



# *Warkworth to Wellsford*

## **Landscape and Visual Effects Assessment**




July 2019

# QUALITY ASSURANCE

## Prepared by

Jacobs GHD Joint Venture in association with Boffa Miskell Ltd. Prepared subject to the terms of the Professional Services Contract between the Client and Jacobs GHD Joint Venture for the Route Protection and Consenting of the Warkworth to Wellsford Project.

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		Name	Signature	Name	Signature	Date
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Prepared by: Chris Bentley (Boffa Miskell Ltd)

Reviewed by: Tom Lines (Boffa Miskell Ltd) and Justine Bennett (GHD Ltd)

Approved by: Brad Nobilo (GHD Ltd)

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# GLOSSARY OF ABBREVIATIONS

The table below sets out the technical abbreviations.

Abbreviation/ acronym	Term
AADT	Average Annual Daily Traffic
AEE	Assessment of Effects on the Environment
AUP(OP)	Auckland Unitary Plan Operative in Part
CMA	Coastal Marine Area
Council	Auckland Council
CVA	Cultural Values Assessment
DBC	Detailed Business Case
DOC	Department of Conservation
ha	Hectares
HCV	Heavy Commercial Vehicles
HNZPT	Heritage New Zealand Pouhere Taonga
km	Kilometres
km <sup>2</sup>	Square kilometres
km/h	Kilometres per hour
m	Metres
m <sup>2</sup>	Square metres
m <sup>3</sup>	Cubic metres
MCI	Macroinvertebrate Community Index
MfE	Ministry for the Environment
NoR	Notice of Requirement
NSMA	Natural Stream Management Area
ONF	Outstanding Natural Feature as defined in the AUP(OP)
ONL	Outstanding Natural Landscape as defined in the AUP(OP)

Abbreviation/ acronym	Term
P-W	Ara Tūhono Pūhoi to Wellsford project
P-Wk	Pūhoi to Warkworth project
RMA	Resource Management Act 1991
RPS	Regional Policy Statement
SEA	Significant Ecological Area as defined in the AUP(OP)
SH(x)	State highway (number)
Transport Agency	NZ Transport Agency
ULDF	Urban and Landscape Design Framework
ZTV	Zone of Theoretical Visibility

# GLOSSARY OF DEFINED TERMS

The table below sets out the defined terms (and some acronyms above apply)

Term	Definition
Amenity values	Defined in section 2(1) of the RMA as “those natural or physical qualities and characteristics of an area that contribute to people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes.”
Conditions	Conditions placed on a resource consent (pursuant to section 108 of the RMA) or conditions of a designation (pursuant to subsection 171(2)(c) of the RMA).
Construction works	Activities undertaken to construct the Project.
Designation	Defined in section 166 of the RMA, as “a provision made in a district plan to give effect to a requirement made by a requiring authority under section 168 or section 168A or clause 4 of Schedule 1 of the RMA.”
Earthworks	Defined in section J1 of the AUP(OP), as disturbance of soil, earth or substrate land surfaces. Includes: blading, boring (greater than 250 mm diameter); contouring; cutting; drilling (greater than 250 mm diameter); excavation; filling; ripping; moving; placing; removing; replacing; trenching; and thrusting (greater than 250 mm diameter). Excludes: ancillary forest earthworks; and ancillary farming earthworks.
Ephemeral stream	Defined in section J1 of the AUP(OP), as stream reaches with a bed above the water table at all times, with water only flowing during and shortly after rain events. This category is defined as those stream reaches that do not meet the definition of permanent river or stream or intermittent stream.
Fish passage	The movement of fish between the sea and any river, including up-stream or downstream in that river.
Indicative Alignment	<p>An indicative road design alignment assessed by the technical experts that may be refined on detailed design within the designation boundary.</p> <p>The Indicative Alignment is a preliminary alignment of a state highway that could be constructed within the proposed designation boundary. The Indicative Alignment has been prepared for assessment purposes, and to indicate what the final design of the Project may look like. The final alignment for the Project will be refined and confirmed at the detailed design stage.</p>

Term	Definition
Intermittent stream	<p>Defined in section J1 the AUP(OP), as stream reaches that cease to flow for periods of the year because the bed is periodically above the water table. This category is defined by those stream reaches that do not meet the definition of permanent river or stream and meet at least three of the following criteria:</p> <ul style="list-style-type: none"> <li>(a) it has natural pools;</li> <li>(b) it has a well-defined channel, such that the bed and banks can be distinguished;</li> <li>(c) it contains surface water more than 48 hours after a rain event which results in stream flow;</li> <li>(d) rooted terrestrial vegetation is not established across the entire cross-sectional width of the channel;</li> <li>(e) organic debris resulting from flood can be seen on the floodplain; or</li> <li>(f) there is evidence of substrate sorting process, including scour and deposition.</li> </ul>
Kaitiakitanga	Guardianship
Mauri	The essential quality and vitality of a being or entity.
Overland flow path	Defined in section J1 of the AUP(OP), as a low point in terrain, excluding a permanent watercourse or intermittent river or stream, where surface runoff will flow, with an upstream contributing catchment exceeding 4,000 m <sup>2</sup> .
Permanent river or stream	Defined in section J1 of the AUP(OP), as the continually flowing reaches of any river or stream.
Pier	Vertical support structure for a bridge.
Project	The Ara Tūhono Pūhoi to Wellsford Project: Warkworth to Wellsford section, which extends from Warkworth in the south, to the north of Te Hana.
Project area	The area within the proposed designation boundary, and immediate surrounds to the extent Project works extend beyond this boundary.
Project works	All proposed activities associated with the Project.
Proposed designation boundary	The boundary of the land to which the notice of requirement applies.

Term	Definition
Stabilised area	An area inherently resistant to erosion such as rock, or rendered resistant by the application of aggregate, geotextile, vegetation or mulch. Where vegetation is to be used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once an 80% vegetation cover has been established.
State highway	A road, whether or not constructed or vested in the Crown, that is declared to be a state highway under section 11 of the National Roads Act 1953, section 60 of the Government Roothing Powers Act 1989 (formerly known as the Transit New Zealand Act 1989), or under section 103 of the LTMA.
The Dome	The highest elevation within the Dome Forest Conservation Area.

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**APPENDIX A: LANDSCAPE AND VISUAL FIGURES**

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# 1 INTRODUCTION

## 1.1 Overview of the Project

The NZ Transport Agency (Transport Agency) is lodging a Notice of Requirement (NoR) and applications for resource consent (collectively referred to as “the Application”) for the Warkworth to Wellsford Project (the Project).

This report is part of a suite of technical assessments prepared to inform the Assessment of Effects on the Environment (AEE) and to support the Application. This assessment report addresses the actual and potential landscape and visual amenity effects arising from the Project. The assessment considers the effects of an Indicative Alignment and other potential effects that could occur if that alignment shifts within the proposed designation boundary when the design is finalised in the future.

## 1.2 Project description

The Project involves the construction, operation and maintenance of a new four lane state highway. The route is approximately 26 km long. The Project commences at the interface with the Pūhoi to Warkworth project (P-Wk) near Woodcocks Road. It passes to the west of the existing State Highway 1 (SH1) alignment near The Dome, before crossing SH1 just south of the Hōteio River. North of the Hōteio River the Project passes to the east of Wellsford and Te Hana, bypassing these centres. The Project ties into the existing SH1 to the north of Te Hana near Maeneene Road.

The key components of the Project, based on the Indicative Alignment, are as follows:

- a) A new four lane dual carriageway state highway, offline from the existing State Highway 1, with the potential for crawler lanes on the steeper grades.
- b) Three interchanges as follows:
  - i. Warkworth Interchange, to tie-in with the Pūhoi to Warkworth section of SH1 and provide a connection to the northern outskirts of Warkworth.
  - ii. Wellsford Interchange, located at Wayby Valley Road to provide access to Wellsford and eastern communities including Tomarata and Mangawhai.
  - iii. Te Hana Interchange, located at Mangawhai Road to provide access to Te Hana, Wellsford and communities including Port Albert, Tomarata and Mangawhai.
- c) Twin bore tunnels under Kraack Road, each serving one direction, which are approximately 850 metres long and approximately 180 metres below ground level at the deepest point.
- d) A series of steep cut and fills through the forestry area to the west of the existing SH1 within the Dome Valley and other areas of cut and fill along the remainder of the Project.
- e) A viaduct (or twin structures) approximately 485 metres long, to span over the existing SH1 and the Hōteio River.

- f) A tie in to existing SH1 in the vicinity of Maeneene Road, including a bridge over Maeneene Stream.
- g) Changes to local roads:
  - i. Maintaining local road connections through grade separation (where one road is over or under the other). The Indicative Alignment passes over Woodcocks Road, Wayby Valley Road, Whangaripo Valley Road, Mangawhai Road and Maeneene Road. The Indicative Alignment passes under Kaipara Flats Road, Rustybrook Road, Farmers Lime Road and Silver Hill Road.
  - ii. Realignment of sections of Wyllie Road, Carran Road, Kaipara Flats Road, Phillips Road, Wayby Valley Road, Mangawhai Road, Vipond Road, Maeneene Road and Waimanu Road.
  - iii. Closing sections of Phillips Road, Robertson Road, Vipond Road and unformed roads affected by the Project.
- h) Associated works including bridges, culverts, stormwater management systems, soil disposal sites, signage, lighting at interchanges, landscaping, realignment of access points to local roads, and maintenance facilities.
- i) Construction activities, including construction yards, lay down areas and establishment of construction access and haul roads.

For description and assessment purposes in this report, the Project has been divided into the following areas (as shown in Figure 1 below):

- a) Hōteō South: From the southern extent of the Project at Warkworth to the Hōteō River.
- b) Hōteō North: Hōteō River to the northern tie in with existing SH1 near Maeneene Road.

For construction purposes, the Hōteō South section is divided into two subsections being:

- South – from the southern tie in with P-Wk to the northern tunnel portals; and
- Central – from the northern tunnel portals to the Hōteō River.

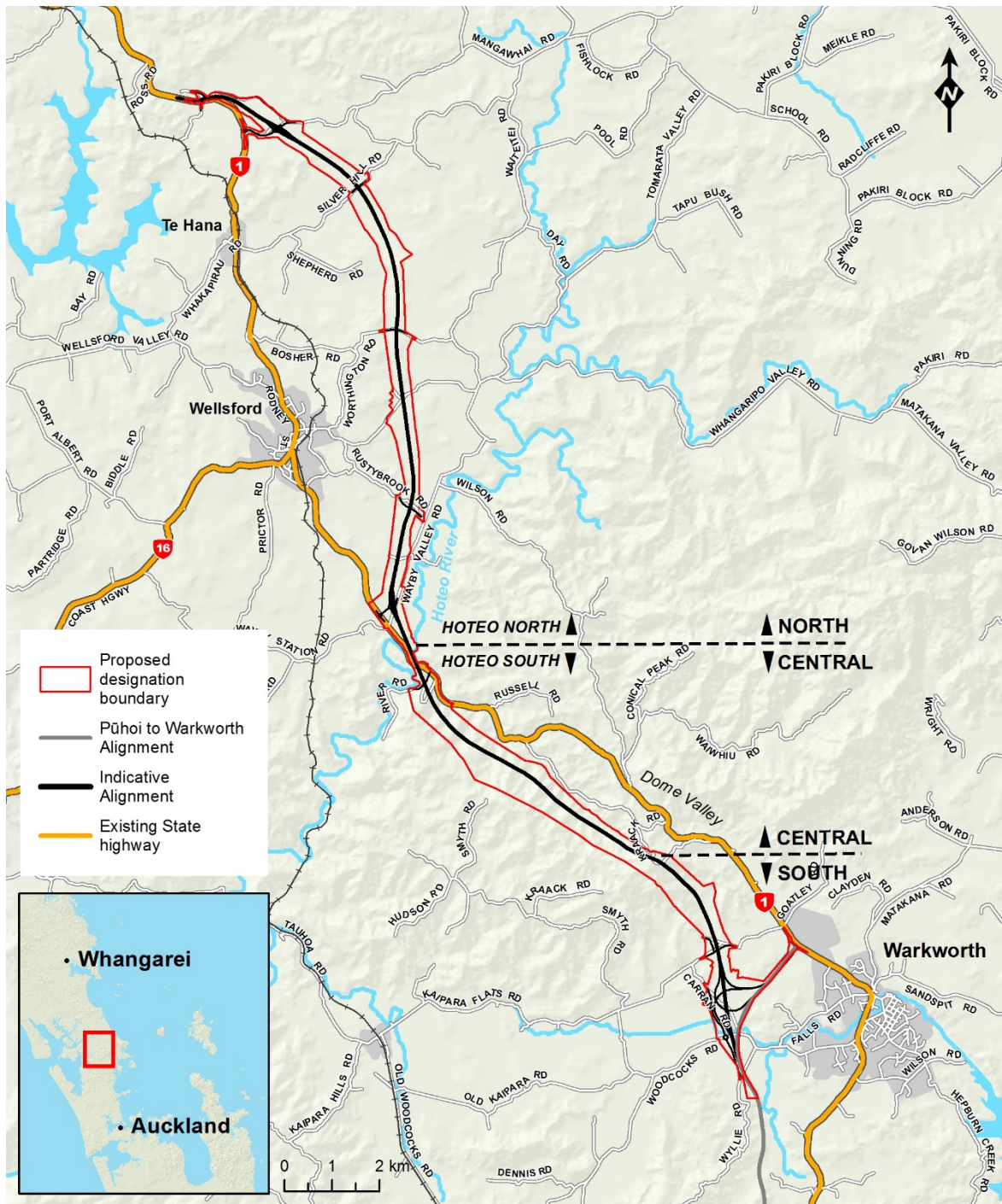


Figure 1 - Project Area

The Indicative Alignment shown on the Project drawings is a preliminary alignment for a state highway that could be constructed within the proposed designation boundary. The Indicative Alignment has been prepared for assessment purposes, and to indicate what the final design of the Project may look like. The final alignment for the Project (including the design and location of associated works including bridges, culverts, stormwater management systems, soil disposal sites, signage, lighting at interchanges, landscaping, realignment of access points to local roads, and maintenance facilities), will be refined and confirmed at the detailed design stage.

A full description of the Project including its design, construction and operation is provided in Section 4: Description of the Project and Section 5: Construction and Operation of the AEE contained in Volume 1 and shown on the Drawings in Volume 3.

### 1.3 Purpose and scope of this report

This report assesses the landscape and visual effects of the Indicative Alignment of the Project as well as proposed changes to the alignment (and design and location of ancillary components) within the proposed designation boundary. This assessment includes the effects on the landscape. Landscape attributes fall into three broad categories, geographic, perceptual and associative. The visual effects assessment considers the effects of the Project on the visual amenity of potential viewing audiences. In summary, the assessment includes:

- (a) An explanation of the methodology used in this assessment;
- (b) A summary of the legislative and planning framework relevant to the assessment of the landscape and visual effects of the Project;
- (c) A description of the landscape character context of the Project area and an appraisal of the Project area in terms of its existing elements, character area and values;
- (d) A description of the key public and private viewing audiences of the Project;
- (e) A description of the landscape effects and visual effects of the Project;
- (f) An outline of recommended measures to avoid, remedy or mitigate adverse landscape and/or visual effects.

For description and assessment purposes, in this report the Project has been divided into the following five landscape character areas:

- (a) Warkworth North
- (b) Dome Valley Area
- (c) Upper Hōteō River Valley
- (d) Wellsford East
- (e) Te Hana North

The basis for delineating these character areas is described in section 3 of this report.

## 2 ASSESSMENT GUIDANCE AND METHODOLOGY

### Assessment guidance and methodology summary

The methodology used for this assessment is consistent with published best practice guidance, including in particular:

- (a) Best Practice Note 10.1, Landscape Assessment and Sustainable Management, New Zealand Institute of Landscape Architects (2010).
- (b) Guidelines for Landscape and Visual Impact Assessment 3<sup>rd</sup> Edition, Landscape Institute (UK) and IEMA (2013).

This assessment is also consistent with the Transport Agency's guidance for landscape assessment<sup>1</sup> and has drawn on other international guidance for describing the landscape baseline.

Our methodology included:

- (a) reviewing relevant literature;
- (b) site visits;
- (c) identifying landscape units (broad types of landscapes found in various places across the Project area);
- (d) identifying character areas (discrete areas along the Project area);
- (e) undertaking "zone of theoretical visibility" (ZTV) analysis to identify the likely extent of visibility of the Project;
- (f) identifying public and private viewpoints;
- (g) preparing visual simulations;
- (h) assessing landscape effects;
- (i) assessing visual amenity effects;
- (j) considering the impact of changes to the alignment and/or design within the designation boundary; and
- (k) considering mitigation.

The assessment considers:

- (a) **landscape effects**; which relate to the effects of change and development on landscape as a resource; and
- (b) **visual effects**; which relate to the effects of change and development on the views available to people and their visual amenity.

<sup>1</sup> NZ Transport Agency, Landscape Guidelines, (Draft September 2014).



Landscape and visual effects are influenced by the sensitivity of the landscape or view/audience and the level of change that would occur as a result of the Project. This assessment uses a seven-point scale of ratings (from 'very low' to 'very high') to describe the significance of the landscape and visual effects resulting from the Project. We have also considered the nature of effects, which may be positive (beneficial), neutral (benign), or negative (adverse) in the context within which they occur.

This section of the report also sets out the limitations of and assumptions relied on in this landscape and visual effects assessment.

## 2.1 Published assessment guidance

This assessment has been undertaken by a New Zealand registered landscape architect<sup>2</sup> with reference to the Quality Planning Landscape Guidance Note<sup>3</sup> and its reference to current best practice guidance, specifically:

- (a) Best Practice Note 10.1, Landscape Assessment and Sustainable Management, New Zealand Institute of Landscape Architects (2010).
- (b) Guidelines for Landscape and Visual Impact Assessment 3<sup>rd</sup> Edition, Landscape Institute (UK) and IEMA (2013).

This assessment is also consistent with the Transport Agency's guidance for landscape assessment:

- (c) Appendix A: NZTA Landscape and Visual Assessment Guidelines, NZ Transport Agency, Landscape Guidelines, (Draft September 2014).

This assessment has also referred to the following published guidance documents in relation to defining and describing the landscape baseline:

- (d) Landscape Character Assessment: Guidance for England and Scotland, Countryside Agency and Scottish Natural Heritage (2002).
- (e) An Approach to Landscape Character Assessment, Natural England (2014).

The above guidance documents have informed the methodology used for this assessment. The key aspects of the methodology, including the effects ratings, visibility analysis and its limitations and assumptions are set out below.

## 2.2 Legislation policy guidance

### 2.2.1 Resource Management Act 1991

The provisions of the RMA of relevance to this landscape and visual assessment are:

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<sup>2</sup> Registered with the New Zealand Institute of Landscape Architects.

<sup>3</sup> <http://www.qualityplanning.org.nz/index.php/planning-tools/land/landscape/landscape-assessment>

- Section 6 sets out matters of national importance that must be recognised and provided for, including:
  - Section 6(a): The preservation of the natural character of rivers and their margins, and their protection from inappropriate subdivision, use and development. This provision is relevant as the Project area adjoins part of a river identified as an ONF (ID 49, Hōteō River). This ONF is identified in the AUP(OP) and discussed below.
  - Section 6(b): the protection of ONFs and ONLs from inappropriate subdivision, use and development. This provision is relevant as the Project area neighbours part of an ONL (ID 32, Dome Forest). This ONL is identified in the AUP(OP) and discussed below.
- Section 7 identifies a range of matters that must be given particular regard, including:
  - Section 7(c): the maintenance and enhancement of amenity values. Section 7(c) is considered in this report in relation to potential effects of the Project on visual amenity (being a subset of amenity values).
  - Section 7(f): the maintenance and enhancement of the quality of the environment. Section 7(f) is considered in this report in relation to the potential effects of the Project on the landscape as a resource in its own right.

## 2.2.2 Auckland Unitary Plan Operative in Part (2017)

### Chapter D: Overlays

Section D10 of the AUP(OP) addresses the ONL and ONF overlays. The key themes in the ONL and ONF objectives and policies of relevance to this assessment relate to: protecting ONLs and ONFs from inappropriate use and development; recognising and providing for the relationship of mana whenua with ONLs and ONFs; protecting the visual integrity of ONLs and ONFs (taking into account the functional or operational needs of infrastructure); and enabling development that maintains or enhances the values and appreciation of ONLs and ONFs.

There are no ONLs within the proposed designation boundary. There is one ONL (ID 32, Dome Forest (subject to appeal)) adjacent to the proposed designation. This ONL overlaps with the Sunnybrook Scenic Reserve and a wider area of hill country to the east of the Reserve. Parts of that Reserve share a boundary with the northern side of the existing SH1 corridor, and thereby neighbour (on the opposite side of SH1) approximately 2.2 km of the proposed designation boundary.

One ONF (ID 49, Hōteō River incised meanders) adjoins approximately 360 m of the proposed designation boundary. This ONF is associated with the Hōteō River corridor and extends along the River's course from around the Project area in the north east, to the Kaipara Harbour in the south west, shown on Figure LV9 in Appendix A: Landscape and Visual Figures.

Further details on the ONL and ONF are provided in sections 4 and 5 of this report.



## Chapter H: Zones

The Project area is almost entirely zoned 'Rural - Rural Production Zone' within the AUP(OP) (except for a short section along the southernmost part of the route which is zoned 'Rural - Mixed Rural Zone'). The delineation of these zones is shown in Appendix A: Figure LV2: AUP(OP) Planning Framework.

This assessment has taken into account the lists of 'characteristics' and 'features' which the AUP(OP) considers to be typical of the rural and mixed rural zones:

- Characteristics; predominantly working rural environment, fewer buildings of an urban scale and general absence of infrastructure which is of an urban type and scale.
- Typical Features: presence of large scale animal farming, extensive horticulture and plantation forests, effects associated with land uses for farming, horticulture, forestry, mineral extraction and cleanfills and accessory farm buildings dot the landscape.

### 2.2.3 Bridging the Gap: Transport Agency Urban Design Guidelines (2013)

Bridging the Gap sets out good practice urban design guidelines for the Transport Agency's projects. The guidelines aim to ensure that Transport Agency projects contribute positively to the environments they sit in.

The guidelines have two overlapping statutory touchstones:

- Under the Land Transport Management Act 2003, the Transport Agency's objective is to undertake its functions in a way that contributes to an effective, efficient, and safe land transport system in the public interest. The Act contains operating principles for the Transport Agency. These specify that in meeting its objective and undertaking its functions, the Transport Agency must exhibit a sense of social and environmental responsibility.
- The RMA promotes the sustainable management of natural and physical resources. The state highway network and the various environments it traverses are resources that fall within the remit of the RMA and need to be sustainably managed. The RMA has a particular focus on ensuring that the adverse environmental effects of activities are avoided, remedied or mitigated.

Importantly, this statutory overlap ensures that State Highway projects are designed to achieve enduring positive design outcomes both for future road users and the natural and social environments affected by projects. The guidelines do not simply seek that adverse effects be avoided, remedied or mitigated under the RMA.

Of particular relevance to this Project, the document provides ten 'urban design principles' which 'reflect the Transport Agency's expectations for the integration of urban design in all phases of highway projects'. These include 'Designing for the context'; 'Contributing to good urban form'; 'Respecting cultural heritage values'; 'Designing with nature'; and 'Creating a positive road users experience'.

These principles have informed and influenced decisions in the design of the Project and the development of mitigation measures relevant to landscape and visual effects identified in this report.

The Project is intended to occur in stages and will evolve and be refined, particularly through the design development phases. The current stage involves preparing a “planning version” Urban and Landscape Design Framework (ULDF)<sup>4</sup>. This framework sets out high level design objectives, principles and opportunities for the Project, as well as illustrative examples that will inform the later design development, and detailed design phases.

The design objectives and principles primarily (but not solely) drive the necessary mitigation solutions to enable the Project to appropriately respond to the RMA. The opportunities in the ULDF outline potential benefits that can be realised through later design stages to support the Transport Agency’s wider LTMA drivers.

The Planning Version ULDF serves other purposes including:

- Providing an understanding of the Transport Agency’s intention for future design and a platform for community and stakeholder comment/input in that final design;
- Facilitating wider integration of environmental effects management (for example, integrating ecological and landscape mitigation to achieve a cohesive whole)
- Informing internal Transport Agency procurement teams and future contractors on key design considerations;
- Assisting Transport Agency engagement with iwi over project design and cultural interface matters.

## 2.2.4 NZ Transport Agency Landscape Guidelines (Draft) (2014)

The Landscape Guidelines document sets out good practice landscape design guidelines for the Transport Agency’s projects. Of relevance to this Project are the ten ‘landscape principles’ which ‘reflect the Transport Agency’s expectations for the integration of landscape considerations in all phases of highway projects’. These include the promotion of a ‘Context sensitive and place based approach’; ‘Facilitate green infrastructure and landscape integration’; ‘Understand the physical conditions’; ‘Deliver a quality user experience’; and ‘Facilitate community engagement and a collaborative approach’. These principles have informed and influenced decisions in the design of the Project and the development of mitigation measures relevant to landscape and visual effects identified in this report.

Other Transport Agency standards which relate to the Landscape Guidelines: include:

- (a) P39: The Standard Specification for Highway Landscape Treatments, NZ Transport Agency (2013).
- (b) Bridge Manual, NZ Transport Agency (3<sup>rd</sup> Edition; May 2016).
- (c) NSW Roads and Maritime Services Bridge aesthetics: Design guidelines to improve the appearance of bridges in NSW (2.6.4 Appearance)

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<sup>4</sup> The different versions of the ULDF are described in section 1.3 of the Planning Version ULDF

- (d) Austroads – Guide to Bridge Technology.
- (e) Guide to Road Tunnels, NZ Transport Agency (2013).
- (f) Pedestrian Planning and Design Guide (October 2009).
- (g) Cycle Network Guidance.

## 2.3 Assessment methodology

Each stage of the assessment methodology is described below. The stages are structured to reflect the (approximate) chronological order in which they were undertaken. Notwithstanding the order, this assessment has formed part of an iterative design and assessment approach. The key findings from the baseline landscape and visual analysis have informed decisions regarding the Indicative Alignment and associated design of the road and its connections. This iterative process has enabled principles and parameters to be set for the siting, layout and design of the final Project, in order to manage (avoid / remedy / mitigate) adverse effects.

### 2.3.1 Initial literature review and site visits

We undertook an initial review of the indicative alignment alongside a desktop review of relevant literature, including published landscape assessments, relevant statutory planning documents and the previous assessment work for Pūhoi to Warkworth project.

An initial site visit, to publicly accessible areas within the Project area and local roads and towns, was also undertaken in April 2017. We followed up the initial site visit with more targeted site inspections in May 2017.

### 2.3.2 Determining landscape baseline

We undertook a desktop exercise to – as far as possible – objectively define the landscape baseline. This initial exercise included the definition and delineation of nine landscape units (or broad types of landscapes e.g. the “Lower Valley Native” landscape unit comprises land lower than 60m in elevation and with primarily native vegetation cover) based upon topography, hydrology (including streams, rivers and their catchments), vegetation, geology and slope. The information that informed the identification of the landscape units is mapped, as referenced in Appendix A – Figures LV2: AUP(OP) Planning Framework, LV3: Elevation, LV4: Slope, LV5: Hydrology, LV6: Land Cover, and LV7: Aerial Photography.

These units are homogenous, that is they are standardised across different geographical areas. The landscape units are mapped on Figure LV8 and described in section 3 of this report.

Information from the resulting landscape units was combined with additional information relating to human uses, and associative and sensory aspects of the landscape (as determined by further desktop study and site visits in April and May 2017). The information that informed this characterisation exercise is provided in Appendix A: Figures LV1: Project Area and Land Use (NZ Topo 50) and LV9: Scheduled Landscapes, Reserves and Historic Places.

With the combined information (Appendix A; LV10) we defined five discrete landscape character areas along the route. Each character area has a demonstrable distinction in its

combination of physical/sensory/associative aspects, to that which exists within the preceding (south) or subsequent (north) character areas. These distinctions are important, as they contribute to a changing identity along the route; which has consequently informed the mitigation principles included within this report and the planning version of the Urban and Landscape Design Framework (ULDF).

These character areas are delineated along the course of the Indicative Alignment (south to north). They are also described more generally in relation to the character of the wider landscape, that is, land to the east and west of the proposed designation. The character areas have been used to structure the description of the landscape and visual baseline (in section 3 of this report), the effects (in section 4 of this report) and have informed the mitigation principles (section 5 of this report).

### 2.3.3 Determining viewing catchments and audiences

We identified the viewing catchments and potential viewing audiences of the road through a three-stage process, comprising:

- (a) A desktop review of aerial photography, contour and land use mapping.
- (b) A computer-based zone of theoretical visibility (ZTV) analysis for the Project area, and each landscape character area. ZTV is a tool to identify the likely extent of visibility of a development. It involves modelling observer points every 80 m along the designed surface of the mainline of the Indicative Alignment and at the highest point of bridges within each character area. ZTV maps are then produced. The colour blocks on the ZTV maps correspond to how many of the grid points are visible from each point on the map. The ZTV maps (Appendix A: Figures LV12 - LV17) therefore show the areas where it may be possible to see the road, and how much of the road is likely to be visible. The ZTV maps are therefore a useful tool for identifying potential viewing locations and audiences (and those with the (likely) clearest views). Above ground features, such as trees and buildings, were modelled and therefore included within the ZTV analysis. However, the ZTV does not accurately account for all vegetation and buildings, and the analysis does not take into account distance. It is an indicative tool only and should be interpreted with caution.
- (c) Visits to the Project area, and the surrounds; including walking within the Project area and walking/driving the surrounding roads.

This process provided us with maps of specific geographical areas which would have visibility of the Project and/or Project works. These areas included publicly accessible areas (e.g. public roads) and private properties (e.g. farms, residential dwellings and forestry land). Potential viewing audiences were then identified, and these are described in section 3, for each character area.

### 2.3.4 Identifying viewpoints and producing visual simulations

We visited the areas identified using the three-stage process described above and photographed a series of specific representative views. Of these views, 22 publicly accessible viewpoints were chosen for inclusion and use within this assessment (mapped on figures in the AEE drawing set LP-Series). These viewpoints were selected based upon the following criteria:

- Being a location that provides a vantage point from which to view the Project;
- Being publicly accessible;
- Having a reasonably high potential number of viewers (determined from a review of aerial photography and onsite inspections); and
- Representative of the range of viewpoints throughout the Project area.

The bulk and location of the Indicative Alignment and the associated earthworks were superimposed onto photographs (visual simulations) from five viewpoints and was undertaken in accordance with the *NZILA Visual Simulations Best Practice Guide* (Appendix B). These photographs were used to verify the extent of the Project and/or Project works that would be visible from the public and private viewpoints, and therefore to gauge the level of potential visual impact on audiences. These five viewpoints were selected from the 22 public viewpoint locations because they illustrate the Project from prominent points, where the Project is elevated above the surrounding area and has a residential viewing audience.

The five visual simulations were chosen (from the initial 22 viewpoints), on the general basis of having the greatest extent of overall visibility towards the road and/or its visually most significant features, and therefore to assist in determining the level of effects both before and following the establishment of the mitigation planting. Therefore, we consider these five viewpoints represent the worst case visual effects from publicly accessible views of the Indicative Alignment. The viewpoints are described further in sections 3 and 4 below and the visual simulations are provided in the Drawings.

### 2.3.5 Assessment of landscape effects

An assessment of landscape effects considers the effects of change and development on landscape as a resource.<sup>5</sup> For the purposes of this assessment, the landscape resource includes:

- (a) The physical elements and features which make up the landscape (e.g. vegetation, watercourses and landform(s)), and in particular those which contribute to the key value(s) of the landscape; and
- (b) The overall character of the landscape, attributed to its combination of physical, sensory and associative aspects.

In order to assess the landscape effects of the Project, we have considered the sensitivity of the resource to the Project specifically, and the level of change (to the landscape resource) that would occur as a result of the Project. Table 1 below sets out a guide we prepared and used to rate the sensitivity of the landscape resource to the Project and the level of change proposed.

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<sup>5</sup> Guidelines for Landscape and Visual Impact Assessment 3rd Edition, Landscape Institute (UK) and IEMA (2013)

**Table 1 - Rating Landscape Sensitivity and Landscape Change.**

Contributing Factors		Higher	Lower
Sensitivity	Susceptibility to change	The landscape is highly distinctive with important biophysical, sensory and associative aspects. There is an absence of landscape detractors, which makes the landscape highly vulnerable to the type of change which would result from the Project. The landscape is highly visible to people.	The landscape lacks any distinctive biophysical, sensory or associative aspects. It has many detractors and has the ability to accommodate the Project without undue consequences to landscape character. The landscape is not easily viewed by people.
	The value of the landscape	The landscape has been identified as outstanding (ONF or ONL).	The landscape is of lower or local importance.
Level of Change	Size or scale	Total loss or addition of key features or elements. Major changes in the key characteristics of the landscape, including significant biophysical/sensory/associative aspects.	The majority of key features or elements are retained, with few additional features or elements. Key characteristics of the landscape remain intact with limited change to biophysical/sensory/associative aspects.
	Geographical extent	Large scale influencing several landscape units/areas.	Site scale influencing the immediate setting.
	Duration and reversibility	Permanent and / or long term (e.g. over 10 years).	Reversible and / or short term (e.g. 0-5 years).

Using Table 1 as a guide, we have determined and attributed an overall rating of the significance of the landscape effect of the Project on each character area. A higher level of significance is generally attached to a greater level of change to a resource of higher sensitivity. Table 3 below provides an explanation of the effects ratings used in this assessment.

### 2.3.6 Assessment of visual effects

An assessment of visual effects considers the effects of change and development on the views available to people, and the visual amenity that people experience as a result of those views.<sup>6</sup> This assessment considers visual effects arising from:

- (a) Changes to public views (including representative, specific or illustrative viewpoints); and
- (b) Changes to private views (e.g. views from within residential properties as represented by the nearest available publicly accessible locations. The changes to these private views were assessed from local roads near the viewing audience and viewed on Google Earth.

In order to assess the visual effects of the Project, we have considered the sensitivity of the viewing audience to the Project specifically, and the level of visual change that would occur as a result of the Project. Table 2 below sets out a guide we prepared and used to rate the sensitivity of the viewing audience to the Project and the level of change proposed.

<sup>6</sup> Guidelines for Landscape and Visual Impact Assessment 3rd Edition, Landscape Institute (UK) and IEMA (2013)

## Limitations and Assumptions of the viewpoint methodology

The following limitations have been encountered, and therefore the following assumptions have been made in carrying out this assessment:

- (a) The assessment of visual effects is based on site visits to publicly accessible locations only. It has not been possible at the time of writing this report to access the entire Indicative Alignment, as much of the route passes through land that is currently held in private ownership. Therefore, the assessment of the impacts of the Project upon landscape elements and features within these private land holdings rely upon our site visits to publicly accessible locations, information from the ecological investigations and our own desktop review of aerial photography and land use/contour information. In addition to site visits, a Zone of Theoretical Visibility (ZTV) analysis was undertaken. Refer to Appendix A, figures LV12-LV17. Only potential viewing audiences outside of the proposed designation boundary have been considered within this report. It is assumed that all private properties within the proposed designation boundary will be acquired.
- (b) This assessment has regard to the broader cultural landscape values identified by Hōkai Nuku and other interested iwi. These are outlined in section 9.18 of the AEE.

Table 2 - Rating Visual Sensitivity and Visual Change

Contributing Factors		Higher	Lower
Sensitivity	Susceptibility to change	Views from dwellings and recreation areas where attention is typically focussed on the landscape.	Views from places of employment and other places such as roads where the landscape context is typically incidental to the focus of attention.
	Value attached to views	Viewpoint is scheduled (e.g. volcanic view shaft) and/or is recognised by the community such that it is identified on tourist maps or in art and literature. High visitor numbers.	Viewpoint is not typically recognised or valued by the community. Infrequent visitor numbers.
Level of Change	Size or scale	Total loss or addition of key features in the view. High degree of contrast with existing landscape elements (i.e. in terms of form, scale, mass, line, height, colour and texture). Full view of the Project.	The majority of key features or elements are retained, with few additional features or elements. Low degree of contrast with existing landscape elements (i.e. in terms of form, scale, mass, line, height, colour and texture). Glimpse/no view of the Project.
	Geographical extent	Front on views. Near distance views. Change visible across a wide area.	Oblique views. Long distance views. Small portion of change visible.
	Duration and reversibility	Permanent and / or long term (e.g. over 10 years).	Transient and / or short term (e.g. 0-5 years).



Using Table 2 as a guide, we have determined and attributed an overall rating of the significance of the visual effect of the Project on each selected viewpoint. A higher level of significance is generally attached to a greater level of change that affects a view/audience of higher sensitivity. See Table 3 below for an explanation of the effects ratings used in this assessment.

### 2.3.7 Recommendations for mitigation

The Project team has, where possible, sought to avoid effects on landscape features and visual effects through route selection and design. The ULDF and subsequent site specific design plans are vital tools in providing principles and design guidance to confirm how the final road design avoids, minimises and mitigates adverse effects. However, as is expected of a project of this size and nature, there will be effects that cannot be avoided. We have specifically considered these effects to ensure that, where possible, they are mitigated or remedied to an appropriate level. The recommended mitigation measures are detailed at section 5.

## 2.4 Significance and nature of effects

### 2.4.1 Significance of effect

We have developed and used a seven-point scale of ratings in this assessment to describe the significance of the landscape and visual effects resulting from the Project.

Table 3 - Rating the Level of an Effect

<b>Very High</b>	Total loss to the characteristics or key elements of the receiving environment and/or visual context amounting to a complete change in landscape character.
<b>High</b>	A high level of effect on the character or key elements of the receiving environment and/or the visual context within which it is seen; and/or a high effect on the amenity derived from it.
<b>Moderate - High</b>	A moderate - high level of effect on the character or key elements of the receiving environment and/or the visual context within which it is seen; and/or a moderate - high level of effect on the amenity derived from it.
<b>Moderate</b>	A moderate level of effect on the character or key elements of the receiving environment and/or the visual context within which it is seen; and/or a moderate level of effect on the amenity derived from it.
<b>Moderate - Low</b>	A moderate - low level of effect on the character or key elements of the receiving environment and/or the visual context within which it is seen; and/or a moderate - low level of effect on the amenity derived from it.
<b>Low</b>	A low level of effect on the character or key elements of the receiving environment and/or the visual context within which it is seen; and/or a low effect on the amenity derived from it.
<b>Very Low</b>	Very low or no modification to the character or key elements of the baseline or available views, i.e. approximating a 'no change' situation.



## 2.4.2 Nature of effect

In combination with assessing the scale of effects, we have considered the nature of effects. Effects can be positive (beneficial), benign (neutral) or negative (adverse) in the context within which they occur (see Table 4).

**Table 4 - Determining the Nature of an Effect**

<b>Negative (Adverse)</b>	The Project would be out of scale with the landscape or at odds with the local pattern and landform which results in a reduction in landscape and/or visual amenity values.
<b>Benign (Neutral)</b>	The Project would complement (or blend in with) the scale, landform and pattern of the landscape maintaining existing landscape and/or visual amenity values.
<b>Positive (Beneficial)</b>	The Project would enhance the landscape and/or visual amenity through removal or restoration of existing degraded landscapes uses and/or addition of positive elements or features.

### 3 EXISTING ENVIRONMENT

#### Existing environment summary

We identified five discrete landscape character areas (Appendix A: Landscape Figure LV10), and described the existing environment in those character areas by reference to the landscape units defined by geology, topography and slope, hydrology, land cover (vegetation), human uses, future development, scheduled features, sensory and perceptual aspect, historical and cultural associations and landscape values. The landscape character areas have been identified as a means of understanding the landscape patterns and elements for this assessment. They do not refer to specific character areas set out for statutory planning purposes. In summary:

- **Warkworth North character area:** This area is characterised by flat valley land, small rural properties and a predominance of agricultural land uses. These land uses include dry stock grazing (primarily sheep), horticulture, orchards and glasshouses. The Mahurangi River left branch and its mature remnant riparian vegetation is a key landscape feature.
- **Dome Valley character area:** This area is characterised by elevated hill country, which contrasts with the flatter valley lands to the north and south and forms a backdrop to views from the northern parts of Warkworth. Notable peaks include The Dome (at 336m AMSL) to the east of the character area and Kraack Hill (at 310m AMSL). Vegetation cover – particularly to the west – is almost entirely comprised of exotic plantation forestry. Areas of indigenous vegetation are found along the north eastern side of the existing SH1 corridor, within an ONL (ID 32, Dome Forest) to the east of the character area, several SEAs, and two DOC reserves, all of which are outside of the proposed designation boundary. The wider Project area contains a number of public walking trails including the Te Araroa national walkway.
- **Upper Hōteao River character area:** The area is characterised by a gently undulating valley landscape featuring Auckland’s longest river (Hōteao) and a number of its key tributaries. Some parts of the river and its tributaries feature connected swathes (and pockets) of indigenous vegetation (some of which are recognised in the AUP(OP) for their ecological value(s)). Land uses within this area are largely pastoral (grazing), with infrastructural activities including SH1 within the character area and the Springhill Aerodrome, and the North Auckland Rail Line.
- **Wellsford East character area:** The area is characterised by sparsely populated undulating to rolling farmland typified by a sequence of low ridges, which rise and form part of a more elevated ridge/land to the west of the character area (around Worthington Road). The Worthington Road ridge provides a physical separation between the character area and the Wellsford settlement. Ridgelines enclose a network of stream courses, which feed into three main catchments, including those of the Hōteao River and Te Hana Creek. The land use is predominantly open pastoral, with limited vegetation cover. The vegetation cover is typically pockets of exotic vegetation.
- **Te Hana North character area:** The area is characterised by sparsely populated undulating to rolling farmland typified by a sequence of low ridges, which form part of a more elevated ridge/land to the east of Te Hana. The land use is predominantly open pastoral, with limited vegetation cover. Any notable pockets

of indigenous vegetation are found around the tributaries and main channel of the Maeneene Stream.

The visual catchment and viewing audiences have also been described for each character area. In summary:

- **Warkworth North character area:** The viewing audiences at the southern end of this character area are located within a wide valley landform, surrounded by more elevated land to the east and west. A number of private residential properties are located on elevated land around Viv Davie-Martin Drive. Some of those properties have dwellings overlooking the Indicative Alignment, and the area within the proposed designation more generally. Publicly accessible viewing locations are limited to Wyllie Road, Woodcocks Road and Carran Road. This section of the road – including the Warkworth Interchange, will be viewed in the context of the Pūhoi to Warkworth section, which is currently under construction. Further to the north and beyond the proposed Warkworth Interchange, the Indicative Alignment passes through a narrower valley landform, which contains a cluster of residential properties along and around Kaipara Flats Road. This road, along with Phillips Road, are the only publicly accessible viewing locations
- **Dome Valley area:** This section of the Indicative Alignment passes through the steeply undulating Dome Valley Area. The Indicative Alignment is proposed to be largely located below the existing grade (i.e. within areas of cut) and would be further enclosed by more elevated landforms and a dense coverage of forest. As such, and due to the limited occurrence of roads or dwellings, this character area has the lowest number of potential viewers of any character area along the entire alignment.
- **Upper Hōteō River area:** In this character area, the Indicative Alignment exits the Dome Valley Area and crosses the existing SH1 and the Hōteō River on a viaduct. This viaduct will be visible to users of the existing SH1 road. Beyond the proposed viaduct, the Indicative Alignment rises as it progresses towards the Wellsford Interchange. This interchange is located within an open, generally flat, part of the Wayby Valley and as such will be visible to users of the existing SH1, Wayby Station Road and Wayby Valley Road. Several nearby residential properties will also have views towards the proposed interchange. Beyond the interchange, the Indicative Alignment continues north along the Wayby Valley and will be visible across parts of Wayby Valley.
- **Wellsford East area:** The Worthington Road Ridge provides a physical and visual barrier between this character area and the Wellsford settlement. The Indicative Alignment intersects Whangaripo Valley Road (via a proposed overbridge) and will therefore be visible to users of this road and nearby Borrows Road. The proposed bridge will also be visible from several nearby private properties and residential dwellings, particularly off Borrows Road. The Indicative Alignment also crosses Farmers Lime Road, which is proposed to be realigned to provide access across the Project. The Indicative Alignment will therefore be visible to users of Farmers Lime Road. Beyond this road, the Indicative Alignment passes through sparsely populated open farmland and has a limited visual catchment in relation to any known public or private viewing audiences.
- **Te Hana North area:** In this character area, the Indicative Alignment passes through a sparsely populated area to the east of Te Hana. The Indicative Alignment intersects with Silver Hill Road, which it is proposed to cross via a bridge. The

proposed bridge and embankments will be visible along nearby parts of Silver Hill Road and a number of nearby private properties. North of the Silver Hill Road bridge, the Indicative Alignment passes through open farmland before arriving at Mangawhai Road, where the Te Hana Interchange is proposed to be located. The Te Hana Interchange and the associated roading realignments/connections will be visible across parts of Mangawhai Road, Vipond Road and the existing SH1. The Interchange will be visible from several private properties along those roads, including a relatively recent subdivision (at Charis Lane).

### 3.1 Published landscape studies

A number of existing landscape studies cover the Project area. These studies range from high level regional character assessments (dating back over 30 years) to assessments focused on identifying ONLs. These are described below in chronological order. These studies were used by the pre-Auckland Council territorial authorities to identify important landscapes and informed the AUP(OP) provisions. A list of the key studies follows.

- Auckland Regional Landscape Study (1984)
- Auckland Regional Landscape Assessment (2003)
- Landscape Review of Outstanding Natural Landscapes (2008)
- Landscape Analysis of Rural Rodney (2009)
- Natural Character Assessment – Auckland Region (2013)
- Pūhoi to Warkworth Urban and Landscape Design Framework (2015)

### 3.2 Landscape areas

In order to define the character of a landscape<sup>7</sup> we assessed the landscape based on elevation, landform, land cover (including vegetation), and land use to define landscape units. From this we identified five discrete landscape character areas along the course of the proposed designation (south to north) (see Figure 2). The landscape character areas are shown in Appendix A: Landscape Figure LV10; Landscape Units and Landscape Character areas and are described in full below. Each description includes the landscape units (i.e. the underlying physical characteristics) and overall character of the landscape character area and that of the land to the east and west (laterally), which has influenced the demarcation of where each character area starts and ends.

<sup>7</sup> Landscape character is a distinctive combination of landscape attributes that give an area its identity: [https://nzila.co.nz/media/uploads/2017\\_01/nzila\\_ldas\\_v3.pdf](https://nzila.co.nz/media/uploads/2017_01/nzila_ldas_v3.pdf)

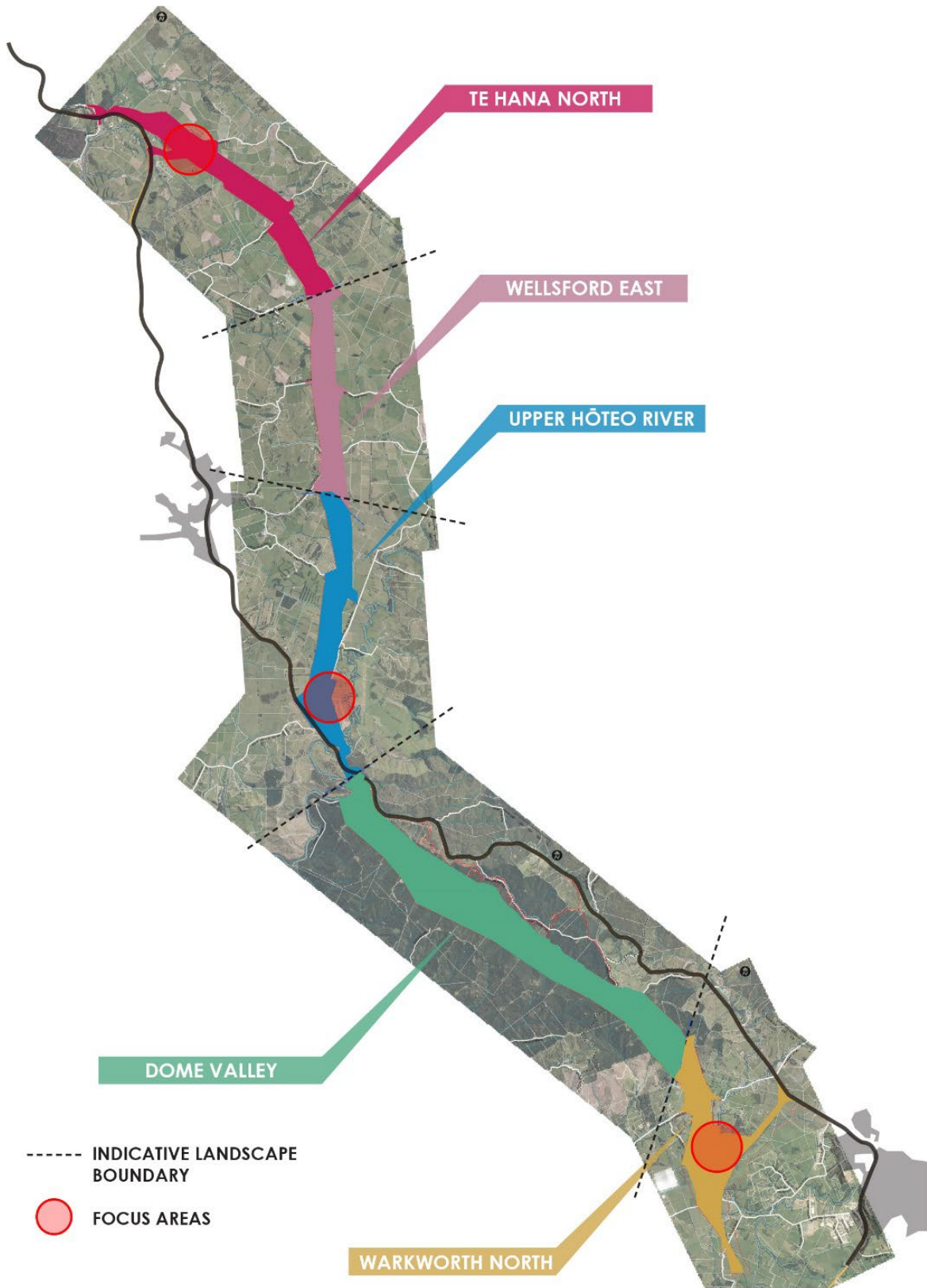


Figure 2 - Landscape Character Areas



### 3.2.1 Warkworth North

(Refer Appendix A Landscape and Visual Figures; Figure LV10)

#### Representative Character Photography



Plate 1 - Kaipara Flats Road near Phillips Road, within the character area (showing areas of lower valley pasture, enclosed to the north by the rising land associated with the Dome Valley).



Plate 2 - Carran Road, within the character area (showing the agricultural activities within the character area; where timber stock loading ramps and post and wire fencing are a common feature).

#### Landscape Units

This character area is comprised primarily of 'Lower Valley Pasture' with a single low ridge, described below, being classified as 'Hill Slopes Pasture'. Some isolated (as opposed to long connected swathes) of 'Lower Valley Native'; 'Hill Slopes Native' and 'Hill Slopes Exotic' contribute to a wide assortment of unit typologies over a small geographical area within this character area. Overall the character area consists of flat to undulating topography and slope, which is demonstrably different from the more steeply undulating and elevated hill country to the north.

#### Geology, Topography and Slope

The underlying geology in this character area consists primarily of interbedded layers of sandstone and mudstone (Pakiri Formation (MwP)). The valleys comprise more recent alluvial soils. This geology is outlined more fully in the AEE.

The topography and slope in this character area is characteristic of the flatter valley lands that extend west from Warkworth through to the Kaipara Flats. The only elevated area is a low ridge that extends southwards from the Dome Valley Area towards Kaipara Flats Road. The topography is classified<sup>8</sup> primarily between 'Flat to Gently Undulating' (0-3 degrees) to 'Undulating' (3-7 degrees) and forms a demonstrable physical change from the more steeply undulating and elevated hill country to the immediate north, and to the south (i.e. around the Dark Summit (at the end of Wyllie Road)/Moir Hill).

## Hydrology

The character area spans two main river catchments, which are separated by the low ridge identified above. On the eastern side of this ridge, the character area crosses the Mahurangi River (Left Branch), which is within the Mahurangi Catchment. On the western side of the ridge, the character area crosses a tributary to the Kourawhero Stream, which is a tributary of the Hōteō River, and is within the Hōteō Central Catchment.

## Land Cover (Vegetation)

As indicated by the underlying landscape unit classifications, vegetation cover in this character area is primarily comprised of pasture (grass). Some indigenous vegetation is evident alongside the stream courses, particularly the Mahurangi River (Left Branch) and its tributaries. Other vegetation of an agricultural character is also evident, with exotic shelterbelts, shade trees and amenity planting (of both exotic and indigenous species) found within and demarcating the rural residential properties.

A detailed audit of the vegetation types and their condition within this character area is included within the Ecological Assessment Report, which forms part of Volume 2 to the AEE.

## Human Uses and Future Development

This character area, and the land to the east and west, is predominantly used for agricultural activities, as it has been historically during the time of European settlement. These activities comprise dry stock grazing (primarily sheep), with smaller areas of horticultural land (e.g. orchards). Large commercial glasshouses to the west of the proposed designation are also present on Woodcocks Road. Timber stock loading ramps and post and wire fencing is common throughout the character area.

Residential properties and dwellings are typically scattered at low density through the lands east and west of the character area. The highest frequency of residential properties occurs alongside and around Kaipara Flats Road, which also features smaller lots used for lifestyle purposes (as opposed to agricultural production). The character area includes the rural residential margins of Warkworth.

The Auckland Plan and the AUP(OP) indicate that Warkworth is to become a centre for intensive future growth. Both documents actively promote and provide for the development of Warkworth as a key employment and settlement node in the north of the Auckland region. Both documents also signal future growth via a Future Urban Zone to the south east of the character area.

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<sup>8</sup> New Zealand Resource Inventory Arc/Info Data Manual Edition 1, May 1992

## Scheduled Landscapes, Reserves and Tracks

The following features are found within this character area:

- Several SEAs are located within the character area (outside of the proposed designation) and part of an SEA (ID 2287) alongside the Mahurangi River (Left Branch) are located within the proposed designation. Refer Figure LV9.
- The Te Araroa Trail extends north south through the west side of this character area.

## Sensory and Perceptual Aspects (Aesthetics, Perceptions, Legibility, Transient)

This character area features a rural aesthetic, defined by a sense of enclosure provided by the foreshortening of views via boundary/roadside vegetation (e.g. along parts of Kaipara Flats Road). This character area also has a sense of a finer development scale/grain in terms of its residential properties which is clearly a result of its proximity to Warkworth, despite some larger scale elements such as the glasshouses along Woodcocks Road.

## Historical and Cultural Associations

The following historical and cultural associations are noted for this character area:

- The Mahurangi River has European and Māori historical significance.
- The wider landscape is known locally for its productive heritage, which began initially with timber logging, continued with lime/cement manufacturing (at the Wilsons Cement Works in south east of Warkworth) and later pastoral agricultural activities.
- A colonial 19<sup>th</sup> Century farm homestead known as Woodthorpe (NZAA ref R09/2064) is located within this character area, to the north of Phillips Road. Refer to the Heritage Report in the AEE for details of its significance.
- The wider landscape surrounding the character area – and around Warkworth more generally – is known to have featured a number of US Military Camps during the Second World War. The Heritage Report indicates that there were several military camps around the Woodcocks Road and Wyllie Road area.

## Landscape Value(s)

There are no nationally or regionally scheduled landscapes (e.g. ONL or ONFs) in this character area. The highest landscape values are attributed to the vegetated stream courses, and particularly those parts of the Mahurangi River (Left Branch) which feature indigenous vegetation cover and are identified within the SEA overlay in the AUP(OP).

We consider that the landscape within and surrounding this character area is of a low/local importance. That is, the landscape values are primarily appreciated at a local level by the local population.

## Summary of Key Characteristics

We consider the key characteristics of this character area are:



- A wide assortment of landscape unit typologies, although the character area is primarily comprised of ‘Lower Valley Pasture’.
- Flat to undulating topography and slope, which is demonstrably different from the more steeply undulating and elevated hill country to the north and south.
- A pattern of ownership that creates the smallest and most densely arranged properties of any character area within the Project area. The character area includes the rural residential margins of Warkworth.
- Agricultural activities are the predominant land use, comprising dry stock grazing, horticultural land, and some large glasshouses.
- The Mahurangi River, and its enclosing vegetation is a key landscape feature.

### 3.2.2 Dome Valley Area

(Refer Appendix A Landscape and Visual Figures; Figure LV10)

#### Representative Character Photography



Plate 3 - Saunders Road, within the character area (showing the predominant plantation pine forestry land use, which also features areas of weedy regrowth around forestry tracks and laydown sites).



Plate 4 - River Road, within the character area (overlooking the Hōteō River corridor which is enclosed by plantation forestry and smaller pockets of indigenous vegetation around the Hōteō River’s margins).

#### Landscape Units

This character area is comprised almost entirely of the ‘Hill Slopes Exotic’ landscape unit, with a discrete area of mostly ‘Upland Ridge Exotic’ identified around Kraack Hill.

## Geology, Topography and Slope

The underlying geology in this character area consists entirely of interbedded layers of sandstone and mudstone (Pakiri Formation (MwP)). This geology is outlined more fully in the AEE.

The topography in this character area is characteristic of a wider band of elevated hill country that stretches from the east coast (around Leigh/Pakiri) to the west coast (around Tauhoa). This land comprises a complex network of peaks, ridges, spurs, and narrowly incised stream gullies. Notable peaks include The Dome (at 336m AMSL), to the east of the character area, and Kraack Hill (at 310m AMSL), within the character area. This character area aligns largely within a valley landform to the south and north of Kraack Hill. The topography is classified<sup>9</sup> primarily between 'Rolling' (7-15 degrees) to 'Very Steep' (greater than 35 degrees), which forms a demonstrable physical change from the less steeply undulating, wide river valleys to the immediate north and south of this character area.

## Hydrology

The character area spans two river catchments, which are separated by an upland ridge sequence that extends from the summit of Kraack Hill. On the northern side of this ridge, there is a number of minor tributaries which feed into the Hōteō River. The Hōteō River forms one of several rivers within what is referred to in Auckland Council's stormwater management areas as the 'Wayby Catchment'. On the southern side of the ridge there is a tributary to the Kourawhero Stream – which in turn forms a tributary of the Hōteō River and is within the 'Lower Hōteō Catchment'.

## Land Cover (Vegetation)

As indicated by the underlying landscape unit classifications, this character area and its surrounding lands – particularly to the west – are almost entirely covered in exotic vegetation. This land cover is due to the predominant land use activity being exotic plantation forestry of *Pinus radiata* (Monterey Pine). This land use results in a managed landscape that changes significantly between the various phases of the forestry cycle, i.e. planting, forest management and harvest. The forest in this character area (Matariki Forest) has been harvested before and is due to be harvested again from 2026s to 2034s.

A discrete area of indigenous vegetation cover is identified within the character area on the upper southern slopes around the Kraack Hill summit. To the west of the character area, areas of indigenous vegetation are found along the northern side of the existing SH1 corridor, including around the Sunnybrook Reserve.

The vegetation types and their condition within this character area are described in the Ecological Assessment Report.

## Human Uses and Future Development

This character area, and the land to the east and west, is predominantly used for exotic plantation forestry. A characteristic of that land use is the occurrence of forestry roads (typically along ridgelines), forestry tracks and laydown ('skid') sites upon minor ridges and spurs, a predominance of well-ordered plantation 'blocks' (at various stages of growth),

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<sup>9</sup> New Zealand Resource Inventory Arc/Info Data Manual Edition 1, May 1992

and areas of felled pine. The latter areas often feature woody debris ('slashings') and an occurrence of exotic colonising weed species (e.g. Pampas grass).

Human settlement is limited within this character area. Much of the elevated hill country being is held in large privately owned titles and utilised for commercial forestry activities. Residential properties are therefore limited and occur almost exclusively alongside the existing SH1 road corridor.

### **Scheduled Landscapes, Reserves and Tracks**

The following features are found within the wider character area, outside of the proposed designation boundary:

- Several SEAs, including one which is overlain across Sunnybrook Reserve and a nearby stream course are found within the wider surrounding area (SEA's T\_814, T\_6634, T\_6635, T\_6636, T\_947, T\_6934, T\_813, T\_2250, T\_6911, T\_766, T\_2305 & T\_2284). None of these are within the character area.
- Sunnybrook Scenic Reserve (managed by DOC) lies to the immediate north-east of the character area and to the east of SH1.
- The Dome Forest Reserve (managed by DOC) lies to the east of the character area and to the east of SH1.
- ONL (ID 32, Dome Forest) lies to the north-east of the character area and to the east of SH1.
- The Dome Walkway forms part of 'Te Araroa Trail - The Long Pathway'; a national walkway running the length of the country (north-south). This walkway passes through the Dome Forest (and wider character area) before crossing SH1 to follow Kraack Road where it passes through the proposed designation over Kraack Hill to meet Smyth Road.

### **Sensory and Perceptual Aspects (Aesthetics, Perceptions, Legibility)**

The forested land cover results in a sense of cohesiveness across this character area and its surrounding area (east-west). This forest cover curtails views and provides a sense of enclosure throughout the character area, including from the existing SH1 road. However, the landform of the area remains legible, via the enclosure provided by surrounding ridgelines and spurs, and the openings/folds provided by the numerous gullies.

The overall coverage of vegetation (although predominantly exotic production forest), and steeply undulating landform, likely results in a perception of naturalness for some people from within publicly accessible areas (e.g. SH1 and the nearby DOC reserves).

Notwithstanding the above, the transient characteristics of the exotic plantation forestry activities (i.e. the cycles of planting-felling-replanting), will at certain times, reinforce a sense of this landscape being predominantly managed by humans as a commercial forest.

## Historical and Cultural Associations

Remnants of the old coach road that extended through the Dome Valley are still evident today. The most visible appear to be on the river flats by the Hōteō River.

## Landscape Value(s)

There are no nationally or regionally scheduled landscapes (e.g. ONL or ONFs) within this character area, although there is an ONL nearby (Dome Forest).

We consider that the values of the landscape within and surrounding this character area have value to the local community and people who visit from further afield. The proposed designation is however located to the west of SH1 and is entirely comprised of exotic plantation forestry.

The Te Araroa trail is a national recreational asset and one which is likely valued at a national level. We acknowledge that this value is chiefly related to the availability of a nationally connected walkway rather than the specific landscape values at this location. The trail crosses the character area on the northern side of the Kraack Hill ridge, where the Project is in a tunnel.

## Summary of Key Characteristics

We consider the key characteristics of this character area (and the surrounding land to the east and west more generally) are:

- A complex network of peaks, ridges, spurs, and narrowly incised stream gullies. This elevated hill country contrasts with the flatter valley lands to the north and south and forms a backdrop to views from the northern parts of Warkworth.
- Notable peaks including The Dome (at 336m AMSL), to the east of the character area, and Kraack Hill (at 310m AMSL), within the character area.
- Vegetation cover – particularly to the west – is almost entirely comprised of exotic plantation forestry which over time is systematically felled. Areas of indigenous vegetation are found along the northern side of the existing SH1 corridor along with riparian margins of some waterways.
- The pattern of ownership creates the largest/least densely arranged properties of any character area.
- A number of high value landscapes, albeit not in the character area, have been noted as being part of the broader context. These include an ONL (ID 32, Dome Forest) to the east of the area, several SEAs, two DOC reserves and a number of public walking trails.

### 3.2.3 Upper Hōteō River Valley

(Refer Appendix A Landscape and Visual Figures; Figure LV10)

## Representative Character Photography



Plate 5 - Wayby Valley Road, within the character area (showing the flat pastoral landscape, and the straight Wayby Valley Road which features along the valley floor).



Plate 6 - Rustybrook Road (showing pastoral lands, with occasional amenity vegetation and enclosing undulating land to the west of the character area).

## Landscape Units

This character area is comprised almost entirely of the ‘Lower Valley Pasture’ landscape unit. Some areas of ‘Lower Valley Native’ were identified around the Hōteō River, and in isolated pockets elsewhere within the valley.

## Geology, Topography and Slope

This area consists of a varied underlying geology. It includes alluvial sediments (Holocene Alluvium (Qa)) alongside the Hōteō River; a complex of mudstone, sandstone, shale and/or limestone (Mangakahia Complex (Kk)) to the west; and a small area of limestone (Mahurangi Limestone (Omm)) across its northern parts. This geology is outlined more fully in the AEE. The topography in this character area – and the land to its immediate east and west – is characterised by a broad valley landform, which is enclosed by the steeply elevated hill country (a continuation of the Dome Valley Area) further to the east, and by a sequence of lower ridges to the west. The topography is classified<sup>10</sup> primarily between ‘Flat to Gently Undulating’ (0-3 degrees) and ‘Undulating’ (3-7 degrees), which forms a demonstrable physical change from the steeply undulating, hill country to the immediate south and the more undulating elevated land to the north of this character area.

<sup>10</sup> New Zealand Resource Inventory Arc/Info Data Manual Edition 1, May 1992



## Hydrology

The character area is contained entirely within the 'Wayby Catchment'. This catchment features the Hōteō River and a number of its tributaries. The character area contains the Hōteō River within its southern parts. It also includes parts of an unnamed stream (including an area of wetland), that forms a tributary to the Hōteō River.

## Land Cover (Vegetation)

As indicated by the underlying landscape unit classifications, vegetation cover is primarily pasture (grass). The banks of the Hōteō River feature connected swathes of vegetation, large parts of which are understood to include indigenous species. An area of indigenous vegetation also extends from the banks of the Hōteō River, and up a ridge (partly) within and immediately east of the character area (located across Lot 1 DP 357545 and Lot 2 DP 398682) (SEA\_T\_683). Three other smaller, discrete, areas of indigenous vegetation (SEA\_T\_6854, SEA\_T\_6851 and SEA\_T\_685), are located within the character area north of the Hōteō River.

Other vegetation of an agricultural character is also evident in this character area, with exotic shelterbelts, shade trees and amenity planting (of both exotic and indigenous species) found within and demarcating certain rural residential properties. Such planting is most prevalent between Rustybrook Road and SH1 and features a pattern of lineal shelterbelts. That pattern of planting contrasts with the more continuous vegetation and sense of enclosure found around Wayby Valley Road. Some discrete areas of indigenous vegetation, including a stand of mature Totara, are found close to the intersection between Wayby Valley Road and Rustybrook Road.

A detailed audit of the vegetation types and their condition within this character area is included within the Ecological Assessment Report.

## Human Uses and Future Development

This character area, and the land to the east and west, is predominantly used for agricultural activities; as it has been historically. These activities primarily comprise dry stock grazing (primarily cattle/sheep), with smaller areas used for equestrian activities. Post and wire fencing is common throughout the area, demarcating paddocks and road boundaries.

Residential properties and dwellings in this character area and the surrounding land to the east and west more generally, are typically scattered at a low density. The highest frequency of residential properties occurs alongside and around Wayby Valley Road.

This character area contains parts of SH1, Wayby Valley Road, Rustybrook Road and some smaller driveways. Other notable human uses east and west of the character area include the Wellsford Golf & Squash Club and the Wellsford Waste Water Treatment Plant, which are located approximately 800 m to the west; and the Springhill Aerodrome, which is located approximately 360 m to the east, at its closest point. The North Auckland Railway Line is located west of SH1. An area of land to the west of the character area, on the eastern outskirts of Wellsford immediately north of the golf course – is zoned Future Urban Zone in the AUP(OP).

## Scheduled Landscapes, Reserves and Tracks

The following features are found within and/or around (east-west) this character area:

- ONF (ID 49) is located to the west of this character area, across parts of the Hōteō River and its immediate riparian margins/banks.
- This character area overlaps with four SEAs (shown on LV9), including around the Hōteō River and its vegetated banks where it crosses the river, and around a wetland north of the River. The SEAs SEA\_T\_683, SEA\_T\_6854, SEA\_T\_6851 and SEA\_T\_685
- The Hōteō Domain/Recreational Reserve lies to the immediate west of the character area, close to the Hōteō River.

## Sensory and Perceptual Aspects (Aesthetics, Perceptions, Legibility)

The broad openness of the valley, due to its flatter topography and largely pastoral use, together with an enclosure pattern of regularly ordered, medium-large paddocks, contributes overall to a greater sense of scale, particularly when travelling along (the long straight sections of) Wayby Valley Road. This sense of scale/'grain' is markedly greater than, for example, the more intimate sense of enclosure found within parts of Warkworth North character area to the south.

## Historical and Cultural Associations

The following associations are noted for this character area (and the surrounding land to the east and west):

- The Hōteō River has significant historical and contemporary values for mana whenua.
- Cultural values associated with the Project Area are set out in Section 9.18 of the AEE.

## Landscape Value(s)

There are no nationally or regionally scheduled landscapes (e.g. ONL or ONFs) in this character area.

We consider that the values of the landscape within and surrounding this character area are recognised and appreciated by a greater audience than solely the local population. These values are primarily a result of the Hōteō River, which contributes (both directly and indirectly) the highest values to the landscape, particularly those parts of the River that feature indigenous vegetation cover and are identified in the ONF and SEA overlays. The Hōteō River also has significant cultural values to mana whenua.

## Summary of Key Characteristics

We consider the key characteristics of this character area (and the surrounding land to the east and west more generally) are:

- A broad, open and gently undulating valley landscape featuring Auckland's longest river and a number of its key tributaries. Some parts of the river and its tributaries

feature connected swathes (and pockets) of indigenous vegetation (some of which are recognised in the AUP(OP) for their ecological value(s)).

- This broad valley landform is enclosed to the south/east by the steeply elevated hill country, which forms a ridgeline backdrop in views south/east, and by a sequence of lower ridges to the north-west which contain residential properties on the outskirts of Wellsford.
- A largely pastoral (grazing) land use, with more intensive (infrastructural) activities including SH1 (within the character area) and the Springhill Aerodrome to the east and the North Auckland Railway Line to the west of the character area.
- Residential properties and dwellings in the lands east and west of the character area are typically scattered at a low density. The highest frequency of residential properties occurs alongside and around Wayby Valley Road.
- Infrastructure including the Springhill Aerodrome, which is located approximately 360m to the east of the area at its closest point. The North Auckland Railway Line, Wellsford golf course, Wellsford waste water treatment plant and Wellsford golf course are to the west of the character area.
- The Hōteu River is a significant natural feature, with high cultural values for mana whenua.

### 3.2.4 Wellsford East

(Refer Appendix A Landscape and Visual Figures; Figure LV10)

#### Representative Character Photography



Plate 7 - Whangaripo Valley Road, within the character area (showing areas of undulating and lower valley pasture).



Plate 8 - Farmers Lime Road, within the character area (showing a rural landscape with a predominance of pastoral land use with occasional farmsteads and buildings and pockets of exotic vegetation).



## Landscape Units

This character area is comprised almost entirely of the 'Hill Slopes Pasture' landscape unit. A small area of 'Lower Valley Pasture' is present where the character area crosses Whangaripo Valley Road. Isolated pockets of 'Hill Slopes Exotic' are also noted.

## Geology, Topography and Slope

The underlying geology in this character area consists primarily of limestone (Mahurangi Limestone). This is outlined more fully in Section 3 of the AEE.

The topography of the character area – and the land to its immediate east and west – is characterised by a sequence of low and undulating ridges, which typically align northeast-southwest within the character area and rise to a more elevated ridge/land to the west of the character area (around Worthington Road). The Worthington Road Ridge provides somewhat of a physical 'barrier' between the character area and the Wellsford settlement. The topography is classified<sup>11</sup> primarily between 'Undulating' (3-7 degrees) to 'Rolling' (7-15 degrees), which forms a demonstrable physical change from the flatter valley lands to the immediate south of this character area.

## Hydrology

The character area spans three catchments, as a result of crossing two ridgelines which align (generally) perpendicular to the proposed designation. The character area begins within the 'Wayby Catchment' and crosses a stream on the northern side of Whangaripo Valley Road. This stream discharges into the Waiwhiu Stream, which flows into the Hōteō River, south of Farmers Lime Road. The character area also contains part of the 'Waiteitei Catchment' and crosses two upper branches of a tributary of the Waiteitei Stream, which is an upper tributary of the Hōteō River. The northernmost part of the character area is within the 'Te Hana Catchment'. This features Te Hana Creek, which in turn flows into Topuni River and the Kaipara Harbour. The character area contains three upper branches, across two tributaries, of Te Hana Creek.

## Land Cover (Vegetation)

As indicated by the underlying landscape unit classifications, the vegetation cover is primarily comprised of open pasture (grass). Several discrete pockets of (largely) exotic vegetation are found within and surrounding the character area, as well as scattered individual amenity/shade trees and occasional rows of boundary planting (typically of exotic species).

A detailed audit of the vegetation types and their condition within this character area is included within the Ecological Assessment Report.

## Human Uses and Future Development

This character area, and the land to the east and west, is predominantly used for agricultural activities. These activities comprise dairying and dry stock grazing (primarily cattle and sheep). Post and wire fencing is common throughout the area, demarcating paddocks and road boundaries. There are very few residential properties/dwellings in the area in the lands

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<sup>11</sup> New Zealand Resource Inventory Arc/Info Data Manual Edition 1, May 1992

immediately east and west of the character area. Those which do exist, do so alongside – and primarily between – Farmers Lime Road and Whangaripo Valley Road. This character area contains parts of Shepherd Road, Farmers Lime Road and Whangaripo Valley Road.

Other notable human uses (outside of the character area) include the Wellsford settlement and the North Auckland Railway Line, which are located approximately 2km to the west of the area.

The Wellsford settlement is categorised (within the Auckland Plan) as one of eight Rural and Coastal Towns in the Auckland region. Those towns are envisaged to grow but are less of a focus for residential intensification and development as employment centres, due to accessibility and infrastructural constraints. Nevertheless, the AUP(OP) has identified and provided for future growth in Wellsford through zoning areas of land Future Urban Zone and Rural – Countryside Living, including land to the west of this character area. The Future Urban Zone allows for growth of Wellsford in an easterly direction on the more elevated land along the spurs radiating from the town centre, building on the existing hilltop character of Wellsford. Wellsford including the Future Urban Zone is visually contained by the Worthington Road Ridge which physically separates the town from the Project.

### **Scheduled Landscapes, Reserves and Tracks**

There are no scheduled landscape features within and/or around (east-west) this character area. The only parks and reserves in proximity of this character area are Curry’s Bush Scenic Reserve and Wellsford Centennial Park, both of which are in Wellsford.

### **Sensory and Perceptual Aspects (Aesthetics, Perceptions, Legibility)**

The lack of human development (e.g. major roads or settlements) and the sense of enclosure provided (in parts) by the ridge landforms (including the Worthington Road ridge, which separates the character area from Wellsford) in this character area create a sense of rural tranquillity. A sense of rural tranquillity is typical of a rural area, and therefore not unique to this character area.

### **Historical and Cultural Associations**

The following associations are noted for this character area (and the surrounding land to the east and west):

- Wellsford was founded by the Albertlanders, with ‘Old Wellsford’ located near Port Albert, and ‘New Wellsford’ located further inland in the 1880s. Industry in the area was driven by timber and the gum trade, with dairy farming the main form of industry from 1900. The Albertland Dairy Factory in Te Hana is an example of the dairy focus in the area. Wellsford and Te Hana townships are outside of the designation.
- Cultural values associated with the Project Area are set out in Section 9.18 of the AEE.

### **Landscape Value(s)**

There are no nationally or regionally scheduled landscapes (e.g. ONL or ONFs) in this character area.

We consider the values of the landscape within and surrounding this character area are of a local importance. That is, any values are primarily recognised and appreciated at a local level (i.e. by the local population). The local population are likely to value the open, undeveloped agricultural character of the landscape in this character area, particularly for the sense of rural tranquillity.

### Summary of Key Characteristics

We consider the key characteristics of this character area (and the surrounding land to the east and west more generally) are:

- Sparsely populated undulating to rolling farmland characterised by a sequence of low ridges, which rise and form part of a more elevated ridge to the west of the character area (around Worthington Road). The Worthington Road ridge provides a physical separation between the character area and the Wellsford settlement.
- Rural residential areas to the east of Wellsford, a network of local roads and surrounding rural community.
- Ridgelines enclosing a network of stream courses, which feed into three main catchments, including those of the Hōteo River and Te Hana Creek.
- Predominantly open pastoral land use, with limited vegetation cover. The vegetation cover is typically pockets of exotic vegetation, with no known sizeable pockets of indigenous vegetation.

### 3.2.5 Te Hana North

(Refer Appendix A Landscape and Visual Figures; Figure LV10)

#### Representative Character Photography



Plate 9 - Lower Silver Hill Road looking toward from the east (showing areas of undulating pasture and former quarry workings) the Project.



Plate 10 - Mangawhai Road intersection with Vipond Road (showing areas of lower valley pasture with scattered exotic trees typical of a rural productive landscape).

## Landscape Units

This character area is largely comprised of the 'Lower Valley Pasture' landscape unit, with a small area of 'Hill Slopes Pasture' identified where the character area crosses a ridge to the north east of the Te Hana settlement (referred to herein as the Te Hana Ridge).

## Geology, Topography and Slope

This character area consists of a varied underlying geology primarily comprised of limestone (Mahurangi Limestone). A small area of sandstone/mudstone (Pakiri Formation) also exists at the ridge to the north east of Te Hana in addition to a small area of alluvial sediments around the upper Maeneene Creek catchment. This geology is outlined more fully in Section 3 of the AEE.

Topographically, the character area and its surrounds are characterised by elevated land to the east of the character area, and a sequence of smaller ridges and spurs to the north and west of the character area. Together, those features form an enclosing landform around a 'bowl' of low-lying land (less than 20m AMSL), which consists of 'Flat to Undulating' (0-7 degrees) topography, gently sloping down towards Te Hana Creek and the coastal estuarine Maeneene Creek to the west of Te Hana.

## Hydrology

The character area spans two main river catchments that drain to the Kaipara Harbour. The catchments are separated by the Te Hana ridge. On the northern side of this ridge, a number of tributaries feed into the Maeneene Stream. The Maeneene Stream is the primary stream within the 'Maeneene Catchment'. On the southern side of the Te Hana ridge, the character area crosses several upper branches of Te Hana Creek, within the 'Te Hana Catchment'.

## Land Cover (Vegetation)

As indicated by the underlying landscape unit classifications, the vegetation cover within the character area is almost entirely comprised of open pasture (grass). Areas of indigenous vegetation are found around the tributaries and main channel of the Maeneene Stream, close to the northernmost extent of the character area, the Te Hana ridge, to the east of the character area, and the upper branches of the Te Hana Creek tributaries, to the south of Parker Road. Elsewhere, vegetation coverage is low, and limited to scattered individual and clustered amenity/shade trees and occasional rows of boundary planting (typically of exotic species).

A detailed audit of the vegetation types and their condition within this character area, is included within the Ecological Assessment report.

## Human Uses and Future Development

This character area, and the land to the east and west, is predominantly used for agricultural activities. These activities comprise dairying and dry stock grazing (primarily cattle/sheep) across large agricultural properties. Post and wire fencing is common throughout the area, demarcating paddocks and road boundaries. There are very few residential properties/dwellings in the area and in the land immediately east and west of the character area. The majority of residential properties are located alongside Silver Hill Road and around the intersection of Mangawhai Road and SH1 with the largest cluster of houses being in the recent subdivision at Charis Lane.

This character area includes parts of Silver Hill Road and Mangawhai Road. The character area and its surrounds feature three small limestone quarries. One quarry is located within the character area (north of Silver Hill Road), one is located to the immediate west of the character area (near Shepherd Road), and, one is located to the north-east of the character area (south of Mangawhai Road). Transpower's transmission line assets run generally west of the character area from a substation in Wellsford until it intersects with the Project near Mangawhai Road.

Other notable human uses (outside of the character area) include the Te Hana settlement and the North Auckland Railway Line, which are located approximately 2.2km to the west of the character area. Te Hana is approximately 5km north of Wellsford and services a population of approximately 200 people. Te Hana contains few services or shops and is categorised as an un-serviced Rural and Coastal Village in the Auckland Plan. In mid-2011, a replica 17<sup>th</sup> Century Māori village and cultural tourism centre was opened in Te Hana. Te Hana Te Ao Marama is a community driven initiative that offers guided tours and cultural experiences, events, and noho (overnight stays). It fronts onto SH1 and as such has a high visibility to the passing tourist trade.

## Scheduled Landscapes, Reserves and Tracks

No scheduled landscape features are found within and/or around (east-west) this character area. Several SEAs are found outside of and to the east of the character area, focused on the indigenous vegetation found around the upper branches of the Te Hana Creek tributaries.

## Sensory and Perceptual Aspects (Aesthetics, Perceptions, Legibility)

The lack of human development (i.e. major roads or settlements), and the sense of enclosure provided (in parts) by the ridge landforms, allows for a sense of rural tranquillity. This sense is typical of a rural area, and therefore not unique to this character area. This sense of 'rural-ness' is disrupted to a degree in close proximity to the existing SH1 around the Mangawhai Road/SH1 intersection.

## Historical and Cultural Associations

The following associations are noted for this character area (and the surrounding land to the east and west):

- The Te Hana ridge has significant cultural values to mana whenua.
- The Retreat - Underwood House (Historic Heritage Overlay Extent of Place ID 428) lies to the east of the character area outside of the proposed designation boundary.

### Landscape Value(s)

There are no nationally or regionally scheduled landscapes (e.g. ONL or ONFs) in this character area.

We consider that the values of the landscape within and surrounding this character area are primarily recognised and appreciated at a local level (i.e. by the local population). The local population are likely to value the open, undeveloped agricultural character of the landscape in this character area, particularly for the sense of rural tranquillity that is evident in the wider landscape to the east of the Te Hana settlement.

### Summary of Key Characteristics

We consider the key characteristics of this character area (and the surrounding land to the east and west more generally) are:

- Sparsely populated undulating to rolling farmland characterised by a sequence of low ridges, which rise and form part of a more elevated ridge/land to the east of Te Hana.
- Elevated land to the east of the character area, which, together with a sequence of smaller ridges and spurs, forms an enclosing landform around a ‘bowl’ of low-lying land. This land then gently slopes down towards Te Hana Creek and the coastal, estuarine, Maeneene Creek to the west of Te Hana.
- Predominantly open pastoral land use, with limited vegetation cover. Any notable pockets of indigenous vegetation are found around the tributaries and main channel of the Maeneene Stream.
- The Te Hana settlement is located to the west of the character area, and features Te Hana Te Ao Marama, a Māori village / cultural tourism initiative.
- The Te Hana ridge encloses views to the north east of Te Hana and provides a backdrop of an elevated landform with regenerating indigenous vegetation. The Ridge has cultural and amenity values.
- The character area and its surrounds feature three small limestone quarries. Other infrastructural uses are the North Auckland Railway Line at Te Hana and Transpower’s transmission line assets are located to the west and intersecting with the character area at Mangawhai Road.

## 3.3 Visual catchment and viewing audiences

We have identified the visual catchment and viewing audiences of each landscape character area along the Indicative Alignment using a combination of desktop review (contour information and ZTV analysis) and site surveys, as described in section 2 of this report.

The ZTV plans (which include an overview plan across the entire Project area) comprise: Refer to Appendix A: Landscape and Visual Figures.



- (a) Figure LV12: Visibility of the Indicative Alignment (Digital Surface Model – ZTV)
- (b) Figure LV13: Visibility of the Indicative Alignment (Digital Surface Model – ZTV) - Warkworth North
- (c) Figure LV14: Visibility of the Indicative Alignment (Digital Surface Model – ZTV) - Dome Valley
- (d) Figure LV15: Visibility of the Indicative Alignment (Digital Surface Model – ZTV) - Hōteō River
- (e) Figure LV16: Visibility of the Indicative Alignment (Digital Surface Model – ZTV) - Wellsford East
- (f) Figure LV17: Visibility of the Indicative Alignment (Digital Surface Model – ZTV) - Te Hana

The visual catchment and primary viewing audiences (both public and private) are described in relation to each character area below. We have identified existing residential properties as the main viewing audience as road users are transient and any visual effects are experienced for a short duration.

### 3.3.2 Warkworth North

#### Visual Catchment

At the southern end of this character area, the Indicative Alignment is located within a wide valley landform, surrounded by more elevated land to the east and west. A number of private residential properties are located on that elevated land, including a subdivision around Viv Davie-Martin Drive. Some of those properties have dwellings overlooking the Indicative Alignment, and the area within the proposed designation boundary more generally. Publicly accessible viewing locations are limited to Wyllie Road, Woodcocks Road and Carran Road. This initial section of the route, including the Warkworth Interchange, will for many of the viewing audiences, be viewed in the context of the Pūhoi to Warkworth section, which is currently under construction.

Further to the north and beyond the proposed Warkworth Interchange, the Indicative Alignment passes through a narrower valley landform, which contains a cluster of residential properties along and around Kaipara Flats Road. This road, along with Phillips Road, are the only publicly accessible viewing locations in this area. Beyond this area, the land rapidly gains in elevation towards the steep, forested and unpopulated Dome Valley Area.

#### Viewing Audiences

The viewing audiences within this character area are road users (public) and local residents (private) along parts of:

- (a) Wyllie Road
- (b) Woodcocks Road
- (c) Viv Davie-Martin Drive
- (d) Carran Road
- (e) Kaipara Flats Road

- (f) Phillips Road
- (g) Mason Heights, although there is limited visibility and mostly of the Pūhoi to Warkworth section.

### Representative Viewpoints

The following viewpoint photographs represent the views from the abovementioned audiences. The viewpoint photographs are included in the AEE drawing set, Landscape View Point Photography LP-Series, along with a viewpoint location plan (Figure LP-001 Warkworth North Viewpoint Locations):

- Figure LP-002: Viewpoint 1: Wyllie Road looking north-west
- Figure LP-002: Viewpoint 2: Viv Davie-Martin Drive looking north-west
- Figure LP-003: Viewpoint 3: Woodcocks Road looking east
- Figure LP-003: Viewpoint 4: Carran Road looking south-east
- Figure LP-004: Viewpoint 5: Kaipara Flats Road looking north-east

### 3.3.3 Dome Valley Area

#### Visual Catchment

This section of the Indicative Alignment passes through the steeply undulating Dome Valley Area. The Indicative Alignment is proposed to be largely located below the existing grade (i.e. within areas of cut) and would be further enclosed by more elevated landforms and a dense coverage of forest, although the forest is commercial production forest and is due to be harvested in stages between 2021 and 2034. As such, and due to the limited occurrence of roads or dwellings, this character area has the lowest number of potential viewers, of any character area along the entire alignment.

The Indicative Alignment does intersect with three private forestry roads and a motocross course located within the pine forest. Forestry workers, casual mountain bikers and hunters periodically access the forest.

#### Viewing Audiences

The viewing audiences within this character area are road users, forestry workers and members of the public including, motocross enthusiasts, mountain bikers and trail walkers. These viewing audiences would be located at the locations identified below:

- (a) SH1
- (b) Saunders Road, Forestry Road and River Road (forestry workers and public accessing recreational activities).
- (c) Te Araroa Trail, which crosses Dome Valley and SH1 before crossing the alignment over Kraack Hill. Views of the Indicative Alignment north of Kraack Hill could be obtained from the Trail as well localised views of any tunnel ancillary buildings.

## Representative Viewpoints

The following viewpoint photographs represent the views from the above mentioned audiences. The viewpoint photographs are included in the AEE drawing set, LP-Series along with a viewpoint location plan (Figure LP-005: Character area B - Dome Valley Area Viewpoint Locations):

- Figure LP-006: Viewpoint 6: SH1 looking south
- Figure LP-007: Viewpoint 7: Forestry Road looking north-west

### 3.3.4 Upper Hōteō River Valley

#### Visual Catchment

In this character area, the Indicative Alignment exits the Dome Valley area and is proposed to cross SH1 and the Hōteō River on a viaduct. This viaduct will be visible to users of the existing SH1. Beyond the proposed viaduct, the Indicative Alignment rises as it progresses towards the Wellsford Interchange. This interchange is located within an open, generally flat, part of the Wayby Valley and as such will be visible to users of SH1, Wayby Station Road and Wayby Valley Road. Several nearby residential properties will also have views towards the proposed interchange. North of the interchange, the Indicative Alignment continues along Wayby Valley. As such, it will be visible across parts of Wayby Valley Road, from Rustybrook Road and Whangaripo Valley Road (including several nearby residential properties).

#### Viewing Audiences

The viewing audiences within this character area are road users (public) and local residents (private) along parts of:

- (a) SH1
- (b) Wayby Station Road
- (c) Cox Road
- (d) Wayby Valley Road
- (e) Spindler Road
- (f) Rustybrook Road

## Representative Viewpoints

The following viewpoint photographs represent the views from the abovementioned audiences. The viewpoint photographs are included in the accompanying figure set, along with a viewpoint location plan (Figure LV24: Upper Hōteō River Valley Viewpoint Locations):

- Figure LP-008: Viewpoint 8: SH1 looking south-east
- Figure LP-008: Viewpoint 9: Wayby Station Road looking east
- Figure LP-009: Viewpoint 10: Wayby Valley Road looking south-west
- Figure LP-009: Viewpoint 11: Wayby Valley Road looking south-west
- Figure LP-010: Viewpoint 12: Rustybrook Road looking north-east

- Figure LP-010: Viewpoint 13: Wayby Valley Road looking west

### 3.3.5 Wellsford North East

#### Visual Catchment

In this character area, the Indicative Alignment passes through a sparsely populated area that is characterised by a more (compared to the previous section) undulating to rolling contour. This character area also includes a sequence of low ridges that rise and form part of a more elevated ridge/land to the west of the character area (around Worthington Road). The Worthington Road ridge provides a physical and visual barrier between the character area and the Wellsford settlement.

The Indicative Alignment intersects Whangaripo Valley Road (via a proposed overbridge) and will therefore be visible to users of this road and nearby Borrows Road. The proposed bridge will also be visible from several nearby private properties and residential dwellings, particularly off Borrows Road.

The Indicative Alignment also crosses Farmers Lime Road, which is proposed to be realigned to provide access across the road. The Indicative Alignment will therefore be visible to users of Farmers Lime Road. Beyond this road, the Indicative Alignment passes through sparsely populated open farmland and has a limited visual catchment in relation to any known public or private viewing audiences.

#### Viewing Audiences

The viewing audiences within this character area are road users (public) and local residents (private) along parts of:

- (a) Whangaripo Valley Road
- (b) Borrows Road
- (c) Worthington Road
- (d) Waiteitei Road
- (e) Farmers Lime Road
- (f) Shepherd Road

#### Representative Viewpoints

The following viewpoint photographs represent the views from the abovementioned audiences. The viewpoint photographs are included in the AEE drawing set, LP-Series along with a viewpoint location plan (Figure LP-011: Wellsford North East Viewpoint Locations):

- Figure LP-012: Viewpoint 14: Borrows Road looking south-east
- Figure LP-012: Viewpoint 15: Whangaripo Valley Road looking west
- Figure LP-013: Viewpoint 16: Farmers Lime Road looking west

### 3.3.6 Te Hana North

#### Visual Catchment

In this character area, the Indicative Alignment passes through a sparsely populated area that is characterised by undulating farmland and a sequence of low ridges, which rise and form part of a more elevated ridge to the east of Te Hana.

The Indicative Alignment intersects with Silver Hill Road, which it is proposed to cross via a bridge. The proposed bridge and the preceding/following embankments/abutments will be visible along nearby parts of Silver Hill Road and a number of nearby private properties. North of Silver Hill Road, the Indicative Alignment passes through open farmland before arriving at Mangawhai Road, where the Te Hana Interchange is proposed to be located.

The Te Hana Interchange and the associated roading realignments/connections will be visible across parts of Mangawhai Road, Vipond Road and SH1. The interchange will be visible from several private properties along those roads, including a relatively recent subdivision (along Charis Lane).

#### Viewing Audiences

The viewing audiences within this character area are road users (public) and local residents (private) along parts of:

- (a) Silver Hill Road
- (b) Lower Silver Hill Road
- (c) Mangawhai Road
- (d) Charis Lane
- (e) SH1
- (f) Waimanu Road
- (g) Vipond Road

#### Representative Viewpoints

The following viewpoint photographs represent the views from the abovementioned audiences. The viewpoint photographs are included in the AEE drawing set, LP-Series along with a viewpoint location plan (Figure LP-014: Te Hana East Viewpoint Locations):

- Figure LP-015: Viewpoint 17: Silver Hill Road looking north-east
- Figure LP-015: Viewpoint 18: Lower Silver Hill Road looking south
- Figure LP-016: Viewpoint 19: Mangawhai Road looking south-west
- Figure LP-016: Viewpoint 20: Vipond Road (east) looking south
- Figure LP-017: Viewpoint 21: Charis Lane looking north-east
- Figure LP-017: Viewpoint 22: Vipond Road (west) looking south

## 4 ASSESSMENT OF EFFECTS

### Assessment of effects summary

This Project is typical of a number of state highway projects that have been built in the rural environment throughout New Zealand, for example the Northern Gateway (SH1 from Orewa to Pūhoi), MacKays to Peka Peka (SH1 on the Kāpiti Coast), and the Waikato Expressway.

The Project will alter the composition of the landform and vegetation cover within the Project area. The significance of the landscape effects resulting from those changes will range from low adverse to very high adverse effects during and immediately following the construction works. However, we consider that many of those effects can be remedied or mitigated to between low adverse to high adverse effects. This can be achieved through the design development phase being guided by the design principles outlined in this report and included in the Planning Version ULDF and over time, in particular with the establishment of the proposed revegetation.

The Project will also alter existing landscape elements and features within the Project area. These changes will also affect the Project area's character and affect the wider character outside of the Project area in places. The significance of the landscape effects resulting from those changes will range from moderate adverse to high adverse effects during and immediately following the construction works. However, we consider that many of those effects can be remedied or mitigated to between low adverse to moderate adverse effects.

The Project does not result in adverse effects on the values of any scheduled landscapes.

The potential effects of the Project on public viewing areas identified within this assessment will range from low to very high adverse effects during and immediately following the construction works. However, we consider that many of those effects can be remedied or mitigated over time, in particular with the establishment of the proposed revegetation and screen planting. The residual visual effects will range between very low and moderate-high adverse effects at the 22 viewpoints assessed.

We have considered potential changes to the Indicative Alignment (and ancillary components) within the proposed designation boundary through future design phases. In our view the final design has potential to materially increase the level of landscape effects in two areas of particular sensitivity that are part of the Warkworth North Landscape Character Area:

- the Mahurangi River (left branch) running parallel with the Indicative Alignment
- the hydrology and associated wetlands at the headwaters of the Kourawhero Stream.

Provided the current level of impact on these two areas is maintained or reduced, by limiting bridges crossing perpendicular to the Mahurangi River to three and a bridge is provided over the ecologically sensitive area of the Kourawhero Stream headwaters) then the effects can be appropriately managed.

Further, the final design should give effect to the mitigation principles and guidelines recommended in section 5 of this report and the Planning Version ULDF. If so, potential



changes to the Indicative Alignment within the proposed designation boundary should have similar effects to the Indicative Alignment.

## 4.1 Landscape effects

### 4.1.1 Character Area A: Warkworth North

#### Key changes and impacts on landscape elements and features within the character area)

This character area includes the Warkworth Interchange, where the Project will interface with the Pūhoi to Warkworth project (P-Wk) and provide a connection to the northern outskirts of Warkworth. The P-Wk connection to SH1 and Warkworth is currently under construction and the Indicative Alignment is proposed to be integrated into a large interchange that extends north of Woodcocks Road and Wyllie Road. The P-Wk project northern connection to SH1 includes screen planting (double row of Poplars as a shelter belt) along the southern edge to block views from elevated properties off Viv Davie-Martin Drive. This together with large scale horticulture buildings and local roads are features that reduce the sensitivity of the area to change.

The interchange includes seven bridges in locations as shown in Figure 3 below where the blue colour denotes bridges spanning a watercourse and yellow indicates those passing beneath the highway (overpasses). Note Bridge 21 spans over both a watercourse and the highway

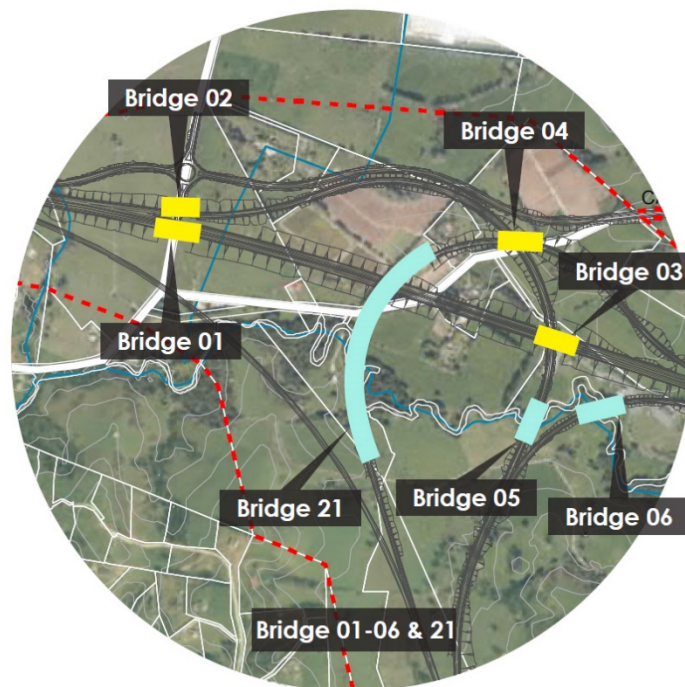


Figure 3 – Warkworth Interchange showing proposed bridges

The key elements of the interchange are:

#### Mainline of the highway:

- Four lanes elevated on embankments up to 10 m in height.
- There are three overpasses (Bridge 1, 2, and 3) and one underpass (Bridge 21 – 490 m long bridge) which are associated with the mainline.
- One over bridge 490 m long and approximately 18 m in height over the mainline (8 m of mainline embankment plus a further 10 m to the bridge surfacing), reaching a maximum height of approx. 21 m, 140 m east of the mainline centreline.

#### Southbound Auckland on ramp:

- Two lanes, utilise the Pūhoi to Warkworth section link, which is currently under construction.

#### Southbound Wellsford to Warkworth:

- One lane at grade apart from a short (120 m) section of a bridge (between 3.5 m and 4.5m height) over the Mahurangi River.

#### Northbound Auckland to Warkworth:

- Two lanes, with bridges over the northbound Warkworth to Wellsford lanes and over the Mahurangi River. The northbound lanes pass under the mainline.

#### Northbound Warkworth to Wellsford:

- One lane on an embankment up to 10 m in height with a bridge 490 m in length and up to 21 m above existing ground level at its highest point, 18 m in height over the mainline.

#### Highway Infrastructure:

- Lighting and signage gantries.

The design of the interchange means that Carran Road will be realigned, alongside the northbound off ramp. Also, at this point, and to the east of Carran Road, the Project area includes an approximately 1.4 km long section of the Mahurangi River (left branch). This section of river includes areas of riparian vegetation cover; which is indigenous and is scheduled as an SEA\_T\_2287. The Indicative Alignment will require the river to be crossed three times, via bridges, to accommodate the on/off ramps, which will connect into existing SH1 further to the east utilising the Pūhoi to Warkworth connection. The Mahurangi River (left branch), and its vegetated margins, are identified in section 3 above as a valuable landscape feature within the Project area. While there would be limited physical modification of the river's course, the bridge structures will require removal of trees that contribute to the riparian vegetation cover along the river and will fragment the serpentine feature of the river corridor.

The Indicative Alignment continues on embankments up until Kaipara Flats Road, at which point areas of cut are required to accommodate a realignment of the local road, which will be bridged over the new state highway and connected to a realignment of Phillips Road. In this area, the Indicative Alignment will require the removal of existing amenity/boundary

planting. Like the clearance of amenity vegetation elsewhere within this character area, its loss represents a potential adverse impact upon the scenic value of the wider vegetation framework within the Project area.

North of Kaipara Flats Road, the Indicative Alignment continues up the valley – on fill embankments and a bridge structure over the headwaters of the Kourawhero Stream. Further north the Indicative Alignment grades upward toward the proposed tunnel, and in this area the western side of the road corridor requires a cut.

### Impacts on wider landscape character

The Project will impact upon several of the key characteristic features within the Project area (identified in section 3 above) through:

- The introduction of a new four-lane highway with a full north/south interchange;
- Stream works;
- Loss of rural residential properties;
- Loss of pasture;
- Removal of garden trees, shelterbelts and remnant patches of indigenous vegetation;
- Loss of rural character in places, particularly along the valley floors around Woodcocks Road and west along Kaipara Flats Road, the legibility of the open pasture land and the accompanying vegetation frameworks in this character area, will be disrupted by the Project, particularly during construction. These changes will have an adverse effect on the character of these parts of the character area.
- The Indicative Alignment avoids the more sensitive parts of this character area, i.e. the Mahurangi River (left branch) along Kaipara Flats Road.

The wider landscape character has a reduced susceptibility to the proposed changes due to the presence of existing infrastructure including large scale developments (e.g. glasshouses along Woodcocks Road) and the Pūhoi to Warkworth highway under construction. Moreover, the south eastern slopes of the valley including Viv Davie-Martin Drive are zoned Future Urban, which indicates that the sensitivity of these areas to urbanisation (generally) is of a reduced level (compared to the rest of the character area which is zoned rural production).

### Effects ratings

Table 5 below provides a summary of the significance and nature of the different landscape effects identified above, including with and without mitigation.

The moderate-high effect on the physical landscape during construction results from the removal of indigenous vegetation, including within an SEA, in addition to earthworks in relation to the mainline and structures (including three bridges over the Mahurangi River and a bridge over the mainline up to 21 m above ground level). Without mitigation, the effect at completion upon the landscape elements and features is considered to remain the same.

The scale of the Warkworth Interchange, involving lanes on fill embankments and several bridges up to 21 m in height, will change the character of this area from a rural agricultural

landscape (albeit with the Pūhoi to Warkworth highway and local roads as part of it) to a transport infrastructure dominated landscape. We consider this Project will have a high level of effect on the character of the area. The change to a transport orientated environment would remain upon completion but the end of construction works, and removal of associated equipment would result in a slightly lower adverse effect. The effect of lighting will reinforce this change in character.

## Key mitigation measures for this character area

(Refer AEE Drawing Set (EM-Series))

### Mitigation

The recommended Project-wide mitigation measures are fully described within section 5 of this report. In summary, the measures that are particularly relevant to the assessment of landscape effects in this character area are:

- (a) Retention of the existing indigenous riparian vegetation along the Mahurangi River (left branch) except where limited clearance is needed to construct bridges over the river. Planting of all residual land within the final design of the Warkworth Interchange to build on the existing hydrology, soils and vegetation patterns associated with the Mahurangi River (left branch). Planting at the interchange should connect the Mahurangi River (left branch) with remnants of indigenous vegetation up to Kaipara Flats Road. Planting should be used to provide filtering/breaking up views of the alignment from the more sensitive residential viewing areas around Warkworth.
- (b) The final design of the Warkworth Interchange should include planting between all ramps to form one large landscape that enhances the existing landscape feature of the Mahurangi River (left branch) and creates a distinctive landscape feature. This will integrate the final Warkworth Intersection into its wider landscape setting, remedy the effects of vegetation loss, strengthen the wider vegetation frameworks (from a landscape perspective), particularly in relation to the Mahurangi River (left branch) and mitigate the large structural components, i.e. embankments, bridges and lighting of the interchange by reducing their scale and dominance. This will help to address the objectives and policies of the Rural Zone AUP(OP), that seek to maintain rural character, amenity and biodiversity values. Specifically, it will reduce the scale and effects of the interchange infrastructure and create a new planted feature which is consistent with recognised features of the zone.
- (c) The final design of the interchange should limit the number of bridges over the Mahurangi River to a maximum of three. Bridge abutments should be kept out of the SEA.
- (d) Retention of existing indigenous vegetation within the proposed designation where practical.
- (e) Revegetation of areas east of the main alignment from the northern end of the interchange to the headwaters of the Kourawhero Stream would link areas of remnant indigenous vegetation and provide a vegetated corridor linking the Kourawhero Stream with the Mahurangi River. A vegetated corridor would also integrate the Kaipara Flats Road realignment and bridge into the landscape and provide a buffer between the highway and the Kaipara Flats Road rural residential area.

- (f) Construction compounds should be located a minimum of 200 m from residential properties and should be screened with grassed mounding and or fast growing shelter belt trees.

**Table 5 - Landscape Effects Character area A: Warkworth North**

Resource	Effect Rating (During Construction)	Effect Rating (Upon Completion)	Effect Rating (Establishment of Mitigation)
Landscape Elements and Features of Value (within Project area)	Moderate-High Adverse	Moderate Adverse	<u>Low Adverse</u>
Wider Landscape Character	High Adverse due to the scale of the interchange and number of structures.	Moderate-High Adverse	<u>Low Adverse</u>

## 4.1.2 Character Area B: Dome Valley

### Key changes and impacts on landscape elements and features of value (within Project area)

In this character area, the Indicative Alignment passes through a series of steep cuts before passing through a tunnel beneath Kraack Hill and Kraack Road (which forms part of the Te Araroa Trail). The Indicative Alignment has twin bore tunnels under Kraack Road, each serving one direction, approximately 850 m long and approximately 180m below ground level.

North of the tunnels, the Indicative Alignment continues through steep hill country, and as a consequence, it would be formed using steep cut and fill works. These works would likely require filling some gullies, which include streams/overland flows that flow into the Waiteraire stream which flows to the Hōteō River. Two gullies have also been identified within the proposed designation as potential soil disposal sites (to accommodate excess cut material). The ecological effects on streams in this character area are described in the Ecological Assessment Report. Apart from the impact on streams, filling of gullies in this character area will have a low landscape effect.

It is assumed that the existing pine plantation will have been harvested prior to 2030 as per the forest harvesting programme. Depending on the timing of the Project, the Project Area is likely to be covered with forestry slash and regrowth vegetation. The Project area avoids areas of indigenous vegetation on the northern side of the existing SH1 corridor (e.g. around Sunnybrook Reserve) and around the Kraack Hill summit, therefore the landscape effects would be low.

The Indicative Alignment would require Forestry Road to be realigned to connect with River Road and bridges to provide access across the alignment at Dibble Road and River Road.

The Te Araroa Trail is identified in section 3 above as a valuable landscape feature within this character area. The Indicative Alignment avoids the Walkway, so there would be no direct impact on it from the Project. The location, form and colour of any tunnel infrastructure structures such as deluge tanks and controls building need to be considered to avoid adverse landscape and visual effects.

## Impacts on wider landscape character

The susceptibility of the wider landscape character to change is based upon its ability to accommodate the changes proposed without undue effects on the area's overall character.

One of the key characteristics of value within this character area is the high coverage of forest vegetation, which helps to reinforce the landform and a sense of enclosure within the valley. This is however a commercial forest which based on current predictions will be harvested by the time the Project commences and is therefore dynamic and subject to change.

More generally, we acknowledge that the Project is not incongruous with the Dome Valley's character, which already features the existing SH1 road and logging/forestry roads.

## Effects ratings

Table 6 below provides a summary of the significance and nature of the different landscape effects identified above, including with and without mitigation.

The moderate - high adverse effect on the physical landscape results from a wide bench cutting across a series of ridges and valleys. During construction, the earthworks resulting from landform modification would be bare earth. At completion without mitigation, it is assumed that earthworks would be partially integrated with adjacent landforms and stabilised with planting and would therefore have a lower (albeit slightly) adverse effect.

Moderate adverse effects on landscape character, would result from landform and land cover modification, specifically a wide bench cutting across a series of east west ridges and valleys. The effects rating remains the same at completion because the landform remains modified and the fundamental character of the area has been changed. Vehicle lights will also have an adverse effect on landscape character. Planting of batter slopes and vegetation within the proposed designation will help to mitigate this effect which is not dissimilar to the presence of SH1 in Dome Valley.

Mitigation will help to blend cut and fill batters with adjacent landform and integrate the highway into the wider landscape.

## Key mitigation measures for this character area

The recommended Project-wide mitigation measures are described within section 5 of this report. In summary, measures that are particularly relevant to the assessment of landscape effects in this area are:

- (a) Twin bore tunnel (as opposed to cut and fill earthworks) through the steepest topography. Associated infrastructure (such as tunnel portals and deluge storage tanks) should be considered at the detailed design stage in order to integrate that infrastructure with the wider context and surrounding landscape character of the Dome Valley through the use of sloped portal structures and revegetation works (similar to those employed at Johnstone's Hill Tunnels). Tunnel structures such as deluge tanks and controls buildings should be located so they are not visible from the Te Araroa Trail and be designed in form and colour to be recessive.



- (b) Earthworks should visually and physically transition into the natural landform and land cover. Appropriate surface treatment of cut slopes include revegetation or leaving an exposed rock face. Rock cuttings and blasting can provide features within the local landscape and reflect the local character of the area.
- (c) Cut and fill batters should be revegetated. Slope gradients, subsoil and topsoil condition, and mulch should be designed to sustain vegetation cover following the principles outlined in the Planning Version ULDF.
- (d) Soil disposal sites should be designed to support revegetation (including through contouring, drainage, subsoil and topsoil), and be revegetated (including mulching across planted area), to assist with their integration with adjoining landforms and vegetation frameworks. Soil disposal sites within this character area may be hidden within forest. The fill volume should be maximised within the available footprint of each soil disposal site, (i.e. rather than simply fill a valley and create a uniform gradient from the batter slopes of the main alignment, they should be filled to form ridges to maximise the disposal volume, reduce stream loss and integrate with the adjacent landform).

**Table 6 - Landscape Effects Character area B: Dome Valley**

Resource	Effect Rating (During Construction)	Effect Rating (Upon Completion)	Effect Rating (Establishment of Mitigation)
Landscape Elements and Features of Value (within Project area)	Moderate-High Adverse	Moderate Adverse	<b><u>Moderate - Low Adverse</u></b>
Wider Landscape Character (to north-east)	Moderate Adverse	Moderate Adverse	<b><u>Moderate - Low Adverse</u></b>

### 4.1.3 Character Area C: Upper Hōteō River Valley

#### Key changes and impacts on landscape elements and features of value (within Project area)

In this area, the Indicative Alignment passes over the Hōteō River via a proposed viaduct (Bridge 11). The viaduct is proposed to ensure that there will be no direct impact upon the riverbed or its banks, but the supporting structures are likely to impact an area of native vegetation cover (SEA\_T\_683) to the south of the river’s southern bank. The proposed designation has been narrowed down substantially at this point to minimise impacts on the SEA and avoid the Hōteō River ONF ID 48. The design in this area considered several bridge layouts with a range of pier spacings. After careful evaluation by the Project team, the best outcome was considered to have all piers located outside of watercourses, the northern bridge abutment located to retain most of the wetland SEA\_T\_6854 and have piers located on the northern and southern edge of SEA\_T\_ 683 so that the central area of vegetation can be retained providing the best landscape and ecological outcome.

The Hōteō River is a highly valuable landscape feature. Areas of riparian indigenous vegetation and the existing tributaries to the Hōteō River are also of value, particularly those which are identified as SEAs. While the Indicative Alignment avoids the SEA areas immediately alongside the river, it would intersect with two tributaries and one SEA area. It

will therefore have an impact upon the wider natural and cultural values of the hydrological catchment of the Hōteō River.

The northern bridge abutments/embankments of the Hōteō viaduct will also be located to the north of an SEA (SEA\_T\_6854) and remove the northern part of the SEA. Further north of SEA\_T\_6854, the Indicative Alignment would require excavation works to lower a small hill landform, which is currently occupied by a residential dwelling (No. 1282 SH1).

Further north, the Indicative Alignment would be formed on fill embankments, and will intersect with part of SEA\_T\_6851. The vegetation clearance required in this location could be minimised by utilising a retaining wall such as a vegetated mechanically stabilised earth (MSE) wall beside the SEA.

The Wellsford Interchange will be located in this character area. It will provide access to Wellsford and eastern communities including Tomarata and Mangawhai, via a connection with Wayby Valley Road. Much of the intersection will likely be formed on fill embankments and will include lighting. Apart from interchanges the design does not involve lighting of the highway.

North of the interchange, the Indicative Alignment passes through a sequence of cuts around Robertson Road. The Indicative Alignment would be some 16m below the existing ridge and hidden from view. North of these areas of cut the Indicative Alignment is subsequently raised once more on fill embankments.

Moving towards Rustybrook Road, the Indicative Alignment is located within a deep cut. The cut earthworks will also require vegetation clearance, predominately of exotic trees species located within the residential properties along Rustybrook Road. North of Rustybrook Road, the Indicative Alignment passes through flatter, largely open pasture land. This section of the Indicative Alignment would pass over the unnamed tributary of the Hōteō River before moving into further areas of cut and fill and then entering the Wellsford East character area.

### Impacts on wider landscape character

The influence of the proposed viaduct on the wider surrounding landscape character will be limited; given the enclosing nature of the surrounding landforms, particularly to the north, east and south. Any changes in character as a result of the proposed viaduct will largely be restricted to within the immediate surrounds of the Hōteō River and in close proximity to the existing SH1 road and bridge. Road users travelling along the existing SH1 would be the most affected as they will drive between piers that span SH1 under the viaduct. While this will result in a high effect from the change in landscape character, people experiencing it are limited to motorists on SH1.

The Wellsford Interchange will have a high impact upon the Wayby Valley Road area. The Wayby Valley Road/SH1 intersection (and to a lesser degree the aerodrome) already contribute a major infrastructural feature to the landscape. However, the proposed scale of the Wellsford Interchange and the necessary modifications to the landform, as described above, will result in a substantial increase in the dominance of roading infrastructure across the wider valley landscape.

Further north, the large cuts and fill embankments required to accommodate the carriageway will create similar effects to the intersection. The northern parts of the character area are visible from elevated ridges to the west, traced by Rustybrook Road and

Whangaripo Valley Road. Views of the Project across the valley floor will be gained from Wayby Valley Road.

This character area is characterised by its open pasture and broad valley landform, with the main 'human element' being Wayby Valley Road. The introduction of the Project, in addition to that existing road, will have a high impact on the character of the valley. Specifically, the Project will impact upon several of the key characteristics within this character area, including, in places, disrupting the openness and expansiveness of existing areas of pasture, the connectivity of the existing vegetation framework (particularly around Rustybrook Road) and an increase in traffic movements and intensity.

## Effects ratings

Table 7 below provides a summary of the significance and nature of the different landscape effects identified above, including with and without mitigation.

The moderate - high adverse effect on the physical landscape results from the removal of indigenous vegetation associated with three SEAs and the physical works associated with construction of the Hōteō Viaduct, the Wellsford interchange and series of cut and fills through ridges and across valleys to the north. During construction, the earthworks resulting from landform modification would be bare earth. At completion without mitigation, it is assumed that earthworks would be integrated with adjacent landforms and stabilised with grass and would have a lower (albeit slightly) adverse effect.

In terms of effects on landscape character, we consider the effects during construction would result from landform and landcover modification, specifically building a viaduct across the Hōteō River and fill batters to form the Warkworth interchange and a series of cut and fills through ridges and valleys that are grazed farm land. At completion, the removal of the construction equipment and precast yard associated with the Hōteō Viaduct and the Wellsford Interchange would result in a slightly lower adverse effect on the character of the area.

Mitigation will help to blend cut and fill batters with adjacent landform and integrate the highway into the wider landscape. A substantial area of mitigation planting is proposed between the Hōteō River and Wayby Valley Road. This will help to address the objectives and policies of the Rural Zone AUP(OP), that seek to maintain rural character, amenity and biodiversity values by creating a substantial area of planting that links existing SEAS (including the Hōteō River) and provides ecological as well as amenity benefits.

## Key mitigation measures for this character area

The recommended Project-wide mitigation measures are described within section 5 of this report. In summary, those measures which are particularly relevant to the assessment of landscape effects in this character area are:

- (a) The final design of the Wellsford Interchange should serve as a milestone along the Project and provide a feature that connects to Wellsford and the surrounding landscape setting. Planting and design works at the interchange should promote a sense of place that reflects the destination presented e.g. by using culturally and locally important plant species.
- (b) The support structures (piers), abutments and embankments of the Hōteō viaduct should be carefully placed to minimise their physical impact on SEAs.

Refer to Section 4.1 Viaducts and Bridge design principles of the Planning Version ULDF.

- (c) The design of the Hōteō Viaduct, the hardscape material (e.g. rock rip rap), inspection and maintenance areas/access, and any railings or barriers should be considered holistically as part of the overall urban and landscape design treatment for the corridor and not as an isolated area, as outlined in the design principles of the Planning Version ULDF.
- (d) Revegetation and mitigation planting should be undertaken as early as possible to gain maximum benefit. These works should also be reflective of the surrounding landscape character and pasture may be most appropriate in this character area.
- (e) Plant the riparian margins of streams in the pastoral landscape north of the Hōteō River helps to stitch together and enhance the legibility of the landscape.

**Table 7 - Landscape Effects Character area C: Upper Hōteō River Valley**

Resource	Effect Rating (During Construction)	Effect Rating (Upon Completion)	Effect Rating (Establishment of Mitigation)
Landscape Elements and Features of Value (within Project area)	Moderate-High Adverse	Moderate Adverse	<u>Moderate Adverse to Moderate-Low depending on the extent of mitigation.</u>
Wider Landscape Character	High Adverse	Moderate-High Adverse	<u>Moderate- Adverse</u>

#### 4.1.4 Character Area D: Wellsford East

##### Key changes and Impacts on landscape elements and features of value (within Project area)

In this character area, the Indicative Alignment passes through two significant areas of cut. These areas currently comprise pastoral fields that feature mature rows of boundary vegetation and clusters of trees.

The Indicative Alignment then proceeds on embankments. It passes over Whangaripo Valley Road, where the bridge abutments and fill embankments on the northern side will occupy land close to Borrows Road and impact two unnamed streams.

Further north, the Indicative Alignment is located within cut, which includes changes of up to approximately 25 m between the existing and design contours. The Indicative Alignment then encounters a former quarry, before reaching Farmers Lime Road, where the removal of some nearby mature (exotic) vegetation is likely to be required. Farmers Lime Road will be realigned and elevated via a new bridge to cross the state highway. North of Farmers Lime Road, the Indicative Alignment crosses a stream, and proceeds within cut, through open pastoral fields, which feature occasional specimen trees, and a small woodlot, all of which will be removed by the Indicative Alignment.

The rolling contour and the occasional vegetation (e.g. mature trees and boundary vegetation) in this character area are of some scenic value, albeit being fairly typical across the wider area. The impact of the Project upon the landform will be very high due to the

physical extent of the earthworks. While vegetation clearance will be required, it will be limited by the lack of existing trees or ground cover within the Indicative Alignment.

### Impacts on wider landscape character

The Project area spans a sequence of low ridges, which rise and form part of a more elevated ridge to the west of the character area (around Worthington Road). The Worthington Road Ridge provides a physical separation between the character area and the Wellsford settlement; and will ensure that the Project does not impact upon the character or amenity of Wellsford and/or its rural interface.

In general, the impact of the Project, upon the characteristics of the wider rural landscape of the character area, will be of a similar nature to the impacts described across the other northern character areas. The Project would introduce a substantial infrastructural corridor to the rural landscape, which would primarily impact the immediate surroundings as well as introducing additional movement and intensity of use to parts of the landscape outside of the Project area. While the ridgelines and rolling topography limit the ability for the Project to influence more distant landscape areas, the Project will have a significant impact upon the character surrounding Borrowers Road and Whangaripo Valley Road. As outlined above, this area will accommodate a new bridge and substantial engineered fill embankments, which will significantly alter the character within the Borrowers Road area. That area currently benefits from a sense of intimacy and enclosure around a quiet rural residential lane.

As with Borrowers Road, the character of the wider landscape surrounding Farmers Lime Road will also be noticeably impacted by the Project. This impact will primarily result from the proposed bridge, and embankment in place of what is currently open countryside. This change will affect the sensory characteristics of the Farmers Lime Road area.

This character area has a rural character, characterised by open pasture, shelter belts and agricultural (farming) landuse. The recommended form of reinstating earthworks is grassing to integrate with the adjacent landcover combined with localised screen planting. While this will assist with tying the Project into the landscape it will have limited ability to mitigate the overall effect of the Project on rural character.

### Effects ratings

Table 8 below provides a summary of the significance and nature of the different landscape effects identified above, including with and without mitigation.

The effect on the physical landscape results from extensive earthworks forming a series of cuts and fills through ridges and across valleys and an elevated bridge across Whangaripo Valley Road. During construction and upon completion it is considered the effects of landscape elements and features would be the same.

In terms of effects on landscape character, the effects during construction would result from landform and landcover modification, a series of cut and fills through ridges and valleys that are grazed farm land. The effects rating remains the same at completion because the landform remains modified and the effect on the character of the area has been changed.

Mitigation will help to blend cut and fill batters with adjacent landforms and integrate the highway into the wider landscape by planting the riparian margins of streams as they cross the proposed designation and extensive planting around the Borrows Road valley.

**Key mitigation measures for this character area**

The recommended Project-wide mitigation measures are described within section 5 of this report. In summary, the measures that are particularly relevant to the assessment of landscape effects in this character area are:

- (a) Earthworks should be designed and graded out to integrate with the surrounding landscape. This approach will be particularly important for the fill embankments proposed around the Borrows Road area.
- (b) Small woodlots and tree belts are common in the wider landscape around Borrows Lane/Whangaripo Valley Road. Similar planting should be used/replicated around the Borrows Road bridge area to soften and visually anchor the proposed bridge and the tall engineered fill embankments.
- (c) Appropriate surface treatment of cut slopes, including grassing, revegetation or leaving an exposed rock face. Rock cuttings can provide features within the local landscape, and reflect the local character of the area, in particular the distinctive limestone geology of the area.
- (d) The bridge form and design should be considered as part of the overall urban and landscape design for the corridor as outlined in the Planning Version ULDF.
- (e) Worked areas, and embankments (outside of the Borrows Road area) should be returned to pasture, to blend with the character of the surrounding open pasture land.
- (f) Plant the riparian margins of streams that flow through the proposed designation.

**Table 8 - Landscape Effects Character area D: Wellsford East**

Resource	Effect Rating (During Construction)	Effect Rating (Upon Completion)	Effect Rating (Establishment of Mitigation)
Landscape Elements and Features of Value (within Project area)	Moderate Adverse	Moderate-Low Adverse	<b><u>Moderate-Low Adverse</u></b>
Wider Landscape Character	Moderate-High Adverse	Moderate-High Adverse	<b><u>Moderate Adverse</u></b>



## 4.1.5 Character Area E: Te Hana East

### Key changes and impacts on landscape elements and features of value (within Project area)

In this character area, the Indicative Alignment continues on embankments and passes over the upper branches of an unnamed stream (which feeds into Te Hana Creek). In the area between Shepherd Road to the west of the proposed designation, and Silver Hill Road the Indicative Alignment intersects with two other streams and wetlands (also part of the Te Hana Creek catchment). The associated earthworks around these streams will require the removal of the existing, largely exotic vegetation. Indigenous wetland vegetation should be retained where practicable and enhanced.

Beyond these streams, the Indicative Alignment passes through a rural residential property on the southern side of Silver Hill Road. This property features a variety of existing mature largely exotic vegetation, most of which would likely need to be removed for the Project. Silver Hill Road is indicatively crossed via a bridge, and on the northern side the Project would proceed along a raised section. This section would feature high fill embankments.

This character area is characterised by open pasture, shelter belts and agricultural (farming) landuse. The recommended form of reinstating earthworks is grassing to integrate with the adjacent landcover combined with localised screen planting. While this will assist with tying the Project into the landscape it will have limited ability to mitigate the overall effect of the Project on rural character.

North of Silver Hill Road, the Indicative Alignment passes through areas of pasture, with some steep sided areas of cut required. The Indicative Alignment then intersects with a ridgeline that is prominent in views from parts of Mangawhai Road (depicted in Viewpoint 19, Figure LP-016). Beyond the ridgeline, and on its northern slopes, the Indicative Alignment proceeds towards the Te Hana Interchange on fill embankments. These embankments will gradually increase in height/scale towards the lower contour of Mangawhai Road.

The Te Hana Interchange will impact upon an area of stream and will include realignments of Mangawhai Road (including its connection with SH1) and Vipond Road. It will include lighting. Apart from interchanges the design does not involve lighting of the highway. Beyond the Te Hana Interchange, the Indicative Alignment continues on generally shallow fill embankments through relatively flat open fields, crosses a watercourse and continues to tie in to SH1 in the vicinity of Maeneene Road. This tie in is proposed to include a bridge over Maeneene River and realignment of Maeneene and Waimanu Roads.

The rolling contour and the occasional boundary vegetation (i.e. mature trees) contribute scenic value to the wider landscape, albeit fairly typical of the wider area. As with the Wellsford East character area, the Project's impact on the landform within the Project area will be high, due to the physical extent of the earthworks. However, while vegetation clearance will be required, it would be limited to the area surrounding Silver Hill Road and the existing stream courses.

### Impacts on wider landscape character

As with the Wellsford East character area above, the susceptibility of the wider landscape to landscape effects from the Project is limited by the enclosing and screening effect of

intervening landforms and the overall sense of scale associated with these rural landscapes. The sense of scale is perceived to be broad, due to the openness and connectivity of the pastoral fields and the homogenous nature of the land use.

The Project will result in greater contrast in smaller areas, such as around Silver Hill Road, where there is a higher prevalence of residential properties and amenity planting. That pattern results in a more 'intimate' or 'finer' framework of rural features and scale. Most noticeably, the bridge and extent of the engineered slopes north of Silver Hill Road will, particularly during and immediately after construction, have a significant impact on the landscape character around Silver Hill Road. While roads are not uncommon in rural landscapes, the movement and activity that they add through passing vehicles, noise and lighting, can adversely impact upon the sensory values of a landscape, particularly with regards to any perceptions of tranquillity or remoteness. This effect will occur, to varying degrees, across the surrounding area, including from more distant locations such as Lower Silver Hill Road, which overlooks parts of the lower valley in which the Indicative Alignment is located.

There is potential for a construction compound to be located in the vicinity of the Te Hana Interchange alongside Vipond Road (south). Stripped topsoil or over burden could be used to form grassed mounding around the perimeter of construction compounds with fast growing shelter belt trees planted to screen them or reduce their presence.

At the northernmost limits of the Project area, the Indicative Alignment will result in a considerable change to the character of the valley to the east of SH1. It will involve a roundabout on the existing SH1 and a full north/south interchange straddling Mangawhai Road. This proposed interchange will alter the landform, use and appearance of the ridge slopes surrounding the lower parts of Mangawhai Road, and will impact upon the landscape character of nearby areas, including the subdivision at Charis Lane, and the rural residential areas around Vipond, Maeneene and Waimanu Roads. The Project will change the character of the valley introducing a large engineering structure, elevated road with ramps and lighting. However, the character within this area is already influenced by the existing SH1 road, a local subdivision and local roads; so those areas have a low sensitivity to change.

Planting the batter slopes of the interchange out to adjacent streams as well as strategically located shelter belts for screening will help to integrate the interchange into the Vipond Road valley and reduce the visual effects.

## Effects ratings

Table 9 below provides a summary of the significance and nature of the different landscape effects identified above, including with and without mitigation.

The effect on the physical landscape results from extensive earthworks forming a series of cuts and fills through ridges and across valleys and a large fill to form the Te Hana interchange over Mangawhai Road. During construction and upon completion it is considered the effects of landscape elements and features would be the same.

In terms of effects on landscape character, we consider the effects during construction would result from landform and landcover modification, a series of cut and fills through ridges and valleys that are grazed farm land. The effects rating remains the same at completion because the landform remains modified and the effect on the character of the area has been changed.

Mitigation will help to blend cut and fill batters with adjacent landforms and integrate the highway into the wider landscape by planting streams as they cross the proposed designation and extensive planting around the Te Hana Interchange.

### Key mitigation measures for this character area

The recommended Project-wide mitigation measures are described within section 5 of this report. In summary, the measures that are particularly relevant to the assessment of landscape effects in this character area are:

- (a) Earthworks should be designed and graded out to integrate with the surrounding landscape. This approach will be particularly important in relation to the tall fill embankments proposed around Silver Hill Road (if included in the final design).
- (b) The Silver Hill Road bridge design should be considered as part of the overall corridor approach to bridge architecture, and structures so that it is part of the corridor wide family of structures as outlined in the Planning Version ULDF.
- (c) For the areas of cut proposed, opportunities for rock cuttings should be explored with the aim of providing features within the local landscape, reflecting its local character (e.g. by exposing the underlying limestone).
- (d) The Te Hana Interchange will be the northern gateway to Wellsford as well as connecting visitors to the Te Hana Te Ao Marama Cultural Centre and Te Hana. The landscape treatment of the Te Hana Interchange and the Wellsford Interchange to the south should be similar (create a family of interchanges) to reinforce the connections into and out of Wellsford. There is opportunity to integrate place making features into the interchanges to assist with this connectivity. Small woodlots and tree belts are common in the wider landscape around this character area. Similar planting should be replicated around the Te Hana Interchange to visually screen local views towards the interchange and the tall engineered fill embankments.
- (e) Plant the riparian margins of streams that flow through the proposed designation.
- (f) Construction compounds should be located a minimum of 200 m from residential properties and should be screened with grassed mounding and or fast growing shelter belt trees.

**Table 9 - Landscape Effects Character area E: Te Hana East**

Resource	Effect Rating (During Construction)	Effect Rating (Upon Completion)	Effect Rating (Establishment of Mitigation)
Landscape Elements and Features of Value (within Project area)	Moderate-High Adverse	Moderate-High Adverse	<u>Moderate Adverse</u>
Wider Landscape Character	High Adverse	High Adverse	<u>Moderate-Adverse</u>

## 4.1.6 Future detailed design

This assessment is based on the Indicative Alignment. The final alignment design could shift during future design development phases within the proposed designation boundary. We consider the following areas are particularly sensitive areas to landscape and visual effects:

- The Mahurangi River and its associated riparian vegetation;
- Remnant patches of indigenous vegetation south and north of Kaipara Flats Road;
- Upper reaches of the upper Kourawhero Stream;
- The Hōteō River and adjoining indigenous forest identified as SEA\_T\_ 683; and
- A high value wetland SEA\_T\_6854 and a remnant of indigenous flood plain forest SEA\_T\_6851 north of the Hōteō River.

We consider future design changes to the alignment can be accommodated without an increase in effects on these areas through the following mitigation measures:

- (a) Bridges crossing the Mahurangi River should as far as practicable be perpendicular to the river to minimise the impact on the riparian vegetation. The number of bridges over the river should be restricted to a maximum of three. Loss of vegetation from remnant patches of forest should be limited to the amount shown on the Indicative Alignment;
- (b) A bridge to span the upper Kourawhero Stream should be required;
- (c) The proposed designation is very narrow at the Hōteō River crossing to minimise the impact on the river and SEA\_T\_ 683. The Hōteō Viaduct northern bridge abutment is located on the northern edge of wetland SEA\_T\_6854. Future designs should retain as a minimum the area of wetland and forest retained through the Indicative Alignment. Refer to the Hōteō Viaduct Plan in section 4.2 of the Planning Version ULDF.
- (d) Future designs should not encroach further into SEA\_T\_685.

Other areas within the proposed designation are less sensitive to change and provided the final design incorporates the general mitigation principles and guidelines recommended in section 5 of this report and the Planning Version ULDF then the future potential changes to the alignment within the designation boundary should have similar effects to the Indicative Alignment.

## 4.1.7 Conclusions

The landscape effects generated by the Project will have Moderate-High adverse physical landscape effects and High landscape character effects on the Warkworth Landscape Character Area. They can however be reduced to low if the mitigation shown on the Landscape and Visual Mitigation plans is implemented.

The Dome Valley Landscape Character Area will experience Moderate-High landscape effects and Moderate landscape character effects which can reduce to Moderate-Low with mitigation.

The Upper Hōteō River Landscape Character Area will experience Moderate-High physical landscape effects and High landscape character effects which can reduce to Moderate or even Moderate-Low depending on the extent of mitigation.

The Wellsford East Landscape Character Area will experience Moderate physical landscape effects and Moderate-High landscape character effects which can reduce to Moderate physical landscape effects and Moderate-Low character effects with mitigation.

The Te Hana North Landscape Character Area will experience Moderate- High physical landscape effects and High landscape character effects which can reduce to Moderate with mitigation.

## 4.2 Visual effects

### 4.2.1 Representative public viewpoints

Having defined the extent of visibility by selecting and photographing 22 viewpoints that represent publicly accessible locations throughout the corridor, we then undertook an extent of visibility analysis. The result of our ZTV analysis is shown on figures LV12-LV17 in Appendix A: Landscape Figures.

In chapter 4 we describe the Project elements and the impact on the character area. We then identified 5 key areas (worst case scenarios from publicly accessible locations, based on the Indicative Alignment) where adverse visual effects would be experienced and prepared visual simulations. These areas were selected to be represented with a visual simulation on the following basis:

- VP8, Hōteō , SH1 looking south. This is the closest we could get to illustrate the viaduct in a visual simulation. Residential properties on Wayby Station Road are orientated in this direction. SH1 passes underneath the viaduct.
- VP9, Wayby Station Road. Looking east towards the Warkworth Interchange. Representative of residential properties on Wayby Station Road.
- VP15, Whangaripo Valley Road. Looking west towards Borrows Road where the proposed highway bridges over Whangaripo Valley Road. Representative of what residential properties on Whangaripo Valley Road and Borrows Road could see.
- VP 20, Vipond Road. Looking south at the Te Hana intersection where it crosses Mangawhai Road.
- VP21 , Charis Lane. Looking north-east towards the Te Hana interchange.

The visual simulations LS-001-LS-005 (AEE drawing set LS-Series) show a panorama of the existing view, the proposed view with the highway at completion and the proposed view with mitigation planting after 10 years. Table 10 provides an assessment of the effects of the Project upon the views and visual amenity at each of the publicly accessible assessment viewpoints introduced in section 3 above. The visual simulations are based on the Indicative Alignment and may not represent the final design of the Project.

The most sensitive areas in terms of visual effects (based on extent of visibility identified on the ZTV figures LV12-LV17 and size of the viewing audience) are considered to be:

- Viv Davie-Martin Drive and Woodcocks Road, Warkworth Interchange;

- Kaipara Flats Road;
- Wayby Station Road, Wellsford Interchange;
- Rustybrook Road;
- Whangaripo Valley Road, Borrowos Road;
- Mangawhai Road, Vipond Road and Charis Lane, Te Hana Interchange.

We recommend visual mitigation in these areas consisting of the following:

- Mitigation of the Warkworth Interchange should involve extensive planting between the ramps to visually absorb the various lanes, fill embankments and structures, particularly when viewed from elevated properties off Viv Davie-Martin Drive. Shelter belt and screen planting adjacent to the outer link roads will screen views of the interchange from properties off Wyllie Road, Woodcocks Road and Carran Road.
- Views of the final design from properties off Kaipara Flats Road should be screened by (where possible) retaining existing shelter belts within the proposed designation and revegetating a strip of land on the eastern side of the Indicative Alignment to buffer the Kaipara Flats Road rural residential area to the east. We propose a shelter belt on the western side of the Indicative Alignment, by Phillips Road, to screen views from properties to the west off Kaipara Flats Road.
- Views of the final design from properties off Wayby Station Road include the Hōteio Viaduct to the south and the Wellsford Interchange to the east. Views of the Hōteio Viaduct should be partially screened by retaining the existing poplar shelter belt near SH1 and through the design and construction methodology for the viaduct in line with our recommendations outlined in Section 4.1, Viaducts and Bridges of the Planning Version ULDF. Views of the final Wellsford Interchange should be screened by retaining existing shelter belts beside Wayby Valley Road and planting a shelter belt on the western sloping fill batter of the interchange.
- Views of the final design from elevated properties off Rustybrook Road, Whangaripo Valley Road and from Wayby Valley Road should where necessary be screened by planting shelter belts on any eastern and western fill batter slopes of the final design.
- Views of the final design from Whangaripo Valley Road and from Borrowos Road should be screened where necessary by planting shelter belts on any eastern and western fill batter slopes of the final road. Native revegetation planting along the stream margins and between Borrowos Road and the final road will provide a buffer, separating Borrowos Road from the state highway.

Views of the final design from properties off Mangawhai Road, Vipond Road and from Charis Lane should be screened where necessary by planting shelter belts as indicated on the Landscape and Visual Mitigation Plans in the AEE drawing set, Landscape and Ecological Mitigation Plans-EM-Series.



Table 10 - Publicly Accessible Viewpoints Assessment

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
1	Wyllie Road looking north-west. This view represents those experienced by road users driving north.	This view looks across the – currently under construction – Pūhoi to Warkworth section. The ongoing construction works have altered the character of the view and reduced the sensitivity of the audience at this location to the Project. The ridge backdrop provided by the Dome Valley Area is an attractive and key feature of the view. A shelter belt of screen planting, as mitigation for Pūhoi to Warkworth will be established before the Project commences construction. It will potentially screen this view.	This view looks towards the proposed Warkworth Interchange. A section of fill batter slopes and bridges crossing the mainline will be visible behind the Pūhoi to Warkworth section. This addition will have a cumulative impact upon the view, both in terms of the extension in time of construction works, and the overall scale of roading infrastructure that will remain in the view.  Mitigation will consist of planting of a floodplain forest across the entire interchange to integrate all the ramps and structures. Refer to the Landscape and Visual Mitigation Plans in the AEE drawing set, EM-Series.	Moderate-Low Adverse	Moderate-Low Adverse	<b><u>Low Adverse</u></b>
2	Viv Davie-Martin Drive looking north-west. This view is from the road edge of Viv Davie-Martin Drive. It is indicative of those experienced by	This elevated view looks down across a rural valley landscape, characterised by agricultural fields, with the larger horticultural glasshouses off Woodcocks Road also visible (to the west). The construction	This view looks towards the proposed Warkworth Interchange. The elevated position means that a large section of the interchange, including the off ramps, surrounding fill batter slopes and bridge structures up to 21 m in height will be visible. These works will be viewed in addition to the Pūhoi to Warkworth	High Adverse	Moderate-high Adverse	<b><u>Moderate-Low Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
	residents within several nearby residential properties and dwellings.	works for the Pūhoi to Warkworth section are also visible (to the south west). The view to the north looks across a relatively cohesive, rolling landscape, populated and framed with mature vegetation and rising to the upland ridges of the Dome Valley Area, which form a prominent backdrop.	<p>section. This addition will impact upon the view, both in terms of the extension in time of construction works, and the overall scale of roading infrastructure that will remain in the view. The effects upon completion will reduce when the construction plant and operations is removed.</p> <p>Mitigation will consist of planting of a forest across the entire interchange to integrate all the ramps and structures. It will however do little to mitigate the effect of lighting.</p> <p>Refer to the Landscape and Visual Mitigation Plans in the AEE drawing set, EM-Series.</p>			
3	Woodcocks Road looking east. This view represents that experienced by road users driving east.	This view looks along Woodcocks Road and is typical of a rural area. It is characterised by open pasture, enclosed by post and wire fencing and boundary vegetation. The construction works for the Pūhoi to Warkworth section are visible in the distance, as are dwellings along Viv Davie-Martin Drive, which sit	The centre of the view, in the immediate foreground, will accommodate a new roundabout as part of the realignment of Carran Road. Behind the roundabout, the road - and the north bound Warkworth off-ramp - will pass over Woodcocks Road via a new bridge. The bridge and its abutments and preceding batter slopes will be visible. The batter slopes will be visible within this view both to the north and south.	Moderate Adverse	Moderate-Low Adverse	<b><u>Low Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
		atop of a prominent hill on the skyline.	<p>The effects upon completion will reduce when the construction plant and operations is removed.</p> <p>Mitigation should include filling the area between the realigned Carran Road and the mainline of the final alignment to integrate the fill embankments with adjacent landform and planting to create an indigenous forested feature reflecting the local landscape that will integrate the structures. Shelter belt planting along the western side of the Carran Road realignment will screen views from adjacent dwellings.</p>			
4	Carran Road looking south-east. This view represents that experienced by road users driving south-east.	An attractive rural valley scene, comprising pasture land enclosed by post and wire fencing, with a characteristic stock gate and mature vegetation enclosing a dwelling (which includes mature Norfolk Island Pine trees). The ridge backdrop provided by the Dome Valley Area is an attractive and key feature of the view.	<p>This view looks towards the location where Carran Road will be realigned (south) and towards the lower valley in which the road will be located (east). The view to the east will include a bridge over the Warkworth off-ramp. Both the realigned Carran Road and the off-ramp will be cut into the land, and therefore will sit beneath the current grade.</p> <p>The effects upon completion will reduce when the construction plant and operations is removed.</p> <p>Mitigation should include extensive planting of the final Warkworth</p>	Moderate Adverse	Moderate-Low Adverse	<u>Low Adverse</u>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
			Interchange to create a wetland forest building on the mature indigenous riparian associated with the Mahurangi River which will be retained and become even more of a feature of the area than it currently is. Shelter belt planting on the western side of the interchange will screen views from adjacent dwellings.			
5	Kaipara Flats Road looking north-east. This view represents that experienced by road users driving north-east and several nearby private residential viewing audiences.	This view looks across a low-lying pastoral valley landscape, which is enclosed to the north and east by elevated ridges, which rise to the north towards the Dome Valley Area. The view includes the existing Kaipara Flats Road, a transmission corridor, multiple rows of post and wire fencing and scattered trees (many of which are exotic).	<p>This view will include a section of the road heading north where it crosses Kaipara Flats Road and Phillips Road. Kaipara Flats Road is proposed to be realigned and cross over the road via a new bridge and intersecting with Phillips Road – which will also be realigned, with a new intersection being formed to the west of the bridge.</p> <p>The effects upon completion will reduce when the bridge construction facilities and associated equipment are removed.</p> <p>Mitigation should include planting up the eastern side of the final alignment to link existing patches of indigenous bush with the Mahurangi River riparian vegetation. Planting between the realigned Phillips Road and the mainline will screen views of the road.</p>	Moderate-high Adverse	Moderate Adverse	<b><u>Moderate Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
6	SH1 looking south. This view broadly represents the public views experienced from the nearby section of SH1, and the public rest area from which the photograph was taken.	The current view is of a narrow valley landscape, enclosed on all sides by vegetation. The majority of the vegetation is pine tree plantation forestry, with some patches of indigenous vegetation around a nearby watercourse and bordering SH1.	Earthworks associated with the road will most likely not be visible in the distance when travelling on the existing SH1 in the Dome Valley Area.  Mitigation should include planting of batter slopes.	Very Low Adverse	Very Low Adverse	<u>Very Low Adverse</u>
7	Forestry Road looking north-west. This view represents that experienced by forestry workers travelling along this road.	The view looks down towards the main valley landform within which the existing SH1 is located. The surrounding slopes are predominantly covered in plantation pine forest – in various stages of cultivation – and colonising weed species.	Forestry Road is proposed to be realigned and will pass over the new road via a new bridge. Users of this road (occasional forestry workers or people accessing the forest) will therefore have a clear view north and south over the road – which will largely be in cut in the immediate foreground – particularly when passing over the bridge. This viewing group is transient and will only experience these views occasionally.  Mitigation should include revegetating batter slopes and any cleared land.	Moderate-Low Adverse	Moderate-Low Adverse	<u>Low Adverse</u>
8	SH1 looking south-east. This view represents that experienced by	The view looks across an open field, which is enclosed by dense vegetation to the south and west, SH1 to the	Views from this location will feature the proposed Hōteo Viaduct, which will pass over the existing SH1 road and form a	Moderate Adverse	Moderate-Low Adverse	<u>Low Adverse</u>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
	road users driving south along SH1.	east and a private residential property – which is also enclosed by vegetation – immediately east of SH1. SH1 forms a key feature of the view, with passing traffic adding movement and interest.	<p>significant, new, man-made feature in the view.</p> <p>The effects upon completion will reduce when the bridge and associated equipment are removed.</p> <p>Mitigation should include retaining existing vegetation beside SH1 to filter views of the viaduct and road. The Viaduct will also be designed with pier spacings (60 m) to span the streams and minimise the amount of vegetation that has to be removed under it.</p>			
9	Wayby Station Road looking east. This view represents that experienced by road users approaching the SH1 intersection. It also broadly represents the views experienced from several nearby residential properties.	The view looks across the broad open valley landscape of the Wayby Valley, which is framed by the Dome Valley Area to the south and east. The view includes the intersection of Wayby Station Road, SH1 and Wayby Valley Road; and the accompanying infrastructure (signs, barriers, lights etc.). Passing vehicles present an intensively used fore to mid-ground of the view, which is otherwise surrounded by an attractive rural landscape.	<p>This location will allow views east across to the proposed Wellsford Interchange, including a raised section of the road that follows on from the Hōteo Viaduct and an off-ramp which will connect via a roundabout with the existing SH1. The road and its full north-south interchange, will comprise a significant change to this view; adding a much greater extent and intensity of human development/infrastructure.</p> <p>The effects upon completion will reduce when the bridge construction facilities and associated equipment are removed.</p> <p>Mitigation should include retaining the existing shelter belts on Wayby Valley</p>	Very high Adverse	High Adverse	<b><u>Moderate-high Adverse</u></b>



VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
			Road to partially screen the final interchange combined with a further shelter belt screen along the western side of the mainline fill batter to screen the highway and associated lighting. An extensive area of revegetation on the eastern side of the road, which will form a forested backdrop to the interchange.			
10	Wayby Valley Road looking south. This view represents those experienced by road users driving south.	The view looks along the Wayby Valley, which features Wayby Valley Road surrounded by flat pasture land – and the Dome Valley Area to the south.	<p>This view will feature the proposed Wellsford Interchange, including the southbound off-ramp which, together with the main alignment, will be raised above the existing valley contour.</p> <p>The effects upon completion will reduce when the bridge and associated equipment are removed.</p> <p>Mitigation should include extensive revegetation of the floodplain land to the south of Wayby Valley Road.</p> <p>Embankments of the final interchange (on more elevated land to the north of Wayby Valley Road) should be grassed to integrate with the adjacent pasture.</p>	Moderate-high Adverse	Moderate Adverse	<b><u>Moderate-Low Adverse</u></b>
11	Wayby Valley Road looking south-west. This view represents those experienced by	The view looks along the Wayby Valley, which features the long and straight Wayby Valley Road surrounded by flat pasture land and more	This view will include the realignment works for Rustybrook Road, which is proposed to cross over the road. A small raised section of the road (i.e. its fill batter slopes) will likely be visible in the	Moderate Adverse	Moderate-Low Adverse	<b><u>Low Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
	road users driving south.	undulating land to the north. The surrounding fields include attractive pockets of mature indigenous vegetation, particularly around Rustybrook Road.	distance, before it passes in cut underneath Rustybrook Road.  Mitigation should include leaving any cuts into rock so the geology is legible and grassing soil batters to integrate with the adjacent pasture. Riparian margins of streams should be revegetated and shelter belts or woodlots of planting used to block views of the road from adjacent residential properties.			
12	Rustybrook Road looking north-east. This view represents those experienced by road users driving north and broadly represents those experienced from within several nearby residential properties.	An extensive panorama across a largely rural landscape, consisting of the broad pastoral Wayby Valley, which transitions into more steeply undulating and elevated land to the east. Signs of human development are limited, albeit the dwelling and garden area at No. 177 is clearly visible in the mid-ground. The broad scale of the valley landform helps to reduce the susceptibility of this view/audience to adverse impacts.	The view down towards the Wayby Valley floor will feature a raised section of the road. This change will represent an intensification of visible human development within the valley; particularly from the added activity which will occur as a result of passing vehicles.  The effects upon completion will reduce when the bridge and associated equipment are removed.  Mitigation should include leaving any cuts into rock so the geology is legible and grassing soil batters to integrate with the adjacent pasture. Riparian margins of streams should be revegetated and shelter belts or woodlots of planting used to block views	Moderate Adverse	Moderate-Low Adverse	<b><u>Low Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
			of the road from adjacent residential properties.			
13	Wayby Valley Road looking west. This view represents those experienced by road users driving west and broadly represents those experienced from within several nearby residential properties.	The view looks along the Wayby Valley, which features Wayby Valley Road surrounded by flat to gently undulating pasture land. The view further west/south of Wayby Valley Road is curtailed where it is enclosed by vegetation as it changes direction.	<p>A short, raised section of the road will be visible directly to the west in this view – as it passes along a flatter part of the valley landscape</p> <p>Mitigation should include leaving any cuts into rock so the geology is legible and grassing soil batters to integrate with the adjacent pasture. Riparian margins of streams should be revegetated and shelter belts or woodlots of planting used to block views of the road from adjacent residential properties.</p>	Low Adverse	Low Adverse	<b><u>Very Low Adverse</u></b>
14	Borrows Road looking south-east. This view represents those experienced from Borrows Road and likely broadly represents those experienced from within nearby residential properties.	A more intimate landscape scene, than those which are represented within the Wayby Valley above. This view is largely rural in character, with open paddocks interspersed with exotic plantings, farm tracks, post and wire fencing, stock ramps, and a culverted stream. Traffic on Whangaripo Valley Road is visible.	This view will feature the proposed bridge across Whangaripo Valley Road, which together with the preceding abutments and batter slopes, will form a significant new man-made feature in the view. The bridge abutments are high and close to a cluster of residential properties in Borrows Road. Refer to viewpoint VP15 (Figure LP-012) and visual simulation LS-004.	Very High Adverse	High Adverse	<b><u>Moderate Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
			<p>The effects upon completion will reduce when the bridge and associated equipment are removed.</p> <p>Mitigation should include extending the fill batter of the final design out further and flatter to provide better integration with the surrounding landform. A wood lot of fast growing shelter belt trees should also be planted around the final intersection with Borrowers Road.</p>			
15	Whangaripo Valley Road looking west This view represents those experienced by passing road users and likely broadly represents those experienced from within nearby residential properties.	The view looking west along Whangaripo Valley Road is characterised by flatter valley lands surrounding the road, which transitions to rolling hills to the north and south. The land is almost entirely utilised for grazing pasture and is scattered with occasional dwellings and farm buildings.	<p>This view will feature the proposed bridge across Whangaripo Valley Road, which together with the preceding abutments and batter slopes, will form a significant new man-made feature in the view.</p> <p>Mitigation should include leaving any cuts into rock so the geology is legible and grassing soil batters to integrate with the adjacent pasture. Riparian margins of streams should be revegetated and shelter belts or woodlots of planting used to block views of the road from adjacent residential properties.</p>	High to Moderate Adverse	Moderate Adverse	<b><u>Moderate Adverse</u></b>
16	Farmers Lime Road looking west. This view represents	An attractive rural scene, which is characterised by pastoral land use and	The immediate foreground of this view will be completely altered by the Project. This section of Farmers Lime Road is	High Adverse	Moderate Adverse	<b><u>Moderate-Low Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
	those experienced by passing road users driving west.	features (e.g. post and wire fencing), with an extensive far-reaching view to the north. The metalled form of Farmers Lime Road adds to the rural character of this location.	<p>proposed to be realigned and include a bridge spanning across the new road. The new road will likely require a significant area of cut to the immediate south of this viewpoint and areas of cut to the north. The road will be visible from the newly elevated section of Farmers Lime Road.</p> <p>The effects upon completion will reduce when the bridge and associated equipment are removed.</p> <p>Mitigation should include leaving any cuts into rock so the geology is legible and grassing soil batters to integrate with the adjacent pasture. Riparian margins of streams should be revegetated and shelter belts or woodlots of planting used to block views of the road from adjacent residential properties.</p>			
17	Silver Hill Road looking north-east. This view represents those experienced by passing road users.	This view looks along the metalled Silver Hill Road, which is enclosed by vegetation along its northern side at a former quarry site and pasture land along its southern side. The residential dwelling at No. 312 is	This view will alter significantly as a result of the Project. This section of Silver Hill Road is proposed to be (slightly) realigned and will feature the road passing overhead across a new bridge. The road will require significant fill batters to the immediate north of this viewpoint.	High Adverse	Moderate-high Adverse	<b><u>Moderate Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
		located to the east, albeit enclosed and screened from sight by dense amenity planting.	The effects upon completion will reduce when the bridge and associated equipment are removed. Mitigation should include leaving any cuts into rock so the geology is legible and grassing soil batters to integrate with the adjacent pasture. Riparian margins of streams should be revegetated and shelter belts or woodlots of planting used to block views of the road from adjacent residential properties.			
18	Lower Silver Hill Road looking south. This view represents those experienced by passing road users.	An extensive, far reaching panorama across an undulating rural landscape, characterised by open pasture, former quarrying activity (in the immediate foreground) and pockets of mostly exotic vegetation.	The view will include a short section of the road where it is proposed to intersect with and cross Silver Hill Road. A section will likely include embankments above the existing ground level. The road then proceeds into an area of cut and will largely disappear from sight. Mitigation should include leaving any cuts into rock so the geology is legible and grassing soil batters to integrate with the adjacent pasture. Riparian margins of streams should be revegetated and shelter belts or woodlots of planting used to block views of the road from adjacent residential properties.	Moderate-Low Adverse	Moderate-Low Adverse	<b><u>Low to Very Low Adverse</u></b>



VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
19	Mangawhai Road looking south-west. This view represents those experienced by passing road users and likely, broadly represents those experienced from within nearby residential properties.	The view is characterised by open pasture, which is populated with occasional Eucalyptus and Poplar trees. The landform presents a prominent ridgeline, from which the land including Mangawhai Road which falls to the west.	This location will offer a somewhat elevated view across the proposed Te Hana Interchange, including a likely raised section of the road and an off-ramp that will lead to a new roundabout.  Mitigation should include grassing soil batters to integrate with the adjacent pasture. Riparian margins of streams should be revegetated and shelter belts or woodlots of planting used to block views of the road and interchange lighting from adjacent residential properties.	Moderate-high Adverse	Moderate Adverse	<b><u>Moderate-Low Adverse</u></b>
20	Vipond Road (east) looking south. This view represents those experienced by passing road user along Mangawhai Road, and those experienced from the intersection with Vipond Road.	The view is characterised by open pasture, which is populated with a row of Poplar trees. It also includes high and low voltage transmission corridors. The landform presents a prominent ridgeline to the south.	This location will allow views south across the proposed Te Hana Interchange, including a likely raised section of the road and an off-ramp which will lead to a new roundabout connecting to another new roundabout (for the southbound off/northbound on ramps). The road will pass over the interchange. The road and its full north-south interchange will comprise a significant change to this view and will add a much greater extent and intensity of human development/infrastructure.	High Adverse	Moderate-high Adverse	<b><u>Moderate Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
			<p>The effects upon completion will reduce when the bridge and associated equipment are removed.</p> <p>Mitigation should include planting the final interchange design and land connecting to adjacent streams. The riparian margins of those streams should also be planted. Shelter belt planting along the western side of Vipond Road will screen views of the interchange including lighting from adjacent dwellings.</p>			
21	Charis Lane looking north-east. This view represents those experienced from Charis Lane and likely, broadly represents those experienced residential properties	A view across a generally flat landscape rising to a more gently undulating contour further north. The immediate view includes an undeveloped allotment, part of the Charis Lane subdivision. The allotment is distinguishable by its perimeter of flax. The view includes mostly pasture, but with a strong framework of vegetation, which defines field boundaries. High voltage transmission pylons are visible.	This location will allow views south across the proposed Te Hana Interchange, including a proposed realigned section of Mangawhai Road, which will connect into a new roundabout and then another new roundabout (for the southbound off/northbound on ramps). A raised section of the road will pass over the realignment of Mangawhai Road. The road and its full north-south interchange, will comprise a significant change to this view. It will add a much greater extent and intensity of human development/infrastructure.	High Adverse	Moderate-High Adverse	<b><u>Moderate Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
			Mitigation should include planting of the final interchange design which should extend to adjacent streams. Riparian margins of those streams should be revegetated and shelter belts or woodlots of planting used to block views of the road from adjacent residential properties. Refer to the Landscape and Visual Mitigation Plans in the AEE drawing set, EM-Series.			
22	Vipond Road (west) looking south. This view represents those experienced from this road and likely, broadly representative of those attainable from within nearby residential properties (i.e. No. 35).	This viewpoint offers a view across an area of largely flat paddocks leading towards SH1 to the south and undulating hills beyond.	<p>The road will span the paddocks immediately in front of this viewpoint, running approximately parallel to the existing SH1. The road is proposed to be raised slightly and will therefore have fill batter slopes visible to this audience. It is also proposed to connect this section of Vipond Road with Mangawhai Road, and therefore further construction works will take place within the immediate context of this viewpoint.</p> <p>The effects upon completion will reduce when the bridge construction equipment and associated equipment are removed.</p> <p>Mitigation should include extensive planting between Vipond Road and the mainline of the final alignment of the road. This area should also have an earth</p>	High Adverse	Moderate-high Adverse	<b><u>Moderate Adverse</u></b>

VP No.	Location and audience(s)	Current view (key characteristics and features)	Summary of proposed change(s) to view	Effect rating (during construction)	Effect rating (upon completion)	Effect rating (establishment of mitigation)
			mound integrated with planting to provide noise attenuation <sup>12</sup> . A shelter belt is also proposed along Vipond Road to screen the interchange and associated lighting.			

<sup>12</sup> Noise Attenuation report located in the AEE

## 5 RECOMMENDED MITIGATION

### Recommended mitigation summary

Design techniques and best practice remedial works can successfully integrate new highways into different landscape areas.

A multidisciplinary integrated approach to the route selection and design of this Project road has resulted in the Project avoiding any ONL or ONFs or other protected landscape features such as DOC reserves and QEII covenants. The potential for various elements of the Project to have significant adverse effects has been avoided by the design of the Indicative Alignment to date, such as by adding tunnels through Kraack Hill to eliminate extensive cut and fill batters and the introduction of a viaduct to reduce the effects on SEAs at the Hōteō River crossing.

A Planning Version ULDF has been developed which identifies high level landscape and urban design objectives, principles and opportunities for the Project. Mana whenua should continue to have input to future versions of the ULDF throughout the life of the Project as the design is developed to ensure that cultural values are protected, history and local stories are identified and integrated into “Place Making” design opportunities. Further versions of the ULDF should be developed to guide the design through the consenting, final design and implementation phases.

Landscape mitigation is part of an integrated mitigation framework developed with ecology, heritage, mana whenua and hydrology factors in mind in order to achieve an integrated approach to mitigation (refer to section 10 of the AEE). A landscape and ecology mitigation strategy was prepared that looks to maximise the landscape and ecological outcomes by focussing the main areas of mitigation on high value ecological areas including the Mahurangi River (left branch), Kourawhero Stream and the Hōteō Flood Plain. A set of Landscape and Ecological Mitigation plans is in the AEE drawing set; EM-Series.

This section sets out our recommendations to appropriately mitigate the potential adverse effects of the Project. It includes our recommended approaches to mitigation relating to:

- (a) Construction mitigation includes maximising the retention of existing vegetation, remediating construction yards, haul roads, borrow pits and soil disposal sites, and locating construction yards to minimise visual effects.
- (b) Earthworks includes design and implementation to integrate highway batter slopes with adjacent landform and landcover.
- (c) Planting and revegetation includes extensive planting at key locations to maximise the opportunity to provide high value and resilient landscape and ecological outcomes. Specific recommendations seek to ensure the success of the planting. Visual screening where required should be provided by planting shelter belts and hedge rows with fast growing species that are commonly found in the area.
- (d) The design and construction of structures and highway features is guided by the principles outlined in the Planning Version ULDF and supporting Transport Agency standards and guidelines.

## 5.1 Mitigation and remedial principles

There are a number of design techniques and approaches which can assist in integrating new highways into different landscape areas and minimise the potential for adverse effects, both during their construction and their ongoing operation. The development of an ULDF is the key method of guiding the design development of the Project so that it can be integrated into the landscape to minimise and mitigate adverse visual and landscape effects. The development of the ULDF goes through several phases (refer section 1.3 ULDF Process and ULDF Structure) that support each stage of the Project from a Preliminary ULDF which supports the Scheme Assessment Phase, to a Planning Version ULDF (this phase) which identifies high level design objectives, principles and opportunities for the Project. The Planning Version ULDF also provides illustrative examples that will inform later design development. The design principles guide the design to avoid or minimise the effects of the project on the physical environment. The ULDF approach also provides for consultation on design to ensure the road is integrated into the environment and considers the views of interested parties. Further phases in the development of the ULDF (Draft through to Final) are used to set out how the relevant conditions of the proposed designation are to be met and guide the design development to satisfy the Outline Plan (OP) process. The final phase of the ULDF is when the project is tendered for construction and involves the development of detailed design drawings and Sector Plans.

We consider the Project will alter the composition of the landform and vegetation cover within the Project area. It will have impacts on the Mahurangi River (left branch), Kourawhero Stream and Hōteo River as well as remnant patches of indigenous forest and wetlands. The Project will modify landform with cut and fill batters and introduce lanes, structures and interchanges into a rural landscape. We consider these impacts can be reduced through design development and with appropriate landscape and visual mitigation.

Landscape mitigation is part of an integrated mitigation approach (outlined in section 10 of the AEE) that has been considered together with ecological mitigation in order to provide the most effective, resilient and enduring environmental outcomes. The focus for landscape mitigation is therefore to establish large areas of revegetation that provides a strong landscape framework to mitigate the loss of rural amenity and habitat creation around a few key areas that contain existing high value features which include the Mahurangi River (left branch), the Kourawhero Stream and the Hōteo River and flood plain. The proposal to plant the eastern side of the road between the Kourawhero Stream and the Mahurangi River will span two catchments, link isolated remnants of indigenous vegetation and create an environment for substantial landscape benefits.

Visual mitigation is based on planting to screen views and provide separation between the highway and adjacent residential dwellings and design of earthworks, structures and elements of the highway to ensure integration with the adjacent landscape.

We recommend that the following measures are implemented in order to appropriately mitigate and remedy, the adverse landscape and visual effects identified within this report.

### 5.1.1 Construction

- (a) Construction compounds in close proximity to residential dwellings should be located a minimum of 200 m from the nearest dwelling and if visible they should be screened with fast growing trees.



- (b) Where practicable, indigenous trees within the proposed designation, clear of the construction footprint should be retained and fenced for protection during construction.
- (c) Any borrow pits should be rehabilitated following completion. These should be contoured, and revegetated where possible, to assist with their integration with adjoining landforms and vegetation frameworks.
- (d) Haul roads that are not going to be permanent roads, excluding forestry roads, should be rehabilitated with compacted soils and base aggregates removed and the ground reinstated to a healthy condition suitable for supporting vegetation.

### 5.1.2 Earthworks

- (a) Earthworks should avoid, where practicable existing high value vegetation (e.g. scheduled SEAs) and streams. In particular, fill batters should avoid, as much as practicable, encroachment into SEA\_T\_6854 and SEA\_T\_6851, (refer Figure LV9, Appendix A, Figure Set: Landscape and Visual Effects). Retain existing riparian vegetation along the Mahurangi River (left branch) except where limited clearance is needed to construct bridges over the river.
- (b) Fill batters should be graded out, reducing the steepness of earthworks and blending them into the natural landform adjacent to the highway (e.g. by feathering of the edges of slopes into adjoining contours)
- (c) Appropriate surface treatment of cut slopes such as grassing, revegetation or leaving an exposed rock face. Rock cuttings can provide features within the local landscape and reflect the local character of the area (e.g. by exposing limestone in the northern parts of the Project area).
- (d) Slope treatments and soil management is critical to ensuring that batter slopes can be effectively integrated into the surrounding landscape. Soils should not be overly compacted and should have suitable nutrients and structure to support successful revegetation.
- (e) Benching (stepped contouring) should be avoided where practicable and steeper single slope cuts in rock transitioning to flatter slopes in softer subsoils is recommended.
- (f) Any soil disposal sites should be contoured, and revegetated, where practicable to assist with their integration with adjoining landforms and vegetation frameworks.
- (g) Locally sourced rock typical in scale and formation to that occurring naturally in the Project area, should be used where rip-rap is required for erosion protection and/or beneath bridges.

### 5.1.3 Planting and revegetation

- (a) Extensive revegetation is recommended at a few specific locations to maximise and integrate landscape and ecological benefits (also discussed separately in the Ecology Assessment) and provide resilience in mitigation. A set of Landscape and Ecological mitigation maps are included in the AEE Volume 3 drawing set; EM Series.
- (b) Where planting is recommended it should relate to the character, patterns and plant communities of the Project area. The selection of native species should be

based on an understanding of the original vegetation types of the Auckland region and a thorough understanding of the local site conditions so that species selection can build on the site conditions.

- (c) To achieve visual screening, we recommend continuing the character of the adjoining dominant rural land use and exotic trees and vegetation patterns or cultural patterns in the design (e.g. shelterbelts and woodlots). The location of proposed visual screening is shown on the Landscape and Ecological Mitigation plans in the AEE drawing set; EM-Series.
- (d) Existing shelter belts within the proposed designation should be retained where practicable to screen views of the alignment from adjacent properties.
- (e) A strip of land on the eastern side of the Indicative Alignment should be revegetated to buffer the Kaipara Flats Road rural residential area to the east. It also has the benefit of connecting several isolated patches of indigenous vegetation and connecting the upper Kourawhero Stream and the Mahurangi River across two catchments.
- (f) Where the final alignment is not contained by landform or other above ground features (e.g. vegetation), planting should be used to provide screening/filtering of views from more sensitive viewpoints identified in this report (e.g. residential areas around Warkworth) and more generally, to assist in visually integrating the road to its landscape context.
- (g) Planting around the interchanges is recommended to break up their prominence and visible scale. When the works are viewed together (i.e. the road carriageway, the north/south bound on and off ramps and the associated earthworks, maintenance areas and stormwater treatment devices) without planting, they will present a very dominant feature within the landscape.
- (h) The interchanges will serve as milestones along the route and should act as a feature associated with the local town and/or landscape setting. Planting and design works at interchanges should create an effective local “gateway” and promote a sense of place, that reflects the destination accessed using the interchange.
- (i) Plant the riparian margins of streams that flow through the proposed designation north of the Hōteio River in open pasture, to express the landscape patterns and provide habitat enhancement.
- (j) Areas that are to be revegetated are likely to have been either highly modified through earthworks or very exposed due to a lack of forest cover. A successional approach to the re-establishment of indigenous forest should be taken and tailored to the local, physical conditions (e.g. soil characteristics, elevation, aspect and hydrology) to ensure plant survival and diversity. Planting plans should therefore aim to establish pioneer/early successional plant communities; with the overall aim of establishing long term ‘self-sustaining’ vegetation. We would encourage the trialling of different revegetation techniques (where practicable).
- (k) All plants used for indigenous revegetation should be eco-sourced to protect the biodiversity of the landscape and to support mana whenua aspirations.

## 5.1.4 Structures and features

- (a) The design of all structures should address the design principles outlined in the Transport Agency's Urban Design Guidelines 'Bridging The Gap'.
- (b) The design of bridge and viaduct support structures (piers), abutments and embankments should be carefully placed to reduce their physical impact and limit their effects. The Hōteio Viaduct should be designed with pier spacings to avoid watercourses and minimise the impact on the SEA\_T\_6851 and SEA\_T\_6854. The final design of the Warkworth interchange should limit the number of bridges over the Mahurangi River to a maximum of three.
- (c) There should be an overall corridor approach to the design of bridges and structures so that they are part of a corridor wide family of structures.
- (d) Retaining walls should only be used where batters cannot be used such as to retain areas of high value adjacent indigenous forest. In such cases vegetated MSE walls or non-urban looking walls are preferred.
- (e) the use of an asphaltic road surface with low noise generating characteristics is preferred as a means of noise attenuation rather than introducing noise walls.
- (f) The tunnel portals should be integrated with the adjacent landform as well as the wider context and surrounding landscape character of the Dome Valley Area through the use of sloping portal structures and revegetation works (e.g. such as those employed at the Johnstone's Hill Tunnels). Tunnel structures such as deluge tanks and control buildings should be located so they are not visible from the Te Araroa Trail and be designed in form and colour to be recessive.
- (g) Lighting should be limited to interchanges and tunnels, subject to meeting safety standards, to preserve the rural amenity of the area.
- (h) Integrated and multifunctional stormwater management areas (stormwater detention and treatment devices) can improve water quality and aesthetics. Stormwater attenuation devices (e.g. wetlands, swales and filter strips) should be rationalised to reduce the number of wetlands and integrated with the overall landscape design. All stormwater devices should be planted.
- (i) All hardscape material (e.g. rock rip rap) should be considered as part of the overall landscape design and treatments for the Project and not as an isolated area.

## 6 CONCLUSIONS

The Project is typical of state highways that have been built in rural environments throughout New Zealand. The Indicative Alignment extends through a variety of rural landscapes from mixed rural in the Warkworth area containing large horticultural business, rural residential properties and smaller farms. Exotic plantation forest in the Dome Valley Area and rural grazing, pastoral landscape from the Hōteō River north.

The Project will alter the composition of the landform and vegetation cover within the Project area. The significance of the landscape effects resulting from those changes will range from low adverse to high adverse effects during and immediately following the construction works. However, we consider that many of those effects can be remedied or mitigated to between low adverse to moderate adverse effects through the design development phase being guided by the design principles outlined in the Planning Version ULDF and over time with the establishment of the proposed revegetation.

The Project will also alter existing landscape elements and features within the Project area. These changes will also affect the Project area's character and affect the wider character outside of the Project area in places. The significance of the landscape effects resulting from those changes will range from moderate-high adverse to high adverse effects during and immediately following the construction works. However, we consider that many of those effects can be remedied or mitigated to between moderate-low adverse to moderate adverse effects.

Visual effects of the Project will range from moderate-low to high during and following construction. However, we consider that many of those effects can be remedied or mitigated to between low adverse to moderate adverse effects with mitigation including planting fast growing shelter belts being located strategically to screen views from specific viewing audiences.

The proposed designation impacts on a few SEAs although future design development can minimise the effects and with mitigation the effects can be reduced to an acceptable level.

Landscape mitigation has been considered together with ecological mitigation in order to provide the most effective, resilient and enduring environmental outcomes. The focus for mitigation is therefore to establish large areas of revegetation that provide a strong landscape framework and habitat creation around a few key areas that contain existing high value features. These areas include the Mahurangi River (left branch), the Kourawhero Stream and the Hōteō River and flood plain. Planting of the Mahurangi river riparian margins and flood plain within the Warkworth Interchange will create a strong landscape that can help to absorb the fill embankments, various lanes and bridge structures within the interchange, reinforce the river as a landscape feature and enhance the ecology of the river and flood plain. The proposal to plant the eastern side of the Project between the Kourawhero Stream and the Mahurangi River will span two catchments, link isolated remnants of indigenous vegetation and create an environment for ecological benefits. Planting of the Hōteō River and adjacent floodplain will link isolated remnants of indigenous vegetation and create a strong landscape feature that makes the Hōteō River environment a more legible landscape feature.

Having considered the landscape context of the Project area and assessed the potential landscape and visual effects, we consider the effects can be appropriately managed through design development (guided by the Planning Version ULDF) and mitigation

planting. We also consider the proposed combined landscape ecological mitigation at three key locations will result in a positive environmental outcome.