings help screen areas beyond. Street trees along such streets would provide a further filter in addition to the dense screen planting proposed adjacent to the highway. The SUP would be integrated with the streetscape.

(c) Providing additional connections between Tara-Ika and Levin such as the bridge illustrated on the masterplan opposite Liverpool Street, and the two footbridges illustrated in the Structure Plan.[14]

Residual effects assessment

110. The proposed mitigation measures will help soften the highway and reduce adverse effects on amenity values with respect to the existing environment. The magnitude of adverse effect with mitigation will be *moderate*. Comments have also been made to help integrate Ō2NL and the planned Tara-Ika urban development (this relies on the developer and also extends beyond the designation).

Levin-Ohau landscape character area

Existing landscape character and values

111. The landscape values of the Levin-Ohau landscape character area are embodied in the following characteristics:

(a) The qualities of the Ohau River as the central feature including:

(i) its wide gravel and cobble bed, terrace scarp, and riparian vegetation;

(ii) its valley, which draws the eye towards the Tararua Range;

(iii) its cultural significance;

[14] I prepared an addendum to this assessment of effects (East West Arterial: Technical Assessment Addendum, Landscape and Visual, and Natural Character, 20 June 2022) to support the Notice of Requirement by Horowhenua District Council for such a bridge.

(iv) its recreational use; and

(v) its relatively high natural character and dynamic natural processes.[15]

(b) The connections along Muhunoa East Road between Ohau and the upstream valley.

(c) The 'borrowed' landmark of Ōtarere hill on the south bank overlooking the Ohau River, albeit undermined by the quarry and pine plantation at the prow end of Ōtarere.

(d) Open dairy farming landscape on the north bank terraces – with nearby distinctive stands of tōtara – kahikatea forest.

(e) Rolling topography between Kimberley Road and Muhunoa East Road, and the reasonably closely settled, well treed, and pleasant landscape of this area including clusters of rural residential properties.

112. Relevant policies in the HDP specific to the Levin-Ohau landscape domain are (emphasis added):

*Policy LO1: "Manage the scale, intensity, size and design of subdivision and land development to ensure that it reflects and responds to the **flat and terraced landform**, **productive capacity** and **open views** that contribute to the landscape character and qualities of the Levin-Ohau Domain."*

*Policy LO.4 "Minimise obtrusive built elements in the **open and elevated landscape** by integrating building location and design with the surrounding landform and landscape qualities, including by avoiding buildings in prominent sites on elevated terraces or uplands."*

*Policy LO.5 "Ensure that the natural habitats, particularly **remnant indigenous forest** areas, **riparian areas** adjacent **to river and stream corridors** and wetland areas, are identified and protected from inappropriate subdivision and development."*

Project

113. As discussed above, the proposed designation is more-or-less parallel with the cadastral pattern east of Levin. South of Kimberley Road, the proposed designation follows a sweeping 'S' alignment that cuts across the cadastral

[15] Further discussed under ‘natural character’ section below

pattern so that the alignment crosses the Ohau River at a location that lines up with the toe of the foothills south of the river.

(a) The highway will traverse the rolling terrain between Kimberley Road and Muhunoa East Road on a sequence of box cuttings transitioning to low embankments.

(b) The highway will be on a low embankment across the flat terrace south of Muhunoa East Road, transitioning to a higher embankment on the flood plain approaching the Ohau River bridge.

(c) The highway will cross the Ohau River on a 175m long bridge. The bridge will launch from a 450m embankment on the north bank flood plain (with a short 25m flood relief bridge within the embankment), and land on the higher southern bank.

(d) Muhunoa East Road will cross the proposed designation on an overbridge. It is planned to divert the road from its current alignment to enable the overbridge to be built off-line. The overbridge will be relatively high given the 6m minimum clearance and because the Ō2NL concept design is shown on a fill embankment approximately 2.6m high at that point.

(e) The proposed designation will sever sections of Kimberley Road and Arapaepae Road South. The local road network will be reconfigured to maintain north south connectivity on both sides of the highway follows: Arapaepae Road will be extended along the western side of the Project to maintain a connection with the eastern end of McLeavey Road. A new local road that will run parallel to the eastern side of the highway to connect the severed southern section of Arapaepae Road to Tararua Road, picking up the severed eastern end of Kimberley Road.

(f) Two stormwater wetlands are planned at the back of the floodplain, one either side of the highway.

(g) As discussed above, the SUP is aligned along the east side of the highway through the area east of Levin (providing connections to Tara-Ika). It will swap to the western side of the highway at the Muhunoa East Road bridge.

Adverse effects on the landscape character area

114. As with other landscape character areas, the Ō2NL Project will be major infrastructure that will inevitably disrupt existing patterns of rural land use, disrupt from the existing pattern of local roads, and detract from rural amenity values. The Muhunoa East Road overbridge will stand out because of its height and its misalignment with existing landscape patterns.

115. However, the following factors contribute to Ō2NL's 'fit' with the landscape, and the extent to which it avoids and reduces the extent of such potential adverse effects:

(a) The location of the Ohau River crossing fits the landscape in that it is aligned with the hills at the back of the plains south of the river and is visually anchored by Ōtarere hill.

(b) The 175m long bridge and cylindrical piers will enable the river to maintain a natural bed and channel(s). With the proposed mitigation, the natural character of the Ohau River will be maintained (see natural character section below).

(c) The designation avoids the stands of remnant bush near Muhunoa East Road to the west of the alignment.

(d) While the Muhunoa East Road overbridge will appear misaligned with landscape patterns in its immediate vicinity, it will more importantly maintain the connection between Ohau and the upper Ohau valley along the north bank of the Ohau River.

(e) A pattern of local connectivity with both Levin and Ohau will be maintained on both sides of the highway (i.e. each of McLeavey Road, Kimberley Road, Riverside Terrace, and Arapaepae Road South will have connections to both Levin and Ohau).

116. The SUP will provide positive effects on connectivity linking communities on either side of the Ohau River.

117. In summary, the Ō2NL Project will achieve a moderately good fit with landscape patterns in this area, will maintain local connectivity, and cause little disruption to natural processes. It will have *moderate* adverse effects on rural amenity values. Overall, the relative magnitude of adverse effects prior to mitigation will be *moderate*.

Mitigation measures

118. Proposed mitigation measures entail:

(a) Planting screen vegetation on all fill batters and alongside at-grade sections of the highway to soften views from dwellings.

(b) Planting an avenue of trees along the new local roads parallel with the highway. The avenues will be on the new local road east of the highway between Tararua Road and Riveredge Terrace (CH18250 – 20500); and the new local road west of the highway between McLeavey Road and Arapaepae Road South (CH20050 – 20500). The purpose of these avenues is to help separate the local roads from the highway, contain the views within the local roads, soften views toward the highway, and break up the width of roading. Formal avenues using indigenous species (for example, tōtara)[16] are proposed to differentiate these local roads from the natural planting style otherwise proposed along the highway.

(c) Enriching riparian vegetation along the Ohau River. This overlaps with mitigation for natural character reasons as described below.

(d) Naturalising the stormwater wetlands including contouring the form of the wetlands, naturalised margin planting, merging the wetlands with the adjacent rehabilitated material supply area (see below), and connecting this area with the riverbank restoration.

Residual effects assessment

119. The proposed mitigation measures will address the adverse effects described above so that the residual effects on landscape character and amenity values will be *low-moderate*.

Kuku landscape character area

Existing landscape character and values

120. The 'Kuku' landscape domain as identified in the HDP includes both Kuku and North Manakau. Landscape values relevant to the area traversed by the Ō2NL Project are embodied in the following characteristics:

[16] The choice of species is a detail to be addressed in the CEDF which will consider such matters as morning shade/potential ice issues and consequent matters such as deciduous v evergreen trees and/or the spacing of trees on a site-specific basis.

(a) The backdrop hills and setting at the back of the plains.

(b) The valleys of the Kuku and Waikawa Streams, which divide the backdrop hills into three segments (Ōtarere, Poroporo and Hanawera). The valleys draw the eye towards the Tararua Range and provide access from the plains into the hills.

(c) The relatively intensive agricultural use of the plains' high value soils including extensive cropping.

(d) Clusters of houses on the plains at Kuku East where the Kuku Stream emerges from between the hills, and at Manakau North where the Waikawa Stream emerges from between the hills.

(e) The Tūkorehe marae at Kuku and its connections with the Kuku Stream, plains, and backdrop Range.

(f) The Ngāti Wehi Wehi marae and its connections with the Waikawa Stream, plains, and Range.

121. Relevant policies in the HDP specific to the Kuku landscape domain are (emphasis added):

*Policy K.1: "Maintain the **expansive, open and productive landscape** of the Kuku Domain landscape by restricting the number, size and shape of new lots created through subdivision of land."*

*Policy K.5: "Ensure that **natural habitats and the margins of rivers**, **streams**, estuaries and wetlands, particularly riparian areas adjacent to the **Ohau River**, **Waikawa Stream** and Manakau Stream, and remnant indigenous forest areas, are identified and protected from inappropriate subdivision and development."*

Project

122. The proposed designation roughly follows the toe of the hills. The Ō2NL Project will:

(a) Be on low embankment and slightly curving alignment close to the hills between the Ohau River and Kuku Stream.

(b) Cross the Kuku Stream on a short bridge (15m long) at the location of an existing farm track culvert.

(c) Be in shallow cut (approximately 1m deep) where a realigned Kuku East Road will pass over the highway.

(d) Be straight and on low embankment (typically 0.5m – 3m high) between Kuku East Road and Waikawa Stream.

(e) Cross the Waikawa Stream on a bridge 140m long, which will launch from an embankment on the north bank flood plain and land on the terrace on the south bank.

(f) Be in a box cutting (typically 2.5m – 5m deep) from the Waikawa Stream to south of North Manakau Road. It will therefore be in a box cutting to the west of the cluster of houses at North Manakau Road and will be in a cut of approximately 5m where a slightly realigned North Manakau Road will cross the highway on a bridge.

(g) Be benched at the toe of Hanawera hills in the area south of North Manakau Road (ie the area north of Manakau village).

123. Three stormwater wetlands are proposed in this section. Two are clustered in the vicinity of Kuku Stream (one at the back of the north bank flood plain, one on the south bank terrace). The wetlands are located on both sides of the highway. The third is at the back of the floodplain on the north bank of the Waikawa Stream (in the lee of the bridge embankment).

124. The SUP parallels the west side of the highway with connections at North Manakau Road and Kuku East Road. It will share the highway bridge over the Waikawa and Kuku Streams.

Adverse effects on the landscape character area

125. As above, the Ō2NL Project will be major infrastructure that will have some potential adverse effects on natural processes, disrupt existing rural activities, and detract from rural amenity values. The following factors will contribute to reducing the extent of such potential adverse effects in this area:

(a) The proposed designation follows the topography along the toe of the hills at the back of the plains.

(b) The highway's visual prominence will be reduced by the backdrop hills and the highway's low elevation in shallow box cuttings and low embankments.

(c) The proposed designation crosses the two main streams (Kuku and Waikawa Streams), and most of the minor tributaries on a perpendicular alignment. Such a pattern helps minimise the highway's potential footprint on the stream and helps maintain legibility of the natural feature. The two main streams will be crossed using bridges which helps maintain a natural stream bed. In the case of Kuku Stream, a bridge will replace the existing farm culvert.

(d) The proposed designation also crosses the two local roads (Kuku East Road and North Manakau Road) on a perpendicular alignment. In both instances the highway will be in cut which will reduce the potential height of the overbridges (more particularly at North Manakau Road).

(e) The Ō2NL Project will maintain the landscape connectivity of the two local roads that follow the valleys of the Kuku and Waikawa Streams towards the Tararua Range.

(f) While there are small clusters of houses at Kuku East Road and North Manakau Road, the Ō2NL Project otherwise crosses an agricultural landscape with low settlement density.

(g) The highway will be in box cutting south of Waikawa Stream will reduce visual effects for the cluster of houses at North Manakau Road and help maintain visual connections between the Ngāti Wehi Wehi marae and the Tararua Range.

126. There will be positive connectivity effects from the SUP, which will create a new north-south connection at the back of the plains.

127. In summary, the Ō2NL highway will achieve a good fit with landscape patterns in this area. It will minimise disruption of natural processes, will maintain existing connectivity on local roads, and will have relatively modest effects on rural amenity values. Overall, the relative magnitude of adverse effects prior to mitigation will be *low-moderate*.

Mitigation measures

128. Mitigation will entail:

(a) Restoration of sections of riparian vegetation along the Kuku and Waikawa Streams upstream and downstream of the proposed highway,

and of a Kuku Stream tributary at CH25400. This overlaps with mitigation for natural character as described below.

(b) Naturalising the stormwater wetlands including contouring the form of the wetlands, naturalised margin planting, merging the wetlands with the restoration of nearby stream margins.

(c) Planting the highway's west-facing fill batters between the Ohau River and Kuku Stream (CH22700 – 23800). The planting design will comprise species of sufficient height to soften views of the highway and traffic in views across the plains. It will help avoid distracting from visual connections between Tūkorehe marae and the Tararua Range.

(d) Planting the highway's east-facing batters between the Ohau River and CH22950 to screen the quarry from the highway, while retaining open east-facing fill batters between CH22950 – 23500 to provide views to the Ōtarere hill.

(e) Planting the highway's west-facing fill batters between Kuku East Road and the Waikawa Stream (CH24100 – 25600) to soften views of the highway and traffic from the plains. Retaining open east-facing fill batters on this section to provide views of Poroporo hills from the highway.

(f) Planting the highway's west-facing fill batters south of North Manakau Road (CH27500 – 28100) to soften views of the highway and traffic from the plains and help avoid distracting from visual connections between Ngāti Wehi Wehi marae and the Tararua Range. Retaining open east-facing fill batters on this section to provide views of Poroporo hills from the highway.

(g) Reinstating access to productive land severed by the designation by providing local access parallel with the highway.

(h) Contouring of surplus spoil north of the Kuku Stream to mimic stream terraces.

Residual effects assessment

129. The proposed mitigation measures will address the adverse effects described above so that the residual effects on landscape character and amenity values in this area after mitigation will be *low*.

Manakau Downlands landscape character area

Existing landscape character and values

130. The HDP recognises the Manakau Downlands landscape domain as an area of High Landscape Amenity. Its landscape character is a combination of natural and human elements, and its landscape values are embodied in the following characteristics:

(a) The amphitheatre-like form of the valley and terraces enclosed by hills.

(b) The pattern of residential development on the terraces around the 'amphitheatre' (Manakau village, Manakau Heights, Mountain View Drive).

(c) The relatively intimate scale in contrast to the open plains elsewhere in the vicinity.

(d) The landmarks of Pukehou, and the backdrop Hanawera Hills.

(e) The sinuous meanders and bubbling nature of the two streams crossing the valley (Manakau and Waiauti Streams).

(f) The upstream valley of the Manakau and Waiauti Streams which leads the eye toward the Tararua Range.

(g) The historic character of Manakau village, the characteristics of which include its grid street pattern, fine grain, treed nature, collection of historic buildings, and its quietness being off to one side of the existing SH1.

131. Relevant policies in the HDP specific to the Manakau Downlands landscape domain are (emphasis added):

> *Policy MD.1: "Manage the scale, intensity, size and design of subdivision and land development to ensure that it reflects and responds to **the varied topography**, **productive capacity**, **aesthetic appeal** and **hill backdrop** that contribute to the landscape character and qualities of the Manakau Downlands domain."*
>
> *Policy MD.4: "**Minimise obtrusive built elements in the open** and elevated landscape by **integrating** building location and design with the surrounding landform and landscape qualities, including by avoiding buildings in prominent sites on elevated land."*

*Policy MD.5: "Ensure that **natural habitats** and the **margins of rivers, streams**, estuaries and wetlands, particularly the Waikawa Stream[17] and **Manakau Stream**, and remnant **indigenous forest areas,** are identified and protected from inappropriate subdivision and development."*

132. As noted above, the Manakau Downlands landscape domain is classified in the HDP as an area of 'High Landscape Amenity', which is subject to specific objectives and policies. Objective 3.1.1 is "…*that regard is had to other landscapes having high amenity.*" Relevant policies giving effect to that objective include having regard to the maintenance and enhancement of the amenity values of the landscape, to any positive effects of landscape and biodiversity enhancement, and to the ability of the existing landscape to absorb development.

Project

133. The proposed designation passes through the valley of the Mangahuia Stream (a tributary of the Manakau Stream) east of ('behind') Manakau Village. The proposed designation is aligned so that the highway would be benched onto the toe slopes of the Hanawera Hills. Manakau village is on a terrace that is higher than the highway.

134. South of Manakau village, the proposed designation follows a sweeping 'S' alignment across the valley of the Manakau and Waiauti Streams. The highway will be on fill embankment across the floor of this valley typically around 3m higher than ground level in the north part of the valley [CH29300-29700] and ramping to nearly 9m where the alignment crosses South Manakau Road and the Manakau and Waiauti Streams. The fill embankment will be typically 5m-7m above ground level south of Waiauti Stream before returning to a shallow cut at the south end of the valley [CH30700] near Staples Bush.

135. The proposed designation crosses the Manakau and Waiauti Streams at a location where the two streams are separated by a small terrace landform. This is the preferred location to cross these streams from a landscape perspective. The highway will cross the streams on two separate bridges that will both launch from this landform. A single bridge will span both the Manakau Stream and South Manakau Road.

[17] The Waikawa Stream is in the Kuku landscape domain addressed above.

136. Three stormwater wetlands are proposed in this landscape character area: one in the valley behind the NE corner of Manakau village, one in the middle of the amphitheatre floor [CH29600], and one near the crossing of the Waiauti Stream. They are all on the west side of the highway.

137. The local connection between Manakau Heights Drive and Manakau Village will be realigned to an overbridge. The overbridge will be where the highway is in a shallow (approximately 3.5m) box cutting.

138. The SUP will parallel the highway on its west side with connections to local roads at Mokena Kohere Street, Manakau Heights Drive, and South Manakau Road.

Adverse effects on the landscape character area

139. The Ō2NL Project will be a major feature bisecting a small-scale and picturesque landscape. The adverse effects will be most pronounced south of Manakau Village where the Project will cross the valley of the Manakau and Waiauti Streams on a fill embankment and occupy the outlook from properties on the terraces at the back of the amphitheatre – mainly Manakau Heights Drive and Mountain View Drive. It will have *high adverse effects* on the landscape character and rural amenity values of this area.

140. Notwithstanding such adverse effects, the following aspects will contribute to reducing potential adverse effects.

    (a) The proposed designation largely avoids adverse effects on most of Manakau Village itself (acknowledging there will be adverse effects for properties on the eastern edge of the village and on Eastern Rise) because it is aligned in a valley behind and below the village. Manakau is on a terrace approximately 10m-15m above the designation, and the terrace slopes to the north-west in the opposite direction from the designation.

    (b) The sweeping 'S' alignment of the proposed designation across the open valley south of Manakau village maximises separation from the Manakau Heights Drive and Mountain View Drive areas – the separation from Mountain View Drive also being subject to the desire to also avoid Staples Bush.

    (c) The crossing location of the Waiauti Stream and Manakau Stream is anchored (physically, visually, and in terms of reducing effects on

meanders) by a small terrace landform. It is the preferred location from a landscape perspective. The footprint will nevertheless require some diversions of stream meanders.

(d) Local connectivity will be maintained. The Manakau South Road alignment along the valley of the Manakau and Waiauti Streams will be maintained, as will the connection between Manakau Heights Drive/Eastern Rise/Mountain View Drive and Manakau village. Connectivity for active modes will be improved by the SUP, which will provide a separate path between Manakau Heights and Manakau Village including a connection at Mokena Kohere Street which leads to Manakau School.

141. In summary, the Ō2NL Project will be aligned 'behind' Manakau but will cut across the picturesque landscape south of Manakau. It will disrupt some meanders of the Manakau and Waiauti Streams. It will have significant adverse effects on amenity values for properties in this area. Overall, the relative magnitude of adverse effects prior to mitigation will be *high.*

142. While there will be significant adverse effects in the Manakau Downlands area, such effects are the consequence of selecting an eastern route that had fewer adverse landscape effects overall.

Mitigation measures

143. Mitigation will entail:

(a) Revegetating all west facing highway fill batters in the valley behind Manakau between CH28100 and 28800. The planting design will comprise species of sufficient height to soften views of the highway and traffic. (As previously discussed, this could be modified to entail low planting on the batters, and an avenue of trees along the SUP to help separate the SUP from the highway and soften views, while also maintaining sightlines between the highway and SUP for CPTED[18] reasons).

(b) Revegetating all east facing fill batters across the valley between CH29250 and 31100 to soften views from the Manakau Heights Drive and Mountain View Drive areas. The planting design will comprise

[18] Crime Prevention Through Environmental Design.

species of sufficient height to soften views of the highway, traffic (including night-time lights), and highway barriers.

(c) Planting an avenue of trees along Eastern Rise and Manakau Heights Drive between CH28250 and 29200 and offering to extend the avenue outside the designation along Manakau Heights Drive between CH29200 and the intersection with South Manakau Road. The purpose of such an avenue is to help contain views along the local road, and to further soften views and increase the perspective depth for properties to the east. A formal avenue is proposed to differentiate these local roads from the natural planting style otherwise used along the highway. It is proposed to use indigenous species (eg tōtara). The layout would be tailored to suit available space and constraints within the road reserve.

(d) Revegetating some west facing fill batters between CH29800 and the South Manakau Road bridge, and between CH30500 and 30850. The planting design will comprise species of sufficient height to soften views of the highway, traffic, and any barriers.

(e) Restoring riparian vegetation along the Manakau and Waiauti Streams upstream and downstream of the highway alignment. This overlaps with mitigation proposed with respect of natural character as described below. The restoration will accentuate the natural features to help offset the presence of the highway. The planting will also help soften views and increase perspective depth for properties on Mountain View Drive.

(f) Similarly, restoring the riparian vegetation along Mangahuia Stream parallel with the alignment behind Manakau Village. This would help to soften views of the Project in that area and overlaps with mitigation proposed with respect to natural character discussed below.

(g) Naturalising the stormwater wetlands including contouring the form of the wetlands, naturalised margin planting, and merging the wetlands with the adjacent restoration of the Mangahuia and Waiauti Streams respectively.

Residual effects assessment

144. The proposed mitigation measures will help reduce the adverse effects described above so that the residual effects on landscape character and amenity values in this area with mitigation will be *moderate-high*.

Pukehou landscape character area

Landscape character and values

145. The Pukehou landscape character area covers the area traversed by the Ō2NL Project that falls within Kāpiti Coast District and Wellington Region. The proposed designation is aligned in a sweeping curve around the toe of Pukehou Hill. This area has a character distinct from that of Manakau Downlands to the north. Its landscape values are embodied in the following characteristics:

(a) The landmark qualities of Pukehou. The hill has a memorable steep-sided, symmetrical shape, and it stands proud of the other foothills, forming a kind of gateway travelling north or south between Horowhenua and the Kāpiti Coast.

(b) The significance of Pukehou to tangata whenua because of historical events associated with the landmark.

(c) The radial pattern of gullies incised in the terraces at the toe of Pukehou. The gullies are tributaries of Waitohu Stream. The terraces comprise farmland and some lifestyle properties.

146. The Pukehou landscape character area is one that has been identified for the purpose of this landscape assessment. The KCDP does not identify landscape character areas in the same manner as the landscape domains in the HDP. The Greater Wellington RPS does classify Pukehou Hill as a Special Amenity Landscape ("**SAL**"). However, the proposed designation does not traverse the mapped SAL – rather it skirts the hill across terraces and gullies.

147. The KCDP also classifies Pukehou Hill as a SAL. The relevant objective is DO-O9 to "maintain and enhance the landscape values of special amenity landscapes…; and avoid, remedy or mitigate adverse effects of earthworks on natural features and landforms." However, as above, the proposed designation does not encroach onto the hillslopes mapped as SAL.

Project

148. The Ō2NL alignment skirts Pukehou in a sweeping curve, crossing the terraces and gullies around the base of the hill. It will tie in with the Peka Peka to Ōtaki section of the Wellington Northern Corridor near Taylors Road just to the south of Pukehou. The highway will comprise a sequence of cuts within the terrace surfaces and fills across the gullies through this landscape character area.

149. The proposed designation is within pasture, including wet pasture in the drained gullies. It will pass between and avoid two bush remnants (Staples Bush and Pukehou Bush) at the northern end of the area [CH31100] and is aligned below the patches of bush and seepage wetland around the base of Pukehou.

150. North-facing ramps will connect the Wellington Northern Corridor to the existing SH1 at a roundabout opposite CH34100. Traffic travelling south on the existing SH1 will be directed onto the new road, while traffic travelling north will have the option of exiting to the existing SH1.

151. The SUP diverts from the proposed highway just south of Staples Bush to instead follow the existing SH1.

152. There are three stormwater wetlands, each in gullies adjacent to watercourses on the downstream side of the highway.

Adverse effects on the landscape character area

153. As with the other landscape character areas, the Ō2NL Project will be major infrastructure and will inevitably change the existing landscape patterns and detract from rural amenity values. The highway will pass close to Pukehou, a feature of landscape significance. It will cut across landforms including a series of gullies and terraces. It is the part of the proposed designation likely to have the deepest cuttings and highest embankments. Cuttings may be up to approximately 15m deep and embankments up to approximately 10m high. The Ō2NL Project will have adverse effects on outlook from rural and rural residential properties in the area. Lighting required around the half interchange at the tie-in will have adverse effects on night-time amenity values especially for adjacent properties.

154. However, the following factors contribute to the proposed designation's fit with the landscape and the extent to which it avoids or reduces the magnitude of potential adverse effects:

(a) The proposed designation responds to topography by sweeping around the toe of Pukehou. It will avoid Pukehou's steeper greywacke hill faces. Instead, the alignment is across the marine sand terraces and gullies at the base of the hill. The sweeping curve of the designation alignment around Pukehou means the hill will remain a prominent landmark for travellers on the new route.

(b) The gullies traversed are highly modified watercourses near tributary headwaters. The proposed designation avoids the area of higher value wetlands and streams on the downstream side of the existing SH1.

(c) The anticipated vertical alignment will help embed the highway in the landform and reduce its prominence.

(d) The proposed designation is aligned to avoid the Staples Bush stand of old-growth coastal bush (CH31100), and the other stands of modified and regenerating bush.

(e) The proposed designation is sufficiently separated from the existing SH1 that the existing road will retain its attractive character through this area. The SUP will take advantage of this by its alignment on the existing road.

155. In summary, the highway will have a good fit with landscape patterns. There will be some disruption of modified natural gullies, and adverse effects on amenity values for properties in the vicinity. Overall, the relative magnitude of adverse effects prior to mitigation will be *moderate*.

Mitigation measures

156. Proposed landscape mitigation is designed in response to the key features of Pukehou as a landmark, the wetland gullies, and Staples Bush. The design measures comprise:

(a) Avoiding benched cut or fill batters. Although the tallest cut and fill batters are in this area, they are nevertheless mostly less than 10m tall. The tallest cut batter is approximately 15m and benching should, wherever practicable, be avoided by feathering out the upper portion.

Avoiding benched cuts will result in a cleaner line for the highway through the terraces and gullies. The planting strategy is to grass the cut batters and plant the fill batters.

(b) Restoring wetlands and wet forest along gullies adjacent to the highway. This overlaps with mitigation proposed for natural character reasons and is further described below. Such restoration will help integrate the highway into its context. It will accentuate the natural features in counterpoint to the presence of the highway.

(c) Naturalising the stormwater wetlands including contouring the wetland form, establishing naturalised margin planting, and merging the stormwater wetlands with the restoration of the adjacent wetland gullies and wet forest.

(d) Planting buffer vegetation between the highway and Staples Bush. The planting will extend the bush, buffer its edge conditions, and amplify its visual presence.

(e) Replanting all west facing batters in indigenous species to soften views from the existing SH1 and houses in this area.

(f) Maintaining an open outlook to Pukehou through re-grassing or low vegetation on the east side of the highway.

Residual effects assessment

157. The proposed mitigation measures will address the potential adverse effects described above so that the residual effects on landscape character and amenity values following mitigation will be *low-moderate*.

Visual effects

Public views

158. The Ō2NL Project will be widely experienced as an integral part of Horowhenua's landscape. It will run the length of the district. People will see the highway as they go about their everyday life, and they will experience the Horowhenua landscape from the highway. The fit of the proposed designation with the landscape character patterns discussed above is therefore key to the visual effects on public views, as are the mitigation measures discussed above to soften and further integrate the Ō2NL Project into the landscape.

159. The Ō2NL Project is illustrated in the photo simulations from representative public viewpoints along the length of the highway (provided in Volume III). A commentary on these views is attached as **Appendix D.4**.

160. There are no additional public places that are considered to warrant special assessment. Frequented public places such as scenic reserves, scenic lookouts, public historic places, cemeteries, wāhi tapu, marae, schools and public buildings are well separated from the proposed designation.

Private views

161. Minimising potential visual effects on properties was a factor that was considered in the MCA processes for selecting the preferred route in the eastern corridor (summarised in Part E of Volume II). However, major infrastructure such as the Ō2NL Project located through a settled landscape such as the Horowhenua will unavoidably require the removal of some houses and have adverse visual effects on other properties.

162. Tabulated assessments estimating the likely visual effects from individual properties are attached as **Appendix D.3**. The tables record distance of the edge of the concept highway design from each dwelling, an assessment of the nature and degree[19] of visual effect, and the recommended mitigation where the adverse visual effects for a dwelling are likely to be 'moderate' or greater. It is acknowledged that the final highway alignment and design within the proposed designation may differ from the concept design, and that the visual effects for individual houses may increase or decrease. Effects should therefore be re-assessed at the outline plan of works stage. However, the method used provides an overall indication of the likely nature and magnitude of visual effects of the Ō2NL Project from dwellings and helps inform the proposed landscape mitigation.

163. The magnitude of visual effects ranges from *very low* to *very high* and '*removal*' (ie those properties likely to require removal because they fall within the footprint of the concept design). The properties assessed as having effects *moderate* or higher prior to mitigation in each of the landscape character areas are tabulated in Table D.1a and D.1b below.

[19] Degree (magnitude) of effect is measured against a 7-point scale as follows:

very low	low	low-mod	moderate	mod-high	high	very high

Table D.1a. Properties estimated to have visual effects of moderate or greater magnitude in each landscape character area (including those owned by Waka Kotahi at April 2022)

Landscape character area	mod	mod-high	high	very high	removal
Levin-Koputaroa (SH1 to Queen Street East)	13 (10)[20]	11 (6)	18 (11)	10 (5)	19 (14)
Levin-Koputaroa (Queen Street East to Tararua Rd)	22	3	4	1	1
Levin-Ohau	12	17	7	6	9
Kuku	4	6	4	0	6
Manakau Downlands	9	8	7	4	6
Pukehou	6	2	8	2	3
Totals	**66**	**47**	**48**	**23**	**44**

Table D.1b. Properties estimated to have visual effects of moderate or greater magnitude in each landscape character area (<u>excluding</u> those owned by Waka Kotahi at April 2022)

Landscape character area	mod	mod-high	high	very high	removal
Levin-Koputaroa (SH1 to Queen Street East)	12	10	17	7	14
Levin-Koputaroa (Queen Street East to Tararua Rd)	22	3	4	1	1
Levin-Ohau	11	12	4	6	5
Kuku	4	4	4	0	5
Manakau Downlands	9	7	6	3	2
Pukehou	5	1	6	1	3
Totals	**63**	**37**	**41**	**18**	**30**

[20] Numbers in brackets are the subset in the portion of the landscape character area between the intersection of Õ2NL with SH57 and Queen Street East – i.e. the area north-east of Levin including Waihou Road.

164. The concentration of moderate or greater adverse visual effects in the area between the north end of the Project and Queen Street East reflects the clusters of rural residential properties on the outskirts of Levin (especially in Sorensons Road, and Waihou Road), and the fact that the proposed designation's large curve around the north-east corner of Levin cuts across the landscape patterns.

165. Some properties have already been purchased by Waka Kotahi. Negotiations are continuing with respect of other properties required for the Project which include many of those that would have the greatest adverse visual effects and which fall within the designation. Of the 18 houses assessed as having 'very high' adverse effects – and which are not currently owned by Waka Kotahi (at April 2022) – 12 are within the designation and an additional 2 are on properties that are affected by the designation although the house itself is outside the designation. Of the 41 houses assessed as having 'high' adverse effects prior to mitigation – and which are not currently owned by Waka Kotahi – 3 are within the designation and 12 are on properties that are affected by the designation but where the house itself is outside the designation.

166. Mitigation is recommended for those properties assessed as having *moderate* effects or greater. Mitigation techniques can include planting to screen the highway and traffic, soften (filter) views, and increase perspective depth (ie planting in foreground and middle-ground layers). In most instances, as detailed in Appendix D.3, such mitigation will be provided by the broad landscape design for the Project (ie the planting proposed for landscape and natural character reasons). Such mitigation includes the proposed planting on fill batters, screen planting adjacent to the highway, planting associated with stormwater wetlands, natural character restoration along streams, and avenues of trees on some local roads. These broad planting patterns were further adjusted where warranted to mitigate views from dwellings. Appendix D.3 outlines the effectiveness of the Project's broad landscape design for properties assessed as having 'moderate' or greater adverse visual effects. The recommended planting will also of course benefit other properties as well.

167. Where planting within the designation is not sufficient to reduce adverse visual effects to a reasonable level, moderate or less, it is proposed to offer owners of affected properties additional planting to be carried out on the affected properties. This is set out in the conditions. It would occur in

parallel with the OPW process. The offer would be subject to individual negotiation between owners of affected properties and Waka Kotahi.

Effects during construction

Biophysical effects during construction

168. Potential adverse effects on the biophysical landscape arising from construction activities (described in the Design and Construct Report provided as Appendix Four to Volume II) may include effects on streams through construction of bridges and culverts, and from stormwater discharge during earthworks. They also include potential effects on bush either through careless clearance, or potential change to groundwater. Such effects are to be managed through consent and designation conditions and management plans (as described in the proposed RMA conditions provided as Appendix Eight in Volume II) covering such matters as:

    (a) working in streams, and soil erosion and sediment control; and

    (b) fencing of bush areas to avoid accidental damage.

Visual effects during construction

169. Visual effects during construction include the raw appearance of earthworks, and construction clutter (construction yards, machinery, safety barriers, stored materials), and the machinery operations that tend to attract attention to the works. Such effects cannot be completely avoided.

170. Nine construction sites are indicated as 'temporary works areas' on the Accommodation Works drawings (Drawings and Plans provided in Volume III). Each is located adjacent to major elements such as the interchanges and bridges and will generally be seen against the backdrop of the construction works for the highway itself. The potential construction sites are in the following locations:

    (a) In the angle between the Ō2NL highway, the proposed roundabout at the north end of the Ō2NL Project, Heatherlea East Road, and the NIMT. The location will be enclosed by infrastructure and construction on three sides. It would require removal of a house on the property which is owned by Waka Kotahi. The property on Heatherlea East

Road opposite the site (25 Heatherlea East Road, ref 3978296)[21] is set back from the road within a treed garden setting. However, there would be *'high'* adverse visual effects during construction for the nearby property on the opposite side of the NIMT that would otherwise have only '*low mod*' effects (46 Heatherlea East Road, ref 6723924).

(b) In the angles (two sites) between the intersection of Ō2NL and SH57, adjacent to the proposed roundabout. One house that falls within the construction site would require removal (254 Arapaepae Road, ref 7025788). The construction site would add to the '*very high*' visual effects of two further houses – the cumulative effects may require removal of both houses (259 Arapaepae Road, ref 7025788; 24 McDonald Road, ref 3964005). The construction yard will add to the visual effects of three other more distant properties for which the yard will be seen against the backdrop of the greater construction works for the highway and roundabout.

(c) At the Tararua Road interchange, adjacent to the north-bound on-ramp (NW quadrant). The yard would be 30m from one house (185 Arapaepae Road, ref 3760580) and would increase the property's estimated visual effects from '*high*' to '*very high*' during construction. The yard would add to the visual effects during construction from three other properties but would be seen against the backdrop of greater construction works for the highway and interchange. The site is south of the built-up residential area of Levin.

(d) In the angle between the Ō2NL highway and Kuku East Road, in the south-east quadrant. There are no houses in the immediate vicinity. A construction yard at this location will add to visual effects in more distant views from properties on the hill further to the southeast but will be seen against the backdrop of greater construction works for the highway and Kuku East Road bridge.

(e) In the angle between the Ō2NL highway and North Manakau Road, in the north-west quadrant. The location is on the opposite side of the highway from a cluster of houses. The yard will be approximately 70m from the nearest house to the west, although that house is screened by trees (51 North Manakau Road, ref 3939569).

[21] Ref is the LINZ property number as used in the estimated visual effects Appendix D.3.

(f) In the angles between the Ō2NL Project and South Manakau Road, two sites on the north-east and south-west quadrants respectively. The sites are adjacent to the bridges over the Manakau Stream/South Manakau Road and Waiauti Streams.

(i) The potential yard in the north-east quadrant will be approximately 60m from the nearest house (63 South Manakau Road, ref 3888216) and will increase the adverse visual effects for that property from '*mod-high*' to '*high*' during construction. The yard would add to the visual effects during construction from three other properties but would be seen against the backdrop of greater construction works for the highway and bridges (21 Manakau Heights Drive, ref 6750506; 23 Manakau Heights Drive, ref 7142444; 69 South Manakau Road, ref 3963441).

(ii) The potential yard in the south-west quadrant will add to the visual effects during construction from the two nearest properties (45B South Manakau Road, ref 6856767; 10 South Manakau Road, ref 4002204), although the yard will be 110m and 160m away respectively and seen as part of the larger works associated with construction of the Ō2NL Project.

(g) Within the half interchange at the southern end of the Ō2NL Project in the angle between the Ō2NL highway, roundabout, and existing SH1. The potential yard at this location will be immediately adjacent to one house which would likely be removed for the Ō2NL Project (134 SH1, 3755849). The yard will be immediately on the opposite side of the existing SH1 from three houses (143 SH1, 3890179; 141 SH1, 4066597; 139 SH1, 3904627), and will increase the level of visual effects from these properties during construction to '*very high*', '*very high*' and '*high*' respectively. Otherwise, the yard will be relatively confined within the construction footprint of the Ō2NL Project with respect to other properties.

171. In general, visual effects during construction will be amplified for those properties already identified as having adverse visual effects from the Ō2NL Project. Temporary adverse visual effects will also occur during the construction of elements that will eventually have positive landscape effects such as the large stormwater wetlands, the rehabilitated material supply sites (see below), and other planting. Such effects will be limited to some

extent by their temporary nature, acknowledging the Project will take several years to construct.

172. Without taking away from such adverse effects, especially for properties most affected, parts of the wider community may also take an interest in such activities and keep track as the work progresses.

Material supply sites

173. Sources of appropriate fill are required because there will be a significant shortfall of cut to fill on the Project. I contributed to a process to select excavation sites for this material, and measures to remedy and mitigate the subsequent landscape effects (refer to Appendix 4.5 to the Design and Construction Report, Appendix Four to Volume II).

174. A long-list of thirty-six sites were assessed using a traffic-light system, of which sixteen were rated 'green' from a landscape perspective. Four of these were short-listed and looked at more closely in terms of potential effects and remediation opportunities. The four sites were subsequently confirmed and are depicted/labelled on the Plans in Volume II Part B. Three are in alluvial deposits and located in upper terraces set back from the stream bed (to reduce effects on natural character).

175. While the design and rehabilitation would be part of an OPW, conceptual plans have been prepared as part of the CEDF to illustrate the intended approach. The approach is to excavate the terraces to mimic natural landforms. For example, the shape of the excavation in plan to mimic an abandoned meander, the cut at the back of the excavation to mimic a river scarp, and areas of rehabilitated wetland within the excavation to mimic the form of ox bows. The rehabilitation would tie in with restoration of indigenous vegetation proposed for natural character and ecological offset reasons. The CEDF promotes the inclusion of taonga species such as mānatu, kowhai, maire tawake, swamp astelia, hukihuki and to create habitat for at risk and threatened manu (bird), ngata (snail species, for example, by integrating ferns and shaded boulder piles) shortfin tuna, inanga, kōkopu (where there is a migration path) and/or introduction of brown mudfish.

176. **Site 34a** is alongside the Ō2NL alignment at CH 11800. It is a terrace of former marine sands that has gullies on both sides. The gullies are headwaters of the Koputaroa catchment. They have flat bottoms and have

been drained and modified. It is proposed to rehabilitate the gullies for natural character and ecological reasons by reversing the drainage, constructing wetlands, and revegetating with wetland and wet forest vegetation. The excavation would widen one of the gullies, removing a section of terrace between the gully and the highway – or more precisely, reducing the terrace to a height slightly above the adjacent wetlands. It would remove part of a low ridge and hillock on the terrace. The area would be rehabilitated with wetland forest to extend the margins of the adjacent wetlands.

177. **Site 36** is on the north bank of the Ohau River, roughly 200m east of the alignment opposite CH 22100. It is an open terrace, currently in dairy farmland. Between the site and the river is an area identified for ecological offset mitigation, which merges with a band of replanting/enhancement proposed for natural character reasons. These areas will buffer the river from the excavation. The potential effects of the excavation will be remedied by creating a landform that mimics a natural flood plain. The area will be rehabilitated with wetland and wet forest type consistent with the river corridor.

178. **Site 19** is on the north bank of the Waikawa Stream and straddles both sides of the Ō2NL alignment at CH 26100. It is an open terrace used for grazing and cropping. It is at the back of a flood plain, typically 150m-250m from the Waikawa Stream. As above, the potential effects will be remedied by creating a landform that mimics a natural flood plain, the sweeping scarp spanning both sides of the highway, and rehabilitating the site with indigenous vegetation. The works will be buffered from the Waikawa Stream by distance and the rehabilitation works proposed on the natural flood plain.

179. **Site 15** is alongside the Ō2NL alignment on the south bank of the Waikawa Stream at CH 26700. It is an open terrace used for cropping. As above, the potential effects will be remedied by creating a landform that mimics a wide meander of flood plain and rehabilitating with indigenous vegetation and wetlands. The terrace is closer to the stream than the other options because the Waikawa Stream is currently against the south side of its flood plain.

180. There will be adverse visual amenity effects during excavation, but they will occur in the context of constructing the whole Ō2NL Project. Following

rehabilitation, the landforms will have a naturalistic appearance, an indigenous vegetation cover, and will include new wetlands. There will be positive net effects on visual amenity and landscape values.

Spoil disposal sites

181. I also contributed to a process to identify spoil disposal sites. A long list of approximately 100 potential sites were assessed by a traffic light system. Preferred sites from a landscape perspective were those in modified farmland (avoiding indigenous vegetation, and water courses), locations that could be merged with Ō2NL earthworks (ie overfilling fill batters), or where there was potential to mimic natural landforms (eg river terraces, or the forms of marine sand terraces).

182. The confirmed potential sites are depicted on the Plans in Volume II, Part B. They are distributed along the route to meet the principle that spoil be disposed within its original catchment. Most are located to merge with the Ō2NL earthworks and intended to be contoured to help tie the highway into the landscape. For example, spoil disposal sites are identified between the arms of the roundabouts to soften the appearance of these junctions and visually anchor them. In most other places, that are located adjacent to fill batters to enable overfilling and contouring for the same purpose. At Kuku East Road, there is potential to merge spoil with a river terrace and mimic the form of a river scarp.

183. Spoil disposal sites will be replanted as part of the broad landscape plan, in some instances with grass, in many instances with indigenous rehabilitation planting.

ASSESSMENT OF NATURAL CHARACTER EFFECTS

Definition of natural character

184. This assessment adopts the definition that natural character is "*the distinct combination of an area's natural characteristics and qualities, including the degree of naturalness*".[22] Natural character is an expression of characteristics and qualities[23] such as those listed at 6.1.3 of the One Plan:

(a) Natural landform.

[22] Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines, paragraph 9.4.
[23] The One Plan uses the phrases "attributes and qualities" and "attributes and characteristics".

(b) Natural water bodies (lakes and rivers) and the sea.

(c) Vegetation cover (type and pattern).

(d) Natural processes associated with the weather and the ecology.

(e) Wildness, exposure, and the natural sculpturing of landforms and vegetation.

(f) The wider landscape context and the site's relationship to this.

185. Other typical 'attributes and characteristics' that contribute to natural character are listed at Horizons One Plan Policies 6-8, which are taken from Policy 13 of the NZCPS. The list indicates that natural character entails both biophysical and experiential attributes. One attribute is that natural character occurs on a range from pristine to modified (ie the level of naturalness or modification).

Project shaping (District wide considerations)

186. Any north-south highway through Horowhenua will unavoidably cross the rivers/streams (and their associated wetlands) that flow east-west across the coastal plain. Such crossings are a functional need of the Project.

187. At a district scale, the proposed eastern route avoids the coastal environment and avoids the significant lakes and wetlands in the western part of the area. The route at the back of the plain is also where the water table is relatively suppressed compared to areas lower on the plains.

188. The Ō2NL Project will unavoidably affect natural character to some extent at each river/stream crossing. The presence of the infrastructure and traffic will necessarily affect perceptions of naturalness in the vicinity. Appropriateness, then, includes consideration of the natural characteristics and qualities of each crossing location (including the existing degree of modification), the design of the Project to avoid or reduce potential effects (such as the use of bridges and fish friendly culverts, and stormwater treatment), and the mitigation designed in response to the natural characteristics and qualities (including restoration and rehabilitation of stream margins upstream and downstream of the crossings).

189. The following section summarises the findings for each of the six principal catchments from north to south. Each section comprises:

(a) A description of the existing natural characteristics and qualities, and an interpretation of overall natural character, including the 'degree' of natural character.

(b) A description of the Ō2NL Project relevant to the crossing points.

(c) An assessment of the effects of the Project on natural character, having regard to both biophysical and perceptual/experiential aspects.

(d) The proposed mitigation (restoration and rehabilitation) based on the natural characteristics and qualities.

(e) An assessment of the net effects on natural character.

190. Where this section refers to ecology, water quality, and hydrology, I am relying on the input of technical experts to natural character workshops (as described in Appendix D1) and the findings in the relevant technical assessments.

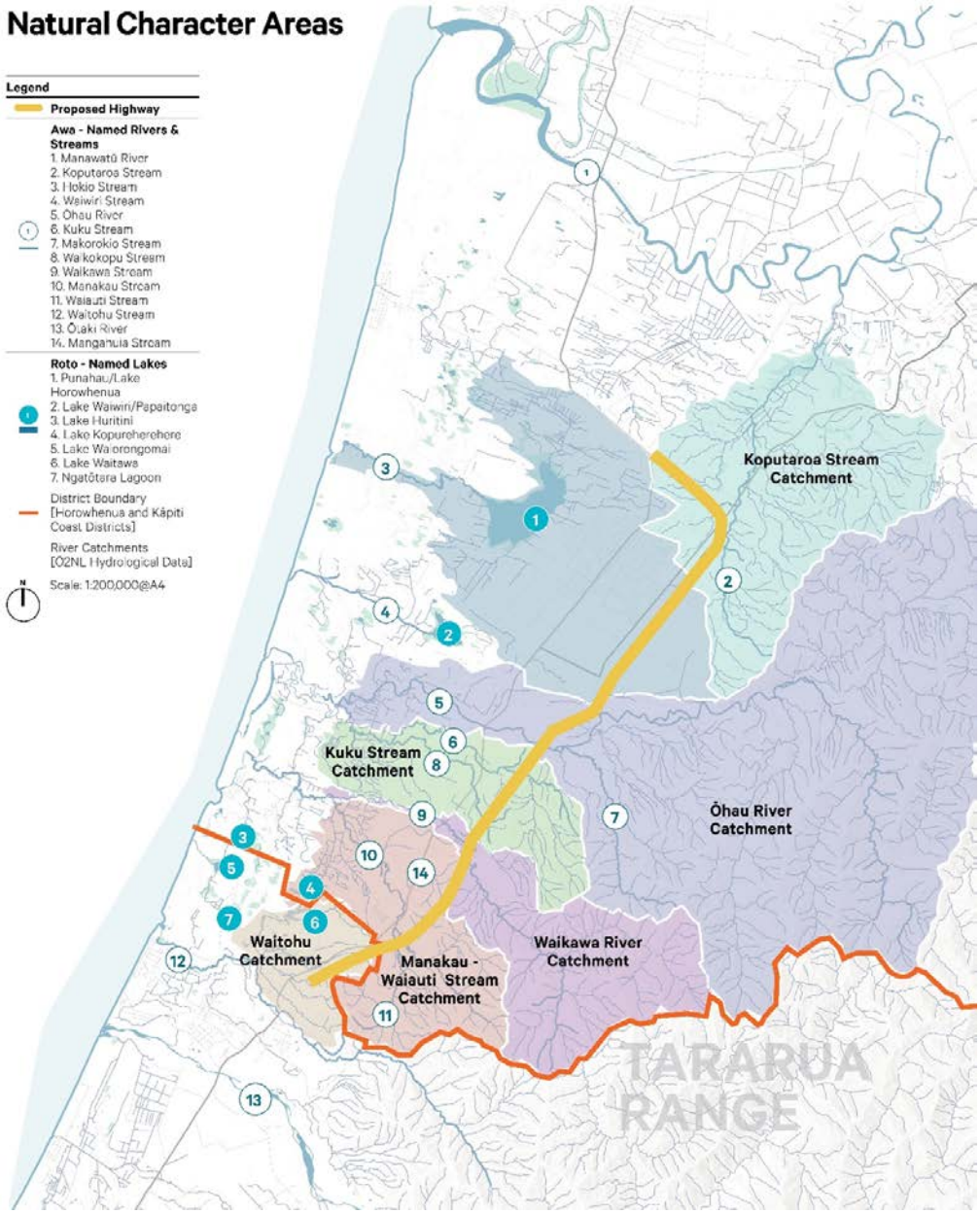

Figure D.2 Natural Character Areas based on catchments

Koputaroa Stream tributaries

Existing natural character

191. Unlike other streams in the vicinity of the Ō2NL Project, the Koputaroa does not flow westwards across the plains, but flows northwards along the toe of the Tararua foothills to the Manawatū River. Unlike the high energy

streams to the south, the Koputaroa is relatively 'sluggish', and passes through extensive wetlands. The lower stream is prone to flooding.

192. The proposed designation avoids the main Koputaroa Stream but crosses the heads of tributaries that rise in the modified landscape north of Levin.

193. The tributaries comprise heavily modified gullies, characterised by constructed ponds and remnant wetlands separated by drains and wet pasture. The upper heads of the gullies include some artificial ponds dammed by the NIMT railway, which contain raupō. While the area would have naturally supported indigenous wetland and wet forest, it is now modified farmland and lifestyle properties dominated by exotic vegetation. The drainage gradients of the gullies are sluggish, and they have a soft substrate. Areas are pugged because of stock access. The quality of permanent water areas is poor with low visibility, and high nutrient levels. The tributaries contain impoverished freshwater fauna (for instance, exotic ornamental fish in the artificial ponds). The macroinvertebrate community index ("**MCI**") of 75-83 indicates severe impairment. See also Technical Assessment K: Freshwater Ecology, Volume IV.

194. Perceptions of naturalness are influenced by the context. Land uses include grazing farmland, cropping, glasshouses, lifestyle properties, and pockets of rural residential development. The area is close to the edge of urban Levin. The NIMT is evident in the western part of the area and the existing SH57 in the eastern part.

195. However, a quality of the area is that the artificial ponds and remnant wetlands provide stepping-stones between Punahau (Lake Horowhenua) and the Koputaroa wetlands for such birds as bittern, spotless crake, and possibly fernbird. They provide habitat for black shag and waterfowl. There are also areas of seepage wetland on gully sides, and remnant areas of kahikatea swamp forest in the wider context.

196. The Koputaroa Stream tributaries (in the area potentially affected by the Ō2NL Project) are therefore considered to have *low-moderate* natural character. While they retain their basic geomorphology, the natural drainage processes and vegetation cover are significantly modified. The water quality and freshwater ecology are degraded. The surrounding context is a substantially modified landscape. Overall, the natural characteristics and qualities are outweighed by the modification. However,

the Koputaroa Stream tributaries (like those of the Waitohu Stream below) have potential for restoration and rehabilitation.

Project

197. The proposed designation will displace an artificially dammed pond and an ephemeral pond upstream of the NIMT railway embankment. Approximately 150m of culverts will be installed in this catchment, and some 450m permanent watercourse impacted.

198. A factor in the route selection is that the proposed designation is aligned on a terrace between two parallel gullies to minimise the encroachment into such gullies.

Potential effects on natural character

199. There will be an improvement in local water quality over the whole Ō2NL Project area because almost all stormwater from the highway and hard surfaces will be treated and will reduce untreated contaminated stormwater from the existing highways.[24] The runoff from the Ō2NL Project will pass through treatment trains comprising planted/grassed batter slopes, planted/grassed swales, and wetland ponds and vegetated detention basins. While there may be some localised increases in sediments in small upper tributaries, there will be overall benefits on Koputaroa catchment water quality.

200. There will be benefits for terrestrial ecology through proposed restoration of wetland and seepage wetland near the end of Sorensons Road, the permanent wetland for stormwater treatment at the intersection with SH57, restoration of riparian vegetation along the streams in the vicinity of that intersection, and enhancement planting along the main Koputaroa Stream north of McDonald Road.

201. The Ō2NL Project will have potential adverse effects on freshwater ecology through the displacement of ponds (albeit artificial) and the culverts and diversions. The effects will be offset by restoration of the natural gullies within the catchment. There will also be potential effects from lights to be installed at the roundabout between the Ō2NL Project and SH57 on the freshwater ecology of two adjacent streams. Such effects will be mitigated

[24] The current roads will continue to operate but at lower volumes as traffic is diverted to the new route (refer to Technical Assessment H: Water Quality provided in Volume IV).

by the restoration of the margins of both streams which are currently in open pasture.

202. The presence of the Ō2NL Project (including the NIMT overpass, intersection with SH57, traffic, and night-time lights) will reduce perceptions of naturalness of the wetland gullies and streams – although effects will be tempered by the existing *low-moderate* natural character of these waterbodies. The proposed restoration of gullies and streams will improve their natural appearance and offset the presence of the Project.

Proposed restoration and rehabilitation measures

203. As discussed above, environmental design measures, including those for natural character purposes, are integrated as part of a whole of landscape approach through the CEDF (Appendix Three to Volume II) to achieve a whole that is greater than the sum of the parts.

204. Proposed restoration and rehabilitation measures for natural character reasons, based on the Koputaroa tributaries' natural characteristics and qualities (see drawings and plans provided in Volume III), entail the following:

(a) Restoring and rehabilitating a wetland gully parallel with the highway in the area beyond the end of Sorensons Road. The proposed approach is to reverse the current drainage and restore wet gully floors, fence, replant swamp forest and allow raupō swamp to re-establish. The extent is approximately 400m between CH11250 and 11650 upstream of an existing farm track. It would connect with planting around a stormwater wetland. The wetlands are envisaged to help connectivity between Punahau (Lake Horowhenua) and Koputaroa by providing habitat for bittern, spotless crake, and fernbird.

(b) Restoring riparian vegetation along a stream upstream and downstream of the culvert at CH12850. The extent is upstream to an existing stock pond (approximately 600m) and downstream to the boundary of the adjacent paddocks (approximately 80m).

(c) Contouring the large stormwater treatment wetland adjacent to the SH57 roundabout to appear as naturalised wetland (rather than geometric pond). While such devices are artificial, they provide an opportunity to be naturalised and integrated with restoration works.

(d) Installing 'fish friendly' culverts on tributary streams. Such culverts are installed below the natural invert level of the stream to allow a natural bed and channel to form within the culvert. Box culverts are typically used for larger tributaries, and oversized circular culverts for smaller tributaries.

Residual effects assessment

205. Without mitigation the Ō2NL Project would have adverse effects on the already relatively degraded natural character of the Koputaroa tributaries because of the further loss of wetland and stream length, and further reduction in perceptions of naturalness. The tributaries would have *low* natural character.

206. The proposed mitigation will maintain (freshwater ecology) or improve (water quality, terrestrial ecology) biophysical aspects of natural character. The proposed restoration will increase perceptions of naturalness of prominent wetland gullies west of the NIMT overbridge and streams adjacent to the SH57 intersection which will offset the adverse effects of the Ō2NL Project on perceptions of naturalness. Overall, with the proposed mitigation, the Koputaroa tributaries will retain *low-moderate* natural character. The benefits of the proposed restoration will also continue to increase over time.

Ohau River

Existing natural character

207. The Ohau River has the most natural character of the watercourses traversed by the Ō2NL Project. It has the largest upstream catchment, the strongest flow, and the river's headwaters are well inside the Tararua Range. The channel flows across a wide gravel and cobble bed, occasionally dividing into braids. The river's natural tendency is to meander across its floodplain between scarps cut into the terraces. The riverbed form is relatively natural, and the channels largely determined by natural processes – although its natural tendency to meander has been constrained by downstream stop-banks and some riverbank armouring in the vicinity of where the proposed designation crosses the river (ie adjacent to the quarry).

208. The water quality is high, reflecting its origins in the bush of the Tararua Range, although water quality decreases downstream of where the

proposed designation crosses the river. The freshwater ecology was described as largely intact, 'almost pristine'. Eleven fish species were identified including two threatened or nationally vulnerable species. The high MCI of 138 indicates high habitat and water quality. The river is an important route for fish migration given the upstream natural areas (refer also to Technical Assessment K: Freshwater Ecology, Volume IV.

209. There is also an almost continuous ribbon of riparian vegetation, albeit largely exotic but including indigenous species, along both banks and on the prominent scarps. It is therefore a corridor for birds and invertebrates. A typical pattern is willow, blackberry, barberry, but with scattered remnant or regenerating pukatea, tōtara, mānatu, tawa and tī kōuka. There are stands of bush on the upstream riverbanks at the mouth of the Makorokio Stream and at Kimberley Reserve, and a noteworthy smaller remnant stand of trees (tōtara, mānatu) upstream of where the proposed designation crosses the river.

210. Perceptions of the river's naturalness are influenced by the modified rural context. The area is characterised by cropping and dairy farming. Muhunoa East Road follows the northern bank of the Ohau River, with an associated pattern of farm and rural-residential buildings. There are existing road bridges upstream and downstream, and a prominent quarry on the face of the Otarere Hill on the south bank opposite where the proposed designation crosses the river. Concrete rubble has been placed to armour the bank at this location.

211. Nevertheless, there is a natural experience within the riverbed. While the modified context is apparent, the riparian vegetation tends to filter views. The sounds and sights of the river are dominant. The river is deep and clean enough that it is used for swimming, including recognised swimming holes (e.g. Clay Banks located upstream of the Project on Muhunoa East Road). Upstream areas at Kimberley Reserve are used for camping and picnicking. The valley of the Ohau River and its major tributaries provide walking access into the Tararua Range. I understand that appreciation of the Ohau River's natural character has cultural value.

212. Overall, the natural characteristics and qualities are considered to outweigh those that are modified. The natural processes and form of the river are largely intact, albeit with some bank armouring and flood control works. The water quality and in-stream ecologies are largely intact. The Ohau

River has a modified rural landscape context, with buildings and infrastructure evident, but while the riparian vegetation is largely exotic, it still comprises an almost continuous corridor of vegetation and has value as corridor for terrestrial ecology. The Ohau River is therefore considered to have *moderate-high* natural character.

Project

213. The concept design for the Ō2NL Project includes a bridge approximately 175m long across the Ohau River with three sets of cylindrical piers. The bridge is to have 'spill-through' abutments armoured in rock. The quarry and farm access road will pass beneath the bridge along the southern riverbank. The bridge will launch from an embankment on the north bank flood plain and will land on the high southern bank. The bridge is to be approximately 6m-7m above the riverbed and 28m wide. There will be a second bridge approximately 25m long through the embankment which will accommodate a small tributary stream and occasional flooding of the flood plain.

214. A factor in route selection was that the location at which the proposed designation crosses the Ohau River is modified by the adjacent quarry, and visually anchored by Otarere hill.

Potential effects on natural character

215. The long bridge and cylindrical piers will enable the river to maintain its natural hydrological processes and natural bed. The spill-through abutments will maximise openness beneath the bridge and along the riverbanks.

216. The instream conditions will be substantially unchanged by the Ō2NL Project with respect to freshwater ecology.

217. As with the other catchments, the treatment of stormwater runoff from the Ō2NL Project, as opposed to the untreated runoff from the existing highway, will improve overall water quality of the Ohau River (refer to Technical Assessment H: Water Quality provided in Volume IV).

218. There will be a small potential adverse effect on terrestrial ecology from the loss of vegetation and habitat within the highway and bridge footprint. However, this will be mitigated through rehabilitation of vegetation on the banks beneath the bridge and will be outweighed by the proposed

enrichment restoration of the vegetation habitat along the banks upstream and downstream of the bridge (refer to Technical Assessment J: Terrestrial Ecology provided in Volume IV).

219. The presence of the embankment, major bridge, highway, and traffic (including vehicle lights at night-time) will reduce the perception of naturalness in the vicinity of the proposed designation. Effects on perceptions of the river's naturalness will be tempered by the existing quarry on the south bank immediately adjacent to the proposed designation (the quarry yard is approximately 50m from the riverbank, and the quarry face approximately 200m-280m from the riverbank). Effects on perceptions of naturalness would be addressed the proposed naturalising of the riparian vegetation along both riverbanks upstream and downstream of the bridge and through the proposed removal of the concrete rubble upstream of the bridge (if that can be achieved). Over time, the replacement of exotic and weed species with indigenous vegetation would increase perceptions of naturalness of the river.

Proposed restoration and rehabilitation measures

220. Proposed restoration and rehabilitation measures based on the Ohau River's natural characteristics and qualities include:

(a) Restoration of riverside vegetation. The Ohau River is one of the two best opportunities (with the Waikawa Stream) to restore a mountain to sea corridor. The recommended approach in this instance, where there is existing vegetation, is progressive transition from exotic vegetation by weed control and inter-planting of indigenous species. Such restoration and replanting would seek to recreate the different communities found on the riverbanks, flood plain, and terrace scarps. The proposed restoration extends approximately 400m upstream and downstream of the bridge.

(b) Connecting the restoration of riverside vegetation with the area of proposed ecological offset mitigation. This latter area encompasses the stand of old trees (identified on ecological plans as 62A) upstream of the crossing and will form the eastern bookend of this restoration. The area will be fenced, have enrichment planting, and weed and pest control.

(c) Removal of the concrete rubble on the river's south bank in the vicinity of the crossing and replacement with gabions of river cobbles, in conjunction with replanting.

Residual effects assessment

221. Without mitigation, the Ō2NL Project would have adverse effects on the natural character of the Ohau River. The natural character would reduce from *moderate-high* to *moderate*, largely because the proposed bridge and traffic will reduce perceptions of naturalness.

222. The proposed mitigation will result in maintenance or improvement of biophysical aspects. It will increase the natural appearance of the river margins which will offset the presence of the Ō2NL Project on perceived naturalness. As such, natural character will remain at *moderate-high*.

Kuku Stream

Existing natural character

223. Kuku Stream has a modest upstream catchment (8km^2), its headwaters rising in the valley to the east of Poroporo and Otarere, an area that has some indigenous bush but is mainly farmland and plantation.

224. The main Kuku Stream has a gravel bed (reflecting the upstream catchment) and retains its natural processes.

225. Although it is a relatively small stream, it has sufficient erosive energy that it is incised. This is exacerbated by the lack of riparian vegetation and control works downstream including bunding, which has constrained the stream's natural meanders. The stream has also been straightened upstream of the Ō2NL Project. There is slumping of the banks into the watercourse in places. The stream is relatively elevated where it emerges to the plains and during flood its waters overflow the banks and take a more direct route across the cropping land, resulting in flooding in the vicinity of Tūkorehe Marae. It is understood the constriction at the existing SH1 crossing also causes the Kuku Stream to flood in that location on occasion.

226. The stream has reasonable water quality at the crossing location (water quality declines downstream). Seven fish species were identified, and the MCI of 119 indicates mild impairment. There is limited riparian vegetation

in the vicinity and that which does exist is largely crack willow and blackberry, which limits the natural ecology characteristics.

227. There are also three tributaries that rise on the slopes of the Otarere and Poroporo hills. These are modified water courses open to the farmland. They are muddy and have degraded water qualities and ecologies. One fish species was identified and the MCI of 68-74 indicates severe impairment.

228. The natural character of Kuku Stream is important for cultural reasons as a source of tuna (eel) and because of its proximity to Tūkorehe Marae. Riparian revegetation has been carried out for these reasons downstream of the crossing point and west of the existing SH1.

229. Perceptions of naturalness are also influenced by the stream's intensively farmed context including large areas of cropping. Kuku East Road follows the Kuku Stream, punctuated by farmhouses and other farm buildings. The existing SH1 is evident (visually and aurally) in the distance. There are a couple of bush remnants on the plains – the most notable being a stand of under-grazed trees containing tītoki, mānatu (ribbonwood), and tawhairauriki (black beech) just downstream of the crossing location. The Poroporo and Ōtarere hills are a natural landform backdrop, although their flanks contain pine plantation.

230. The natural characteristics are matched by the modified characteristics. Some natural characteristics are reasonably intact (stream processes, water quality, freshwater ecology) while others are relatively modified (riparian vegetation, terrestrial ecology, upstream channel straightening, downstream flood control works, modified tributaries), and the stream's context is a relatively intensively modified rural setting with rural structures and infrastructure. Kuku Stream is therefore considered to have *moderate* natural character, taking the characteristics and qualities listed above together.

Project

231. The proposed designation will cross the Kuku Stream a short distance downstream of where the stream emerges from the gap between the Poroporo and Otarere hills. The Project will cross via a short bridge,15m long, with vertical abutments.

232. In the broader catchment, there will be approximately 425m of stream tributary affected by the Project, including approximately 255m of culvert and 125m of diversions.

Potential effects on natural character

233. The replacement of the existing farm culvert with a bridge will remove a current constriction and allow the stream to revert to more natural flows and bed at this point. There will be no change, though, to the existing tendency of the stream to flood downstream areas which is a consequence of the stream's perched elevation and water spilling from the bed during floods.

234. As with the other catchments, the treatment of stormwater runoff from the Ō2NL Project, as opposed to the untreated runoff from the existing highway, will improve overall water quality of the Kuku Stream (refer to Technical Assessment H: Water Quality provided in Volume IV). Two large stormwater wetlands are to be constructed near the crossing of the Kuku Stream crossing. Planting around the wetlands will be naturalistic.

235. The culverts and diversions of the smaller tributaries within the catchment will have potential adverse effects on freshwater ecology. It is proposed to mitigate the effects with fish friendly culverts and offset the residual effects with stream enhancement elsewhere within the catchment (fencing and planting).

236. The Ō2NL Project will potentially have adverse effects on terrestrial ecology in the vicinity of the stream crossing given the stand of old growth alluvial forest identified at property ref 7188315, which falls within the designation (on the north bank of the stream, west of the concept alignment). Such potential effects will be avoided by the proposed retention and restoration of this stand of trees.

237. The highway, bridge, and traffic (including vehicle lights at night-time) will reduce the perception of naturalness of the Kuku Stream in the vicinity of the proposed designation. Such effects will be tempered by the modified context including the existing culvert and farm buildings, although it is acknowledged that the highway will be a different scale and character compared to the farm elements. The proposed restoration of the stream banks upstream and downstream of the highway will enhance the natural appearance of the stream course to offset the appearance of the Ō2NL Project. The restoration will be carried out on the section of the Kuku

Stream most evident from the vicinity of the bridge crossing, from the first bend upstream where the Kuku Stream emerges from the hills to the first bend downstream where the stream passes a stand of trees. The stream restoration planting will connect with the proposed restoration of site 60B discussed above and integrate with the perimeter planting of the stormwater treatment wetlands.

238. In addition, the restoration of riparian vegetation along the tributary at CH25400 (Waikokopu Stream) will accentuate and increase perceptions of naturalness of that stream and offset the presence of the highway on perceptions of its natural character. The riparian planting is proposed for the length of stream that would be experienced in the vicinity of the culvert crossing, from a stand of trees upstream of the crossing, and to a bend in the stream at a paddock boundary downstream.

Proposed restoration and rehabilitation measures

239. Proposed restoration and rehabilitation measures based on the Kuku Stream's natural characteristics and qualities comprise:

(a) Fencing and revegetating the riparian margins of the main Kuku Stream in the vicinity of the crossing for a distance approximately 220m upstream and 100m downstream. The purpose of this riparian restoration is to increase the perceived naturalness of the stream to balance the presence of the Project on such perceived naturalness. It would also have benefits in downstream water quality and ecological health and would complement downstream revegetation that has been carried out.

(b) Linking the riparian restoration with the nearby bush remnant (60B) that it is proposed to be restored.

(c) Fencing and revegetating the riparian margins of the tributary at CH25400 for approximately 90m upstream and 200m downstream of the culvert.

Residual effects assessment

240. Without mitigation, the Ō2NL Project would have adverse effects on the natural character of the Kuku Stream because the highway and bridge will reduce perceptions of naturalness, result in a loss of stream length, and the proposed designation would have adverse effects on terrestrial ecology

through the potential loss of a stand of mature indigenous trees. For these reasons, the net natural character would reduce from *moderate* to *moderate-low*.

241. The proposed mitigation will result in improvement in biophysical aspects of natural character and increase the natural appearance of the Kuku Stream to offset the presence of the Project on perceived naturalness. Overall, the Kuku Stream will retain *moderate* natural character.

Waikawa Stream

Existing natural character

242. The Waikawa Stream has a reasonably large upstream catchment (30km^2), the headwaters rising within indigenous bush in the Tararua Range. The stream runs across the plains to an estuary adjacent to Waikawa Beach. It historically shared an estuary with the Ohau River, and the estuary of the Waikawa Stream is still connected to an area of coastal wetlands and lagoons.

243. The Waikawa Stream retains its natural form and hydrological processes in the vicinity of where the proposed designation crosses the stream. It is a high energy stream given to frequent course changes. The bed comprises gravels and cobbles reflecting the upstream rock source.

244. Such a bed provides habitat and spawning sites for a range of species. The freshwater ecology of the stream in the vicinity of the crossing is 'near pristine', reflecting the proportion of natural upstream catchment, and the low intensity upstream farming. The water has good clarity, and low bacteria and nutrient levels. Nine fish species were identified, including two that are threatened or nationally vulnerable. The MCI of 136 indicates high habitat and water quality (refer also to Technical Assessment K: Freshwater Ecology found in Volume IV). Water quality deteriorates markedly downstream of the crossing point due to the cumulative effect of farming.

245. The stream banks are characterised by almost contiguous patches of riparian vegetation, which is mostly exotic (crack willow and blackberry) but includes some indigenous species. The vegetation contributes to terrestrial ecology and aesthetic aspects of natural character. It is likely the area comprised kohekohe-tītoki forest on well drained terraces with kahikatea-tōtara forest on lower terraces. A particular characteristic is a patch of old kohekohe and tītoki trees downstream of the crossing point. Wainuia snails

were also found just downstream of the crossing point, in an area dominated by blackberry.

246. There is a small tributary on the north bank flood plain of the Waikawa Stream that also has a gravel bed and is fenced from stock. The tributary joins the Waikawa Stream a few hundred metres downstream of where the proposed designation crosses the Waikawa Stream. The tributary will pass under the highway embankment in a culvert. It has moderate ecological value.

247. The continuous riparian vegetation and natural stream bed contributes to perceived naturalness of the Waikawa Stream. However, such perceptions are also influenced by the modified rural context, including nearby cluster of houses, and extensive cropping on the adjacent plains.

248. The stream is also deep, clean, and pleasant enough to have swimming holes upstream of the crossing point (the swimming holes are near the North Manakau Road bridge over the stream and adjacent to a remnant stand of old growth bush). This area is separated from the proposed designation by a foothill spur (ie the swimming holes are around a bend in the valley). North Manakau Road follows the Waikawa Stream to a road-end campsite which provides walking access into the Tararua foothills.

249. The existing SH1 and NIMT are also evident, but distant. There are sections of stop banks downstream. The Tararua foothills (Poroporo and Hanawera) provide a natural landform backdrop but are marked with patterns of plantation rather than indigenous bush.

250. The Waikawa Stream is therefore considered to have moderate-high natural character. Overall, while the stream margins are modified, and the stream is within a modified rural setting, the natural characteristics and qualities outweigh the modifications. The stream retains its largely natural form and processes. The water quality is high and the in-water ecology relatively intact. While the stream bank vegetation is largely exotic, it does provide almost contiguous patches of vegetation.

Project

251. The Ō2NL Project will cross Waikawa Stream on a 140m long bridge with pairs of cylindrical piers. The bridge will launch from an embankment on the north bank flood plain and land on the higher southern bank. The bridge will be approximately 5m-6m above the stream bed and 28m wide.

A tributary stream will pass beneath the embankment in a culvert and join the Waikawa Stream downstream of the bridge.

Potential effects on natural character

252. Despite the dynamic nature of the Waikawa Stream, it is understood that the 140m long bridge and pier design will accommodate the natural bed and channel morphology, and the natural meanders of the stream.

253. The bridge will avoid adverse effects on freshwater ecology of the main Waikawa Stream: the instream conditions will be unchanged. A section of the small tributary on the north bank will be lost to culvert. As discussed, this tributary is currently fenced and has a gravel bed. Offset mitigation is proposed elsewhere in the catchment as outlined in Technical Assessment K: Freshwater Ecology found in Volume IV.

254. As with the other catchments, the treatment of stormwater runoff from the Ō2NL Project, as opposed to the untreated runoff from the existing highway, will improve overall water quality of the Waikawa Stream (refer to Technical Assessment H: Water Quality provided in Volume IV). A stormwater wetland will be constructed at the back of the flood plain (in the lee of the embankment) approximately 200m from the stream. Planting around the wetland will be naturalistic and will abut an area of proposed revegetation of the flood plain discussed below.

255. While the Waikawa Stream has almost continuous riparian vegetation (albeit mainly exotic and weed species) the concept design bridge location coincides with a gap in such vegetation. There would be potential adverse effects if the remnant mature kohekohe and tītoki trees that fall within the designation downstream of the crossing point were to be removed. However, it is proposed to retain the trees as the kernel of an area of revegetated flood plain, which will have positive effects.

256. The Project will adversely affect the perceived naturalness of the Waikawa Stream through the presence of the embankment, bridge, and traffic (including aural and visual presence of traffic and lights at night-time). The significance of such effects will be increased by the existing *moderate-high* natural character of the stream. The effects of the highway on perceived naturalness will be balanced by the proposed restoration of the stream banks, which will accentuate naturalness of the stream. It includes the restoration of indigenous vegetation on the floodplain downstream of the

embankment (based around the remnant kohekohe and tītoki trees) and the tributary stream downstream of the highway. The restoration will include revegetation of areas of pasture, weed control, and enrichment planting within exotic vegetation. Enrichment will be carried out to avoid disrupting the Wainuia snail population. The proposed mitigation will be carried out on the section of the stream that will be experienced from the vicinity of the Project, extending to the bends upstream and downstream of the bridge.

Proposed restoration and rehabilitation measures

257. Proposed restoration and rehabilitation measures based on the Waikawa Stream's natural characteristics and qualities include:

(a) Fencing and enhancing riparian vegetation along the stream banks and scarps. The Waikawa Stream is regarded as one of the two best opportunities (with the Ohau River) for a restored mountain to sea corridor (acknowledging that natural character currently diminishes downstream of the proposed crossing location). The proposed approach is to fence the areas and progressively replace exotic vegetation (eg willow, tree lucerne, blackberry) with inter-planting of indigenous species and weed control. The proposed extent is approximately 300m upstream and 200m downstream which is beyond the first bend in both directions.

(b) Revegetating the floodplain of the tributary stream and its confluence with the Waikawa Stream to create a 1.5ha native forest in the lee of the bridge embankment. This area will encompass the remnant kohekohe and tītoki trees (and Wainuia habitat) and connect with the stormwater wetland on the north bank.

Residual effects assessment

258. Without mitigation, the Ō2NL Project would have adverse effects on the natural character of the Waikawa Stream because the bridge, highway, and traffic would reduce perceptions of naturalness, the Project would result in loss of the tributary stream length, and loss of a remnant stand of old growth trees. For these reasons, the net natural character would reduce from *moderate-high* to *moderate*.

259. The proposed mitigation will result in improvement in some biophysical aspects of natural character (water quality, terrestrial ecology) and maintenance of other aspects (hydrology, freshwater ecology). The

mitigation will increase the natural appearance of the stream corridor and offset the presence of the Ō2NL Project on perceived naturalness. With the proposed mitigation, the Waikawa Stream will retain *moderate-high* natural character. The benefits of the proposed restoration will continue to increase over time.

Manakau and Waiauti Streams

Existing natural character

260. The natural character of the Manakau and Waiauti Streams is considered together because the proposed designation crosses just above the confluence of the two streams.

261. The Manakau Stream has a modest upstream catchment (8km2), with its headwaters in the Tararua foothills valley. The stream has high energy, reflected in its sinuosity. The upstream catchment comprises mainly farmland and pine plantation, although it also includes some areas of indigenous bush around the headwaters. The stream bed is gravel and cobbles, although the catchment is affected by sedimentation because of upstream activities. The water quality is degraded, with high amounts of bacteria and nutrients. Seven fish species were identified in the Manakau Stream. The MCI of 114 indicates mild impairment (refer also to Technical Assessment K: Freshwater Ecology provided in Volume IV).

262. Several of the Manakau Stream tributaries north of the main stem are also traversed by the proposed designation, including the Mangahuia Stream, which flows around the north side of Manakau Village. These tributaries rise on the Hanawera hills, are relatively small, have soft sediment beds, degraded water quality and limited fish life. The MCI of between 63 and 93 for these tributaries indicates severe impairment.

263. The Waiauti Stream also has a modest upstream catchment (7km^2), rising on the west facing slopes of Pukehou. The catchment comprises farmland and pine plantation with little indigenous forest cover. The stream bed is gravel and cobbles, reflecting the greywacke headwaters. Such bed material is an important contributor to the stream's characteristic in-water ecology.

264. The Waiauti Stream's hydrological processes are also largely natural. A key characteristic is the sinuosity of the channel, representing a good example of a meandering stream. The sinuosity adds to habitat value, as

well as its aesthetic appeal as a natural feature. Characteristic elements are the remnant ox bows and meander scarps. The ox bows would likely have formerly comprised wetlands and swamp forest characterised by pukatea. They have been substantially modified but provide opportunity for restoration and rehabilitation. Likewise, occasional patches of remnant indigenous bush on meander scarps (kānuka and kāmahi) contribute to natural character.

265. The water quality and terrestrial ecology of the Waiauti Stream are degraded – largely reflecting its location in a farming landscape with little riparian vegetation, and stock access to the unfenced stream. Upstream forestry is also potentially contributing sediment to the stream bed in places. Five fish species were identified. The MCI of 99 indicates moderate impairment.

266. The perceived naturalness of the Manakau and Waiauti Streams is influenced by the reasonably closely settled rural context. The context includes Manakau Village and the rural residential settlement on the terraces at the back of the valley (Manakau Heights Drive, Mountain View Drive, Eastern Rise). The NIMT and existing SH1 are evident (aurally and visually). The Tararua foothills provide a natural landform backdrop but are clothed in plantation rather than indigenous bush.

267. Considering these characteristics and qualities together, the Manakau and Waiauti Streams (in the area affected by the Ō2NL Project) are considered to have *moderate* natural character. The natural elements and modification are roughly balanced. On the one hand, the natural processes and form of the main streams are largely natural – including the gravel/cobble beds, sinuosity – and they have moderate to good instream ecology. On the other hand, the streams are unfenced, the margins are pasture, water quality is moderately degraded, and perceptions of naturalness are influenced by the modified rural landscape setting that includes rural residential development and existing infrastructure.

Project

268. The proposed designation crosses the valley just above the confluence of the Manakau and Waiauti Streams. The Ō2NL Project will traverse the valley on a long embankment and will cross the two streams on a pair of bridges approximately 150m apart. The bridge over the Waiauti Stream will be relatively short: approximately 15m long. That over the Manakau

Stream will be roughly twice as long (approximately 30m) because it will accommodate both the stream and South Manakau Road including a local SUP path.

269. A factor in the route selection (in addition to optimising separation from Manakau Heights Drive and Mountain View Drive area while also avoiding Staples Bush) was the presence of a small terrace between the Manakau and Waiauti Streams. The alignment of the proposed designation with this terrace helps to anchor the bridges and reduce potential impacts on stream meanders.

Potential effects on natural character

270. Notwithstanding the alignment of the proposed designation with the terrace discussed above, the Ō2NL Project will nevertheless disrupt meanders and require diversions of both the Manakau and Waiauti Streams in the vicinity of the bridges. The footprint will also occupy an ox-bow wetland.

271. However, the use of bridges will enable the streams to retain a natural bed and channel morphology. The loss of meanders, particularly on the Waiauti Stream, will be mitigated by recreating meander forms in the diversions. While this will increase the length of diversion, it will also restore sinuosity which is a characteristic of the streams.

272. Nearly 1400m of stream length in the main streams and tributaries will be affected by diversion and culverts, including eight culverts totalling approximately 530m in length. These culverts affect the small tributaries immediately north of the main streams, and a larger tributary (Mangahuia Stream) that rises in the valley behind Manakau and flows around the north side of the village. The proposed designation parallels a section of the latter tributary. As noted above, the tributaries are modified and have relatively low natural character. The loss of these sections of streams will be mitigated by fish friendly culverts and proposed offset stream restoration outlined in the Ecology Assessment. This includes restoration of the Manakau and Waiauti Streams upstream and downstream of the crossing.

273. As with the other catchments, the treatment of stormwater runoff from the Ō2NL Project, as opposed to the untreated runoff from the existing highway, will improve overall water quality of the Manakau Stream and will maintain the existing water quality of the Waiauti Stream (the existing SH1 crosses the catchment downstream of the confluence of the Manakau and

Waiauti Streams) (refer to Technical Assessment H: Water Quality provided in Volume IV). Three stormwater wetlands will be constructed within the catchment. One is adjacent to the Waiauti Stream, one adjacent to a tributary of the Manakau Stream west of Manakau Heights Drive, and one adjacent to the Mangahuia Stream in the valley behind Manakau Village. Planting around these wetlands will be naturalised and integrated with proposed restoration of riparian vegetation along the adjacent streams.

274. The Ō2NL Project will adversely affect the perceived naturalness of the Manakau and Waiauti Streams, and also of the tributaries including the Mangahuia Stream. The highway will be a prominent feature parallel with the Mangahuia Stream within the valley behind Manakau, and the long embankment will be a prominent feature across the valley of the Manakau and Waiauti Streams south of Manakau. The presence of the highway will be accentuated by traffic (visually and aurally) and including lights at night. Such effects will be tempered by the modified context including the farmland setting, uncontrolled stock access, lack of riparian vegetation, and presence of buildings, roads, and railway line. The adverse effects of the highway's presence on perceived natural character will be offset by increased natural appearance of the Manakau and Waiauti Streams upstream and downstream of the highway and of the Mangahuia Stream parallel to the highway by the proposed restoration of riparian vegetation (including proposed restoration beyond the designation boundaries). .

Proposed restoration and rehabilitation measures

275. Proposed restoration and rehabilitation measures based on the natural characteristics and qualities of the Manakau and Waiauti Streams will comprise fencing and planting stream banks upstream and downstream of the highway, and similarly fencing and planting the margins of the tributary Mangahuia Stream parallel with the highway. The restoration is proposed within sections of each stream that will be experienced in the vicinity of the Ō2NL Project, and comprises:

    (a) Restoration on the Manakau Stream upstream to Mountain View Drive (approximately 300m) and downstream to below the confluence of the Waiauti Stream (approximately 420m).

    (b) Restoration on the Waiauti Stream upstream opposite the Mountain View Drive area (approximately 800m) and downstream to the confluence with the Manakau Stream (approximately 630m). It

includes restoration of an oxbow wetland on the Waiauti Stream upstream of the bridge.

(c) Restoration on the Mangahuia Stream parallel with the highway downstream of the culvert at CH28850 (approximately 1200m) and upstream to the edge of the forest (approximately 200m).

(d) Restoration on a minor tributary at CH29300 (adjacent to a stormwater wetland) upstream to Manakau Heights Road (approximately 90m) and downstream towards the small hill (approximately 80m).

Residual effects assessment

276. Without mitigation the Ō2NL Project would have adverse effects on the natural character of the Manakau and Waiauti Streams and their tributaries because of the loss of stream length and reduced perceptions of naturalness. For these reasons, the natural character would be reduced from *moderate* to *low-moderate*.

277. The proposed mitigation will result in an improvement in some biophysical aspects of natural character (water quality, terrestrial ecology) and maintenance of other aspects (hydrology, freshwater ecology). The proposed restoration will increase the natural appearance of the streams and offset the presence of the Project on perceived naturalness. Overall, with the proposed mitigation, the Manakau and Waiauti Streams will retain *moderate* natural character. The benefits of the restoration will also continue to increase over time.

Waitohu Stream tributaries

Existing natural character

278. The main Waitohu Stream rises within the indigenous forest of the Tararua Range and flows to the south of the project area. The lower catchment includes a small estuary and important wetlands west of the existing SH1.

279. The proposed designation intercepts only tributaries of the Waitohu Stream that rise on the western flanks of Pukehou. The tributaries comprise flat-bottomed gullies incised in terraces, which are former wetlands and sluggish streams with soft beds (gradients from 1% - 5%) that would likely have formerly supported swamp forest. They have been drained and are now wet pasture with unfenced artificial channels. Farm dams have also

been constructed in the gullies. There is limited fish life, and the wetlands have low freshwater ecological value. The MCI of 55-67 indicates severe impairment. No water quality data is available for these tributaries, although the downstream data indicates the water is moderately degraded, reflecting its farmland context.

280. Perceptions of naturalness are influenced by the modified farmland context, the drains that are evident in the gullies, and the scattered rural buildings. Perceptions are also influenced by the presence (visual and aural) of the existing SH1. Pukehou is a distinctive natural backdrop, although modified with a patchwork of pine plantation.

281. In summary, the tributary gullies of the Waitohu Stream are considered to have *low-moderate* natural character. The reasons for this assessment are the modification of the natural drainage processes and vegetation cover, the degraded water quality and ecologies (freshwater and terrestrial), and the presence of buildings, infrastructure, and farming activities in the rural context.

Project

282. The proposed designation skirts Pukehou and crosses nine gullies that will require culverted fill embankments. At the northern end of the catchment, there is a large parallel gully on the western side of the designation parallel with the Ō2NL alignment (ie between the proposed and existing highways). Fill batter slopes encroach into parts of this gully. There will be approximately 720m of channel length impacted by the works including approximately 380m of culverts.

Potential effects on natural character

283. The Waitohu tributaries account for the largest area of wetlands affected by the Ō2NL Project[25] although, as noted, the wetlands are highly modified. The effects of the Project footprint and culverts will be mitigated by proposed offset enhancement of wetlands elsewhere in the catchment as outlined in the Ecology Assessment (the proposed area is an extensive wetland west of the existing SH1 and NIMT).

284. As with the other catchments, the treatment of stormwater runoff from the Ō2NL Project, as opposed to the untreated runoff from the existing

[25] The other area of affected wetlands is in the tributaries of the Koputaroa Stream discussed above.

highway, will improve overall water quality of the Waitohu Stream catchment. Four stormwater wetlands will be constructed within the catchment, all on the west side of the highway. One is within the gully parallel with the highway at the north end of the catchment (CH32350 – 32550). Two are adjacent to a gully that is crossed at a perpendicular angle near the south end of the section (CH34000 – 34100). For natural character reasons, these three wetlands will be oversized (constructed to a size larger than required to satisfy the treatment requirements), and the planting around them will be naturalised and integrated with proposed restoration of adjacent wetland gullies. The fourth is a smaller device proposed at CH34450.

285. The Project will adversely affect the perceived naturalness of the wetland gullies, although such effects will be in the context of *low-moderate* existing natural character. The proposed restoration of gullies adjacent to the highway will increase their natural appearance (they will have the appearance of natural wetlands as opposed to their current appearance of wet pasture), which will offset the presence of the highway on perceived naturalness.

Proposed restoration and rehabilitation

286. Proposed restoration and rehabilitation measures based on the natural characteristics and qualities of the Waitohu Stream tributaries entail reversing drainage, fencing, allowing areas to revert to raupō wetland, and planting margins with wet forest. The mitigation is proposed on both sides of the highway at locations that will achieve the most evident naturalisation in the vicinity of the Project as follows:

(a) Mitigation will extend downstream along the gully parallel to the highway from the culvert at CH31950 to 32600 (approximately 600m) and upstream of that culvert to an existing stock dam (approximately 40m). This area integrates one of the stormwater wetlands.

(b) Mitigation near the south end of the Project will extend upstream of the existing SH1 to the culvert at CH3400 (approximately 170m) and along the tributary gully parallel to the highway to the culvert at CH33650 (approximately 420m). The mitigation will also extend upstream of the culvert at CH3400 to the bend in the gully (approximately 200m), and upstream of the culvert at CH33650 to an existing farm track

embankment (approximately 100m). This area integrates two stormwater wetlands.

Residual effects assessment

287. Without mitigation, the Ō2NL Project would have adverse effects on biophysical aspects of the natural character of the Waitohu Stream tributaries because of the loss of stream and wetland habitat. The Project would also reduce perceptions of naturalness. The natural character would reduce to *low*. Such effects are tempered by the degraded nature of the habitats and modified context.

288. The proposed mitigation will result in improvement in some biophysical aspects of natural character (water quality, terrestrial ecology) and maintenance of other aspects (hydrology, freshwater ecology). These outcomes will contribute to the maintenance and enhancement of wetlands downstream on the opposite side of the existing SH1. The proposed restoration of gullies in the vicinity of the highway will increase their natural appearance as wetlands, which will offset the presence of the new highway on perceived naturalness. Overall, with the proposed mitigation, the Waitohu Stream tributaries will retain *low-moderate* natural character. The benefits of the restoration will also continue to increase over time.

Punahau (Lake Horowhenua)

289. Consideration was given to potential effects on the natural character of Punahau because the proposed designation crosses the lake's catchment in the area east of Levin. There are no permanent streams in this part of the catchment, with water mostly flowing as groundwater. It is understood that culverts will maintain the intermittent surface flows and that the Ō2NL Project is designed so as not to affect groundwater. The proposed designation will also represent an area retired from agriculture, and stormwater discharge will be treated through treatment devices compared with the untreated situation of the existing SH57. Dr McConchie (Technical Assessment G: Hydrogeology and Groundwater in Volume IV) assesses there will be a slight improvement in water quality and no change to groundwater.

290. Nevertheless, the proposed designation is remote from the lake and on the opposite side of the Levin urban area. While groundwater and stormwater are relevant to the water quality of Punahau, in this instance those matters

are best considered with respect to their specialist disciplines rather than considered as part of natural character. The Ō2NL Project will have no adverse effects on natural character of Punahau.

High and Outstanding Natural Character

291. As discussed above, Objective 6-2 (b) of the One Plan is that adverse effects, including cumulative adverse effects, on the natural character of the coastal environment, wetlands, rivers and lakes and their margins are avoided in areas with outstanding natural character, avoided where they would significantly diminish attributes and qualities of areas that have high natural character, and avoided, remedied, and mitigated in other areas.[26]

292. As described in the preceding analysis, none of the rivers/streams or wetlands in the vicinity of the proposed designation were assessed as areas with '*outstanding*' or '*high*' natural character. The Ohau River has the highest natural character, and is the most natural of the features, crossed by the proposed designation. It was assessed as having *moderate-high* natural character. However, for thoroughness, further attention was paid as to whether the Ohau River might have '*outstanding*' or '*high*' natural character as follows.

293. '*Outstanding*' natural character describes areas with outstanding natural characteristics and qualities including *very high* naturalness. Such a description might apply, for example, to such near pristine environments as the upper reaches of the Ohau River within the inner Tararua Range. Clearly, it does not fit the Ohau River in the area around the proposed designation.

294. *High* natural character is a step down from 'outstanding'. It describes areas with significant natural characteristics and qualities including *high* naturalness. The natural characteristics (natural elements, processes, patterns) would be dominant and human modification would be small or of little significance. Some of the Ohau River's characteristics retain *high* naturalness (water quality and in-water ecology), and the river is significant for natural and cultural reasons. Its context is nevertheless an intensive farming landscape, the banks and riparian vegetation are modified

[26] Policy P25 of the Greater Wellington Proposed Natural Resources Plan (Appeals Version) is somewhat similar in that it generally seeks to avoid adverse effects on areas with '*outstanding*' natural character, and to avoid significant adverse effects in areas with '*high*' natural character. The relevant areas of the Waitohu catchment were assessed as having '*low-moderate*' natural character. In such areas the relevant section of the policy is to avoid, remedy or mitigate adverse effects on natural character.

(including concrete rubble armouring), and human presence is evident (including the adjacent quarry on the south bank, and rural residential properties on the north bank). I consider, therefore, that the Ohau River in the vicinity of the proposed designation is best characterised as having *moderate-high* natural character.

295. Even if the Ohau River in the vicinity of the proposed designation was deemed to have *high* natural character, the Ō2NL Project would not significantly diminish the attributes and qualities of the area as described above. For example, its water quality and in-water ecology attributes will not be adversely affected, and such aspects as terrestrial ecology and natural appearance of the riverbanks will be enhanced. Overall, the Ohau River will retain its existing mod-high natural character.

Summary

296. The rivers/streams and wetlands in the vicinity of the proposed designation have different characteristics and qualities including sluggish wetlands that would have supported wet forest and raupō, and fast-flowing streams on cobble and gravel beds. They include streams that rise on the modified foothills, to those that have large catchments in the bush clad Tararua Range. They all flow across a relatively intensively farmed coastal plain. They vary between *low-moderate* and *moderate-high* natural character.

297. It is a functional need of a north-south highway to cross such river/streams and, in some cases, their associated wetlands. There is no practicable alternative that would avoid crossing these waterbodies and avoid the associated potential effects on perceptions of natural character. The relevant matter is the extent to which potential adverse effects are avoided or reduced through route selection, designation alignment, and the nature of elements such as bridges, culverts, and stormwater treatment. Finally, the extent to which residual effects are appropriately mitigated through restoration and rehabilitation of natural character.

298. At a district scale, the route selection process avoids areas with higher natural character in the west.

299. The Ō2NL designation crosses the river and streams at locations where the Project is compatible with the existing level of modification. The proposed designation is aligned to reduce encroachments of the highway into wetlands (eg the alignment between tributary gullies of the upper Koputaroa

catchment), and to cross streams where there is existing modification (eg the Ohau River adjacent to the quarry and riverbank armouring, Kuku Stream at a farm culvert, Waikawa Stream where riparian vegetation is thin and there are nearby buildings, and Manakau Stream adjacent to the existing South Manakau Road bridge).

300. The form and design of the Ō2NL Project elements further reduce potential effects on natural character, and minimise disruption of natural processes:

(a) Bridges are to be used to cross the main waterbodies: the Ohau River and the Kuku, Waikawa, Manakau, and Waiauti Streams.

(b) Over-sized 'fish friendly' culverts are used for other tributaries and wetland gullies. The culverts are to be installed below natural water level to allow a natural bed to reform inside the culvert.

301. Measures are proposed to restore and rehabilitate natural character. Such measures are tailored to the specific characteristics and qualities that contribute to natural character at each location:

(a) Restored wetlands in the tributary gullies of the Koputaroa and Waitohu Streams.

(b) Restored and rehabilitated riparian vegetation along the banks of the Ohau River, and the Waikawa Stream, Kuku, Manakau, and Waiauti Streams.

302. The mitigation measures listed above are intended to restore ecological conditions along each of the streams, and also enhance the natural appearance of the steams to offset the appearance of the Ō2NL Project. Such mitigation measures will continue to improve natural character over time.

303. Overall, the current level of natural character will be retained in each catchment.

SUMMARY RATING OF EFFECTS

304. A new state highway through a landscape such as the Horowhenua must unavoidably have some adverse landscape, visual, and natural character effects.

305. However, potential significant adverse effects have been avoided and reduced through the selection of an eastern route and detailed alignment through a process of considering alternatives. The proposed designation follows what is considered the best fit from a landscape perspective at a district and local level within the constraints of engineering geometry for such a highway. Such a fit helps reduce effects on natural and human patterns and will contribute to aesthetic coherence between the Ō2NL Project and landscape.

306. The effects on overall landscape values for each of the landscape character areas traversed typically vary between *low-moderate* to *high-moderate*, with the exceptions being the area at Waihou Road and the Manakau Downlands area, where there will be *high* adverse effects. An integrated landscape plan is proposed that integrates mitigation for landscape character, natural character, and visual effects from individual properties. The proposed mitigation will reduce the magnitude of effects on each of the landscape character areas so that they will vary between *low* and *moderate-high*.

307. Minimising adverse visual effects on amenity values from individual properties was a factor in selecting the preferred alignment, although it is acknowledged that a new highway through such a settled landscape must unavoidably affect some properties. Mitigation is recommended for those properties assessed as having adverse effects that are *moderate* or greater. Such mitigation will be largely provided by the integrated landscape plan mentioned above. While the mitigation will reduce the level of effects in each instance, there will still be properties with adverse visual effects greater than moderate. There may be opportunities to further mitigate effects by planting on affected properties subject to agreement between property owners and Waka Kotahi.

308. The existing natural character for each of the main catchments traversed varies between *low-moderate* to *moderate-high*. The Ō2NL Project will unavoidably have adverse effects on each catchment, largely because the presence of the highway will affect the perceived naturalness of each of the rivers, streams, and wetlands crossed by the proposed designation. The proposed rehabilitation and restoration will address such effects so that the current degree of natural character will be maintained in each catchment. The benefits of this mitigation for natural character values will continue to increase over time.

CULTURAL AND ENVIRONMENTAL DESIGN FRAMEWORK (CEDF)

309. The individual mitigation measures described in the sections above will be integrated and detailed more fully in the CEDF. The purpose of the CEDF is provide the key principles, and then over time the detail, to drive the overall direction and to integrate the mitigation recommended by different disciplines. The intention is to amplify the benefits through a coordinated design, and to ensure continuity of design direction through successive phases of the Project.

Purpose and principles

310. The CEDF has been, and is continuing to be, developed under an overall Ō2NL partnership between Waka Kotahi and the Project Iwi Partners.

311. The CEDF draws on technical specialists and stakeholders. It seeks to direct environmental measures from different disciplines into a coordinated package. It sets out a framework of principles and values to guide all design measures – for instance those carried out for cultural, ecological, acoustic, visual, natural character, and landscape reasons. Such an approach will maximise overlapping benefits.

312. The core (overarching) principles for the Project and CEDF are:

    (a) **Tread lightly, with the whenua**: Me tangata te whenua (treat the land as a person), Kia māori te whenua (let it be its natural self); and

    (b) **Create an enduring community legacy**: Kia māori te whakairo (normalise māori values), Me noho tangata whenua ngā mātāpone (embed the principles in all things), Tū ai te tangata, Tū ai te whenua, Tū ai te wai (elevate the status of the people, land, and water).

313. The CEDF is to be a live document directing the design through successive stages from start to finish of the Ō2NL Project.

314. The CEDF is organised into 6 Parts:

    (a) Part 2 describes the context. It covers Horowhenua's landscapes from north of Ōtaki to north of Levin. It adopts a thematic approach to describe the natural landscape (Taiao), human landscape (Tāngata).

    (b) Part 3 expands on the core principles to those that direct specific design responses to the context.

(c) Part 4 describes the design response. These are organised into two groups that relate to the landscape and highway respectively:

315. Part 1 introduces the purpose and principles of the CEDF. It describes the Ō2NL partnership, governance, and philosophical approach. It sets out the core project principles, and the more detailed design principles. It lists other relevant documents and standards.

(a) The landscape component focuses on water and vegetation with an emphasis on restoring natural processes and patterns. It includes restoring ecological habitat within the principle of creating a legacy for all living things.

(b) The highway component focuses on the elements that are part of the highway footprint itself such as bridges, safety barriers, medians, edge details, lighting, highway 'furniture', noise walls, retaining walls, cut and fill batters, spoil disposal, and material supply. The intent is a clean, uncluttered highway that reduces distractions and lets the surrounding landscape speak.

(c) Part 5 sets out the principles to guide the design process following consent though the procurement, construction, and ongoing management of the Ō2NL Project.

(d) Part 6 sets out 'Next Steps'. It is to be updated through each phase of the Project. It currently sets out work to progress the design and CEDF between the DBC phase and the consenting phase.

Overview of measures

316. In summary, measures will be established through the CEDF to 'repair the landscape' focus on waterways as the natural landscape's lifeblood, indigenous vegetation networks, and the local road and SUP network.

Landscape principles (Let the landscape be its natural self)

317. Waterways are the landscape's lifeblood. Focussing on improving waterways will benefit ecology, aesthetics, culture, and natural character.

(a) Bridges are to be used over the five main streams crossed (Ohau River and the Kuku, Waikawa, Manakau and Waiauti Streams).

(b) Large culverts are to be used on the smaller watercourses, excavated to enable natural stream beds to establish within culverts. Culvert length is to be minimised through use of wing walls.

(c) Riparian vegetation will be planted or restored according to the natural characteristics and qualities of the streams:

(i) The gullies of the Koputaroa and Waitohu Streams are proposed to be restored as raupō wetland, and wet kahikatea/pukatea forest through reversal of drainage and planting.

(ii) The banks of the Kuku, Manakau and Waiauti Streams are proposed to be replanted with terrace and scarp vegetation, and natural ox bows restored.

(iii) The vegetated banks of the Ohau River and Waikawa Stream are proposed to be transitioned to indigenous species through weed control and enrichment planting.

(d) The stormwater system includes vegetated swales and large stormwater wetlands. The latter are to be naturalised, with extensive margins, and linked with other green networks (for instance with restoration of riparian vegetation).

(e) Surplus spoil is proposed to be used alongside the highway, for example by overfilling fill batters and contouring around roundabouts) to integrate the Project into the landscape. Such areas will typically be planted.

318. Indigenous vegetation cover is to be increased:

(a) Planting will be undertaken to buffer remnant stands of bush at Staples Bush, and the two stands adjacent to 'Ashleigh' homestead. Other stands of trees are proposed to be restored for ecological reasons at the Ohau River, Kuku Stream, and Waikawa Stream, and connected with planting carried out for riparian restoration.

(b) Planting is proposed to be carried out along the highway (for example on the fill batters), between the SUP and highway, and otherwise parallel with the highway to screen and soften views of the highway and traffic from the surrounding area, with special attention to outlook from

houses. Such planting will use plant communities indigenous to the setting.

319. Human landscape patterns are to be maintained and added to.

(a) The local roads following stream valleys towards the mountains are to be maintained: Muhunoa East Road, Kuku East Road, North Manakau Road, and South Manakau Road.

(b) The area north of the Ohau River will maintain connectivity between Levin and Ohau on both sides of the highway – and connections between Levin, Ohau and Kimberley Reserve will be maintained.

(c) The existing SH1 is to be re-purposed as a quieter, local spine connecting Levin, Ohau, Kuku and Manakau.

(d) The SUP will provide new connections at the back of the plains between Levin (including the planned Tara-Ika development), Kuku East, North Manakau, Manakau, Ōtaki and places further south. It is envisaged that the SUP will provide for short local trips, as well as longer trips. The SUP will connect with every road intercepted by the proposed designation.

Highway principles

320. The principle of a clean highway relates to visual aspects (clean lines, avoiding clutter) and natural aspects (clean water, avoiding weeds).

321. The principles are applied for each highway element (bridges, safety barriers, barrier transitions, kerbs, medians, highway furniture, signs, cut and fill batters and noise walls) and, especially, in a standardised approach to how they fit together. The 'design language' is proposed to be consistent with the rest of the Wellington Northern Corridor, but with an aspiration to continuing improvement.

322. The highway is to be un-lit except where necessary at intersections, ie the Tararua Road interchange, Taylors Road half-interchange and the two roundabout connections at the northern tie-in and at SH57. The purpose is to reduce effects on darkness of the night sky, reduce ecological effects at stream crossings, and help reduce night-time visual effects.

Summary

323. The CEDF will be developed to integrate the final mitigation measures (including those proposed by different disciplines) into a coordinated 'whole of landscape' plan. The measures will address (amongst other things) landscape character, visual effects, and natural character. The measures will enhance biophysical aspects, help soften the highway and help tie it into the landscape.

CONCLUSION

324. Potential adverse landscape, visual, and natural character effects of the Ō2NL Project have been avoided and reduced to a substantial degree by the selection of the proposed route. Mitigation measures are proposed to address residual individual effects. The individual measures are also coordinated into a cohesive 'whole of landscape' approach through the principles within the CEDF – which will guide the detailed design – and which are designed to contribute a positive landscape legacy. I consider this to represent a best practice approach to integrating a new highway into the landscape.

Gavin Lister
14 October 2022

APPENDIX D.1: METHODOLOGY

Methodological framework

1. The assessment is consistent with the concepts, principles, and approaches in 'Te Tangi a te Manu – Aotearoa New Zealand Landscape Assessment Guidelines' *Tuia Pito Ora/New Zealand Institute of Landscape Architects, June 2022*. The following section summarises the specific method tailored to the landscape context, issues, and purpose of the assessment of the Ō2NL Project.

Landscape and Visual

Definition of landscape

2. The following definition of landscape is adopted:

> *Landscape embodies the relationship between people and place: it is the character of an area, how the area is perceived and experienced, and the meanings associated with it.*[27]

Extent of relevant landscape

3. The extent of the landscape context is the whole Horowhenua and Kāpiti Coast north of Otaki. The area is centred on the coastal plain but backdropped by the Tararua Ranges and edged by the coastal sand-dune country. The whole area is considered relevant to understanding the landscape character and values, and the selection of the proposed route.

Existing landscape character and values

4. Landscape character is the distinct combination of physical, associative, and perceptual attributes. Landscape values are aspects that are held in regard.

5. The assessment describes the character of the area and evaluates its landscape values consistent with the definitions above. It canvasses the physical, associative, and perceptual dimensions of the landscape and how these factors collectively constitute Horowhenua's distinct landscape.

6. The process includes desk-top review, field work, and discussion with key people, including representatives of tāngata whenua as Project partners. It draws on general reference works relating to the area, and on the other

[27] Te Tangi a te Manu, May 2021, paragraph 4.17.

specialist reports undertaken for this Project. It is carried out in tandem with the Cultural and Environmental Design Framework ("**CEDF**") to ensure consistency between these documents, which have complementary purposes. The process takes advantage of knowledge and appreciation accumulated through the involvement of the author in different stages of the Project during the last decade.

7. The assessment is not an exhaustive description of the area but focuses on attributes and values considered most relevant to the purpose of assessing landscape and visual effects. Landscape values include potential values – ie the opportunities to restore values that may have been diminished.

Proposal

8. The assessment relies on the description of the Ō2NL Project included as Section 3 in Volume II of the documents provided to support the NoRs and applications for resource consents as authoritative. Some of the key aspects of the Ō2NL Project most relevant to assessing landscape and visual, and natural character effects are summarised in the report.

Relevant provisions

9. A review was carried out of provisions relevant to the assessment of landscape and visual effects (**Appendix D.2**). The purpose of such a review is to frame the landscape and visual assessment: it is not an appraisal of the Project against the provisions. Provisions considered relevant include those in the Regional Policy Statement section of the Horizons One Plan, the Horowhenua District Plan ("**HDP**"), the Greater Wellington Regional Policy Statement and Proposed Natural Resources Plan, and the Kāpiti Coast District Plan ("**KCDP**"). Amongst other things, the provisions highlight areas that have been identified as having special landscape values and attributes, and areas with significant natural values.

Issues

10. The assessment of effects was structured around issues derived from the nature of the Ō2NL Project, the existing landscape character and values, and the matters in the provisions. The key issues are considered to comprise:

    (a) appropriateness of the route alignment (compared to alternatives).

(b) nature and degree of **effects on landscape character and amenity values** (with respect to physical, perceptual, and associative aspects); and

(c) **visual** effects from public and private views, including during construction.

Assessment of landscape and visual effects

11. Effects are assessed under each of these headings.

(a) Effects on landscape character and amenity values are assessed for each of six landscape character areas. The areas are the four landscape domains identified in the HDP that the Project traverses (Levin-Koputaroa, Levin-Ohau, Kuku, and Manakau Downlands) plus the balance area (Pukehou) at the southern end of the area which falls in Kāpiti Coast District. The Levin-Koputaroa landscape domain above is subdivided into two subsections to reflect the differences between (i) the rolling rural area north and north-east of Levin, and (ii) the flat area east of Levin which is ear-marked for urban development. The assessment includes further detail on the characteristics and qualities that contribute to the landscape values of each area, reference to specific policies (where relevant), a description of the Project in each area, an assessment of the nature and magnitude of effects, a description of recommended mitigation, and an assessment of net or residual effects.

(b) **Appendix D.3** comprises analysis of visual effects from houses in the vicinity of the highway. The assessment is tabulated for each of the landscape character areas discussed above. Assessments are based on desk top analysis and road-side observation. Factors influencing the degree of effect are described, such as distance (measured to edge of carriageway), apparent orientation of house, the nature of the highway at each location, the extent of screening, and elements in the foreground and middle-ground that would contribute to perspective depth.

12. Effects are a consequence of changes on landscape values. The focus is the effects on landscape values rather than change per se. Both the nature and magnitude of effect are relevant to understanding effects. A 7-point scale (below) is used where reference is made to degree or magnitude.

very low	low	low-moderate	moderate	moderate-high	high	very high

Photo simulations

13. Photo simulations are useful for understanding the appearance of the Ō2NL Project and are prepared in a manner consistent with the NZILA Best Practice Guide 10.2. They are presented across two A3 pages to provide a field of view of approximately 110º, at correct scale for a 400mm reading distance. Fourteen representative public viewpoints[28] were selected to illustrate key elements of the Project and to represent each of the landscape character areas. These were shared with the landscape architect providing advice to Horowhenua and Kāpiti Coast District Councils and a site visit undertaken with the advisor to confirm and fine-tune the locations on a without prejudice basis.

14. While photo simulations are useful tools, it is important to note their inherent limitations. Photos are static, have a limited field of view, and tend to flatten perspective. People typically experience landscapes by moving through them in a range of conditions – somewhat differently from photos that are taken in one set of conditions, from fixed viewpoints, and that do not depict context. The before-and-after format can focus attention on change rather than effects on landscape values. The format discussed above seeks to reduce these limitations.

15. **Appendix D.4** comments on the photo simulations from the representative viewpoints.

Construction effects

16. Effects specific to construction were also assessed. These include biophysical effects (such as increased potential for sediment discharge during the time surfaces are open) and visual effects of construction. The latter are likely to be experienced from similar locations as permanent effects but are typically amplified, especially from residential properties, by the raw appearance of works and heavy construction machinery. Other

[28] In two instances viewpoints were selected on private farmland to illustrate the bridges over the Ohau River and Waikawa Stream.

specific construction effects arise from construction yards and temporary access.

Remediation and mitigation

17. The assessment of landscape and visual effects (and natural character – see below) is carried out in tandem with the CEDF. The CEDF is compiled in partnership with the Project Iwi Partners, integrating input from the Project design team, other environmental disciplines, and stakeholders

18. The reason for such an approach is to ensure alignment with the CEDF in terms of (i) acknowledging the existing landscape values; (ii) addressing potential adverse effects on landscape values; and (iii) taking opportunities to enhance and improve outcomes for landscape values.

Natural character

Definition

19. The assessment adopts the following definition of natural character from Te Tangi a te Manu guidelines:

> *Natural character is the distinct combination of an area's natural characteristics and qualities, including degree of naturalness.*

20. The definition is consistent with the One Plan's description of natural character at 6.1.3 as an expression of certain natural attributes, and at Policy 6-8 as comprising a variety of natural attributes and characteristics – including a range of natural character from pristine to modified.

21. Potential effects on natural character principally relate to the river, streams and associated wetlands crossed by the Project. These waterbodies fall into 6 main catchments. As noted, the route avoids the coastal environment and the lakes and extensive wetlands in the western part of the Horowhenua and Kāpiti Coast Districts.

Issues

22. The issue is the extent to which the natural character of wetlands, lakes and rivers and their margins are preserved, and the **appropriateness** of the Ō2NL Project in that regard. Consideration of appropriateness will relate in general terms to matters listed in Policy 6-9 of the One Plan, which can be interpreted as follows:

(a) Compatibility of the Ō2NL Project with the existing level of modification to the environment.

(b) The functional need for the Project to cross the rivers and streams, and the consideration of alternative routes that was undertaken.

(c) The form, scale, and design of the Project – specifically the design of the bridges and culverts with respect to landform, geological features, and vegetation.

(d) Whether the Project significantly disrupts natural processes and ecosystems.

(e) Whether the Project provides for restoration or rehabilitation of natural character.

Spatial extent

23. Existing natural character, and effects on natural character, are considered at nested spatial scales: focusing on each crossing location with respect to the localised natural character and specific design (eg bridge, culvert, approaches), and in the context of the whole course of each waterway, and the broad landscape context.

24. The reason for the approach described above is that the Project has a functional need to cross the waterways and will have an unavoidable localised effect on natural character because of its footprint and visual presence. Appropriateness will therefore depend, not only on the effects of the Project on the natural character of each waterway as a whole, but also in part on (i) the nature of the crossing point, (ii) the design measures to reduce biophysical effects at that location, and (iii) rehabilitation measures at adjacent waterway margins.

Existing natural character

25. The existing natural character is to be assessed by analysing the characteristics and qualities that contribute to natural character of each waterway. They include both biophysical and experiential aspects, such as:

(a) The nature of each waterway's bed and banks.

(b) The functioning of the natural stream processes.

(c) Water quality.

(d) Riparian and margin vegetation.

(e) Freshwater and terrestrial fauna and flora.

(f) Experiential qualities.

(g) Broad context landscape.

26. These aspects are consistent with One Plan 6.1.3, and Policy 6-8. They are analysed through desk-top review, field work, and workshops with other specialists involved in the Project. The natural character is then interpreted (integrated) as a composite of the natural characteristics and qualities. This includes an assessment of the degree of naturalness (or degree of natural character) against the seven-point scale referred to above.

Effects on natural character

27. The effects on natural character were similarly considered with respect to:

(a) The specific characteristics and qualities that contribute to each waterway's natural character.

(b) An overall reappraisal of natural character with the Project in place.

(c) The net effects on natural character with the proposed restoration and rehabilitation in place.

Specialists

28. Specialists who contributed to an understanding of natural character matters included:

(a) Andrew Craig – hydrology and river processes;

(b) Keith Hammill/Kristy Harrison – water quality;

(c) Tim Martin – terrestrial ecology;

(d) Alex James/Nick Goldwater – freshwater ecology;

(e) Gavin Lister – landscape; and

(f) Lisa Rimmer – CEDF.

29. Each specialist participated in a briefing workshop and two subsequent workshops to provide specialist input to help (i) describe and appraise the existing natural character, (ii) recommend restoration and rehabilitation

measures, and (iii) assess effects on natural character. Such input relates to natural character as a separate concept, not to be conflated with separate disciplines.

Restoration and rehabilitation

30. As above, the natural character assessments were carried out in tandem with the Cultural and Environmental Design Framework, which is being compiled in partnership with the Project Iwi Partners, integrating input from the Project design team, other environmental disciplines, and stakeholders.

31. The reason for such an approach is to ensure that the CEDF and Effects Assessment are aligned in terms of (i) acknowledging the existing natural character, (ii) addressing potential adverse effects on natural character, and (iii) taking opportunities to enhance and improve natural character.

APPENDIX D.2: RELEVANT PROVISIONS

1. The appendix sets out provisions relevant to landscape, visual and natural character effects. For the avoidance of doubt, the purpose is to help frame the assessment of landscape and visual, and natural character effects: it is not a planning assessment. (**All emphasis** in this section is added unless otherwise stated).

Horizons One Plan

Regional Policy Statement Section

2. Matters relating to natural features, landscapes, and natural character are addressed in section 6. The One Plan identifies the Region's **outstanding natural features and landscapes** in Schedule G. None of those listed are in the vicinity of the project or would be potentially affected. The nearest is Tararua Forest Park. The One Plan also sets out criteria by which to consider other potential outstanding natural features and landscapes. It identifies (method 6-8) Waipunahau (Lake Horowhenua) and its margins and Waiwiri (Lake Papaitonga) and its adjacent scenic reserve as landscapes to be considered as potential ONLs. The Project avoided these landscapes through the route selection process.

3. At 6.1.3, the One Plan describes **natural character** as an expression of the following characteristics and qualities:

    a) "Natural landform.

    b) Natural water bodies (lakes and rivers) and the sea.

    c) Vegetation cover (type and pattern).

    d) Natural processes associative with the weather and the ecology.

    e) Wildness, exposure, and the natural sculpturing of landforms and vegetation.

    f) The wider landscape context and the site's relationship to this."

4. Policy 6-8 also repeats the list of "attributes and characteristics" of natural character from NZCPS Policy 13(2).

5. The One Plan, though, also interprets natural character as a 'sliding scale' and explains under 6.1.3 is that "*the approach of the One Plan is to at least*

maintain, and enhance where appropriate, the current degree of natural character…".

6. Objective 6-2 is:

> *"(a) The **characteristics and values** of …(ii) the natural character of the coastal environment, wetlands, rivers and lakes and their margins are protected from inappropriate subdivision, use and development. "*
>
> *"(b) Adverse effects, including cumulative adverse effects, on the natural character of the coastal environment, wetlands, rivers and lakes and their margins, are:*
>
> *(i) avoided in areas with outstanding natural character, and*
>
> *(ii) avoided where they would significantly diminish the attributes and qualities of areas that have high natural character, and*
>
> *(iii) avoided, remedied or mitigated in other areas."*
>
> *"(c) Promote the rehabilitation or restoration of the natural character of the coastal environment, wetlands, rivers and lakes and their margins."*

7. Policy 6-8 (a) is that that *"…natural character of …wetlands, rivers, and lakes and their margins must be preserved and these areas must be protected from inappropriate subdivision, use and development*." Policy 6-8 (b) is that the "*…natural character of these areas must be **restored and rehabilitated** where this is appropriate and practicable*." (As noted, Policy 6-8 (c) lists attributes and characteristics that may contribute to natural character, the list derived from the NZCPS 2010).

8. Policy 6-9 is a policy for managing natural character. It states that in relation to the natural character of such areas, "*subdivision, use or development must generally (but without limitation) be considered appropriate if it*:"

> *"(c) is compatible with the **existing level of modification** to the environment.*
>
> *(d) has a **functional necessity** to be located in or near the …wetland, river, or lake and no reasonably practical alternative locations exist.*
>
> *(e) Is of an **appropriate form, scale and design** to be compatible with the existing landforms, geological features and vegetation.*

*(f) **Will not**, by itself or in combination with effects of other activities, significantly **disrupt natural processes or existing ecosystems**, and*

*(g) Will provide for the **restoration or rehabilitation** of natural character where that is appropriate and practicable."*

9. Policy 6.10 is a policy for providing public access to and along rivers and lakes and their margins. It generally promotes public access but recognises instances where access might be restricted, and that private property rights are to be recognised.

*"(a) Activities within or near rivers and lakes must be established and operated in a manner which readily **provides for public access**. Public access may be restricted only where necessary for safety, cultural or conservation purposes, or to ensure a level of security appropriate for activities authorised by a resource consent.*

(b) Public access for recreational purposes must recognise the need to protect rare habitats, threatened habitats and at-risk habitats.

*(c) Public access must recognise existing **private property rights**.*

Horowhenua District Plan

Rural Environment

10. Chapter 2 addresses the **Rural Environment**. The introduction states that the "*rural character, amenity values and productive use of rural land underpins the social, economic and cultural well-being of the people of the District*."

11. Objective 2.1.1 addresses effects of subdivision, use and development on rural character.

*"To ensure that subdivision and land development maintains and enhances the **character and amenity values** of the rural environment, and that the subsequent development resulting from subdivision such as on-site servicing and other infrastructure provision does not adversely affect the environment including the efficient and effective operation of existing transportation and infrastructure networks."*

12. Many of the subsequent policies relate to subdivision, buildings, reverse sensitivity, and servicing. Policies that are relevant to the landscape and visual effects of the Ō2NL Project include the following:

*Policy 2.1.7: "**Minimise obtrusive built elements** in the rural environment by integrating building location and design **with the surrounding landform and landscape qualities** and recognise that farm building location is influenced by their function."*

*Policy 2.1.9: "Avoid, remedy or mitigate adverse effects of subdivision, use and development of land on areas or features of **landscape**, **biodiversity, historic heritage or cultural value**."*

*Policy 2.1.19: "Having regard to the Explanation and Principal Reasons in respect of the **elements of rural character** ensure that new activities locating in the rural area are of a nature, scale, intensity and location consistent with **maintaining the character of the rural area** and to be undertaken in a manner which **avoids, remedies or mitigates adverse effects on rural character**, including rural productive values."*

*Policy 2.1.20: "Ensure that new activities locating in the rural area are of a nature, scale, intensity and location consistent with maintaining the character of the rural area and to be undertaken in a manner which **avoids, remedies or mitigates adverse effects on rural character**, including rural productive values and potential reverse sensitivity effects."*

13. The Chapter also proposes an approach to landscape management based on the specific character and values of different parts of the Horowhenua District. It divides the district into three broad land types (coastal environment/sand dunes, inland plains/river terraces, Tararua Ranges/foothills) and subdivides these into 10 'landscape domains' (i.e. landscape character areas). Policy 2.1.2 is to:

*"Identify the following **landscape domains** within the Horowhenua Rural Environment in recognition of the **specific landscape character**, **visual quality**, primary productive values and **sensitivity** of different areas."*

The proposal traverses four of the domains as follows:

- *Levin-Koputaroa.*
- *Levin-Ohau.*
- *Kuku.*
- *Manakau Downlands.*

14. Each domain has a suite of policies. Policies relevant to assessing the proposal's landscape, visual, and natural character effects with respect to the **Levin-Koutaroa Domain** include:

> *Policy LK1: "Manage the scale, intensity, size and design of subdivision and land development to ensure that it reflects and **responds to the varied and undulating topography, productive capacity and open views** that contribute to the landscape character and qualities of the Levin-Koputaroa Domain."*
>
> *Policy LK4: "Ensure that **the natural habitats, particularly remnant indigenous forest areas and wetland areas**, are identified and protected from inappropriate subdivision and development.*

15. Relevant policies with respect to the **Levin-Ohau Domain** include:

> *Policy LO1: "Manage the scale, intensity, size and design of subdivision and land development to ensure that it reflects and responds to the **flat and terraced landform**, productive capacity and **open views** that contribute to the landscape character and qualities of the Levin-Ohau Domain."*
>
> *Policy LO.4 "Minimise **obtrusive built elements** in the open and elevated landscape by **integrating** building location and design **with the surrounding landform and landscape qualities**, including by avoiding buildings in prominent sites on elevated terraces or uplands."*
>
> *Policy LO.5 "Ensure that the natural habitats, particularly **remnant indigenous forest areas**, **riparian areas** adjacent to river and stream corridors and wetland areas, are identified and protected from inappropriate subdivision and development."*

16. Relevant policies with respect to **the Kuku Domain** include:

> *Policy K.1: "Maintain the **expansive, open and productive landscape** of the Kuku Domain landscape by restricting the number, size and shape of new lots created through subdivision of land."*
>
> *Policy K.5: "Ensure that **natural habitats and the margins of rivers, streams**, estuaries and wetlands, particularly riparian areas adjacent to the **Ohau River**, **Waikawa Stream** and **Manakau Stream**,[29] and*

[29] The main Manakau Stream is in the 'Manakau Downlands' domain.

***remnant indigenous forest areas**, are identified and protected from inappropriate subdivision and development."*

17. Relevant policies with respect to the **Manakau Downlands** include:

*Policy MD.1: "Manage the scale, intensity, size and design of subdivision and land development to ensure that it reflects and responds to the **varied topography, productive capacity, aesthetic appeal and hill backdrop** that contribute to the landscape character and qualities of the Manakau Downlands domain."*

*Policy MD.4: "**Minimise obtrusive built elements** in the **open and elevated landscape** by integrating building location and design with the surrounding landform and landscape qualities, including by avoiding buildings in prominent sites on elevated land."*

*Policy MD.5: "Ensure that **natural habitats** and the **margins of rivers, streams**, estuaries and wetlands, particularly the Waikawa Stream[30] and **Manakau Stream**, and remnant indigenous forest areas, are identified and protected from inappropriate subdivision and development."*

18. The Explanation and Principal Reasons section explains that the District Plan seeks to protect that **rural character and amenity values** that are based primarily around **primary production**. There are differences in rural character. Management should respond to the **particular characteristics and qualities of each area (domain)** and maintain or enhance the **features and values that contribute to landscape character**. Strategies to create an integrated open space network are also identified, including connections along river corridors, to the ranges, and between the ranges and the coast.

19. **Appendix 1: 'Rural Environment Landscape Assessment'** provides further details on characteristics and qualities of each of the domains, based on a report 'Landscape Assessment of the Rural Environment of the Horowhenua District, October 2008'.

[30] The streams in the Manakau Downlands domain are the Manakau and Waiauti Streams.

Natural Features and Values

20. Chapter 3 addresses natural features and values – including the topics of outstanding natural features and landscapes, and natural character of the coastal environment, wetlands, lakes and rivers and their margins.

Outstanding Natural Features and Landscapes – Areas of High Landscape Amenity

21. The introduction identifies five **outstanding natural features and landscapes** ("**ONF**"/"**ONL**") in Horowhenua (listed below).

22. The Tararua Ranges and including the Skyline of the Tararua Ranges.

    (a) Lake Horowhenua, Moutere Hill and the HokioStream.

    (b) Lake Papaitonga and the Waiwiri Stream.

    (c) The Manawatu River Estuary.

    (d) The Coast including the foredune and adjacent dunelands.

23. The Ō2NL Project does not affect any of these. The route selection process avoided western alternatives that may have affected Lake Horowhenua/Hokio Stream and Lake Papaitonga/Waiwiri Stream.

24. In addition, the introduction identifies four domains as having **High Landscape Amenity** – described as a "*second tier of landscapes below the ONLs*".

    (a) Hill Country.

    (b) Manakau Downlands.

    (c) Coastal Lakes.

    (d) Coastal Environment.

    The Ō2NL Project traverses one of these domains: the **Manakau Downlands**.

25. Objective 3.1.1. relates to Outstanding Natural Features and Landscape and Domains with High Landscape Amenity.

    "Ensure that the District's Outstanding Natural Features and Landscapes are protected from inappropriate subdivision, use and

*development and that **regard is had to other landscapes having high amenity**."*

26. Policies giving effect to this objective that are relevant to assessing the landscape, visual, and natural character effects of the Project include:

Policy 3.1.3: "Subdivision, use and development affecting domains with high landscape amenity shall be controlled to specified levels and enabled beyond this where undertaken in a manner that gives particular regard to the maintenance and enhancement of the amenity values of that landscape."

*Policy 3.1.6: "Have regard to any **positive effects** associated with **landscape and biodiversity restoration**."*

Policy 3.1.7: "Have regard to the ability of existing landscapes to absorb appropriate subdivision, use and development, which includes existing land uses, and also topography and vegetation."

Natural Character

27. Objective 3.3.1 relates to the **natural character** of lakes, rivers and other water bodies:

*"To protect the **natural character** of lakes, rivers and other water bodies and their margins, from inappropriate use, and development."*

28. Policies giving effect to this objective that are relevant to assessing the landscape and visual, and natural character effects of the Project include:

*Policy 3.3.2: "Identify **priority** lakes, rivers, wetlands and other water bodies with **high natural character and conservation, recreation, cultural, amenity and intrinsic values**."*

*Policy 3.3.3: "Manage the **design, location and scale** of subdivision and/or **land development** and use adjoining lakes, rivers, wetlands and other water bodies so they **retain their special values and natural character.**"*

*Policy 3.3.4: "Ensure subdivision, use and development **protects the natural character** of lakes, rivers, wetlands and other water bodies and maintain and enhance their special values by **having regard to the following matters** in assessing proposals:*

- *extent to which **natural processes, elements and patterns** that determine the area's natural character are sustained, and/or restored and rehabilitated;*
- *degree of change to **landform and relief**;*
- *degree of protection of **vegetation** cover and patterns, including use of a buffer;*
- *compatibility with **existing level of modification** to the environment;*
- ***functional necessity** to be located in or near the water body and no reasonably practicable alternative locations exist;*
- *ability to **mitigate any potential adverse effects** of subdivision, use, and development; and*
- *provision of **public amenity and access** to land acquired by Council for reserve purposes. (See similar list in One Plan Policy 6-9)*

*Policy 3.3.6: "Promote and encourage the development or maintenance of **riparian planting** along water body margins."*

*Policy 3.3.7: "Enable **customary activities** to be undertaken within and adjacent to lakes, rivers and other water bodies."*

29. The Explanation and Principal Reasons section explains that management of development close to rivers and other water bodies is to protect natural character and special values such as cultural, natural, recreation, and amenity values. It acknowledges that buildings, structures, and activities can adversely affect natural character and special values but acknowledges the **functional necessity of some activities, such as bridges, to be located in and adjacent to water bodies**. It explains the potential for restoration and enhancement of natural values of the margins of waterways.

30. It explains that the Council has an Open Space Strategy, which identifies water bodies with significant values where creating esplanade reserves or strips are considered a priority. Such **priority water bodies** are listed in Schedule 12 under Groups 1 and 2: the two groups relating to approaches requiring esplanade reserves and esplanade strips respectively.

31. There is potential ambiguity between Policy 3.3.2, which suggests that identified priority water bodies are those that have high natural character and other values, and Schedule 12 which appears to be a response to other values and policies relating to esplanade reserves. For example, Lake Horowhenua is listed in the Schedule and has high cultural, recreation, and intrinsic values, but would fall well short of high natural character. Of those waterbodies identified in **Schedule 12**, only the Ohau River will be crossed by the Ō2NL proposal. It is described as having "*natural, ecological, natural hazard, recreational/access, and cultural values*".

32. Other waterbodies listed in Schedule 12 that are avoided by the selection of an eastern alignment include Lake Horowhenua, Lake Papaitonga, Hokio Stream, Waiwiri Stream, and the lower 2km of the Waikawa Stream.

Transport Infrastructure

33. Chapter 10 addresses **transport infrastructure**. Objective 10.1.1 relates to maintenance of land transport networks. Policy 10.1.4 is relevant to landscape matters:

> *"Policy 10.1.4 Encourage the development of pedestrian paths and cycleways, as well as convenient and accessible cycle parking, to support the opportunity to use non-vehicular transportation modes throughout the District."*

34. Objective 10.2.1 relates to managing effects of transport infrastructure. The Objective is:

> *"To provide for a land transport network that is safe, convenient and efficient, and which **avoids, remedies or mitigates the adverse effects** to maintain the health and safety of people and communities, and the **amenity and character of the environment**."*

35. Policies giving effect to this objective include the following:

> *"Policy 10.2.2 Require all extensions and upgrades to the land transport infrastructure, including roads, to avoid, remedy, or mitigate any adverse effects on the natural and physical resources, sensitive areas, and **amenity and landscape values** of the District.*
>
> *Policy 10.2.3 Avoid adverse amenity impacts by ensuring that new roads are designed to, at least, minimum standards and **visually complement the character of any surrounding area**.*

*Policy 10.2.4 Adopt techniques to **discourage high volume and heavy traffic** use in areas **where it would have adverse environmental effects on the local community.***

Greater Wellington Regional Policy Statement

36. The southern part of the Ō2NL Project falls within the jurisdiction of the Greater Wellington Regional Council and the Kāpiti Coast District Council. For the purposes of assessing the effects of the Project, the relevant landscape elements are Pukehou, the rural landscape surrounding Pukehou, and the catchment and certain tributaries of the Waitohu Stream.

37. Objective 17 of the RPS is that the "region's **outstanding natural features and landscapes** are identified, and their **landscape values protected** from inappropriate subdivision, use and development" (emphasis added). There are no ONFs or ONLs in the vicinity of the Ō2NL Project. The nearest is the Tararua Ranges several kilometres to the east.

38. **Objective 18** of the RPS to identify '**special amenity landscapes**' and to **maintain and enhance the landscape values** that contribute to **amenity** and the **quality of the environment**. Pukehou is identified in the KCDP as a Special Amenity Landscape (see below), but the area mapped comprises the steep hillsides. The proposed designation does not encroach into the area identified.

39. The RPS include provisions relating to **freshwater (including public access**) that are relevant to natural character matters, although the RPS does not address natural character of wetlands, rivers and lakes and their margins directly. Objective 12 addresses the quantity and quality of freshwater, and the related policies include Policy 15 with respect to minimising the effects of earthworks and vegetation clearance. Objective 13 addresses healthy functioning ecosystems of rivers, lakes, and wetlands, and the related policies address amenity, recreational and indigenous biodiversity values (Policy 19) and a whole of catchment approach (Policy 64). The Waitohu Stream is not included in **Appendix 1, Table 15**, of the Operative RPS, which lists rivers and lakes with values requiring protection.[31] However, it is included in Table 16 which lists rivers and lakes with significant indigenous ecosystems. (Policies 19 and 43).

[31] The list does include Lake Waitawa (Forest Lakes) to the west which is avoided.

Greater Wellington Proposed Natural Resources Plan (Appeals Version)

40. The Proposed Natural Resources Plan ("**PNRP**") integrates and replaces five regional plans relating to the coast, soil, discharges to land, freshwater, and air. While it will not be fully operative until all appeals are resolved, where a rule has not been appealed it becomes operative.

41. Objective O17 is that "The **natural character** of the coastal marine area, **natural** wetlands, and rivers lakes and their margins is preserved and protected from inappropriate use and development."

42. Policy P25: is *"To preserve natural character and protect it from inappropriate use and development by*

(a) (relates to coastal environment)

(b) (relates to coastal environment)

(c) ***outside the coastal environment****, avoiding and, where avoidance is not practicable, remedying or mitigating adverse effects of activities on the natural character of wetlands, rivers, lakes and their margins that have outstanding natural character, provided that the outstanding natural character of the area taken as a whole is retained, and*

(d) ***outside the coastal environment****, avoiding and, where avoidance is not practicable, remedying or mitigating significant adverse effects of activities on the natural character of wetlands, rivers, lakes and their margins that have high natural character, provided that the high natural character of the area taken as a whole is retained, and*

(e) ***outside the coastal environment****, avoiding, remedying or mitigating other adverse effects of activities on the natural character of wetlands, rivers, lakes and their margins that are not addressed under (c) or (d) of Policy P25*

43. The area traversed by the proposed designation (tributary wetlands and streams of the Waitohu Stream) was assessed as having *'low-moderate*' natural character and certainly does not have '*high*' or '*outstanding*' natural character. Policy P25 (e) is therefore the most relevant to the Project.

44. Other objectives of the PNRP that are relevant to consideration of natural character and landscape matters include the following:

*Objective O1: "Air, land, freshwater bodies and the coastal marine area are managed as **integrated** and connected resources; **ki uta ki tai** – **mountains to the sea**."*

*Objective O3: "**Mauri** particularly the mauri of fresh and coastal waters **is sustained** and, where it has been depleted, natural resources and processes are **enhanced to replenish mauri**."*

*Objective O27 "**Vegetated riparian margins** are established, maintained or restored to enhance water quality, aquatic ecosystem health, mahinga kai and indigenous biodiversity of rivers, lakes, natural wetlands and the coastal marine area.*

45. The section on 'Sites with significant values' includes the following objectives:

Objective 031: Outstanding water bodies and their significant values are protected. and restored. Where the significant values relate to biodiversity, aquatic ecosystem health and mahinga kai, restoration is to a healthy functioning state as defined by Tables 3.4, 3.5, 3.6, 3.7 and 3.8.

*Objective O32: "**Outstanding natural features and landscapes** and their values are protected from inappropriate use and development.*

46. As discussed above, there are no ONF/ONLs identified near the Ō2NL Project. Likewise, the Waitohu Stream is not included in Schedule A which lists 'outstanding water bodies'. However, places on Waitohu Stream are included in Schedule C1, which lists sites of significance to Ngā Hapu o Ōtaki. Waitohu Stream and tributaries are also included in Schedule F1, which lists rivers and lakes with significant indigenous ecosystems because it is habitat for indigenous threatened/at risk fish species and habitat for migratory indigenous fish species. Such values relate to parts of the catchment downstream of the Ō2NL Project.

Wellington Regional Freshwater Plan

47. As noted above, the provisions of the PNRP replace the previous Regional Plans as appeals are resolved. The Regional Freshwater Plan has a generic objective that echoes section 6(a) of the RMA: Objective 4.1.4, "*The natural character of wetlands, and lakes and rivers and their margins, is preserved and protected from inappropriate subdivision, use and development*."

48. Policy 4.2.9 is "*To have regard to the following characteristics of wetlands, and lakes and rivers and their margins, when considering the protection of their natural character from the adverse effects of subdivision, use, and development:*

- *ecosystems, habitats and species; and*
- *water quality; and*
- *the natural flow characteristics and hydraulic processes (such as sediment transport) of rivers or the pattern and range of water level fluctuations that occur naturally in wetlands or lakes; and*
- *the topography and physical composition of river or lake beds and the course of the river."*

Operative Kāpiti Coast District Plan 2021

49. Objectives and policies are organised under Issues in the Operative District Plan 2021 e-Plan. District Objectives ("**DO**") that have relevance to landscape matters include:

50. DO-O1, Tangata Whenua, is "*To work in **partnership with the tāngata whenua of the District** in order to maintain kaitiakitanga of the District's resources and ensure that decision affecting the natural environment in the District are made in accordance with the principles of the Te Tiriti o Waitangi (Treaty of Waitangi)*."

51. DO-O2, Ecology and Biodiversity, is "*To improve indigenous biological diversity and ecological resilience through:*

1. protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna;

2 encouraging restoration of the ecological integrity of indigenous ecosystems

3 enhancing the health of terrestrial and aquatic ecosystems; and

4 enhancing the mauri of waterbodies.'".

52. DO-O7, Historic Heritage, is "*To protect historic heritage in the District for the social, cultural and economic wellbeing of the Kāpiti Coast community and future generations, including (amongst other things):*

2 recognising and protecting tāngata whenua historic heritage, including wāhi tapu and other places and areas significant to Māori.

53. Of relevance to the Project in this respect is Pukehou, which is recognised as significant to Māori.

54. DO-O9, Landscapes, Features and Landforms, is "*To protect the District's identified outstanding natural features and landscapes from inappropriate subdivision, use and development; and*

> *1. maintain or enhance the landscape values of special amenity landscapes and identified significant landforms; and*
>
> *2. avoid, remedy or mitigate adverse effects of earthworks on natural features and landforms.*

55. Schedule 5 identifies Special Amenity Landscapes. Of those identified, only Pukehou is close to the Project. However, the proposed designation avoids the mapped Special Amenity Landscape. Pukehou is described as a prominent outlier of the Tararua Ranges on the northern edge of the district. A range of attributes are listed which will be relevant in considering effects on the landscape. These include attributes relating to the hill's qualities as a landmark, and intangible associations with a significant historical event relating to Ihaia (hence its names of 'Ihaia's Leap' and 'Hill of Dedication'). The expressway skirts Pukehou with earthworks around the toe slopes but is outside the area mapped as Special Amenity Landscape.

56. DO-O11,**Character and Amenity Values**, is "*To maintain and enhance the* ***unique character and amenity values*** *of the District's distinct communities so that residents and visitors enjoy (those relating to urban areas are not repeated)*

> *4. productive rural areas, characterised by* ***openness, natural landforms****,* ***areas and corridors of indigenous vegetation****, and primary production activities;*

57. DO-O13, **Infrastructure**, is "*To* ***recognise the importance*** *and national, regional and local benefits* ***of infrastructure*** *and ensure the efficient development, maintenance and operation of an adequate level of social and physical infrastructure and services throughout the District that:*

> *1. meets the needs of the community and the region; and*
>
> *2. builds stronger community resilience,* ***while avoiding, remedying or mitigating adverse effects on the environment****.*

58. The explanation refers to the acknowledging the importance of the state highway infrastructure (along with network utilities) and ensuring integration, coordination and safeguarding of such assets across territorial boundaries.

59. Relevant policies under **Natural Environment** primarily implement DO-O2 and DO-O9 above relating to ecology and landscapes including protecting ecological sites identified in Schedule 1, outstanding natural features and landscapes identified in Schedule 4, and geological features identified in Schedule 6.

- **Schedule 1** identifies **Ecological Sites** (ie areas of significant indigenous vegetation and significant habitats of indigenous fauna). The two identified sites relevant to the Project are K016 (Staples Bush) and K164 (Pukehou Bush) – both located on the north side of Pukehou near the boundary with Horowhenua District. Staples Bush is described as a small fragment of kohekohe-māhoe forest. Pukehou Bush is described as kohekohe-tawa forest including a rare habitat for toro. The expressway has been aligned to pass between these stands of bush.

- **Schedule 4** identifies **Outstanding Natural Features and Landscapes**. None of those identified are affected by the Project. The nearest is 'the main range and forested foothills of the Tararua Ranges that run along the eastern boundary of the entire District.' The area mapped is well to the west (>3km) of the Project area.

- **Schedule 6 i**dentifies **Geological Features**. None of those identified are affects by the Project.

60. Policies with respect to **Rural Zones** relevant to assessing landscape and visual effects of the Project include:

> *GRUZ-P2, Rural Character*
>
> *Subdivision, use and development in the Rural Zones will be undertaken in a manner that maintains or enhances the District's **rural character**, including:*
>
> *1) the general sense of **openness**;*
>
> *2) **natural landforms**;*
>
> *3) overall **low density** of development; and*

*4) the **predominance of primary production** activities*

GRUZ-P5, Management of Conflicting Uses

*Manage the **interface between activities** on adjoining properties in the Rural Zones in order to **avoid, remedy or mitigate adverse effects on amenity values** and on the effective and efficient operation of rural activities.*

APPENDIX D.3: VISUAL EFFECTS

1. Visual effects were estimated for houses in the vicinity of the Ō2NL Project with respect to the concept highway design. It is acknowledged that the NoR seeks to secure a designation and not a fixed alignment. Nevertheless, the concept design provides a practical basis for estimating the overall effects of the Project on outlook from properties, and a basis for scoping the proposed mitigation. Effects may differ for individual houses (they may be lesser or greater) depending on the final design and alignment. Those details would be addressed as part of the OPW.

2. Assessments were based on desk-top analysis of aerial photos and road-side observation. Factors considered include distance (measured from the house to the edge of the carriageway of the concept design), apparent orientation of house, the nature of the concept highway design at that location (eg whether it is on embankment or in cutting), existing screening, and perspective depth (extent of foreground and middle-ground elements between house and concept highway alignment). The degree of adverse effect was estimated against the seven-point scale describe in Appendix D.1, Methodology (ie from very low to very high).

very low	low	low-mod	moderate	mod-high	high	very high

3. Mitigation is warranted for properties where the adverse effects would be moderate or greater. Such mitigation has been incorporated into the overall landscape plans and integrated with planting proposed for landscape and natural character reasons (ie the proposed planting often serves more than one purpose). While the mitigation will reduce the degree of visual effects, it is not possible to reduce all such effects to less than 'moderate'. There may be opportunities to provide further mitigation on affected properties which would be subject to agreement between property owners and Waka Kotahi.

4. The following inventory is organised into the six landscape character areas used in the assessment.

Levin-Koputaroa (Northern tie-in to Queen Street East)

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
4065534	421	97 Avenue North Road	350m (roundabout)	House appears oriented NE to garden setting. Existing SH1 passes to the N of the property. The highway will be realigned to the E to tie with new highway at roundabout. Foreground trees. Middle-ground trees and houses.	low	
7292758	428	96 Avenue North Road	220m (roundabout)	House appears oriented to garden setting NW and NE. Existing SH1 passes to the N of the property. The highway will be realigned to the E to tie with new highway at roundabout. Foreground trees. Middle-ground trees. SUP will be on near side.	low-mod	
7292759	430	92 Avenue North Road	180m (roundabout)	House appears oriented N to existing SH1 and away from new alignment. Existing SH1 will be realigned to new roundabout in cropping fields to SE. The Avenue will be realigned to join roundabout. Middle-ground trees will limit views. Longer distance views towards NIMT overbridge to SE but generally >500m. The section of existing SH1 to E of house will be redundant. Potential low-mod adverse effects offset by positive effects.	low-mod	
6882008	429	88 Avenue North Road	300m (roundabout)	House orientation unclear. Current outlook to existing SH1 to E. Existing SH1 will be realigned to new roundabout further E in open fields. Middle-ground trees will limit views. Longer distance views towards NIMT overbridge to SE	low	
6618334		80 Avenue North Road	210m (roundabout)	House orientation unclear. Existing SH1 to E of property. Existing SH1 will be realigned to new roundabout further E.	low-mod	

[32] LINZ property ID number.
[33] Stantec ID number.
[34] As discussed, this is measured to the edge of the carriageway of the highway concept design.
[35] Mitigation proposed (within designation) for properties where effects are *moderate* or greater.

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				Foreground trees. Some middle-ground trees. Potential partial views.		
7111946		62 Avenue North Road	390m	House appears oriented N away from highway. Roundabout tie in with existing SH1 to NE beyond existing SH1. Foreground hedging. Middle-ground hedgerows, trees and buildings.	low	
3820275		185 The Avenue	240m	House orientation unclear. Highway will be on opposite side of existing SH1 to NE. Open outlook to NE including roundabout tie-in with existing SH1. Middle-ground buildings and trees will limit views to E toward NIMT overpass.	mod	Proposed tall screen planting along highway and adjacent to roundabout (including tall forest restoration) will soften views. Will reduce visual effects to *low-mod*. Will also benefit from proposed screen planting adjacent to boundary of 158 and 178 The Avenue.
3819457		175 The Avenue	250m	House appears oriented NW away from alignment. Foreground trees. Highway will be on opposite side of existing SH1 to NE and beyond middle-ground buildings and trees. Potential views to roundabout tie-in with existing SH1 further N.	low	
6543785	655	178 The Avenue	140m	House appears oriented N toward alignment. Highway will cross outlook from E to N. Outlook over open fields. Some foreground trees. Ramp will be approximately 4m higher than ground level at house at nearest point to NE,	high	Proposed tall screen planting along highway and adjacent to roundabout (including tall forest restoration)

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				rising to approximately 5m higher at crest further E.		will soften views. Proposed tall screen planting along boundary of designation will further filter views. Collectively will reduce effects to *mod*.
6543786	450	170 The Avenue	140m	Accommodation units appear oriented NW away from alignment. Highway will cross outlook over open fields from E to N. Occasional tree. Ramp will be approximately 3m higher than ground level at the units at nearest point to NE, rising to approximately 4m higher at crest further E.	high	Proposed tall screen planting along highway and adjacent to roundabout (including tall forest restoration) will soften views. Proposed tall screen planting along boundary of designation will further filter views. Collectively will reduce effects to *mod*.
4061630	455	158 The Avenue	170m	House appears oriented E towards alignment and NIMT overpass. Open outlook with occasional foreground tree. House ground level on reasonably high terrace. Ramp will be approximately 3m higher than house ground level at nearest point to NE, rising to approximately 4m higher at crest further E. (Works will cross corner of wider property)	high	Proposed tall screen planting along highway and adjacent to roundabout (including tall forest restoration) will soften views. Proposed tall screen planting along boundary of designation

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						will further filter views. Collectively will reduce effects to *mod*.
3981122		144 The Avenue	300m	House orientation unclear. Potential outlook over open fields to NIMT overpass to NE. Elevation of overpass approximately 4m higher than ground level at house. Foreground shelter belt. Middle-ground trees along NIMT corridor will intercept longer views of highway on opposite side of NIMT to the E.	mod	Proposed tall screen planting on highway batters including ramps to NIMT overbridge will soften views. Would reduce effects to *low-mod*.
3914462		3 Avenue Road North	400m	House appears oriented NE. Highway will be on opposite side of existing SH1, beyond middle-ground buildings and shelter belts.	low	
4051481		157 The Avenue	330m	House appears oriented NE towards alignment (and NW). Highway will be on opposite side of existing SH1. Potential partial view of NIMT overpass at approximately 360m. Foreground trees (buffer to existing SH1). Middle-ground buildings and substantial trees.	low	
3799777		118 The Avenue	380m	House appears oriented NW away from alignment. Outlook over open ground to NE towards highway and NIMT overpass. Nearest section of highway is on opposite side of NIMT. Middle-ground shelter-belt trees. NIMT overpass >400m away – with middle-ground trees. .	low	
3899238	444	6 Heatherlea East Road	0m	Within highway footprint.	removal designation	
3981123	453	12Heatherlea East Road	0m	Within highway footprint.	removal designation	

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
3850066	446	7Heatherlea East Road (Blueberry Farm)	30m	House appears oriented N away from alignment. House is adjacent to current intersection of Heatherlea East Road and the existing SH1. Existing SH1 will be realigned to new roundabout tie-in on opposite side of Heatherlea East Road approximately 120m to SW. New connecting road between Heatherlea East Road and Koputaroa Road will encroach across property and will be closer to house (less than 20m). Some foreground trees.	high designation avoids house but crosses property	Designation bisects house and garden. Will require individual landscape plan including new boundary fencing and garden reinstatement. Trees on new local connecting road will contribute to buffer from SH1.
3820305	454	21 Heatherlea East Road	100m	House appears oriented N away from alignment. Highway roundabout tie-in with existing SH1 will be in open fields to S on opposite side of Heatherlea East Road approximately 100m away. New connection with Heatherlea East Road will be in foreground. Some foreground trees. Middle-ground shelterbelt will intercept oblique views to SE toward NIMT overpass. A potential construction yard is identified approximately 60m to the SE which will add to visual effects during construction. Although close, the construction yard is beyond the NE arm of the roundabout.	mod-high	Proposed tall forest restoration planting between Heatherlea East Road and roundabout will screen views. Proposed avenue of trees on Heatherlea East Road will also provide foreground buffer. Collectively would reduce effects to *mod-low*
3978296	458	25 Heatherlea East Road	250m	House appears oriented NE and NW away from alignment. In parkland setting. Highway will be in open farmland on opposite side of Heatherlea East Road. Roundabout tie in with existing SH1 approximately 250m SW. NIMT overpass ramps >400m	low	

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				S. House surrounded by trees. Middle-ground trees and buildings. The site on the opposite side of Heatherlea East Road is identified as a potential construction site. It would be approximately 100m away and screened by vegetation.		
7021968	463	32 Heatherlea East Road	140m	House appears oriented N away from alignment. Outlook across open fields behind house to S to NIMT overbridge ramps. Top of NIMT overbridge approximately 7m higher than ground level at house at >300m. Stormwater pond and SUP on near side of highway. Foreground trees and building. Roundabout tie-in with existing SH1 in open fields W of house closer but beyond shelter belts. The house site is earmarked as a potential construction yard which would require its removal.	mod-high Waka Kotahi removal for construction yard designation	Proposed tall screen planting along highway and ramps will soften views of highway, roundabout, and NIMT overbridge. Foreground stormwater wetland and proposed tall forest restoration will further screen and filter views (and increase perspective depth). Collectively will reduce effects to *low-mod.*
6723924	469	46 Heatherlea East Road	220m	Orientation unclear. Highway will cross outlook to S and SW behind house. Nearest section of highway is on opposite side of NIMT. Overbridge is 330m to S. Foreground trees. Middle-ground trees and shelterbelts. However, a construction yard is identified close (approximately 40m) on opposite side of NIMT. Effects will be softened by foreground vegetation and NIMT, but will	low-mod	

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				be high during construction period.		
3962242	473	60 Sorensons Road	0m	Within highway footprint (highway occupies much of wider property)	removal designation	
6522583	470	42 Sorensons Road	200m	House appears oriented N away from alignment. Highway will curve around outlook behind house from SW to W on high ramp. High point of NIMT overpass will be approximately 9m higher than ground level at house and 200m away. Foreground trees. Middle-ground substantial trees and shelter belts. Middle-ground NIMT (nearest section of highway is on opposite side of NIMT).	mod Waka Kotahi	Proposed tall screen planting type on batters will soften highway and NIMT overpass. Proposed tall forest restoration to W will provide further buffer. Will reduce effects to *low-mod*.
3820307	487	40 Sorensons Road	240m	House appears oriented NE and NW. Highway will curve around outlook behind house from SW to W on high ramp. High point of NIMT overpass will be approximately 10m higher than ground level at house and 240m away. Foreground trees. Middle-ground substantial trees and shelter belts.	mod	Proposed tall screen planting type on batters will soften highway and NIMT overpass. Proposed tall forest restoration to W will provide further buffer. Will reduce effects to *low-mod*.
3810003	482	44 Sorensons Road	240m	House appears oriented N away from alignment. Highway will curve around outlook behind house from SW to W on high ramp. High point of NIMT overpass will be approximately 12m higher than ground level at house and 240m away. Foreground trees. Middle-ground substantial trees and shelter belts.	mod	Proposed substantial depth of tall screen planting to S will soften views of highway and NIMT overbridge. Will reduce effects to *low-mod.*

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
3974142	491	46 Sorensons Road	250m	House appears oriented NW, NE and SE. Highway will curve around outlook from SW to W on high ramp. High point of NIMT overpass will be approximately 12m higher than ground level at house and 300m away. Foreground trees. Trees along middle-ground gully.	mod	Proposed substantial depth of tall screen planting to S will soften views of highway and NIMT overbridge. Will reduce effects to *low-mod.*
4036002	484	56 Sorensons Road	150m	House appears oriented to garden setting to N, E and W. Highway will curve around outlook from S to NW on high ramp. Ramp will be approximately 11m higher behind house to S, and up to 14m higher at railway overbridge to NW (at ~250m). Some foreground trees. Trees along middle-ground gully.	high	Proposed substantial depth of tall screen planting to S and W will soften views of highway and NIMT overbridge. Proposed forest restoration planting will soften views along highway to E. Collectively will reduce effects to *mod.*
3978295	484	64 Sorensons Road	80m	House appears oriented to bush outlook to NE and NW. Highway will curve around outlook from S to NW on high ramp. Ramp will be approximately 13m higher behind house to S, and up to 16m higher at railway overbridge to NW (. SUP will be close (20m) on near side of highway at base of ramp earthworks.	very high designation	Proposed substantial depth of tall screen planting to S and W will soften views of highway and NIMT overbridge. Proposed forest restoration planting will soften views along highway to E. Proposed

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						planting along Sorensons Road frontage will further filter views. Collectively will reduce effects to *mod-high*.
3798872	501	47 Sorensons Road	270m	Appears oriented NW. Highway will curve around outlook to SW and W. Will be elevated on ramp approximately 4m-6m above terrace level but up to 13m higher than house, although relatively distant at this elevation (>450m). Substantial foreground trees. Middle-ground trees and buildings. Glimpses likely between trees.	low-mod	
7828364	489	68 Sorensons Road	80m	House appears oriented NE and SW. Highway will be on ramp 'behind' house, elevated approximately 4m-5m relative to house. Plans should house within the footprint of new access road to underpass (if it could be refined to avoid house, the effects would be 'very high'). (Earthworks occupy most of wider property)	Removal Waka Kotahi designation	
7828362	472	66 Sorensons Road	70m	House appears oriented NE towards alignment. Highway crosses N outlook on ramp. The ramp will be approximately 4m-6m higher than the terrace level and more than 13m higher than the gully opposite the house. SUP closer to house (35m). Underpass close to house to NE. Some foreground trees. (Highway bisects wider property).	very high Waka Kotahi designation	Proposed tall screen planting on outside of SUP and on batters will help soften highway and ramps. Proposed avenue along SUP will further filter views. Will reduce effects to *high*.

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
7303612	485	72 Sorensons Road	50m	House appears oriented N towards alignment (also W and S). Highway crosses N outlook on lower end of ramp. Underpass close to house to NW. Some foreground trees. (Highway crosses northern part of wider property).	very high Waka Kotahi designation	Proposed tall screen planting on outside of SUP and on batters will help soften highway and ramps. Proposed avenue along SUP will further filter views. Will reduce effects to *high*.
3899448	494	80 Sorensons Road	0m	House appears oriented N away from highway. 40m from highway carriageway, but within footprint of earthworks and stormwater pond. .	removal designation	
3900695	495	82 Sorensons Road	30m	House appears oriented N and W toward alignment. Highway will be very close in N outlook. Highway will be in cut – earthworks will encroach into garden. (Highway bisects wider property).	very high designation	Proposed tall screen planting on outside of SUP will help soften highway including longer distance views to W and E. Proposed avenue along SUP will further filter views. Will reduce effects to *high*.
3893675	621	157 Fairfield Road	410m	House appears oriented NE to garden setting. Highway will curve around distant outlook to NE and N. Highway will be mostly in shallow cut. Large stormwater pond on near side to NE. Foreground garden trees. Middle-ground shelter hedging, trees, buildings.	low	

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
3904544	535	161 Fairfield Road	120m	House appears oriented NE and NW towards alignment. Elevated and open outlook. Highway will be in valley in front of house in shallow cut (~1m-2m) except where it crosses a small watercourse. Large stormwater pond to E. SUP on near side of highway. Partly screened by small hill to NW but hill may be removed for material supply site (Highway cuts across northern part of wider property)	high designation avoids house but crosses property	Proposed tall screen planting outside of SUP to N and W, and around stormwater pond to E, will soften highway. Proposed wet forest planting (for natural character restoration) would further filter views to W. Collectively will reduce effects to *mod*. Opportunity for middle-ground trees to further filter views (and increase perspective depth).
3974176		165 Fairfield Road	400m	House appears oriented N and W. Highway curves around distant outlook to NE and N. Foreground trees and hedging. Middle-ground trees, shelter belts, houses, glasshouses.	low	
3974184	620	167 Fairfield Road	290m	House appears oriented N toward alignment. Highway will be curve around to N and E. Foreground shelter belts, and middle-ground trees and houses will limit views. Glimpses most likely to E..	low-mod	
3824064	548	163 Fairfield Road	180m	House appears oriented NE and NE. Highway will be curve around NE outlook in open farmland. Foreground trees. Middle-ground shelter belts, trees and buildings will limit long views along alignment to	mod-high designation avoids house but crosses property	Proposed tall screen planting around stormwater pond to N, and along

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				NW and SE. Large stormwater pond on near side of highway in N outlook (110m) will soften views of highway. SUP on far side of pond. (Alignment bisects wider property).		outside of SUP will soften highway. Natural character restoration to NE will further filter views and increase buffer. Will reduce effects *mod*. Opportunity for middle-ground trees to further filter views (and increase perspective depth).
3780076		168 Fairfield Road	400m	House orientation unclear. Highway will be curve around the N and E. Distant glimpses mainly to E across open farmland to roundabout (>500m). Foreground trees and buildings. Middle-ground shelter belts, glasshouses, houses, trees.	low	
3929244	554	168A Fairfield Road	350m	Orientation unclear. Highway will be curve around the N and E. Foreground trees and glasshouses will screen views to NE N and NW. More distant views to E across open farmland to roundabout (>500m). .	low-mod	
3780224	560	174 Fairfield Road	170m	House appears oriented NE towards alignment (also SE and NW). Highway will be curve around the N and E outlook. Open foreground. Highway will be in shallow cut and low embankment. Large stormwater pond on near side of highway to N (110m). SUP also on near side of highway and stormwater pond. Shelterbelt will limit long views along alignment to NW.	high designation	Proposed tall screen planting on outside of SUP and around stormwater pond to NW will soften highway. Tall screen planting and forest restoration

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				(Alignment occupies corner of wider property).		will screen roundabout to E. Natural character restoration to N and E will further filter views and increase buffer. Will reduce effects to *mod*. Opportunity for middle-ground trees to further filter views (and increase perspective depth).
3765431	573	172 Fairfield Road	70m	House appears oriented N (new house) towards alignment. Highway will be curve around the N and E outlook. Open foreground. Highway will be close and on embankment (~3m to N and NE – increasing to over 4m over lower land to SE). SUP will be on near side of highway and closer (50m). (Alignment bisects wider property).	very high Waka Kotahi designation	Proposed tall screen planting on outside of SUP and around stormwater pond to NW will soften highway. Tall screen planting and forest restoration will screen roundabout to E. Natural character restoration to NW and E will further filter views and increase buffer. Will reduce effects to *mod-high*. Opportunity for middle-ground trees to further filter views (and

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						increase perspective depth).
6870426	603	319 Arapaepae Road N	200m (Roundabout 200m)	House appears oriented NW away from alignment. Highway will be elevated approximately 3m-4m on embankment across open farmland to SW. Roundabout intersection with SH57 230m to S. Foreground hedgerow. Otherwise, open. Potential construction yard identified to the S at approximately 190m but beyond the realigned SH57 approach to the roundabout.	mod-high	Proposed tall screening planting will soften highway. Proposed tall forest restoration will screen roundabout. Proposed natural character restoration to N and tall forest restoration to NE will further filter views. Will reduce effects to *mod*
3974540		317 Arapaepae Road N	280m (Roundabout 230m)	House appears oriented NE and NW away from alignment. Highway will be elevated approximately 3m-4m on embankment across open farmland to SW. Realigned SH57 will curve through S outlook. Roundabout will be 250m to SW. Foreground trees to W will soften oblique views along alignment. Potential construction yard identified to the S at approximately 130m but beyond the realigned SH57 approach to the roundabout.	mod-high	Proposed tall forest restoration will screen roundabout. Proposed tall screening planting will soften longer views along highway to W Proposed natural character restoration to W will further filter views. Tall forest restoration around stormwater wetland to SE will also screen longer views along highway in that direction. Will reduce

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						effects to *mod*
3761761	569	229 Arapaepae Road N	370m	House is slightly elevated and appears oriented NE and SE towards alignment and roundabout interchange with SH57. Highway will curve around NE outlook, SH57 will be realigned to also curve through the NE outlook to roundabout which will be 450m to the N. Open outlook. Some middle-ground trees to E. Large stormwater ponds on near side of highway. Works will be reasonably distant but a major feature of the outlook. Potential construction yard identified approximately 170m to NE would add to visual effects, although on far side of SH57 reconstruction.	mod	Proposed tall forest restoration will screen roundabout to N and approaches to E. Proposed tall screening planting will soften highway. Will reduce effects to *low-mod*
3926269		231 Roslyn Road	450m	House appears oriented NE and NW to garden setting. Outlook to NE towards highway's curving alignment and interchange roundabout with SH57. Foreground trees and trees along highway. Some middle-ground shelter-belts.	low	
South of SH57						
3842001	592	293 Arapaepae Road N	0m	Within highway footprint	removal designation	
7025788	582	259 Arapaepae Road N	140m (10m SH57)	House appears oriented NE and SE. Realigned SH57 will pass through shed immediately behind house. The property will be surrounded by the realigned SH57, Ō2NL highway, and the roundabout interchange between the two highways. There would be further adverse visual effects from potential construction yard identified 140m to SE. Cumulative	removal designation	Proposed tall forest planting around roundabout will screen the intersection. Proposed tall screening planting will otherwise soften the highway. Proposed tall

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				effects may require removal of house.		planting will further soften views to the E. A bespoke design (within designation) could help screen the Arapaepae Road approaches to the roundabout. However, house would remain very close to the road, and surrounded by highway infrastructure. Effects will remain *high.*
3902849	596	9 McDonald Road	0m	Within highway footprint	removal designation	
3902848	598	15 McDonald Road	0m	Within highway footprint	removal designation	
3835824	594	254 Arapaepae Road N	90m	House appears oriented NE towards alignment. Property will be enclosed on three sides by Ō2NL highway, realigned SH57, and roundabout interchange between the highways. The house is within an identified potential construction yard which would require removal of the house.	very high [removal for potential construction yard] designation	The proposed tall forest planting around the intersection will screen the roundabout. Proposed tall screen planting on batters will otherwise soften highway. The proposed tall forest restoration will further soften views to the E. This would reduce effects to *high*.

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						However, the house would remain surrounded by highway infrastructure on three sites.
3964005	590	24 McDonald Road	50m	House appears oriented NW and NE to garden setting. Highway will curve around NE outlook almost at grade (<1m fill). Some foreground trees. Potential construction yard identified approximately 60m to NW would add to visual effects during construction.	very high	Proposed tall forest planting would screen and soften alignment to N of house. Proposed screening planting will soften highway to E. Proposed tall forest planting will screen roundabout to NW and longer views to W. and to more distant intersection. However, highway will be very close. Will reduce effects to *high.*
3965668	602	30 McDonald Road	0m	Within Project footprint	removal designation	
6554514	608	45 McDonald Road	210m	House appears oriented NW and NE to garden setting surrounded by trees on bank of Koputaroa Stream. Highway will be on embankment <1.5m high on opposite side of stream. New realigned section of Waihou Road between property and highway. Foreground heavily treed with riparian vegetation. Planting around intervening stormwater	low-mod	

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				pond and along local road will help soften views of highway.		
6554517	612	69 McDonald Road	380m	House appears oriented NW and NE. Highway will be to W on opposite side of Koputaroa Stream. Foreground garden vegetation. Middle-ground trees along McDonald Road and Koputaroa Stream. New realigned section of Waihou Road between property and highway.	low	
4002575	611	38 McDonald Road	200m	House appears oriented NW and NE. Highway will be almost at grade (<1m fill) to NW on opposite side of Koputaroa Stream. Foreground riparian vegetation along stream. Other middle-ground trees and hedge rows. New realigned section of Waihou Road between property and highway.	mod	Proposed deep area of tall forest planting and wet forest planting will screen and buffer highway to W and NW Proposed tall screen planting will soften longer views along alignment to S. Proposed avenue of trees on local road will further filter views. Will reduce effects to *low-mod*.
3962459	604	32 McDonald Road	90m	House appears oriented NE to garden setting. Highway will be almost at grade (<1m fill). Outlook towards highway to W. Foreground trees. Middle-ground trees will limit long views along highway curve to N and SW. New realigned section of Waihou Road will be closer (50m) and pass just outside the edge of the garden. (Highway will bisect larger property).	high designation	Proposed deep area of tall forest planting and wet forest planting will screen and buffer highway to W and NW. Proposed tall screen planting will soften longer views along alignment to

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						S. Proposed avenue of trees on local road will further filter views. House will nevertheless be close to highway. Will reduce effects to *mod-high*.
7814503	567	212 Arapaepae Road North	340m	House appears oriented NW away from alignment. Outlook to nearest section of the highway to SE – middle-ground house and trees. Highway will curve into more distant NE outlook (>400m). Middle-ground shelter hedging.	low-mod	
7814503	567	152 Waihou Road	330m	House appears to have been removed.		
6792138		153 Waihou Road	340m	House orientation unclear. Enclosed by trees and sheds. Highway will be to E, curving into the more distant N outlook. Foreground trees, shed, and shelter belt hedge to E of house will screen nearest section of highway. Foreground trees to N. Middle-ground trees and buildings.	low	
6632953	568	151 Waihou Road (new house)	210m	House appears oriented NW. Shelter belt hedge to E of house will screen nearest section of highway. But highway will curve into the more distance N outlook from house. Some middle-ground trees and buildings.	mod	Proposed tall screening planting on near batter of highway will soften highway to E and NE. Proposed tall forest restoration will soften more distant view of highway alignment and screen roundabout to

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						N. Will reduce effects to *low-mod*.
3907025	585	132 Waihou Road	110m	Orientation unclear. Outlook to E toward highway and is it curves around into the house's N outlook. Highway largely at grade. Some foreground trees, and middle-ground shelterbelts to N.	high Waka Kotahi	Proposed tall screening planting on near batter of highway will soften highway to E and NE. Proposed tall forest restoration will soften more distant view of highway alignment and screen roundabout to N. Will reduce effects to *mod-high*.
3945648	619	120 Waihou Road	0m	Within highway footprint	removal Waka Kotahi designation	
3979554	586	101 Waihou Road	0m	Within highway footprint	removal Waka Kotahi designation	
3772361	570	85 Waihou Road	0m	Within highway footprint	removal designation	
3933006	566	75 Waihou Road	0m	Within highway footprint	removal [designation]	
3747364	561	63 Waihou Road	0m	Within highway footprint	removal Waka Kotahi designation	
3939745	555	45 Waihou Road	0m	Within highway footprint	removal designation	

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
3858132	599	118 Waihou Road	90m	House appears oriented N, E and W to garden setting. Outlook to NW along curving alignment. Highway will be close and at grade opposite house. Some foreground trees. New local road (Waihou Road realignment) will run between house and highway, and may require removal of shelter belt trees. (Highway footprint will occupy large portion of wider property beyond house curtilage)	high designation avoids house but crosses property	Proposed tall screen planting on near batter will soften highway. Foreground avenue along local road will further buffer and filter views. Proposed tall forest restoration will screen longer views along highway to NW. Will reduce effects to *mod-high*.
4000017	597	106 Waihou Road	160m	House appears oriented NE and NW towards alignment. Highway will be close to grade on opposite side of Waihou Road. Some foreground trees. Middle-ground trees will soften oblique views along alignment to SW and NE.	mod-high	Proposed tall screen planting will soften view of highway to W and longer oblique views along highway to NW and SW. Proposed foreground avenue of trees on new link road will further buffer highway and filter views. Will reduce effects to *mod*.
3941063	595	100 Waihou Road	160m	House appears oriented N and E. Outlook to W towards alignment. Highway will be on opposite side of Waihou Road. Some foreground trees. Middle-ground trees will screen oblique views along alignment to SW.	mod-high	Proposed tall screen planting will soften highway to W. Proposed foreground avenue of trees on

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						Waihou Road (within designation) will further buffer highway and filter views. Will reduce effects to *mod*.
3973773	593	92 Waihou Road	110m	House appears oriented to NW towards alignment. Highway will be relatively close, and on low fill (approximately 1m) on opposite side of Waihou Road. Open outlook to nearest part of highway. Foreground and middle-ground trees will screen oblique views along alignment to SW.	high	Proposed tall screen planting will soften highway to W. Proposed foreground avenue of trees on Waihou Road (within designation) will further buffer highway and filter views. Will reduce effects to *mod-high*.
4012310	589	82 Waihou Road	50m	House appears oriented to NW towards alignment. Highway will be on low fill (approximate 1m – 1.7m) on opposite side of Waihou Road. Open outlook to nearest part of highway and oblique views to north. Foreground trees will screen oblique views along alignment to SW.	very high	Proposed tall screen planting will soften highway to W. Planting area is approximately 17m deep opposite house. Proposed foreground avenue of trees on Waihou Road (within designation) will further buffer highway and filter views. Will reduce

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						effects to *mod-high*..
3866550	584	70 Waihou Road	110m	House appears oriented to garden setting. Highway will be close but on opposite side of Waihou Road. Highway will be close to grade. Foreground trees surrounding garden. Middle-ground trees and houses will reduce oblique views along alignment.	mod-high	Proposed tall screen planting will soften and screen highway to W. Proposed foreground avenue of trees on Waihou Road (within designation) will further buffer and filter views. Will reduce effects to *mod*.
7357977	575	54 Waihou Road	80m	House appears oriented NE and NW towards alignment. Highway will be close on opposite side of Waihou Road. Foreground trees but views between trees. Highway will be close to grade.	high	Proposed tall screen planting will soften and screen highway to W, and oblique views along highway to N and SW. Planting area is to be approximately 30m deep opposite house. Proposed foreground avenue on Waihou Road (within designation) will further buffer and filter views. Will reduce effects to *mod*.
6876726		42 Waihou Road	80m	House orientation unclear. Highway will be close.	high	Proposed tall screen planting will

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				Foreground trees and sheds. Highway will be close to grade.		soften and screen highway to W and longer views along alignment to N and SW. Planting is to be approximately 30m deep opposite house. Proposed foreground avenue of trees on Waihou Road (within designation) will further buffer and filter views. Will reduce effects to *mod*.
3774706	638	40 Waihou Road	90m	House appears oriented W in direction of alignment. Highway will be close and near grade. Open outlook. Some foreground trees will restrict views along alignment to the N.	high	Proposed tall screen planting will soften and screen highway to W and longer views along alignment to N and SW. Planting is to be approximately 40m deep opposite house. Will reduce effects to *mod*. (Opportunity to plant additional specimen foreground trees within designation to

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						further filter views (increase perspective depth).
4013377		197 Arapaepae Road North	410m	House appears oriented NE. Highway will be in farmland to SE on opposite side of SH57. Some potential distant views (>500m) to interchange to NE. Foreground trees buffer from existing SH57. Middle-ground glasshouses, chicken farm, hedgerows, trees.	low	
3882014	559	190 Arapaepae Road N	300m	House appears oriented NE and NW way from alignment. Highway will be in farmland to SE 'behind' house. Foreground sheds and glasshouses. Some middle-ground trees.	low Waka Kotahi	
3861775	551	186 Arapaepae Road N	330m	House appears oriented NE and NW away from alignment. Highway will be in farmland to SE 'behind' house. Foreground trees and buildings. Middle-ground shelter belts will compartmentalise view. Middle-ground chicken farm buildings will screen views to E and N.	low-mod	
3935418		187 Arapaepae Road N	380m	House appears oriented NE and NW away from alignment. Highway will be in farmland to SE on opposite side of SH57. Foreground trees buffer between house and existing highway. Middle-ground buildings and trees. Trees and buildings in oblique views along alignment to NE and S.	low	
4016934	549	176 Arapaepae Road N	320m	House orientation unclear. Highway will be on low fill in farmland to E. Foreground trees will screen views to SE and S along alignment. Buildings and shelter belts will screen views to NE and N. Middle-ground trees to E in direction of highway (i.e. views will be compartmentalised).	low	

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
4018565	552	174 Arapaepae Road N	210m	House appears oriented NE and NW away from alignment. Highway will be infarmland to SE. Some foreground trees. Some middle-ground trees. Some trees in oblique views along alignment to S. Trees and chicken farm buildings will reduce oblique views to NE (i.e. views will be compartmentalised).	mod	Proposed tall screen planting will soften highway to E. Proposed additional groups of specimen trees will further filter views. Will reduce effects to *low-mod.*
3828126	546	170 Arapaepae Road N	240m	House appears oriented NE away from alignment. Highway will be in in farmland to SE. Some foreground trees. Some middle-ground trees. Open outlook in oblique views along alignment to S. Trees and chicken farm buildings will reduce oblique views to NE (i.e. views will be compartmentalised).	mod	Proposed tall screen planting will soften highway to E. Proposed additional groups of specimen trees will further filter views. Will reduce effects to *low-mod.*
4044883	541	156 Arapaepae Road N	310m	House appears oriented NE and NW away from alignment. Highway will be in farmland to SE 'behind' house. Open foreground. Middle-ground shelter trees to SE, but open oblique views along alignment to S.	low-mod	
7103090		143 (139)Arapaepae Road N	380m	House appears oriented NE. Highway will be in open cropping land on opposite side of SH57. Highway will be at grade. Reasonably distant. Some foreground trees. Trees and buildings will limit oblique views along alignment to NE and S.	low	
6821253	515	114 Arapaepae Road North	260m	Visitor accommodation (Annandale Manor B & B). Highway will be on low fill (approximately 1.5m-2m) sin farmland to SE. Foreground	low-mod	

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				trees and shed. Middle-ground orchard and shelter belt hedging.		
6838622	517	108 Arapaepae Road North	230m	House appears oriented NE to garden setting. Highway will be on low fill in farmland to SE. Foreground trees and shed. Middle-ground orchard and shelter belt hedging.	low-mod	
3786974		105 Arapaepae Road North	360m	House appears oriented to garden setting. Highway will be to SE on opposite side of SH57. Foreground trees and garden vegetation. Middle-ground trees, buildings, orchard and shelter belts on opposite side of Arapaepae Road.	low	
3782643	516	98 Arapaepae Road N	130m	House appears oriented N, but also with outlook to SE towards alignment. Highway will be on low fill. Foreground trees and neighbouring house. Middle-ground trees and hedgerows will limit oblique views to NE.	high designation avoids house but crosses property	Proposed high screen planting on west side batter will soften highway. Potential for additional specimen trees (within designation) to further filter views. Will reduce effects to mode
4026630	514	96Arapaepae Road North	70m 210m	Rear house on property. Appears oriented NE and SE. Highway will be on low fill (approximately 2m) and close and in open outlook. House is within designation. Front house on property. Appears oriented NE. Highway will be on fill embankment (approximately 2m-3m) in open farmland to SE. Foreground buildings and trees will limit views to E and NE, but open outlook to SE and S.	very high designation mod-high	Proposed high screen planting on west side batter will soften highway. Potential for additional specimen trees (within designation) to further filter views. Will reduce effects to *high* for rear house and *mod* for front house.

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
3782824	513	88 Arapaepae Road N	240m (380m to overbridge)	Appears oriented NE and NW. Highway will be on fill in open farmland to SE. Foreground shed and trees. Middle-ground trees and buildings will limit oblique views along alignment to NE and S.	mod	Proposed tall screen planting will soften highway to SE. Proposed tall forest restoration associated with large stormwater, and tall screen planting on bridge ramps, will soften overbridge to S. Will reduce effects to *low-mod*.
4027654	510	86 Arapaepae Road North	230m (330m to overbridge)	House appears oriented NE and SE – the latter towards alignment. Highway will be almost at grade in farmland to SE. Some foreground trees and sheds, but otherwise open outlook. Outlook also to overbridge to S. Middle-ground trees and buildings will limit oblique views along alignment to S and also NE. (Highway cuts across rear corner of property). There appears to be secondary dwelling. A little closer to alignment (210m) than main house but appears to be oriented to NE and outlook screened to greater extent by boundary hedging.	mod low-mod	Proposed tall screen planting will soften highway to SE. Proposed tall forest restoration associated with large stormwater, and tall screen planting on bridge ramps, will soften overbridge to S. Will reduce effects to *low-mod*.
7394754		89 Arapaepae Road North	340m	House appears oriented to garden setting, including to SE towards alignment. Highway will be to SE on opposite side of Arapaepae Road. Foreground trees enclosing garden. Middle-ground trees and buildings on opposite side of road.	low	

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
7394753		85 (83) Arapaepae Road North	300m	House appears oriented NE. Highway will be to SE on opposite side of Arapaepae Road. Foreground hedging. Middle-ground trees and buildings on opposite side of road.	low	
6527808	509	74 Arapaepae Road N	120m (230m to overbridge)	House appears oriented NE to garden. Highway will be close to grade in flat farmland to SE. Foreground shed and planting. Outlook to S toward overbridge. Middle-ground hedges will limit oblique views along alignment to NE. Rated *high* because of close proximity (25m) of stormwater ponds and associated works in conjunction with proximity to highway and views of overbridge. .	high designation avoids house but crosses property	Proposed tall forest restoration planting around foreground stormwater wetland will soften and screen views to nearest part of highway and to overbridge to S. Tall screen planting will further soften overbridge and oblique views along alignment to N. Will reduce effects to *mod.*
3818705		73 Arapaepae Road North	350m	House appears oriented NW away from alignment. Highway will be to SE on opposite side of SH57. Foreground commercial building. Middle-ground trees and buildings. Oblique view to S to new roundabout on Arapaepae Road (200m) and overbridge (Q5)..	mod	Proposed tall forest restoration planting around foreground stormwater wetland, and tall screen planting along batters will soften highway and overbridge. Will reduce effects to *low-mod*.

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
3943778	504	48 Arapaepae Road North	0m	House within Ō2NL footprint for Queen Street overbridge.	removal designation	
3800338		29 Arapaepae Road North	210m	House appears oriented NE away from alignment. Highway will be to SE on opposite side of SH57. Potential outlook to new Queen Street roundabout on Arapaepae Road (100m) and Queen Street overbridge (300m). Assessed as low because of foreground hedging (buffer with existing highway). Would score mod-high if hedging were to be removed to construct roundabout.	low	
3943905		25 Arapaepae Road North	180m	House appears oriented NE away from alignment. Highway will be to SE on opposite side of SH57. Potential views to Queen Street overbridge. Assessed as low because of foreground trees and buffer planting from existing highway. Would score mod-high if hedging were to be removed to construct roundabout.	low	
3851320		24 Arapaepae Road North	120m (320 to overbridge)	House appears oriented NW and SE. Highway will be close to grade in farmland to SE 'behind' house. Overbridge (Q5) will be across open farmland to NE. Some foreground trees to N and E.	mod-high	Proposed tall screen planting on batters will soften highway including long views to NE and S. Proposed tall forest restoration around large stormwater wetland will buffer and screen nearest part of highway to SE. Tall screen planting on batters will soften overbridge. Will reduce

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						effects to *mod*.
7193392	481	20 Arapaepae Road North	110m	House appears oriented NW away from alignment, but open outlook to SE 'behind' house. Highway will be close to grade in open farmland to SE. Intervening shelter trees likely to be removed. Outlook will include Queen Street East pedestrian overbridge to the S, works for Ō2NL stormwater pond close to house (approximately 40m) and the Q5 overbridge to NE.	high	Proposed tall screen planting on batters will soften highway including long views to NE and S. Proposed tall forest restoration around large stormwater wetland will buffer and screen nearest part of highway to SE. Tall screen planting on batters will soften overbridge. Will reduce effects to *mod*.
7283062		679 Queen Street Representative of 8 nearest villas in Masonic Village nearest SH57	160m	Villas appear oriented to N and W internally to retirement village and away from alignment. Highway will be to SE on opposite side of Arapaepae Road. Outlook will include Queen Street East pedestrian overbridge. Highway itself will be reasonably distant. Foreground fences and buffer planting along verge of existing SH57. Ō2NL stormwater pond will soften views.	mod	Proposed planting (including tall forest restoration) around large stormwater wetland, and ecological offset area S of Queen Street East will buffer and screen highway opposite village. Tall screen planting will soften longer views along highway to overbridge to

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
						NE. Will reduce effects to *low-mod.*
3854387	480	1009 Queen Street	0m	House is within highway footprint	removal designation	
7919698	490	1015 Queen Street	0m	House is within highway footprint	removal Waka Kotahi designation	
7812630		1033 Queen Street	150m	House appears oriented NE and NW. Highway will be in open farmland to NW. Queen Street East pedestrian overbridge will be in middle-ground to W. Queen Street realignment will wrap around property approximately 130m to the E. Outlook will include Q5 overbridge to N (360m). Will be enclosed by highway related roads on three sides. Foreground vegetation and shed. Middle-ground trees, shelter belts, bush will limit oblique views along alignment.	high	Proposed restoration planting will soften highway. Proposed tall screen planting type will soften Q7 overbridge. Will reduce effects to *mod-high*. Opportunity to plant additional middle-ground trees as part of a bespoke plan to filter views.
4000960	615	1051 Queen Street East	340m (40m)	House appears oriented NW towards alignment. Highway will be reasonably distant in open farmland. Foreground trees will frame views. However, realigned Queen Street will cross property and curve around at approximately 40m – 50m from house in middle of outlook.	very high	Will require bespoke landscape plan to re-establish boundary vegetation and additional garden trees to soften and screen views and create some perspective depth.
7795377		1063 Queen Street East	440m (150m)	House appears oriented NW. Highway itself is reasonably distant and will be well screened.	mod	Proposed tall screen planting type

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				However, realigned Queen Street will curve around at approximately 150m to SW and NW. Foreground trees and buildings and intervening neighbouring properties will soften views.		will soften views of overbridge to NW. Landscape design for neighbouring property (see above re 1051 Queen Street) will benefit this property as well.
7795376		1065 Queen Street East	450m (50m)	House orientation unclear. Garden setting to N and E. Highway alignment is reasonably distant. However, realigned Queen Street will curve around at approximately 50m to S and W. Foreground trees will soften views. Works may remove some vegetation.	mod-high	Will require bespoke landscape plan to re-establish boundary vegetation. Landscape design for neighbouring property (see above re 1051 Queen Street) will benefit this property as well.
7314723		1071 Queen Street	320m (200m)	House appears oriented NE away from alignment. Highway will be to NW. Foreground shelter belt hedging. Realigned Queen Street will be closer (200m) and potential views of overbridge (320m).	mod	Proposed tall screen planting on batters will soften potential views of overbridge. Will reduce effects to low-mod
3811785		1081 Queen Street	600m (150m)	House appears oriented NW towards highway alignment. Highway will be distant and well screened. Realigned Queen Street will also be screened by separated by intervening properties.	low	
7392549		73 Wakefield Road	260m	House appears oriented to NE and NW. Open outlook to highway alignment to NW.	mod	Proposed tall screen planting will

Property[32]	ID[33]	Address	Distance[34]	Description	Degree	Mitigation[35]
				Highway will be on low fill in open farmland. Middle-ground trees and hedging restricts oblique views along alignment to N and SW.		soften highway to NE. Proposed groups of specimen trees outside SUP will further filter views. Width of planting will screen and buffer oblique views along alignment to N. restoration type planting will soften highway. Will reduce effects to *low-mod.*
7392550		73A Wakefield Road	360m	House appears oriented NE. Highway will be on low fill in open farmland to NW. Middle-ground trees and hedging Trees and shelter belt hedging in intervening area	low-mod	
6549224		71 Wakefield Road Representative of 18 properties in Wakefield Road	430m	House appears oriented NE and NW. Highway alignment is to NW in flat farmland. Views of highway and the realigned Queen Street will be distant and softened by shelter belts, amenity trees, and houses on intervening properties.	low	

Levin-Koputaroa (Queen Street East to Tararua Rd)

Property	ID	Address	Distance	Description	Degree	Mitigation
3858261	479	1024 Queen Street East 'Ashleigh'	110m	House appears oriented NE and NW to garden setting. Highway will be at grade approximately 40m-50m W of garden. The highway will be close, and the highway and overbridge will be adjacent to two sides of the property but will be well screened from house by existing garden. The Queen Street East overbridge or pedestrian overbridge will to NW of property – ramps are likely to extend partly in front of property on opposite side of road. Well-treed foreground setting will restrict views although will be visible from parts of grounds including the gateway. The overbridge options will change the wider setting and the historical relationship of Ashleigh to Queen Street.	mod-high	Proposed tall screen restoration planting between garden and highway will provide additional buffer to existing screening. Proposed tall screen planting will soften long views to N. Tall screen planting on batters will soften views of the overbridge options. Will reduce effects to *mod*.
4020563	1001	1046 Queen Street East	260m (110m)	House appears oriented NE and NW toward highway alignment and proposed realigned section of Queen Street. Highway will be reasonably distant to NW beyond intervening homestead garden and bush. Clearer views to N and NE along realigned section of Queen Street East including distant views (500m) of the Q5 Queen Street overbridge. Traffic (including vehicle lights) on realigned Queen Street East will be oriented toward house. Foreground	low	

Property	ID	Address	Distance	Description	Degree	Mitigation
				planting will soften views to N and NE.		
3754751		1052 Queen Street East	340m (80m)	House appears oriented NE and NW. Highway alignment is to NW, quite distant, and beyond Ashleigh garden. Foreground houses and trees to NW will further soften views. However, house has outlook to realigned Queen Street East to NE (approximately 80m) including intersection with stub street. Traffic (including vehicle lights) on realigned Queen Street East will be oriented toward house.	mod-high	Will require bespoke plan to intercept sightlines along realigned Queen Street East and new intersection.
6732995		1060 Queen Street East	410m (40m)	Undeveloped lot. Highway alignment is to NW, quite distant, and beyond homestead garden and bush. Houses and trees on neighbouring properties will further soften views. Outlook to realigned Queen Street to N (approximately 40m) including intersection with stub street. Traffic (including vehicle lights) on realigned Queen Street will round bend opposite the property.	mod	Will require bespoke plan to intercept sightlines along realigned Queen Street East and new intersection.
7155228		1068 Queen Street East	470m	Undeveloped lot. Highway alignment is to NW, quite distant, and beyond homestead garden and bush. Houses and trees on neighbouring properties will further soften views. Realignment of Queen Street commences in front of property (i.e. property is at the end of the curve where the realigned Queen Street meets the existing alignment. Little change	low	

Property	ID	Address	Distance	Description	Degree	Mitigation
				with respect to this property.		
4065474		1070 Queen Street East	540m (70m)	House appears oriented NE. Highway alignment is to NW, distant, and beyond homestead garden and bush. Houses and trees on neighbouring properties will further soften views. No changes in front of property with respect of realigned section of Queen Street. Intervening properties will screen and soften views of the realignment.	low	
3781759		1040 Queen Street East Representative of 4 properties in NW of Redwood Grove area (1040 Queen Street East and 20, 22, 26 Redwood Grove	280m	House appears oriented NE and NW toward alignment. Highway alignment is to NW beyond intervening homestead garden and bush. Foreground planting. Vegetation and houses on neighbouring properties will limit and soften views to realigned section of Queen Street to the N.	low	
6732996		11 Redwood Grove Representative of 3 properties in NE of Redwood Grove area (11, 15, 21 Redwood Grove	420m (110m)	House appears oriented NW toward alignment. Highway will be to NW, quite distant, and beyond intervening homestead garden and bush. Foreground houses and trees to NW will further soften views. Realigned section of Queen Street (including intersection with Queen Street stub) will be to N. Intervening neighbouring properties will soften views of realignment.	low	
3799095		32 Redwood Grove	280m	House appears oriented NW toward alignment. Highway will be in open	mod	Proposed tall screen planting (between SUP

Property	ID	Address	Distance	Description	Degree	Mitigation
		Represents 5 properties in SW of Redwood Grove area 32, 36, 38, 42A and 42B Redwood Grove.		farmland to W. Stand of bush screens oblique views along alignment to NW. Foreground shelter belt planting. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce potential adverse effects to 'very low').		and highway) will soften highway. Will reduce effects to *low-mod*
7704504		43 Redwood Grove Represents 6 properties in SE of Redwood Grove area, 27, 31, 37, 39, 43, 43A Redwood Grove.	400m	House appears oriented N and W. Highway will be in open farmland to W. Foreground vegetation. Middle-ground lifestyle properties and hedging will further soften views.	low	
4030974		688 Queen Street East	170m	House appears oriented NE and SE. Highway will be to SE in open farmland on opposite side of Arapaepae Road. Will include view of Queen Street East pedestrian overbridge. Highway itself will be in middle-ground beyond foreground roundabout on Arapaepae Road. The Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce potential adverse effects to 'low'. The foreground roundabout at intersection of Queen Street East and existing SH57 will be more prominent but will replace existing intersection. Foreground fences and buffer planting along verge of existing SH57.	mod-high	Proposed ecological offset planting, and tall forest restoration planting around wetland north of Queen Street East, will buffer and screen highway. Planting is >100m deep. Will reduce effects to *low-mod.*

Property	ID	Address	Distance	Description	Degree	Mitigation
6835591		36 Weld Street Representative of 7 properties between 26 and 38 Weld Street	160m	Houses appear typically oriented NE, but some oriented SE towards alignment. Highway will be to SE in open farmland on opposite side of Arapaepae Road. Foreground fences and buffer planting along verge of existing SH57. Outlook will include Queen Street pedestrian overbridge. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce potential adverse effects to 'low').	mod-high	Proposed ecological offset planting, and tall forest restoration planting around wetland north of Queen Street East, will buffer and screen highway. Planting is >100m deep. Will reduce effects to *low-mod.*
3786354		7 Kirkcaldie Grove Representative of 4 properties, 5,7 & 8 Kirkcaldie Grove, and 10 Kebbell Avenue.	200m	Houses appear typically oriented NE and NW. Highway will be to SE on opposite side of Arapaepae Road and opposite side of stand of bush. Foreground fences and buffer planting along verge of existing SH57. Some longer oblique views along alignment to NE. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would prevent any oblique views past bush).	low-mod	
3805333		75 Meadowvale Drive Representative of 5 properties between 74 Meadowvale Drive and 8 Kebbell Avenue.	210m	House appears oriented NE. Others typically oriented NE and NW. Highway to SE in open farmland on opposite side of Arapaepae Road. Foreground fences and buffer planting along verge of existing SH57. Foreground low hedge on opposite side of road.	mod	Proposed tall forest restoration around large stormwater wetland will screen and buffer highway. Planting is >100m deep. Tall screen planting will soften longer views of highway

Property	ID	Address	Distance	Description	Degree	Mitigation
				Middle-ground stand of bush and shelterbelts limit potential oblique views along alignment to NE. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce adverse effects to 'very low').		to S. Will reduce effects to *low*.
3866459		12 Ngaio Street Representative of 7 properties between 4 and 15 Ngaio Street	240m	House appears oriented SE toward alignment. Other houses typically oriented NE and NW away from alignment. Highway will be to SE in open farmland on opposite side of Arapaepae Road. Foreground fences and buffer planting along verge of existing SH57. Foreground low hedge on opposite side of road. Middle-ground stand of bush and shelterbelts limit potential oblique views along alignment to NE and S. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce adverse effects to 'very low').	mod	Proposed tall forest restoration around large stormwater wetland will screen and buffer highway to E. Proposed tall screen planting will soften highway to S. Will reduce effects to *low-mod.*
3802886	440	73 Arapaepae Road South	190m	House appears oriented SE, NE, NW. Highway will be in open farmland to SE. Foreground trees and shelter belts. Middle-ground shelter belts limit oblique views to NE and S. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce adverse effects to 'very low').	mod	Proposed tall screen planting will soften highway to SE and longer views to S. Proposed tall forest restoration around large stormwater wetland will screen longer views along alignment to NE. Will reduce effects to *low-mod*.

Property	ID	Address	Distance	Description	Degree	Mitigation
3867259		105 Arapaepae Road	240m	House appears oriented NE and NW to garden setting in opposite direction. Highway will be in open farmland to SE. Foreground sheds. Middle-ground shelter belts limit oblique views to NE and S. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce adverse effects to 'very low').	mod	Proposed tall screen planting will soften highway to SE and longer views to S. Proposed tall forest restoration around large stormwater wetlands will screen longer views along alignment to NE, and towards Tararua Road interchange to S Will reduce effects to *low-mod*.
3814078	443	131 Arapaepae Road	80m	House appears oriented NE and NW to garden setting. Highway will be just to NW of hedge defining edge of garden. Foreground garden trees and hedging. Alignment bisects property and severs access from Arapaepae Road	very high designation	Proposed tall screen planting will soften highway to NW. Proposed tall screen planting will soften Tararua Road interchange to S. Will reduce effects but highway will remain close. Will reduce effects to *high.* Opportunity for additional foreground trees (within designation) to further filter views.
3974909	441	133 Arapaepae Road	30m	House appears oriented NW. Highway will be immediately adjacent. Earthworks will encroach into garden adjacent to house. Alignment bisects property. House likely to require removal.	very high (removal) designation	Proposed tall screen planting will soften highway. Tall forest restoration around large stormwater wetland will screen and buffer Tararua Road interchange to S. Will help mitigate effects, however,

Property	ID	Address	Distance	Description	Degree	Mitigation
						house will remain very close to highway.
6939280		7 Fullers Close (representative of Rangeview Villas retirement units of which 7 are on Arapaepae Road perimeter)	290m	Retirement Village. Units appear oriented NW and NE. Highway will be in open farmland to SE, beyond rear boundaries and on opposite side of Arapaepae Road. Foreground buffer strip of planting between rear boundaries and existing SH57. Shelter belts parallel to views on opposite side of road restrict oblique views. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce adverse effects to 'very low').	low-mod	
7021407		22 Fuller Close (representative of 16 properties between 22 Fuller Close and 31 Strathmore Avenue)	290m	Houses appear typically oriented NE, N and NW. Highway will be in open farmland to SE, beyond rear boundaries and on opposite side of Arapaepae Road. Foreground sheds commonly adjacent to rear boundaries. Foreground planting along Arapaepae Road verges to buffer properties from existing highway. Some middle-ground hedging, buildings, and trees. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce adverse effects to 'very low')	low-mod	
3840755		53A Strathmore Avenue (representative of 12 properties	300m	House oriented NE. Others typically oriented N, NE and NW. Highway will be in open	low-mod	

Property	ID	Address	Distance	Description	Degree	Mitigation
		33-53A Strathmore Avenue		farmland to SE beyond rear boundaries and on opposite side of Arapaepae Road. Foreground fences and planting along Arapaepae Road verges to buffer properties from existing highway. Some middle-ground trees. Middle-ground houses reduce potential oblique views along alignment to NE and S. Distant (>500m) glimpses of interchange to S. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce adverse effects to 'very low')		
4062669		172 Arapaepae Road	270m	House appears oriented W, N, and E. Highway will be approximately 300m away on opposite side of Arapaepae Road in open farmland. Foreground trees screening garden from existing highway. Some middle-ground trees in farmland will soften views Northbound on ramp of Tararua Road Interchange will be a little closer (270m). (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area which would reduce adverse effects to 'very low') Potential construction yard 170m to E would further add to visual effects during construction but would be seen against backdrop of greater	mod	Proposed tall forest restoration around large stormwater wetland, and tall screen planting on batters of Tararua Road interchange will soften highway. Will reduce effects to *low-mod*.

Property	ID	Address	Distance	Description	Degree	Mitigation
				works associated with Ō2NL highway and interchange.		
3760580	413	185 Arapaepae Road	140m	House appears oriented N and W away from highway. Highway will be in open farmland to E 'behind' house (200m) but behind the northbound on ramp of Tararua Road interchange (140m). Oblique views along highway to NE. Interchange roundabouts and bridge will be elevated approximately 230m to SE. Open outlook – some foreground sheds, and shelterbelt to NE. Large property that will be bisected by highway. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area. Such development would reduce adverse effects to 'low'). Potential construction yard in foreground 30m to E would further add to visual effects (would increase to very high) during construction. As above, the site is within Tara-Ika urban development area.	high	Proposed tall screen planting on batters of Tararua Road interchange to S and tall forest restoration around large stormwater wetland to E will soften and buffer highway. Will reduce effects to *mod-high*.
3821329		205 Arapaepae Road	120m	House appears oriented NW in opposite direction. Tararua Road Interchange will be in open farmland to E and SE 'behind' house. Main highway will be at 250m behind and screened by northbound on-ramp. Roundabout and on-ramp will be closer (120m) and elevated. (Intervening	high	Proposed tall screen planting on outside batter of ramp will soften highway and interchange roundabouts and overbridge. Will reduce effects to *mod-high*.

Property	ID	Address	Distance	Description	Degree	Mitigation
				area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area. Such development would reduce adverse effects to 'low'). Potential construction yard identified approx. 100m to E will add to visual effects during construction. However, will be seen against backdrop of greater works of Ō2NL highway and interchange.		
3922604		189 Tararua Road	120m	House on intersection of Tararua and Arapaepae Roads. Appears oriented N. Outlook to E towards Tararua Road Interchange in open farmland. Some foreground trees and shed. Main highway will be at 250m behind and screened by northbound on-ramp. Roundabout and on-ramp will be closer (120m) and elevated. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area. Such development would reduce adverse effects to 'low'). Potential construction yard identified approx.100m to E will add to visual effects during construction. However, will be seen against backdrop of greater works of Ō2NL highway and interchange.	high	Proposed tall screen planting on outside batter of ramp will soften highway and interchange roundabouts and overbridge. Will reduce effects to *mod-high*.
3762394	419	249 Tararua Road	200m	House appears oriented NE and NW. Potential views to highway in open paddocks to W	high	Proposed tall screen planting on outside of ramps will soften

Property	ID	Address	Distance	Description	Degree	Mitigation
				and NW. Foreground hedging. Main highway will be at 270m behind Tararua Road Interchange south-bound off-ramp. Oblique views along main alignment to the N. Interchange roundabout and on-ramp will be closer (170m) and elevated. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area. Such development would reduce adverse effects to 'low').		views of highway, roundabout, and Tararua Road overbridge. Will reduce effects to *mod-high*. Proposed additional groups of middle-ground trees (within designation) will further filter views.
3982960	439	257 Tararua Road	300m	House appears oriented N and W. Potential views to highway in open paddocks to W and NW. Foreground shelter belt hedges. Middle-ground trees, shelterbelts and buildings. Main highway will be at 410m behind Tararua Road Interchange south-bound off-ramp. Roundabout and ramp will be closer (300m) and elevated but partially screened by middle-ground houses and vegetation. (Intervening area is to be zoned for urban development under proposed PC4 Tara-Ika Growth Area. Such development would reduce adverse effects to 'very low').	low-mod	
7303606		279 Tararua Road	570m to interchange. 600m to main alignment	House appears oriented N. Highway in open farmland to NW. Foreground trees to NW. Trees and buildings to W toward interchange.	low	

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Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
3824629		246Tararua Road	170m (roundabout)	House appears oriented N and W. Glimpses NW to interchange. 170m from interchange roundabout and 270m from main highway. Middle-ground shelter belt. Oblique outlook along alignment over open fields to S. Buffered by local road.	mod-high	Proposed tall screen planting will soften interchange and overbridge. Proposed middle-ground restoration planting will further soften ramps. Proposed foreground avenue along new local road will further filter views. Will reduce effects to *mod.*
4004786	403	198 Tararua Road	0m	House is within footprint of stormwater wetlands.	removal designation	
3901766	1007	174 Tararua Road	300m (off ramp)	House appears oriented NE and NW to garden setting. Views to SE across open farmland to highway in cut and offramps/interchange. Some middle-ground buildings and hedgerows.	mod	Proposed middle-ground stormwater ponds and restoration planting on outside of ramps will soften interchange and help screen main alignment. Will reduce effects to *low-mod*
4022991		29 Garth Road	350m (to off-ramp)	House appears oriented SE in direction of highway. Outlook over open fields to highway in cut and interchange. Middle-ground vegetation limits oblique views along alignment to S.	mod	Proposed tall forest and other restoration planting around large stormwater ponds, and tall screening planting on outside of ramps to NE, will screen and buffer highway and Tararua

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
						Road interchange. Tall screen planting will soften more distant views along alignment to S. Will reduce effects to *low-mod*
3821328	392	247 Arapaepae Road South	0m	Within footprint	removal designation	
267583 [7207848]		249 Arapaepae Road South	170m	House orientation unclear. Foreground trees to SE in direction of highway. Outlook over open fields. Large stormwater pond on near side of highway.	mod-high Waka Kotahi	Proposed tall forest restoration around large stormwater wetland will soften view to highway to SE and, in conjunction with tall screen planting around interchange, will screen and buffer Tararua Road interchange. Proposed tall screen planting will soften more distant views along alignment to S. Will reduce effects to *mod*
3798794	379	271 Arapaepae Road South	200m	House appears oriented N and W in opposite direction. But outlook from rear garden across open fields to highway in shallow cut, and NE to interchange (>600m). Shelter belts S of house will screen oblique views along alignment in that direction.	mod-high	Proposed tall screen planting will soften nearest section of highway. Proposed tall forest restoration around large stormwater wetland and tall screen planting on batters will screen and buffer Tararua Road interchange to

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
						NE. Will reduce effects to *mod*
3978235		286 Arapaepae Road South	380m	Orientation unclear. Glimpses likely to be screened by foreground trees, and shelterbelts on opposite side of Arapaepae Road and beyond.	low	
3771436	359	290 Arapaepae Road South	380m	Orientation unclear. In heavily treed setting. Glimpses likely to be screened by foreground trees, and shelterbelts on opposite side of Arapaepae Road and beyond.	low	
4039038	365	307 Arapaepae Road South	170m	House appears oriented N, W and E. Outlook to SE across open farmland to highway in shallow cut. Some foreground sheds, and shelter belt to NE that would interrupt oblique views along the alignment in that direction.	mod-high	Proposed tall screen will soften highway to SE. Proposed tall screen restoration will soften more distant views along alignment to S. Will reduce effects to *mod*.
3873393	367	313 Arapaepae Road South	100m	House appears oriented NW in opposite direction, but outlook to SE across open farmland to highway in shallow cut. Some foreground sheds and trees.	high	Proposed tall screen will soften highway to SE. Proposed tall screen restoration will soften more distant views along alignment to S. Will reduce effects to *mod-high*. Opportunity for additional foreground groups of specimen trees (within designation) to further filter views.

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
3882904	344	312 Arapaepae Road South	330m	House appears oriented NW and W in opposite direction. Glimpses SE to highway in shallow cut. Foreground trees and Arapaepae Road. Middle-ground trees and buildings.	low	
3777495	358	315 Arapaepae Road	200m	House appears oriented E. Highway will be across open farmland to E. Middle-ground buildings and trees limit longer views along alignment to NE and S.	mod-high Waka Kotahi	Proposed tall screen will soften highway to SE. Proposed tall screen restoration will soften more distant views along alignment to S. Will reduce effects to *mod*
3861709	356	321 Arapaepae Road	200m	House appears oriented to garden setting to N. But open outlook to E towards highway. Middle-ground buildings and trees limit longer views along alignment to NE and S.	mod-high Waka Kotahi	Proposed restoration type planting will soften highway. Will reduce effects to *mod*.
6612312	338	324 Arapaepae Road	280m	House appears oriented N and E. Highway will be in farmland on opposite side of Arapaepae Road. Foreground trees. Middle-ground trees and buildings on opposite side of road.	low Waka Kotahi	
6612311	334	326 Arapaepae Road	330m	House appears oriented N and E. Highway will be in farmland on opposite side of Arapaepae Road. Fore-ground trees. Middle-ground trees and buildings on opposite side of road. Waka Kotahi owned	low Waka Kotahi	
3884839	329	334 Arapaepae Road South	300m	House appears oriented NE and NW in opposite direction. Glimpses of highway in shallow cut beyond other side of Arapaepae Road. Middle-	low-mod	

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
				ground trees, shelter belts and sheds.		
6721357	406	273D Kimberley Road	400m	House appears oriented NE. Views to closest part of highway to NW screened by foreground hedges and neighbouring house, and buffered by local road. Oblique views across open farmland along alignment and to interchange to N. (>800m)	low	
6721358	395	273E Kimberley Road	340m	House appears oriented NE. Views to closest part of highway to NW screened by foreground hedges. Oblique views across open farmland along alignment and to interchange to N. (>800m)	low	
6721355	396	273B Kimberley Road	380m	House appears oriented N and W. Views s to highway across open cropping land to W and NW. Foreground and middle-ground trees and sheds. .	low-mod	
6721354	393	273A Kimberley Road	390m	House appears oriented N and W. Views to highway across open cropping land to W and NW. Foreground planting and middle-ground trees and sheds. .	low-mod	
7928900		269 Kimberley Road	350m	House appears oriented NE. Views s of highway to NW. Middle-ground trees will limit most views, and screen oblique views along alignment to N and SW.	low-mod	
3979375	382	259 Kimberley Road	290m	House appears oriented N and W to garden setting. Partial views to highway across open cropping land to NW. Foreground trees and shelter belts.	mod	Proposed tall screen planting will soften highway. Proposed avenue of trees along local road will further filter views. Will

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
						reduce effects to *low-mod*.
3940891	374	237 Kimberley Road	0m	Within footprint of proposed local road.	removal designation	
3867636	380	264 Kimberley Road	330m	House appears oriented NW to garden setting. Views to highway to NW screened by foreground trees and hedges. Glimpses to N over open cropping fields. Highway buffered by new local road.	low	
6605483	372	248 Kimberley Road	220m	House appears oriented N and W. Enclosed by high hedge. Highway across open farmland to NW. Buffered by new local road. Hedge will effectively screen views.	low-mod	
6605482	363	232 Kimberley Road	0m	Within footprint.	removal Waka Kotahi designation	
3802874	354	217A Kimberley Road	80m	First dwelling accessed from Arapaepae Road. 150m from alignment. Orientation unclear. Well treed garden setting. Glimpses of highway through trees to E. Relatively close. Foreground and middle-ground trees and other buildings. (mod) Second house accessed from Kimberley Road. 80m from alignment. House appears oriented W to well-treed garden setting in opposite direction, but elevated outlook also towards highway to SE. Oblique views along alignment to NE and SW. Some	mod-high	Proposed tall screen planting will screen and buffer highway to SE and soften highway in longer views along alignment to NE and S. Will reduce effects to *mod*.

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
				foreground trees. (mod-high)		
3823151	314	194 Kimberley Road	280m	House appears oriented N and W in opposite direction. Glimpses of highway to SE on opposite side of Arapaepae Road S. Middle-ground trees and buildings. Foreground shed. Middle-ground trees and buildings.	low-mod Waka Kotahi	
6971712	300	184 Kimberley Road	370m	House appears oriented W, N and E. Distant glimpses of highway in shallow cut to SE on opposite side of Arapaepae Road S. Middle-ground trees and buildings.	low	
6971711	301	180 Kimberley Road	440m	House appears oriented N and W in opposite direction. Well-treed setting. Distant glimpses of highway to SE on opposite side of Arapaepae Road S. Substantial foreground trees. Middle-ground trees and buildings.	low	
3964926	342	353 Arapaepae Road South	100m	House appears oriented N and W in opposite direction. But understood to have outlook (including upstairs) over open farmland to Taraura Range to E in direction of highway.	high	Proposed tall screen planting will soften highway to SE and longer views along alignment to S and NE. Will reduce effects to *mod-high*.
3857340	346	361 Arapaepae Road South	80m	House appears oriented E and W. Open outlook to highway to E. Middle-ground trees and buildings limit oblique views along alignment to NE and SW.	high Waka Kotahi	Proposed tall screen planting will soften highway to SE and longer views along alignment to S and NE. Will reduce effects to *mod-high*.

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
4066371	355	363 Arapaepae Road South	80m	House appears oriented to N and W in opposite direction. Highway is in open farmland at grade behind house. Foreground sheds.	mod-high Waka Kotahi designation	Proposed tall screen planting will soften highway to SE and longer views along alignment to S and NE. Will reduce effects to *mod.*
3930010	330	366 Arapaepae Road South	130m	House appears oriented W, N and E. Highway at grade in open farmland to E. Foreground trees and buildings on opposite side of Arapaepae Road.	mod-high	Proposed tall screen planting will soften highway to SE and longer views along alignment to S and NE. Proposed foreground avenue of trees on Arapaepae Road will further filter views. Will reduce effects to *mod.*
7231412	643	372 Arapaepae Road South	120m	House appears oriented E. Highway at grade in open farmland to E on opposite side of Arapaepae Road. Some foreground hedging. Middle-ground trees. and buildings on opposite side of Arapaepae Road. Clearer glimpses to SE. .	mod-high	Proposed tall screen planting will soften highway to SE and longer views along alignment to S and NE. Proposed foreground avenue of trees on Arapaepae Road will further filter views. Will reduce effects to *mod.*
7231413	326	378 Arapaepae Road South	100m	House appears oriented N and E. Highway at grade in open farmland to E on opposite side of Arapaepae Road. Some foreground trees. Middle-ground trees on opposite side of Arapaepae Road. Buildings and trees limit longer distance views along alignment to NE and SW.	high Waka Kotahi	Proposed tall screen planting will soften highway to SE and longer views along alignment to S and NE. Proposed foreground avenue of trees on Arapaepae Road will further filter views. Will

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
						reduce effects to *mod-high*
3824987	337	379 Arapaepae Road South	0m	Within footprint	removal Waka Kotahi designation	
3998106	311	380 Arapaepae Road South	100m	House orientation unclear – possibly E and W. Well treed setting. Highway at grade on opposite side of Arapepae Road. Well treed foreground. Buildings and trees limit longer distance views along alignment to NE and SW.	mod-high Waka Kotahi	Proposed tall screen planting will soften highway to SE and longer views along alignment to S and NE. Proposed foreground avenue of trees on Arapaepae Road will further filter views. Will reduce effects to *mod*
3841156	307	390 Arapaepae Road South	100m	House appears oriented NW to well-treed garden setting. Highway is at grade cutting diagonally across paddock immediately on opposite side of Arapaepae Road. Foreground trees. Realignment of Arapaepae Road (to create new link to McLeavey Road) will encroach across corner of property and require removal of some foreground vegetation.	high Waka Kotahi	Proposed tall screen planting will soften highway to SE and longer views along alignment to S and NE. Proposed foreground avenue of trees on Arapaepae Road will further filter views. Will reduce effects to *mod-high.*
3985938	349	397Arapaepae Road S	50m (40m to new local road)	House appears oriented NE and NW. Highway will cut diagonally across paddock in front of house to NW. Views along alignment to NE and SW limited to some extent by middle-ground trees. New local road will be closer to house, but may help buffer highway. Some foreground planting.	very high designation avoids house but crosses property	Proposed tall screen planting between highway and new local road will soften highway. Proposed avenue of trees along local road will further filter views. Will reduce effects to *high.*

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
						Opportunities for foreground specimen trees and or hedgerow (within designation) to further screen or filter views.
3891024	328	401 Arapaepae Road South	0m	Within highway footprint	removal Waka Kotahi designation	
3992864	304	398 Arapaepae Road South	0m	Within footprint of realigned Arapaepae Road.	removal Waka Kotahi designation	
3809254	371	413 Arapaepae Road South	150m	House appears oriented NE. Highway is to NW in shallow cut. Some foreground planting to NW. Middle-ground trees and buildings soften longer views along alignment to N and SW.	mod-high	Proposed tall screen planting between highway and new local road will soften highway to NW and longer views along alignment to N. Proposed avenue of trees along local road will further filter views. Proposed tall forest restoration will screen and buffer the highway to the W. Will reduce effects to moderate.
3855996	313	429 Arapaepae Road South	80m	House appears oriented NE and NW to garden setting. Highway is quite close to NW and oblique views to NE along alignment. However, foreground hedging vegetation, and highway is on opposite side of Arapaepae Road. Highway will be close to grade opposite house and	mod-high	Proposed tall forest restoration will screen and buffer the highway to the W. Proposed Avenue of trees along local road will further filter views. Proposed tall screening

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
				in longer views along alignment to NE. Will be in cut in longer views along alignment to SW..		planting and avenue of trees will soften longer views along alignment to NE. Will reduce effects to *mod.*
4051300	318	435 Arapaepae Road South	150m	House appears oriented NE. Highway is to NW on opposite side of Arapaepae Road. Foreground and middle-ground trees and other buildings. Highway will be in cut opposite property and in longer views along alignment to SW.	mod	Proposed tall forest restoration will screen and buffer the highway to the W. Proposed Avenue of trees along local road will further filter views. Proposed tall screening planting and avenue of trees will soften longer views along alignment to NE. Will reduce effects to *low-mod.*
3854110	270	198 McLeavey Road	410m	House appears oriented N and W to garden setting in opposite direction. Highway will be quite distant and in box cut. Middle-ground stand of bush and neighbouring house.	low	
6922087	280	197 McLeavey Road	370m	Orientation unclear. Views to highway to E and NE across open cropping fields. Foreground buildings and trees. Middle-ground hedge rows.	low	
3823149	289	207 McLeavey Road	310m	House appears oriented NW and NE. Highway is to E and NE across open cropping fields. Middle-ground hedge rows. Arapeapae Road will be realigned to run parallel on the near side of the highway at 280m.	low-mod	

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
4039670	288	218 McLeavey Road	210m	House appears oriented NE and SE towards the highway which will cross open farmland in cut. Arapeapae Road will be realigned to run parallel on the near side of the highway in longer views along alignment to NE.	mod	Proposed low vegetation (above cut batter) and tall screen planting to NE will soften highway. Proposed avenue on realigned Arapaepae Road will further filter views. Will reduce effects to *low-mod*.
4013551	297	243 McLeavey Road	0m	In highway footprint.	removal designation	
3820517	308	437 Arapaepae Road South	110m	House appears oriented W to garden setting. Foreground trees limit views to W towards highway. Although reasonably close, the highway is in cut in terrace opposite house.	low	
4055122	309	6 Riveredge Terrace	140m	Orientation unclear. Garden setting. Although reasonably close, the highway is in box cut in terrace in views to W. Foreground trees. .	low	
3972995	306	459 Arapaepae Road South	200m	House appears oriented NW in direction of highway which is in box cut in terrace in direction of NW outlook. More open views of embankment to W. Foreground trees. Middle-ground trees limit longer distance oblique views along alignment.	low-mod	
3842201	312	465 Arapaepae Road South	210m	House appears oriented NW in direction of highway which is in box cut in direction of NW outlook, although more open views of highway on low embankment to W. Middle-ground trees limit longer distance oblique	mod	Proposed tall forest restoration, tall screen planting, and avenue of trees on local road will screen and soften longer views to

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
				views along alignment to N and SW.		N. Will reduce effects to *low-mod*.
3761941	286	476 Arapaepae Road South	50m	Appears to be shed with accommodation. Highway very close on low fill embankment to NW. Bisects property.	very-high	Proposed tall screen planting between SUP and highway, and low rehabilitation planting on outside of SUP. will soften highway. However, highway will remain very close. Opportunity for additional foreground trees or hedging (within designation) to further filter views..
3863222	293	480 Arapaepae Road South	180m	House appears oriented NE to garden setting. Outlook to NW to highway on low embankment climbing into box cut into terrace. Middle-ground trees, shelter belt, and building.	mod	Proposed tall screen planting on fill batters and top of cut will soften highway. Will reduce effects to *low-mod*.
3761949		481 Arapaepae Road South	400m	House appears oriented to NW and NE. Highway on low embankment in farmland to NW. Foreground trees. Middle-ground hedging, trees and buildings.	low	
6540856		495 Arapaepae Road South	350m	House appears oriented NW and NE. Highway on low embankment in farmland to NW. Foreground trees. Middle-ground trees and buildings.	low	
3930501	282	496 Arapaepae Road South	230m	House appears oriented NW and NE. Views to highway on low embankment to W.	mod	Proposed tall screen planting on fill batters and top of cut

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
				Middle-ground trees and buildings limit views to NW and along the alignment to the N. Alignment bisects property.		will soften highway. Will reduce effects to *low-mod*.
4008814		507 Arapaepae Road South	370m	House appears oriented to garden setting to NW, NE and SE. Highway on low embankment to W. Foreground trees and hedging. Hedging on opposite side of Arapaepae Road. Middle-ground trees and buildings.	low	
3765347		517 Arapaepae Road South	430	House appears oriented to garden setting. Highway on low embankment to NW. Foreground trees and hedging. Hedging on opposite side of Arapaepae Road. Middle-ground trees and buildings.	low	
7071192	281	514 Arapaepae Road South	250m	House appears oriented NW towards highway. Open outlook to closest part of the highway. Middle-ground trees and buildings limit views along the alignment to the N and S.	mod	Proposed tall screen planting on fill batters and top of cut will soften highway. Will reduce effects to *low-mod*.
7071193		520 Arapaepae Road South	350m	House appears oriented NW and NE to garden setting. Foreground trees and shelter vegetation. Distant views across farmland to highway on low embankment with middle-ground trees and houses..	low-mod	
4008808		523 Arapaepae Road South	450m	House appears oriented NW. Highway to NW on low embankment in farmland on opposite side of Arapaepae Road. Foreground trees. Hedging on opposite side of Arapaepae Road.	low	

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
				Middle-ground trees and buildings		
4004384		530 Arapaepae Road South	400m	House appears oriented NW and NE to garden setting. Surrounded by foreground trees and shelter vegetation. Distant views across farmland to highway on low embankment with middle-ground trees and houses.	low-mod	
3963174		284 Muhunoa East Road	520m (~420 to ramps of Muhunoa East Road overbridge)	House appears oriented NE. Distant views to highway on embankment across open farmland terrace to W and Muhunoa East Road overbridge to NW. Middle-ground trees and buildings on opposite side of road to to NW. Foreground planting.	low-mod	
3763259		265 Muhunoa East Road	340m	House appears oriented E and W to garden setting. Surrounded by foreground trees and shelter vegetation. Distant views across farmland to highway on low embankment with middle-ground trees and houses.	low-mod	
7451300	272	247(247B) Muhunoa East Road	100m	House appears oriented N and E. Outlook to highway to NW and along alignment to NE. Middle-ground trees and houses limit views along highway to SW. Outlook to W to overbridge and rampes.	high	Proposed tall screen planting on fill batters will soften highway to NE. Will reduce effects to *mod-high.*
7451302	273	247A Muhunoa East Road	40m	House appears oriented NE and NW. Highway very close immediately to NW and outlook along the alignment to NE. On low embankment. Alignment cuts across property.	very high designation	Proposed tall screen planting type on fill batters will soften highway. But highway will remain very close.
4021290	268	245 Muhunoa East Road	160m	House appears oriented N and W. Views to highway on low embankment to W	mod-high	Proposed tall screen planting on fill batters will

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
				and oblique views along alignment to N (foreground trees, middle-ground hedge and buildings). Outlook to overpass to SE (250m).		soften highway and overbridge. Will reduce effects to *mod.*
3975218	261	242 Muhunoa East Road	180m	Appears oriented NW in direction of alignment. Outlook to highway to NW (mod-high). But realignment of Muhunoa East Road to overpass ramp wraps around NW corner of property (cutting across corner of garden). Outlook along overpass ramp.	very high designation	Proposed tall screen planting on fill batters will soften overbridge but it will remain very close. New road will cut across garden. Mitigation options limited for this property.
3758611	253	223 Muhunoa East Road	0m	Within footprint	removal designation	
6559578	259	211B Muhunoa East Road	340m	House appears oriented N and E. Highway will be on low embankment across lower farmland to SE, and in cut through terrace to E. . Middle-ground trees. Middle-ground houses and trees in longer views along alignment to S.	low-mod	
6559580	262	211 Muhunoa East Road	270m	House appears oriented NW and NE to garden setting. Views to highway on low embankment to SE (middle-ground trees and shelter belts) and oblique views along alignment in shallow cut to NE with middle-ground trees and hedges.	low-mod	
3775139	256	213D Muhunoa East Road	190m	House appears oriented NW and NE away from highway. Outlook towards highway on low embankment to SE (open foreground, middle-ground trees), and oblique views along alignment in shallow cut to NE with middle-ground trees and hedges	mod	Tall screen planting type on fill batters and along top of cut will soften highway. Will reduce effects to *low-mod*.

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
3900840		213B Muhunoa East Road	100m	House appears oriented NE parallel with highway. Highway will be on low embankment to SE with long views along alignment to NE and SW including Muhunoa East Road overbridge. Some limited foreground trees to SE and along low bank.	high	Proposed tall screen planting type on fill batters and along top of cut will soften highway to SE. Proposed low rehabilitation planting and groups of taller trees on foreground spoil disposal area will further filter views to SE. Tall screen planting will soften overbridge to SW. Will reduce effects to *mod-high*.
3906109		213A Muhunoa East Road	130m	Orientation unclear. Garden setting surrounded by vegetation. Highway is to SE with oblique views along alignment to NE (middle-ground trees). More distant views to overbridge to S (foreground trees, middle-ground houses).	mod-high	Proposed tall screen planting type on fill batters and along top of cut will soften highway to SE. Proposed low rehabilitation planting and groups of taller trees on foreground spoil disposal area will further filter views to SE. Tall screen planting will soften overbridge to SW. Will reduce effects to *mod.* .
3807777	249	213 Muhunoa East Road	50m	House appears oriented NE. Closest views to highway to E with foreground trees and neighbouring house. Longer oblique views along alignment to NE with middle-ground	very high designation	Proposed tall screen planting on fill batters will soften highway to E and overbridge to S. Proposed low rehabilitation

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
				buildings and trees. Close view to overbridge to S behind house. Highway and overbridge will be on two sides.		planting and groups of taller trees on foreground spoil disposal area will further filter views to E. However, house will be very close and will be enclosed on two sides by highway and overbridge. Bridge will be dominant 70m to south.
7857049		205 Muhunoa East Road	90m	House appears oriented NE. Closest views to highway to E with foreground trees and neighbouring house. Longer oblique views along alignment to NE with middle-ground buildings and trees. Close view to overbridge to S behind house and to highway to SE where it will be on low embankment. Highway and overbridge will be elevated on two sides. SUP will be loop around on side of overbridge ramp.	very high	Proposed all screen planting on fill batters will soften highway to E and overbridge to S. Proposed low rehabilitation planting and groups of taller trees on spoil disposal area will further filter views to E. Will reduce effects to *high.* However, house will be close and will be enclosed on two sides by highway and overbridge. Bridge will be dominant 90m to south.
7086834	244	197Muhunoa East Road	160m	New house. Appears oriented NE. Highway on low embankment to E. Middle-ground houses, trees, shelter belts (mod). Outlook to overbridge 150m to SE (mod-high)	mod-high	Proposed tall screen planting on fill batters will soften highway to E and overbridge to S. Proposed low rehabilitation planting and groups of taller

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
						trees on spoil disposal area will further filter views to E. Will reduce effects to *mod*.
7086833	243	195 Muhunoa East Road	220m	House appears oriented NE. Highway will be on low embankment to SE. Middle-ground houses, trees, shelter belts. Also outlook to Muhunoa East Road overbridge 220m to S. Foreground houses but bridge will be prominent because of its elevation.	mod	Proposed tall screen planting type on fill batters will soften highway to E and overbridge to S. Will reduce effects to *low-mod.*
7086832	236	191 Muhunoa East Road	210m	House appears oriented NW and NE. Highway will be on low embankment to E and SE. Middle-ground houses, trees, shelter belts. Also outlook to Muhunoa East Road overbridge 210m to S. Foreground houses but bridge will be prominent because of its elevation	mod Waka Kotahi	Proposed tall screen planting type on fill batters will soften highway to E and overbridge to S. Will reduce effects to *low-mod.*
3780165	227	194 Muhunoa East Road	140m	House appears oriented NW in opposite direction. Open outlook behind house to highway SE behind house, and to overbridge (Muhunoa East Road) 200m to E. Highway will be on low embankment across terrace to S. Muhunoa East Road overbridge will be prominent because of its elevation.	mod-high	Proposed tall screen planting on fill batters will soften overbridge to E. Proposed low vegetation rehabilitation will soften highway to S. Will reduce effects to *mod*. Opportunities for additional groups of specimen trees (within designation) to further filter views.
3864330	237	155 Muhunoa East Road	390m	House appears oriented NE. Highway on low embankment and elevated Muhunoa East Road overbridge will be to	low	

Property[i]	ID	Address	Distance	Description	Magnitude	Mitigation
				SE. Foreground trees. Middle-ground houses and trees.		
378422	240	145 Muhunoa East Road	430m	House appears oriented NE and SE. Highway on low embankment and elevated Muhunoa East Road overbridge will be to SE. Foreground vegetation. Middle-ground houses and trees.	low	

Kuku (including North Manakau)

Property	ID	Address	Distance	Description	Magnitude	Mitigation[36]
7188316	203	87 Kuku East Road	0m	Within footprint	removal designation	
7188315	207	111 Kuku East Road	0m	Within footprint	removal designation	
3963528	197	83 Kuku East Road	0m	House will be surrounded by Project works on all sides: highway to E, overpass to S, SUP to W and stormwater ponds to N. Access will be severed , earthworks will encroach to house. Likely to require removal.	removal designation	
3802887	192	75 Kuku East Road	0m	Within footprint of proposed stormwater works.	removal designation	
6708103	189	65 Kuku East Road	170m	House appears oriented NW and NE. Outlook to highway and overpass to E. Houses and some trees in middle-ground. Large stormwater ponds in middle-ground. SUP closer (140m) on near side of ponds.	mod-high	Proposed tall screen planting on ramps will soften overbridge to E. Proposed tall forest restoration around stormwater wetlands and tall screen planting rehabilitation on north bank will screen and buffer highway to E and longer views along alignment to NE. Proposed tall screen planting will soften longer views along alignment to

Property	ID	Address	Distance	Description	Magnitude	Mitigation[36]
						S. Will reduce effects to *low-mod.*
6708104	193	63 Kuku East Road	220m	Appears oriented W and E. Outlook to highway over open farmland to E. Large stormwater ponds in middle-ground. SUP closer (140m) on near side of ponds.	mod-high	Proposed tall screen planting on ramps will soften overbridge to E. Proposed tall forest restoration around stormwater wetlands and tall screen planting rehabilitation on north bank will screen and buffer highway to E and longer views along alignment to NE. Proposed tall screen planting will soften longer views along alignment to S. Will reduce effects to *low-mod.*
3802976	186	61 Kuku East Road	270m	House appears oriented N to garden setting surrounded by trees. Highway will be in open farmland to E. Middle-ground trees and neighbouring house.	low-mod	
6902423	188	76 Kuku East Road	240m	House appears to be oriented N and E. Outlook to E toward highway and overbridge. Some foreground trees.	mod	Proposed tall screen planting type on fill batters will soften highway and overbridge to E. Proposed restoration planting around stormwater wetland, natural character restoration, will soften views along alignment to NE. Proposed tall screen planting will soften longer views along alignment to S. Will reduce effects to *low-mod*
3791026	168	679 SH1	150m	Cottage appears oriented N and W. Highway to E in open farmland. Some middle-ground sheds. Some hedging will reduce longer distance views along alignment to N and S.	mod-high Waka Kotahi	Proposed tall screen planting type on fill batters will soften highway to SE. Will reduce effects to *mod*.
3777732		*679A SH1*	*70m*	*Appears oriented to NW.*	*high* *designation avoids*	

Property	ID	Address	Distance	Description	Magnitude	Mitigation[36]
					building but crosses property	
7009325	*185*	*679B SH1*	*70m*	*Uncertain whether a dwelling. Open outlook to E toward highway. Highway would be close in open setting. SUP a little closer (50m).*	*high* *designation avoids building but crosses property*	
7753490		679C SH1		Within footprint	removal designation	
3864377		47 Martins Road	550m	Orientation unclear. Elevated on terrace Outlook across open cropping land to NE to highway alignment. Some trees and riparian vegetation in middle-ground. Reasonably distant.	low	
4061791	162	25 Martins Road	510m	House on terrace. Appears oriented NW to outlook down Waikawa Stream valley. View to highway bridge over Waikawa Stream and embankment on north bank flood plain. Oblique views over open cropping land to NE to highway alignment. Some trees and riparian vegetation in middle-ground. Quite distant. Highway encroaches on property.	low-mod	
4061783	159	137North Manakau Road	330m	House on lower terrace below road. Appears oriented N toward Waikawa Stream. Outlook down valley to NW toward highway bridge over Waikawa Stream and embankment on north bank flood plain. Riparian vegetation in middle-ground will limit views. Terrace scarp, trees, and houses restrict views to W and SW. Second house on property. Orientation unclear. House is closer (260m) but surrounded by trees. Nearest section of highway	mod	Proposed tall screen planting on fill batter will soften highway to NW (on north bank of stream). Proposed middle-ground restoration of Waikawa Stream further soften views. Will reduce effects to *low-mod*.

Property	ID	Address	Distance	Description	Magnitude	Mitigation[36]
				will be in cut to NW. Trees and house in intervening area.		
3981321	157	123 North Manakau Road	260m	House appears oriented NW towards highway. Outlook over open farmland. Some foreground hedgerow and house and trees in intervening area.	low-mod	
7393334	158	121A North Manakau Road	20m	House appears oriented to N, E and W with outlook over Waikawa Stream. Alignment very close to house – cut batter encroaches to within couple of metres. Oblique views in both directions including along the Waikawa Stream bridge. Highway bisects property. Likely to require removal of house.	removal Waka Kotahi designation	
7393333	153	121 North Manakau Road	150m	House appears oriented NW with outlook across open farmland towards alignments. Highway will be in shallow cut (approximately 2m – 2.5m) at nearest point to house which will reduce prominence. Trees and other houses will restrict longer oblique views.	high	Proposed low vegetation rehabilitation at top of cut batter will soften highway to NW. Proposed tall screen planting on fill batter will soften highway to NW (on north bank of stream). Proposed middle-ground restoration of Waikawa Stream further soften views. Will reduce effects to *mod*.
7393332	150	119 North Manakau Road	230m	House appears oriented NE and NW with outlook across open farmland to NW towards highway. alignments. Highway will be in shallow cut (approximately 2.5m – 3.5m) which will reduce prominence. Trees and other houses will partly frame views and restrict longer oblique views. Highway will encroach on property.	mod-high designation avoids house but crosses property	Proposed low vegetation rehabilitation at top of cut batter will soften highway to NW. Proposed tall screen planting on fill batter will soften highway to NW (on north bank of stream). Proposed middle-ground restoration of Waikawa Stream further soften views. Will reduce effects to *mod*.
3824368	145	101 North Manakau Road	80m	House appears oriented N and W in direction of highway. Foreground garden with outlook over open farmland. Highway	high designation avoids house but	Proposed low vegetation rehabilitation at top of cut batter will soften highway to W. Proposed tall screen planting on fill

Property	ID	Address	Distance	Description	Magnitude	Mitigation[36]
				will be in cut (approximately 4m) which will reduce prominence. Will bisect property.	crosses property	batter will soften highway to N (on north bank of stream). Proposed middle-ground restoration of Waikawa Stream further soften views. Proposed tall screen planting will soften North Manakau Road overbridge to SW. Will reduce effects to *mod-high*
7313106	149	90 North Manakau Road	190m	House appears oriented NE and NW with outlook across open cropping field to wE toward highway and W to overbridge. Reasonable separation distance. Highway will be in cut (approximately 4.5m – 5m) which reduces potential height of North Manakau Road overbridge. Local road realigned so will be slightly further away from front of property. Views framed by foreground trees.	mod-high	Proposed low vegetation rehabilitation at top of cut batter will soften highway to W. Proposed tall screen planting type will soften North Manakau Road overbridge to W. Will reduce effects to *mod.*
3939569		51 North Manakau Road	150m	House appears oriented NW to garden setting in opposite direction. Highway (and overbridge) to E across open cropping fields. Oblique views along alignment to NE. Highway will be in cut (approximately 4.5m – 5m) opposite house. Foreground trees and sheds to E of house. (See separate assessment of material supply site to N of this property] Potential construction yard approx.. 70m E of house will add to visual effects during construction, but will be softened by foreground trees and seen against backdrop of greater works of Ō2NL highway and Kuku Road bridge.	mod	Proposed low vegetation rehabilitation on top of cut batter will soften highway to NE. Proposed tall screen planting will soften North Manakau Road overbridge to E. Proposed tall screen planting will soften longer views along alignment to S. Will reduce effects to *low-mod*

Property	ID	Address	Distance	Description	Magnitude	Mitigation[36]
6522660		46 North Manakau Road	200m	House appears oriented NE and NW to garden setting. Highway to E across open cropping fields. Foreground hedge. Highway will be shallow cutting (approximately 2m – 3m) opposite house. North Manakau Road overbridge to E.	mod	Proposed low vegetation rehabilitation on top of cut batter will soften highway to SE. Proposed tall screen planting will soften North Manakau Road overbridge to E. W Proposed tall screen planting will soften longer views along alignment to S.Will reduce effects to *low-mod*
3886682	143	76 North Manakau Road	80m	House appears oriented to a garden setting to N and E in opposite direction. Highway in shallow cut to W. Outlook also to North Manakau Road overbridge. Oblique views along alignment to N and S. Highway will be in shallow cut (approximately 2m – 3m) opposite house. Foreground trees and hedge in direction of highway.	mod-high Waka Kotahi	Proposed tall screen planting will soften North Manakau Road overbridge and highway to W Will reduce effects to *mod.* Opportunity for additional foreground group(s) of trees (within designation) to further filter views.
4010657		43 Mokena Kohere Street	320m	House appears oriented N and E with direct views to alignment to E and longer oblique views to N. Outlook across open farmland. Reasonably distant. Some foreground trees. Backdrop hills	low-mod	.

Manakau Downlands

Property	ID	Address	Distance	Description	Magnitude	Mitigation
3856359		1 Ihaka Hakuene Street	330m	House on terrace, NE corner of Manakau. Appears oriented N and E to garden setting. Framed outlook over open farmland to NE – oblique view along highway. Views to closest part of highway to E limited by trees.	low-mod	
7981821	134	63 Wi Tako Street	200m	House appears oriented NW with outlook down hill toward alignments. House is elevated high on hillslope approximately	mod [Waka Kotahi]	Proposed tall screen planting will soften highway. Proposed avenue of trees along local road (extension of

Property	ID	Address	Distance	Description	Magnitude	Mitigation
				30m above highway. Foreground trees are likely to restrict views to a short section of alignment.		Eastern Rise). would further filter views. Will reduce effects to *mod-low.* Opportunity for additional specimen trees on mid-ground slope to further filter views.
7981821		63 Wi Tako Street	130m	Second building on property. Orientation unclear. Building in woodland setting. Highway benching in valley approximately 10m lower. Substantial trees will filter views and limit oblique views along alignment. Works will encroach into property.	mod-high Waka Kotahi designation avoids house but crosses property	Proposed tall screen planting will soften highway. Proposed avenue of trees along local road (extension of Eastern Rise). would further filter views. Will reduce effects to *mod.* Opportunity for additional specimen trees on mid-ground slope to further filter views.
7981821	134	63 Wi Tako Street	0m	Earthworks reach edge of building.	removal Waka Kotahi	
7017224	125	53 Wi Tako Street	190m	House appears oriented W, N and E to woodland garden setting. Located in valley at similar elevation to highway. Substantial trees in intervening area. (It is assumed the trees on the boundary can be retained).	mod	Proposed low vegetation rehabilitation planting on fill batters will soften highway. Proposed row of trees along SUP will further filter views. Propose natural character restoration of Mangahuia Stream would further filter views. Ecological offset restoration will screen and buffer longer views along alignment to S. Will reduce effects to *low-mod.*
7134218	651	43 Wi Tako Street	250m	House appears oriented N and W away from alignment. Highway benched approximately 10m lower in valley to E. Large stormwater pond on near side of highway. House has woodland setting with extensive trees in intervening landscape.	low-mod	
7618893	652	45 Wi Tako Street	230m	House appears oriented N and W in opposite direction. Highway	low-mod	

Property	ID	Address	Distance	Description	Magnitude	Mitigation
				benched approximately 10m lower in valley. Substantial trees in intervening landscape, including shelter belts that will limit oblique views along alignment.		
3770327	131	50 Wi Tako Street	150m	Orientation unclear. House in valley at similar elevation to highway. Alignment bisects property to E. Open outlook to adjacent section of alignment. Foreground trees limit some oblique views.	high designation avoids house but crosses property	Proposed low vegetation rehabilitation planting on fill batters will soften highway. Proposed row of trees along SUP will further filter views. Propose natural character restoration of Mangahuia Stream would further filter views. Ecological offset restoration will screen and buffer longer views along alignment to S. Will reduce effects to *mod-high*
7044909	116	47 Tame Porati Street	220m	House appears oriented N and E. Potential views to E and NE along alignment. Highway will be benched approximately 10m lower in valley. Foreground trees. Shelter belts to north will reduce longer distance views. Foreground house to S.	mod	Proposed low vegetation rehabilitation planting on fill batters will soften highway to E. Proposed row of trees along SUP will further filter views. Propose natural character restoration of Mangahuia Stream would further filter views. Ecological offset restoration will screen and buffer views to highway to S including Manakau Heights Drive overbridge. Will reduce effects to *low-mod.*
3748297	112	49 Tame Porati Street	20m	Orientation unclear. House elevated on plateau. Alignment approximately 10m-lower in valley to E. Foreground trees to E and NE. Open outlook oblique views to SE.	mod	Proposed low vegetation rehabilitation planting on fill batters will soften highway to E. Proposed row of trees along SUP will further filter views. Propose natural character restoration of Mangahuia Stream would further filter views. Ecological offset restoration will screen and buffer views to highway to S including Manakau Heights Drive overbridge.

Property	ID	Address	Distance	Description	Magnitude	Mitigation
						Will reduce effects to *low-mod.*
7116398	128	29B Eastern Rise	130m	House appears oriented NW with views to highway immediately below house to W and oblique view along alignment to N. Elevated high on toe of hill overlooking alignments below (elevated approximately 15m higher). Open outlook. .	high designation avoids house but crosses property	Proposed tall screen planting will soften highway to NW. Proposed avenue of trees on realigned Eastern Rise will further filter views. Proposed tall screen planting will soften Manakau Heights overbridge to W. Proposed foreground natural character restoration of Mangahuia Stream will further soften views (increase perspective depth) Will reduce effects to *mod-high*.
7116397	127	29A Eastern Rise	130m.	House appears oriented W towards alignments. Oblique views along highway to SW, and to Manakau Height Drive overbridge. Elevated high on toe of hill overlooking alignments below (elevated approximately 10m higher). Open outlook – foreground sheds.	high	Proposed tall screen planting will soften highway to NW. Proposed avenue of trees on realigned Eastern Rise will further filter views. Proposed tall screen planting will soften Manakau Heights overbridge to W. Proposed foreground natural character restoration of Mangahuia Stream will further soften views (increase perspective depth) Will reduce effects to *mod-high*.
7116396		29 Eastern Rise	160m	House appears oriented W towards alignment. Oblique views along highway to SW, and to Manakau Height Drive overbridge. Elevated high on toe of hill overlooking alignments below (elevated approximately 10m higher). Open outlook.	high	Proposed tall screen planting will soften highway to NW. Proposed avenue of trees on realigned Eastern Rise will further filter views. Proposed tall screen planting will soften Manakau Heights overbridge to SW. Proposed foreground natural character restoration of Mangahuia Stream will further soften views (increase

Property	ID	Address	Distance	Description	Magnitude	Mitigation
						perspective depth) Will reduce effects to *mod-high*.
7217189	123	32 Eastern Rise	150m	House appears oriented NW towards alignment. Elevated high on toe of hill overlooking alignments below (elevated approximately 10m higher). Open outlook. Above Manakau Heights Drive overbridge to W. Longer views along alignment to N.	high	Proposed tall screen planting will soften Manakau Heights overbridge and highway to W. Proposed tall screen planting will soften highway to NW. Proposed avenue of trees on realigned Eastern Rise will further filter views to NW. Proposed foreground natural character restoration of Mangahuia Stream will further soften views (increase perspective depth) Will reduce effects to *mod-high*.
7217191	644	141 Manakau Heights Drive	240m	House appears oriented NW in opposite direction. House is on knoll approximately 15m above highway which will reduce potential dominance. .	low-mod	
3805008	87	117 Honi Taipua Street	160m	House appears oriented N and E with outlook along alignment to E and NE. House is on knoll approximately 15m above highway which will reduce potential dominance. Some foreground trees to NE – dense stand will screen potential oblique views to S.	mod-high	Proposed tall screen planting will soften highway and overbridge to E. Proposed low vegetation rehabilitation on batters, and row of trees along SUP will soften longer views along alignment to NE. Proposed middle-ground ecological offset planting will further filter views. Will reduce effects to *mod*.
7217187	110	108 Manakau Heights Drive?	80m	New site. Open outlook towards alignment (which will be at lower elevation and in box cut) and to Manakau Heights Drive overbridge. Realignment of Manakau Heights Drive will encroach into property.	very high designation	Proposed tall screen planting between Manakau Heights Drive and highway will soften highway and overbridge. However, works will remain very close to house.

Property	ID	Address	Distance	Description	Magnitude	Mitigation
7217185	104	107 Manakau Heights Drive	0m	House within footprint	removal designation	
7158244	99	97 Manakau Heights Drive	0m	House within footprint.	removal designation	
6751736	91	95 Manakau Heights Drive	50m	House orientation not clear. Elevated on terrace at toe of distinctive hill (approximately 25m high, steep sides, symmetrical). Highway will be close to house to SE, where transitions from embankment to box cut. SUP will be closer (25m). Oblique views along highway to SW. Works will encroach into property and sever access.	very high designation	Proposed tall screen planting will soften views of highway. Proposed low restoration planting on foreground contoured spoil disposal, and natural character restoration of foreground stream, will further filter views. However house will remain very close to highway.
6751740	113	90 Manakau Heights Drive	170m	House appears oriented NW towards alignment, and oblique views over open farmland to W and SW. Highway will be on low embankment and box cut on opposite side of road. Some foreground vegetation along watercourse. Some foreground houses to SW in direction of oblique views along alignment.	mod-high	Proposed tall screen planting will soften highway and Manakau Heights Drive overbridge. Proposed middle-ground tall forest restoration, natural character restoration of small stream, and avenue of trees along Manakau Heights Drive will further filter views. Will reduce effects to *moderate.*
6751741	102	82 Manakau Heights Drive	180m	House appears oriented N and W. Outlook over open farmland along small creek towards alignment. Highway will be on low embankment and box cut on opposite side of road. Some foreground trees. Some foreground houses to W and SW in direction of oblique views along alignment.	mod-high	Proposed tall screen planting will soften highway and Manakau Heights Drive overbridge. Proposed natural character restoration of foreground small stream, tall forest restoration on stream's north bank, and avenue of trees along Manakau Heights Drive will further filter views. Will reduce effects to *moderate.*
6751737	88	75 Manakau	60m	House appears oriented E, N and W. Elevated on	very high	Proposed tall screen planting will soften

Property	ID	Address	Distance	Description	Magnitude	Mitigation
		Heights Drive		terrace with open outlook toward alignment. Highway will be on embankment on lower valley floor and box cut into terrace to N. Oblique views along alignment to N and SW.	designation avoids house but crosses property	highway. Proposed natural character restoration of foreground small stream, tall forest restoration on stream's north bank will further filter views. Will reduce effects to *high,* but highway will remain very close. Opportunity for additional planting on proposed foreground spoil disposal area to further filter views.
6621559	85	63 Manakau Heights Drive	150m	House appears oriented NW towards alignment. Elevated on terrace with open outlook. Highway will be on embankment on lower valley floor. Oblique views along alignment to N and SW.	high Waka Kotahi designation avoids house but crosses property	Proposed tall screen planting will soften highway. Proposed natural character restoration of foreground small stream, tall forest restoration on stream's north bank will further filter views. Will reduce effects to *high,* but highway will remain very close. Opportunity for additional groups of foreground trees or hedging to further filter views.
7488069	97	9 Hanawera Ridge Road	200m	House appears oriented N and W in direction of alignment. Foreground houses on the opposite side of Manakau Heights Drive. Outlook down gully to highway to W. Longer views along alignment to N and SW.	mod	Proposed tall screen planting on fill batters will soften highway. Proposed foreground avenue of trees on Manakau Heights Drive will further filter views. Will reduce effects to *low-mod.*
7488070	101	11 Nīkau Lane	270m	House appears oriented NW in direction of alignment. Foreground and middle-ground houses.	low-mod	
6621568	1005	10 Nīkau Lane	380m	House appears oriented NW in direction of alignment. Trees and other houses restrict outlook but view to NW over pond. House elevated. Highway will be on embankment on lower valley floor.	low-mod	

Property	ID	Address	Distance	Description	Magnitude	Mitigation
6621569		8 Hanawera Ridge Road	330m	House appears oriented NW in direction of alignments. House elevated on terrace. Highway will be on embankment on lower valley floor. Intervening houses and trees.	low-mod	
6621570		4 Hanawera Ridge Road	240m	House appears oriented NW in direction of alignments. House is elevated on terrace. Foreground trees and intervening house on opposite side of road. Highway will be on embankment on lower valley floor.	mod	Proposed tall screen planting will soften highway. Proposed foreground avenue of trees along Manakau Heights Drive and natural character restoration of small middle-ground stream will further filter views. Will reduce effects to *low-mod.*
6621571	86	52 Manakau Heights Drive	280m	House appears oriented NW in direction of alignment. House is elevated on terrace with outlook over open valley. Foreground house on opposite side of road. Highway will be on embankment across valley floor (highway approximately 6m – 7m lower).	mod	Proposed tall screen planting will soften highway. Proposed foreground avenue of trees along Manakau Heights Drive and natural character restoration of small middle-ground stream will further filter views. Will reduce effects to *low-mod.*
7142446	78	51 Manakau Heights Drive	200m	House appears oriented W in direction of alignment. House is on terrace with outlook over open farmland. Highway will be on embankment across valley floor.	mod-high	Proposed tall screen planting on fill batters will soften highway. Will reduce effects to *mod.*
6621572	83	42 Manakau Heights Drive	310m	House appears oriented N, E and W to garden setting. House is elevated on terrace with outlook over open farmland. Foreground trees. Highway will be on embankment across valley floor (highway approximately 8m – 9m lower).	low-mod	
6621573	82	40 Manakau	370m	House appears oriented NW towards alignment. House is elevated on	low-mod	

Property	ID	Address	Distance	Description	Magnitude	Mitigation
		Heights Drive		terrace with outlook over open farmland. Some foreground trees. Highway will be on embankment across valley floor.		
7134372	84	32 Manakau Heights Drive	420m	House appears oriented NW towards alignment. House elevated, alignment will be on embankment across valley floor. Outlook to South Manakau Road overbridge to W. Middle-ground houses and some vegetation in outlook.	low-mod	
6951855	74	18 Manakau Heights Drive	480m	House appears oriented NW and W towards alignment. House elevated, alignment across valley floor – on embankment and bridge. Outlook to South Manakau Road overbridge to W. Middle-ground houses in outlook.	low-mod	
7142444	71	23 Manakau Heights Drive	210m	House appears oriented NW towards alignment. Foreground house on neighbouring property, but otherwise outlook across open farmland to NW and obliques views along alignment to N. Highway will be on embankment.	mod-high	Proposed tall screen planting type on fill batter will soften highway. Opportunity for foreground trees (within designation) to further filter views. Will potentially reduce effects to *mod.*
6750506	61	21 Manakau Heights Drive	180m	House appears oriented NW toward alignment. Outlook across open farmland, including oblique views to N. Highway will be on embankment. Potential construction yard identified approx. 100m to SW will add to visual effects during construction but will be seen against backdrop of the greater works of the Ō2NL highway itself.	mod-high	Proposed tall screen planting type on fill batter will soften highway. Opportunity for foreground trees (within designation) to further filter views. Will potentially reduce effects to *mod.*

Property	ID	Address	Distance	Description	Magnitude	Mitigation
3963441	66	69 South Manakau Road	220m	House appears oriented N and W. Alignments are to N and W in direction of outlook. Highway will be on embankment and bridge. House is on the opposite side of Manakau Heights Drive, neighbouring house and trees in intervening area. Potential construction yard identified approx. 120m to NW will add to visual effects during construction. However, will be seen against backdrop of greater construction works of Ō2NL highway and bridge, and softened by foreground vegetation.	mod	Proposed tall screen planting on fill batters will soften highway and overbridge. Proposed foreground avenue of trees along Manakau Heights Drive will further filter views to NW and N. Proposed natural character restoration of foreground Manakau Stream will further filter views and soften overpass bridge to W. Will reduce effects to *low-mod.*
3888216	63	63 South Manakau Road	160m	House appears oriented NE and NW. Alignment is to NW, with oblique views along alignment to N and SW. Highway will be on bridge and embankment to W. Some foreground trees. Potential construction yard identified approx.60m to W will increase foreground visual effects during construction (will increase effects to high). Will be seen against backdrop of greater works of the Ō2NL highway including bridges.	mod-high	Proposed tall screen planting on fill batters will soften highway and overbridge. Proposed natural character restoration of foreground Manakau Stream will filter views and soften overpass bridge to W. Will reduce effects to *mod.* Opportunity to plant specimen trees along boundary to further filter views.
3859863	58	49 South Manakau Road	0m	Within footprint of alignment	removal Waka Kotahi designation	
6856766	48	45 South Manakau Road	130m	House appears oriented NW and W towards Manakau Stream. Alignment will be on fill embankment (bridge ramp) to E and oblique views along alignment to	mod-high	Proposed tall screen planting type on fill batters will soften highway. Further tall screen planting on foreground spoil disposal area and tall forest restoration

Property	ID	Address	Distance	Description	Magnitude	Mitigation
				SE. Foreground trees intercept views to NE along alignments. Foreground house and trees in intervening area.		around large stormwater wetland will further filter views. Natural character restoration along foreground Manakau Stream will further filter views to S towards overbridge Will reduce effects to *mod.*
6856768	53	45A South Manakau Road	60m	House appears oriented N and W to garden setting. Alignment is on fill embankment (bridge ramp) to E and oblique outlook to NE along alignment. Foreground trees. Earthworks will encroached into property and be close to house (25m). Will sever access. [owned Waka Kotahi]	very high Waka Kotahi designation	Proposed tall screen planting on fill batters, and natural character restoration on foreground Manakau Stream, will help soften views of overbridge and ramps.
6856767	49	45B South Manakau Road	110m	House appears oriented N and W in well treed garden. Alignment is on fill embankment across open farmland to E and NE. Trees intercept views along alignment to SE. 110m to carriageway, 90m to SUP. Will sever access. Potential construction yard identified approx.110m to S will add to visual effects during construction. Will be seen against backdrop of greater works of the Ō2NL highway including bridges, and softened by location on opposite side of Manakau Stream and South Manakau Road. .	mod-high	Tall screen planting on fill batters will soften views to highway to E. Natural character restoration of foreground Manakau Stream will help soften views of overbridge and ramps. Natural character restoration of middle-ground Waiauti Streams will help soften longer views along alignment to S. Will reduce effects to *mod.*
6531742		106 South Manakau Road	470m	House appears oriented NE and NW over Waiauti Stream. Alignment to NW and W. Foreground vegetation, and houses in intervening landscape.	low	

Property	ID	Address	Distance	Description	Magnitude	Mitigation
7012930	635	48 Mountain View Drive	470m	Houses appears oriented N and W. Alignment to NW and W. House elevated with outlook of open farmland. Reasonably distant.	low-mod	
7012932	636	47 Mountain View Drive	430m	House appears oriented NE. Alignment is to NW and W. Foreground houses.	low	
7012927	633	44 Mountain View Drive	270m	House appears oriented to N and W toward alignments. Elevated on terrace with outlook over open farmland. Alignment on embankment across valley below house to NW, and in cutting behind ridge to W. Some foreground trees.	moderate	Proposed tall screen planting on fill batters will soften highway to NW. Proposed natural character restoration of foreground Waiauti Stream will further filter views. Will reduce effects to *low-mod*
7012934		35 Mountain View Drive	300m	House appears oriented to NW and NE. Alignments are to NW. House is on opposite side of Mountain View Drive, with foreground houses in intervening area.	low-mod	
7012923		28 Mountain View Drive	180m	House appears oriented NW and SW towards alignment. Elevated on terrace, with open outlook to highway on embankment and bridge over Waiauti Stream. Foreground wetland and spur.	mod_high	Proposed tall screen planting on fill batters will soften highway to W. Proposed natural character restoration of foreground Waiauti Stream will further filter views. Will reduce effects to *mod.*
7012922		20 Mountain View Drive	140m	House oriented E towards alignment. Elevated on terrace, with open outlook to highway on embankment and bridge over Waiauti Stream. Foreground wetland and spur.	high	Proposed tall screen planting on fill batters will soften highway to W. Proposed natural character restoration of foreground Waiauti Stream will further filter views. Will reduce effects to *mod.*
7012921	54	18 Mountain View Drive	130m	House appears oriented E towards alignment. Elevated on terrace, with open outlook to highway on embankment and	high	Proposed tall screen planting on fill batters will soften highway to W. Proposed natural character restoration of

Property	ID	Address	Distance	Description	Magnitude	Mitigation
				bridge over Waiauti Stream.		foreground Waiauti Stream will further filter views. Will reduce effects to *mod.*
7012917	52	14C Mountain View Drive	0m	New house. 10m from carriageway. Earthworks encroach into house.	removal Waka Kotahi designation	
3854887	47	36 South Manakau Road	0m	House appears oriented to N and W. House falls within earthworks footprint.	removal Waka Kotahi designation	
4002204	45	10 South Manakau Road	270m	House appears oriented N. Alignment is to E with oblique views along alignment to SE and NE. House is slightly elevated with outlook over open farmland. Highway will be on embankment with bridges over Waiauti Stream and South Manakau Road/Manakau Stream. Stormwater ponds in front of highway. Potential construction yard identified approx.160m to E will add to visual effects during construction. Will be seen against backdrop of greater works of the Ō2NL highway including bridges.. .	mod	Proposed low planting on fill batters will soften highway to E and SE. Proposed tall forest restoration around large middle-ground stormwater wetlands, and natural character restoration of foreground Waiauti Stream will further filter views. Natural character restoration of Manakau Stream will also help filter longer views to the overbridge and highway alignment to the NE. Will reduce effects to *low-mod*.

Pukehou

Property	ID	Address	Distance	Description	Magnitude	Mitigation
3780907		456 SH1	240m	House appears oriented N and W in opposite direction. Foreground trees and NIMT to S in direction of alignment. Middle-ground bush (Staples Bush), shelter belts, and other buildings.	low-mod	
3796325	43	426 SH1	110m	House appears oriented N in opposite direction. Foreground trees, sheds, shelter belt, and stand of bush (Staples Bush) to S and E in direction of alignment. Highway will be on fill embankment in gully behind house.	moderate	Proposed tall screen planting on batters and spoil disposal area will soften highway. Proposed foreground tall screen restoration planting (buffer planting to Staples Bush) will further screen and buffer highway. Planting will be 45m deep. Will reduce effects to *low*
3779581	41	424 SH1	30m	(rear house) House appears oriented N and E, with outlook to S and E along alignment. Highway will be very close and on embankment to E. SUP will pass around house and encroach into property.	very high Waka Kotahi designation	
3779581	41	424 SH1	100m	(front house) House appears oriented N and W in opposite direction. Some foreground trees and intervening house to S and E in direction of alignment. Highway will be prominent on fill embankment. SUP will pass immediately behind house and works will encroach into garden (potential to fine tune SUP alignment which would reduce effects to mod-high)	high Waka Kotahi designation	
6623083	40	424 SH1	0m within footprint	(House appears oriented N toward alignment. Open foreground. Alignment is close in front of house and approximately 13m lower in elevation. Cut batter encroaches into house footprint.	removal designation	

Property	ID	Address	Distance	Description	Magnitude	Mitigation
3808471		415SH1	160m	House appears oriented N and E in opposite direction. Foreground trees to S in direction of alignments. Alignment is beyond existing SH1, partly in box cutting, but will cross gully opposite house on embankment.	low-mod	
3862840	33	270 SH1	0m	House orientation unclear. Within alignment footprint.	removal designation	
3864360	31	264 SH1	160m	House appears oriented NW, and NE parallel with alignment. Open farmland to NE where highway will be on fill. Stand of trees on knoll to SE in direction of alignment and where highway will be in box cut. Open farmland to SE where highway will be on fill embankment across gully. SUP will be along existing SH1 in front of house.	mod Waka Kotahi designation	Proposed tall screen planting on highway fill batters to NE and SE will soften highway. Proposed natural character restoration along stream to NE, and tall forest restoration around large stormwater wetland, will further filter and screen view along alignment to NE. Will reduce effects to *low-mod*.
3864325	30	210A SH1	110m	House appears oriented W and N towards alignment. On knoll elevated approximately 27m above highway grade. Highway will be mainly in box cutting opposite house. Large cut batter into hillside to N. Some foreground trees to N. Crosses narrow gully on embankment immediately to W. Extensive views along the alignment. But also wide outlook above highway to W and N.	high	Proposed tall screening planting type along top of large cut batter to N, and above driveway to W will filter views to highway to N and W. Will reduce effects to *mod-high* Opportunity for additional middle-ground trees to further soften works and create perspective depth without impeding longer views above highway.
3787854	26	224 SH1	180m	House appears oriented N. House is on terrace above existing SH1. Proposed Ō2NL alignment in box cut to E approximately 8m below terrace surface. Shelter trees on adjoining property to E and NE in direction of alignment. Foreground neighbouring	mod	Proposed tall screening planting along top of large cut batter to E will screen edge of cutting and soften large cut batter on opposite side of highway. Will reduce effects to *low-mod*.

Property	ID	Address	Distance	Description	Magnitude	Mitigation
				house in direction of highway. Alignment would require removal of some shelter trees.		
3864354	29	222 SH1	70m	House appears oriented N and W with shelter trees to E and S in direction of alignments. Alignment will be in box cutting approximately 8m below terrace level but very close – edge of cutting will be approximately 10m from house and immediately adjacent to an outbuilding. The works will impinge on grounds and require removal of shelter trees to E of house.	very high designation	Proposed tall screen planting type along top of large cut batter to E will screen edge of cutting and soften large cut batter on opposite side of highway. The planting will merge with tall screening planting on fill batters across valleys to N and S. Will reduce effects to *high*. Opportunity for additional middle-ground trees to further filter views.
3786462		200 SH1	190m	House appears oriented NE. House is on terrace at approximately 30m. Highway is at lower elevation of approximately 25m – 29m on embankment across gully S of terrace, and in shallow cut through terrace on opposite side of gully. Foreground trees to S in direction of alignment. Sheds in intervening area. .	mod	Proposed tall screen planting type on batters and around top of cuts will soften highway to SE. Proposed low rehabilitation planting on fill batters will soften narrow views to E and S. Natural character restoration of valley to S will further filter views along alignment of highway. Will reduce effects to *low-mod*.
3832397		190 SH1	170m	House appears oriented NE and NW. House is on terrace. Alignment is behind house, approximately 4m to 5m lower on embankment across gully S of terrace. Foreground trees. Sheds in intervening area to E Highway be on far side of gully. .	moderate	Proposed tall screen planting type on batters and around top of cuts will soften highway to SE. Proposed low rehabilitation planting on fill batters will soften highway across gully to S. Natural character restoration of valley to S will further filter views. Will reduce effects to *low-mod*.
3995989	20	178 SH1	90m	House appears oriented to NE and NW. House is on terrace at approximately 29m. Alignment is behind house, approximately 2m to	high	Proposed low rehabilitation planting on fill batters will soften highway across gully to S. Natural character

Property	ID	Address	Distance	Description	Magnitude	Mitigation
				5m lower on embankment across gully S of terrace. Trees to south in direction of alignment. Alignment will have backdrop of cut batter. Small fill batter and stormwater ponds in will encroach into gully behind house.		restoration of valley to S will further filter views. Proposed tall screen planting type on batters and around top of cuts will soften highway to E. Will reduce effects to *mod-high*
3755849	15	134SH1	20m	House appears oriented E and W. House will be sandwiched between local road and off ramp, and close to roundabout. Likely to be require removal. Immediately adjoining potential construction yard which would likewise require removal of house. .	removal designation	
6883167	19	170 SH1	60m	House appears oriented N and NE. Alignment cuts diagonally across outlook from SW to NE. Alignment is approximately 7m – 9m lower in elevation through gully to NW of house. Alignment will be in cut. Foreground garden Open outlook to W toward highway on embankment, and including roundabout along valley to NW. Will require new access to house.	high designation	Proposed low rehabilitation on cut and fill faces will soften highway. Proposed natural character restoration of valley to SW will further soften views of highway. Proposed tall screen planting along top edge of cut face and along top of valley scrapr to SW will further filter views. Will reduce effects to *mod-high.*
7598487	27	114 SH1	100m (on ramp)	House appears oriented north toward alignment. Open foreground. Southbound on-ramp will be 100m from house although partly in cut– highway itself will be 130m. Highway will cross gully to north on embankment. Ō2NL will sever existing access and will require new access road on near side of highway.	high designation avoids house but crosses property	Proposed low rehabilitation on cut and fill faces will soften highway. Proposed natural character restoration of valley to N will further soften views of highway. Proposed tall screen planting between south-bound ramp and local road, and on top of cut above local road, will further filter views of highway to W and NW. Will reduce effects to *mod-high*

Property	ID	Address	Distance	Description	Magnitude	Mitigation
3890179		143 SH1	60m (roundabout)	House appears oriented N and W away from alignment. Foreground fence and vegetation. Main highway alignment reasonably distant, further away than existing SH1 which fronts this property. However, roundabout and ramps will be prominent foreground. Potential construction yard identified approx.40m to SE will add to foreground visual effects during construction. (Will increase to very high). Will be seen in context of greater works of the Ō2NL highway and interchange.	high	Proposed low vegetation rehabilitation will soften foreground roundabout and middle-ground highway to E. Proposed natural character restoration of valley to E will further soften highway. Additional groups of foreground trees will further filter views to E. Proposed tall restoration planting will screen and buffer views of highway to S. Will reduce effects to *mod-high*.
4065497		141 SH1	70m (roundabout)	House appears oriented NW, and SE toward alignment. Foreground trees to SE. Main highway alignment reasonably distant, further away than existing SH1 which fronts this property. However, roundabout and ramps will be prominent foreground. Potential construction yard identified approx.30m to SE will add to foreground visual effects during construction. (Will increase to very high). Will be seen in context of greater works of the Ō2NL highway and interchange.	high	Proposed low vegetation rehabilitation will soften foreground roundabout and middle-ground highway to E. Proposed natural character restoration of valley to E will further soften highway. Additional groups of foreground trees will further filter views to E. Proposed tall restoration planting will screen and buffer views of highway to S. Effects will reduce to *mod-high*.
3904627	12	139SH1	100m (to off ramp)	House appears oriented NW, and SE toward alignment. Foreground trees to SE. Main highway alignment will be reasonably distant (180m), further away than existing SH1 which fronts this property. However, off ramp and roundabout will be prominent foreground. Potential construction yard identified approx.50m to SE will add to foreground visual effects during construction.	mod-high	Proposed stand of tall forest restoration will soften main highway to S and north-bound off ramp. Proposed low rehabilitation vegetation will soften roundabout to NE and longer views along alignment to SE. Effects will reduce to *mod.*

Property	ID	Address	Distance	Description	Magnitude	Mitigation
				(Will increase to high). Will be seen in context of greater works of the Ō2NL highway and interchange.		
3917698	9	10 Taylors Road	80m (to exit ramp)	House appears oriented N, and E towards alignment. Foreground trees in direction of alignment. Highway itself will be further away (100m) than the existing SH1 which passes directly in front of the property, but the area in front of house will include local road, exit ramp, and main highway.	mod	Proposed low rehabilitation vegetation will soften highway and north-bound offramp to E and longer views along alignment to SE Proposed stand of tall forest restoration will screen and buffer longer views along alignment to NE. Groups of trees in low vegetation will further filter views to NE. Effects will reduce to *low-mod*.
3793279	7	85 SH1	50m	House orientation not clear. Trees to east and NE towards alignment, which is in location of existing SH1 and will be the interconnect between the existing SH1 and Pekapeka to Ōtaki section of the Wellington Northern Corridor. Works to construct Taylors Road connection will encroach into property, requiring removal of roughly third of the trees. Highway itself will be in location of existing SH1 but of much larger scale.	high [Waka Kotahi]	Will require bespoke plan to re-establish buffer of trees at front of garden.
3755723	16	84 SH1	290m	House orientation unclear. Shelter belt trees to N and W in direction of alignment. New alignment is in location of existing SH1	low-mod	
3754116	11	82 SH1	80m	House appears oriented north. Avenue and specimen trees to W in direction of alignment. Shelter belt to north would help screen views along the alignment. New alignment is in location of existing SH1	mod-high Waka Kotahi designation avoids house but crosses property	Proposed low vegetation rehabilitation planting will soften highway and local access link. Potential to plant tall screening vegetation on contoured spoil disposal area to W and NW of property. Would reduce effects to *mod.*

APPENDIX D.4: COMMENTARY ON PHOTO SIMULATIONS

1. Photo simulations are contained in the separate A3 attachment (Stantec drawing set reference)'. The photo simulations illustrate the Ō2NL Project from fourteen public viewpoints[37] that were selected to depict the key features of the Project and represent each of the landscape character areas.

2. The photo simulations necessarily depict the concept highway alignment and design, acknowledging that the NoR is to secure a designation rather than a fixed alignment or design. The photo simulations nevertheless illustrate the scale and general appearance and general relationship of the Project to the landscape, as an aid to assessing effects

3. The proposed list of representative viewpoints was shared and agreed in principle with the landscape advisor for the Horowhenua District and Kāpiti Coast District Councils. A site visit was undertaken with the advisor to further check the locations.

4. The following is a commentary on the photo simulations.

#	Viewpoint	Commentary
1	Heatherlea East Road (opposite #21) looking south-east towards highway	The viewpoint of the roundabout at the northern tie-in of Ō2NL with the existing SH1, the Avenue, and Heatherlea East Road. The NIMT overbridge is obscured from this viewpoint behind the row of trees. The photo simulation illustrates that Project will replace the existing cropping farmland with major infrastructure. The lights, signage, and wire-rope barriers (which are not depicted in the photo simulation) will further increase the prominence of the intersection. Nevertheless, the photo simulation illustrates that the roundabout intersection is in an unobtrusive location set back from existing roads, and just slightly elevated above existing ground level. The planting proposed on the foreground land (which is not shown in the photo simulation)

[37] Except that the viewpoints illustrating the crossings of the Ohau River and Waikawa Stream are from private land because there were no suitable public viewpoints.

#	Viewpoint	Commentary
		would screen the intersection from this viewpoint.
2	The Avenue (opposite #157) north of the intersection with Avenue North Road looking east toward the NIMT overbridge and ramps	The viewpoint is to illustrate the clearest existing public view of the proposed NIMT overbridge. From most of The Avenue (existing SH1) the views are screened by intervening vegetation. Despite the height of the overbridge, the photo simulation depicts the extent to which it is visually anchored by foreground and backdrop vegetation. Proposed planting on the ramp batters would soften the highway.
3	Arapaepae Road (opposite #317) Road) looking south towards the O2NL and SH58 roundabout	The viewpoint is to illustrate the intersection of Ō2NL with SH58. The photo simulation illustrates that the intersection will replace existing open farmland with significant infrastructure and disrupt the existing straight alignment of Arapaepae Road (SH58). It illustrates that the intersection will be built on fill above the existing low-lying land. The lights, signage, and wire-rope barriers (which are not depicted in the photo simulation) would further increase the prominence of the intersection. The proposed planting will soften the intersection and gradually help to screen traffic and vehicle lights.
4	Arapaepae Road (south of the intersection with Queen Street East) looking NE towards Ō2NL and Queen Street East overbridge.	The viewpoint is to illustrate Ō2NL on the open land east of Levin and the proposed Queen Street East overbridge. The backdrop trees are on the Ashleigh property. The foreground land is proposed as an ecological offset area. The photo simulation illustrates the set-back of the highway from Arapaepae Road and its relatively low prominence because of the flat

#	Viewpoint	Commentary
		terrain. It also illustrates, though, that the Queen Street overbridge will be a significant structure. The planting proposed on the embankment batters will soften the bridge and gradually reduce visibility of the road and vehicles. The planting proposed on the foreground ecological offset area (the planting is not shown in the photo simulation) would screen the intersection from this viewpoint.
5	Arapaepae Road (north of the intersection with Tararua Road) looking SE towards Ō2NL and the Tararua Road interchange	The viewpoint is to illustrate Ō2NL on the open land east of Levin (in the area of the planned Tara-Ika urban development) and the proposed Tararua Road interchange. The photosimulation illustrates the set-back of the highway from Arapaepae Road and its relatively low prominence because of the flat terrain. The lights, signage, and wire-rope barriers (which are not depicted in the photo simulation) would increase the prominence of the intersection. At the same time, the planting proposed on the embankment batters and adjacent to the highway will soften Ō2NL and gradually reduce visibility of the highway and vehicles. Development of the planned Tara-Ika urban development would also screen the views from this viewpoint. Following development of Tara-Ika, visibility of Ō2NL will be largely confined to its immediate urban surroundings.
6	Muhunoa East Road (near #205) looking SE to Muhunoa East Road overbridge and Ō2NL.	The viewpoint is to illustrate the Muhunoa East Road overbridge, particularly from adjacent properties. It depicts the eastern ramp, with the bridge and Ō2NL highway beyond. At this point, the concept design has the highway on a low embankment.

#	Viewpoint	Commentary
		The photo simulation illustrates that the overbridge will be a significant structure, its height increased by the highway being on an embankment. At this proximity the bridge forms the skyline, and meaning the bridge and ramps are dominant, and block views to the south. It illustrates that the Project will deviate Muhunoa East Road from its current straight alignment. The planting proposes will soften both the bridge ramps and the main Ō2NL highway and traffic.
7	Private property at 210 Muhunoa East Road looking south towards bridge over Ohau River.	The viewpoint is to illustrate the Ohau River crossing and the section of Ō2NL on the terraces north of the river. In this instance, a viewpoint from private land has been used because of the lack of accessible public viewpoints. The photo simulation depicts the section of Ō2NL on embankment across the lowest river terrace and the shorter flood relief bridge, as well as the bridge across the river itself. It also depicts the SUP on the west side of Ō2NL. The photo simulation illustrates that, while for much of its route Ō2NL is close to grade, it will be more prominent where it is on embankment such as across the lower river terrace. The planting proposed will help anchor the project. It will soften the highway and gradually reduce the prominence of traffic.
8	Kuku East Road (near #111) looking south-east toward Kuku Road East overbridge and	The viewpoint is to illustrate public viewpoints at Kuku East Road, including Kuku Stream in the right of the image. The photo simulation illustrates that the potential height and prominence of the Kuku

#	Viewpoint	Commentary
	Ō2NL. Kuku Stream to right.	East Road overbridge will be reduced by the highway being in a shallow cut at this location. Visibility of the highway and bridge will also be limited by the relatively low elevation. The planting proposed will help anchor the highway and overbridge.
9	Private property at 121A North Manakau Road looking north-west toward Waikawa Stream.	The viewpoint is to illustrate the Waikawa Stream crossing. In this instance, a viewpoint from private land has been used because of the lack of accessible public viewpoints. The photo simulation illustrates that the bridge launches from a terrace on the south bank, sits relatively low in the landscape, and spans a wide section of riverbed to accommodate changes in meander. The proposed planting and restoration upstream and downstream will help visually anchor the highway and increase the natural appearance of the stream.
10	North Manakau Road (near #51) looking east towards Ō2NL and North Manakau Road overbridge	The viewpoint is to depict the section of Ō2NL north of Manakau. The photo simulation illustrates that Ō2NL follows the toe of the hills at the back of plains in the section north of Manakau. It illustrates that the highway sits relatively low in the landscape and passes through a cutting, reducing the potential elevation and prominence of the North Manakau Road overbridge. The planting proposed will further gradually soften the highway and traffic (foreground proposed planting would further screen views from this specific viewpoint).
11	Manakau Heights Drive looking south-west toward	The viewpoint is to depict the section of Ō2NL through the Manakau Downlands landscape domain south of Manakau village, and the

#	Viewpoint	Commentary
	highway, Pukehou in left background	outlook from properties on Manakau Heights Drive. The photo simulation illustrates the prominence of the highway through this area given its elevation on embankment and because it traverses the middle of the valley. It also illustrates the extent to which separation and foreground vegetation will help soften outlook. The planting proposed will gradually soften the highway and traffic.
12	South Manakau Road looking south-east to Ō2NL and bridges over South Manakau Road, Manakau Stream, and Waiauti Stream	The viewpoint is to depict one of the most elevated sections where Ō2NL crosses the floodplain of the Manakau and Waiauti Streams on a long and high embankment. The photo simulation illustrates that this section of Ō2NL will be relatively prominent given the high embankment and the retaining walls north of South Manakau Road. It illustrates that South Manakau Road will remain at grade on its existing alignment. The planting proposed will gradually soften the embankments, highway and traffic. The restoration of the Waiauti Stream depicted in the foreground will contribute to the stream's natural character and offset the presence of the highway on the stream valley.
13	Existing SH1 (adjacent to #419) looking south-west towards Ō2NL. Pukehou in background.	The viewpoint is to depict the section of Ō2NL around the toe of Pukehou. The viewpoint depicts on of the clearest views from the existing SH1. The photo simulation illustrates that the highway is partly embedded in terraces around the toe of Pukehou and partly on embankment across the intervening gullies. It illustrates the

#	Viewpoint	Commentary
		avoidance of Pukehou itself while views of the landmark will be available for travellers (the alignment curves around the hill). It also illustrates that the SUP reverts to the existing SH1 for this part of the project. The proposed planting will gradually soften the highway and traffic.
14	Existing SH1 (adjacent to 141) looking south-east to roundabout and southern tie-in	The viewpoint is to depicts the half-interchange and southern tie-in with the rest of the Wellington Northern Corridor (ie the northern end of the Pekapeka to Ōtaki section). The foreground road will become an extension of Taylors Road. The roundabout is to the left, the north-bound offramp is in the middle ground and, beyond, the Ō2NL highway underpass for the south-bound onramp. The photo simulation illustrates that the southern tie-in and half interchange will be a major structure in a rural landscape. It illustrates the elevation and prominence of the embankment, roundabout, and ramps. The proposed planting will help visually anchor the interchange and gradually soften the highway and traffic (proposed foreground planting, the extent of which is depicted by dashed yellow lines, would screen part of the interchange from this viewpoint).