Northern Corridor Improvements

Assessment of Landscape and Visual Effects

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Executive summary

Purpose of Report

This report assesses the landscape and visual effects of the Northern Corridor Improvements Project (the Project) that are either temporary in nature (associated with construction activities), or permanent effects (once the Project is complete). The landscape and visual effects assessment concludes with an overall assessment of the likely magnitude and significance of landscape and visual effects. This assessment also takes account of the nature of effects and the effectiveness of any proposed mitigation.

Project Area

The Project area is located within a highly modified urban environment and within or adjacent to the existing road network of State Highway 1 (SH1) and State Highway 18 (SH18) on the North Shore of Auckland. A variety of land uses, including commercial areas, residential development, utilities and open space areas, flank either side of the Project area. This assessment includes the effects on these adjacent land uses as well as other areas within the visual catchment of the Project.

The Project

The anticipated works consist of a number of construction activities to complete a range of built elements associated with the Project. The primary built elements include the widening of SH1, nine bridges, a busway (including a bridge across SH1 to the Albany Park n Ride), a shared use path (SUP), the reconstruction of the McClymonts Road overbridge, and a number of retaining walls and acoustic barriers. The existing Constellation Bus Station is to be reconfigured to accommodate a third platform. In addition, 11 new wetlands and extensive planting is proposed within the Project area.

Landscape and Visual Effects

The construction of the Project is anticipated to be staged, over a period of time, and therefore visual effects will occur progressively. Anticipated landscape effects will predominantly result from earthworks, vegetation removal and limited works within the Oteha Stream embankments, and Alexandra Stream embankments. Works within stream embankments will occur in isolated areas, which will then be revegetated. Trees will need to be removed in some areas to allow construction of the Project although revegetation (including tree species) to compensate vegetation loss will be undertaken. In addition to compensating for the loss of vegetation, additional amenity planting is proposed throughout the Project area. Following mitigation, it is considered that permanent adverse natural character and landscape effects anticipated at the completion for the Project can be managed and mitigated to result in low adverse effects overall (less than minor).

During construction, viewing audiences may experience adverse effects from a number of locations, however, these effects are temporary in nature and would reduce once the Project is completed.

These effects will primarily be associated with the construction of the busway, the SUP, and widening and construction of nine bridges.

The successful integration of these elements into this urban landscape requires consideration of the final appearance of the structures and the ability to mitigate potential adverse landscape and visual effects in relation to the surrounding activities, and viewing audiences. Permanent visual effects will predominantly result from the removal of vegetation and the presence of built structures including walls, bridges, and on-ramps / off-ramps. However, contextually appropriate noise walls, extensive mitigation planting, and views towards new pedestrianised features will result in low adverse visual effects (less than minor).

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Glossary of Abbreviations

Item	Description
AEE	Assessment of Environmental Effects
AUP	Auckland Unitary Plan Operative in Part (15 November 2016)
BoI	Board of Inquiry
CBD	Central Business District
GIS	Geographic Information System
NoR	Notices of Requirement
NZILA	New Zealand Institute of Landscape Architects
RMA	Resource Management Act 1991
RWWTP	Rosedale Waste Water Treatment Plant
SH x	State Highway (number)
SUP	Shared Use Path
UC	Universal Column
UDLF	Urban Design Landscape Framework
UHH	Upper Harbour Highway
ZTV	Zone of Theoretical Visibility

Terms and Definitions

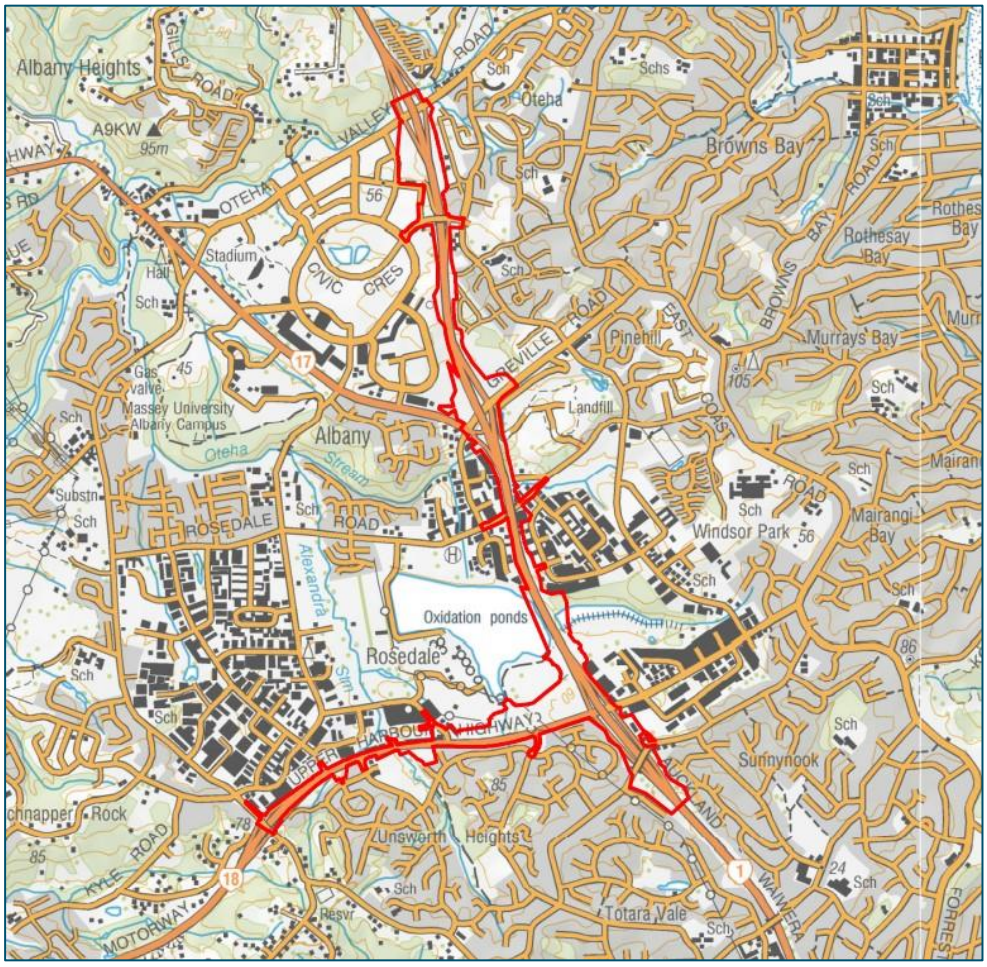
Item	Description
Assessment area	The area including both the project area and surrounding environment from which the Project may result in landscape or visual effects.
Project	Refers to the Northern Corridor Improvements Project including the extension to the Northern Busway and proposed Shared Use Pathway.
Project area	The area within the proposed designation(s) corridor for the Northern Corridor Improvements Project and that area adjoining this corridor

1 Description of Project

1.1 Background

The Northern Corridor Improvements Project (the Project) is an accelerated project. The Project area covers the area of SH18 between Albany Highway and Constellation Drive, and SH1 between Upper Harbour Highway (UHH) interchange to just beyond the Oteha Valley Road Interchange as indicated on **Figure 1** below and confirmed in the suite of plans provided in **Volume 5**.

Figure 1 Extent of Project Area



Source: Base Map from LINZ

The Project proposes to upgrade the existing State highways within the Project area. In summary, the key elements of the Project are as follows:

- North and West Motorway Interchange connections – SH1/SH18;
- State highway capacity and safety improvements;
- Northern busway extension from Constellation Bus Station and connection to Albany Bus Station;
- Reconfiguration of Constellation Bus Station converting it from a terminus station to a dual direction station;

- SUP provision along existing SH1 and SH18 routes for the full extent of the Project corridor:
  - Constellation Bus Station to Oteha Valley Road;
  - Constellation Drive to Albany Highway; and
  - Intermediate linkages to local network.

A full description of the Project, including its components and construction, is contained in section 5 of the Assessment of Environmental Effects (AEE).

Project Objectives

The objectives for the Project are:

- To help facilitate interregional travel between Auckland and Northland by completing the Western Ring Route to motorway standard;
- To improve connectivity of the SH1 and SH18 interchange;
- To improve safety, efficiency, reliability and the capacity of:
  - SH1 between SH18 and Albany; and
  - SH18 between SH1 and Albany Highway.
- To provide safe walking and cycling facilities adjacent to SH1 and SH18 and connections to local transport networks; and
- To extend the North Shore Busway from Constellation Bus Station to the Albany Bus Station.

1.2 Purpose of this Report

This report is one of a suite of technical reports that has been prepared to inform the AEE for the Project.

The focus of this report is the assessment of potential landscape and visual effects of the Project, both on the existing landscape character of the area and the visual amenity of any external audiences.

2 Assessment Methodology

2.1 Overview

This assessment has been undertaken with regard to the New Zealand Institute of Landscape Architect's (NZILA) Assessment Guidelines[1] and the UK guidelines for landscape and visual impact assessment[2].

Boffa Miskell has undertaken the following steps in preparing this assessment:

- Review of documents, plans and other material;
- Project landscape familiarisation; and
- Assessment of effects.

These steps are described below.

2.2 Document Review

This assessment of landscape (including natural character) and visual effects is based upon a review of a number of documents and mapping resources including:

- Natural Character Assessment Auckland Region (2009) prepared by Stephen Brown Environments; and
- Auckland Unitary Plan Operative in Part (AUP).

In addition, the following technical reports prepared for the Project AEE have also been reviewed where relevant, which can be found in the supporting documentation for the Notices of Requirement (NoR) and resources consent required for the Project:

- Assessment of Freshwater Ecological Effects(**Volume 3 – Technical Assessment 5**);
- Assessment of Effects – Corridor Encroachment on Rosedale Landfill (**Volume 3 – Technical Assessment 7**);
- Assessment of Stormwater Management (**Volume 3 – Technical Assessment 11**);
- Assessment of Terrestrial Ecological Effects (**Volume 3 – Technical Assessment 13**);
- Assessment of Transport Effects (**Volume 3 – Technical Assessment 14**);
- Design and Constructability Report (**Volume 3 – Technical Assessment 15**); and
- Scheme Plans and Drawings (**Volume 5**).

These reports have assisted in determining the anticipated landscape and visual effects associated with the Project. An indicative Urban Design Landscape Framework (UDLF) document has been prepared in parallel with this assessment. The UDLF provides guidance on the desired design outcomes for the Project in relation to urban design principles.

Part 2 of the Resource Management Act 1991 (RMA) sets out the purpose and principles of the RMA. Section 5 states that the purpose of the RMA is to promote the sustainable management of natural and physical resources. Section 6 sets out the matters of importance that must be recognised and provided for in achieving the purpose of the RMA. Section 7 contains other matters that must be given

[1] Best Practice Note, Landscape Assessment and Sustainable Management 10.1, NZILA (2010)

[2] Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (2013)

particular regard to, and Section 8 states that the principles of the Treaty of Waitangi must be taken into account in achieving the purpose of the RMA.

There are no outstanding natural landscapes or outstanding natural features, or areas of high or outstanding natural character within the assessment area and as such Section 6 matters are not relevant to this assessment.

Section 7 identifies a range of matters that shall be given particular regard to in achieving the purpose of the RMA. Of particular relevance to this proposal and assessment is Section 7(c), the maintenance and enhancement of amenity values.

2.3 Project Landscape Familiarisation

In addition to the review of relevant Project documents, a site visit was conducted order to fully understand the Project area and assessment area. A drive-by site survey and walkover of the key areas of the Project area and assessment area was undertaken in May 2016, including route corridors and the location of the key Project elements, such as proposed construction yards, wetlands, pedestrian bridges, vehicle bridges and retaining walls.

In addition to this photographs were taken using a Canon SLR camera at key Project locations of the surrounding area to capture the landscape and visual catchment of the Project (outlined in Section 3.7). Aerial photography (2014) and ground contours (0.25m intervals) have also been used to assist the analysis of the potential effects.

The Project adjoins a number of private properties, and those that are likely to be affected have been visually surveyed from publicly accessible locations where possible with reference also to aerial imagery.

For a number of areas subsequent field visits have been made to review the impacts of revisions to the Project design and to take additional photos.

2.4 Assessment of Effects

Although both landscape and visual effects assessments consider the effect of a proposed development on a landscape, they follow separate procedures and methodologies.

The assessment of the potential effects on the landscape forms the first step in this process and is carried out in order to assess the effect of a project on an environmental resource (i.e. landscape features or character).

The assessment of visual effects considers how changes to the physical landscape affect the viewing audience.

The types of effects can be summarised as follows:

- Landscape effects: Change in the physical landscape elements and features, including vegetation and earthworks, which may change its character (including natural character, if within the coastal environment, streams or waterbodies) or value.
- Visual effects: The visual change to the environment as experienced by residents and visitors. Visual effects can be fixed (as in a view from a house) or transitory (i.e. from a vehicle on a road, a boat on the water or from within a park/ reserve or walkway / cycling route).

The principal elements of the Project that will give rise to landscape and visual effects are:

- The nature and extent of the proposed road widening, new ramps between SH18 to SH1, SUP and busway, the distance from the main viewing areas and the way in which it is seen within the existing road network and the wider landscape context;
- The nature and location of ancillary structures, including signage, bridges and lighting;

- The existing vegetation (to be retained and removed) and proposed new vegetation; and
- Physical changes to watercourses and stormwater ponds and other landscape features.

To determine the overall nature and significance of landscape and visual effects, both the sensitivity of the landscape or viewing audience and magnitude of change resulting from a proposed development are considered. The sensitivities of the viewing audiences to visual change vary, as detailed in the full methodology set out in **Appendix A**. Generally residential and recreational viewing audiences are the most sensitive to change and travelling and working viewing audiences are less sensitive.

To determine the visual catchment and viewing audiences of the Project, a survey was conducted from publically accessible locations within the Project area. The visibility of the Project from outside of the project area was then confirmed by visiting identified publicly accessible locations located within the surrounding environment. A different method to determine the visual catchment is by using a Geographic Information System (GIS). This method was not possible to determine the visual catchment due to the nature of the project.

Consideration was also given to whether there was any benefit in undertaking Zone of Theoretical Visibility (ZTV) mapping. It is not possible to undertake an accurate ZTV mapping for this type of project as there are an infinite number of points along the corridor that would need to be referenced. We have described the overall visual catchment and mapped the key residential areas with the potential for views of the project (refer to **Appendix C - LV07**). We have augmented this with photos from key public locations both within the existing road corridor and the area surrounding. In addition to this, each of the 5 identified site areas provide a more detailed description of the visual catchment and affected vising audiences in relation to the Project at a level appropriate to this application. This includes reference to **Appendix C - LV08 to LV14** which depicts the viewing audiences associated with each site area. We consider that this approach provides sufficient information for the community to understand if they are potentially affected.

While it is acknowledged that photo montages and visual simulations can assist the understanding of changes to the visual environment for viewing audiences, providing photo montages from near representative viewpoints is not possible for the following reasons:

- The linear and extensive nature of the Project makes it extremely difficult to select a limited number representative range of viewpoints. It is not practical to collate a photo montage of every single viewpoint;
- Publically accessible viewpoints are generally from surrounding roads and selected viewpoints are unlikely to be representative of residents' views of the project, which in many cases will experience the greatest adverse visual effects; and
- The Project is currently at the concept design phase. The Project remains subject to detailed design. While the general bulk and location of works can be shown, the design of the Project is not able to be accurately shown at this stage. For this reason, the information in the General Arrangement Plans has been relied on including the illustrative sketches and cross sections to understand what the Project is likely to look like as a basis for our effects assessment.

A 3-D Flyover model is available on the NZ Transport Agency's website. However, this flyover does not form part of the application or this assessment of visual and landscape effects as it only provides a bird's eye view overview of the bulk and location of the proposed works. It does not provide the degree of accuracy or detailed information necessary to inform this assessment of effects. However, it is likely that this tool will assist potential submitters in getting a better understanding of what the Project might look like, even if just from a bird's eye view. Once submissions have been received any concerns from the community can be responded to in a more targeted manner. It is possible that submissions will be received from individuals representing residential groups. Photos for visual simulations may then be taken from these individual's properties to provide an accurate representation of private views towards the Project (provided that the individuals in question allow access). There will also be an opportunity

to prepare further analysis of changes to views form specific locations and this may include visual simulations - the elements of which could then be modelled and incorporated into photographs. However, this would represent the bulk and location of the proposed works not the final design.

The following methodology has been adopted within this assessment to ensure that the temporary and permanent likely effects are addressed:

- Temporary Effects: Describes the anticipated effects on the landscape elements, landscape character and natural character (if applicable) including those which are likely to alter the landform, vegetation, watercourses, as well as the anticipated effects on the visual amenity as a result of the construction phases of the Project. Temporary effects = also include temporary activities such as the presence of temporary structures and machinery.
- Permanent Effects: Describes the completed works and the level (significance) of any permanent natural character, landscape and visual effects.

For each of the effects anticipated in the construction phase and operation phase, a level of effect rating has been given. This rating is based upon the assumption that all mitigation measures proposed in **Section 5** of this assessment have been fully adopted as part of the Project.

The landscape and visual effects assessment concludes with an overall assessment of the likely significance of landscape and visual effects. This step also takes into account the nature of effects and the effectiveness of any proposed mitigation.

This process informs an overall judgement identifying which effects are likely to be significant, including determination of whether effects are more or less than 'minor' where relevant[3]. This assessment has been used to guide the significance of landscape and visual effects using an adapted seven point scale derived from NZILA's Best Practice Note. A full explanation of the methodology used to prepare this report is attached as **Appendix A** to this assessment.

[3] As required in RMA Section 95A (in relation to notification determination) and 104D (in relation to non-complying activities). For the purpose of Section 95E in relation to whether a person is affected, moderate-low significance of effects qualify as 'minor'.

3 Overview of the Existing Environment

3.1 Site Location

The Project area is located on Auckland's North Shore between the UHH / Constellation Drive Interchange to the south, and the Albany Bus Station bounded by Oteha Valley Road to the north (refer **Appendix C - LV01:** Regional Context and Site location; **LV02**: New/Altered Designation Boundary). To the east are the suburbs of Windsor Park, Pinehill, and Oteha which are predominantly a mix of residential housing and light industry. To the north are the elevated areas of Fairview Heights and Albany Heights featuring new residential developments. To the west of the Project area lies Albany containing North Harbour Stadium and a commercial centre in addition to Rosedale featuring residential suburbs, large areas of open space and the oxidation ponds. To the south are the suburbs of Unsworth Heights and Sunnynook which adjoin Constellation Drive.

3.2 Topography

The Project area is generally contained within two valleys, the Oteha Valley and Albany Valley and on more elevated land that separates these valleys (refer **Appendix C - LV03**: Elevation). Oteha Valley is located between the Albany Heights Ridgeline above the Oteha escarpment to the north, and the Spencer Ridgeline traced by Spencer Road to the south. The Albany Valley is located between the Spencer Ridgeline to the north and Sunset Road Ridgeline to the south of the Constellation Interchange. To the east of the Project area, East Coast Road occupies a prominent ridgeline which runs north to south.

3.3 Hydrology

The Project area occupies two catchments (refer **Appendix C - LV04:** Hydrology), the Lucas Creek catchment to the north (approximately 600ha) and the Oteha Valley catchment to the south (approximately 1300ha). Importantly, the Lucas Creek catchment contains Lucas Creek which totals approximately 16.3km long and generally flows northeast to southwest. The Creek contains freshwater and marine estuarine sections, although the estuarine sections are well outside the Project area. The Oteha Valley catchment contains both the Oteha Stream and Alexandra Stream. Large portions, particularly the upper tributaries, have been piped under the Rosedale Waste Water Treatment Plant (RWWTP) Ponds and through open drains and culverts to the natural stream. The Alexandra Stream drains the area of Unsworth Heights and flows as an open stream within sections of Unsworth Heights, crossing beneath the UHH to its confluence with the Oteha Stream.

3.4 Vegetation and Open Space

There is a wide variety of vegetation types within and around the Project area which occupy parks, reserves roadsides and private properties. The key areas of vegetation and open space include the grass areas within Constellation Reserve (also known as Rosedale South Park), Rosedale Closed Landfill, the indigenous forest of Pigeonwood Reserve, Burnside Escarpment, Fernhill Escarpment, and Days Bridge Esplanade Reserve, as well as the manuka/kanuka forest on the northern slopes of Oteha Valley (refer **Appendix C - LV05:** Existing Open Space and Significant Ecological Areas). Roadside vegetation also occupies the flanks and berms of the Northern Motorway and SH18 including flax, fan palm, manuka, queen palm, cabbage tree and lemonwood among other species.

3.5 Landscape Features

Despite the surrounding landscape being predominantly built up, there are several notable landscape features within the surrounding context (refer **Appendix C - LV06:** Landscape Features). These areas are the vegetation along the Oteha Escarpment to the north, large trees within the Burnside escarpment to the south west, the grassed slopes of Rosedale Closed Landfill to the east, the RWWTP Ponds and associated large stand of Pine trees south of Arrenway Drive and Apollo Drive. These landscape features provide a strong green / landscape backdrop to some areas of the motorway corridor and as features within the wider landscape setting.

In addition to these landscape features, prominent transport corridors are located within the Project area including SH1, SH18, Oteha Valley Road, Albany Expressway, Greville Road, Rosedale Road and Constellation Drive.

There are no outstanding natural landscapes or features under the AUP within the Project area.

3.6 Urban Development and Land Use

There are two State Highways within the Project area, SH1 and SH18. SH1, is the longest road in New Zealand and after passing through the Auckland CBD it continues north to Cape Reinga. SH18 consists of the Upper Harbour Motorway and begins from where SH1 meets Constellation Drive, and continues eastwards to Massy. Both of these highways form a prominent element in the existing urban environment. These major transport corridors separate the surrounding urban development and in most cases provide a clear boundary to a range of different land uses.

The land uses that adjoin the Project area predominantly contain a mix of commercial and residential development (refer **Appendix C - LV07:** Site Areas and Landscape Analysis). North of Greville Road, the suburbs or Pinehill, Oteha and Fairview Heights occupy the land to the east of the Project area. To the west the commercial centre of Albany forms the key urban development. Southwards of Greville Road, land uses are typically industrial which then transition to the open grass areas, ponds, and North Harbour Hockey Stadium (NHHS) and the residential suburbs of Unsworth Heights and Windsor Park to the south.

The area has experienced significant change over the years from a small suburban neighbourhood to become one of Auckland's main growth nodes. The ongoing development of Albany has brought with it extensive "Big Box" retail and commercial development in addition to residential intensification. The area surrounding SH1 and SH18 within the Project area is now intensively developed with commercial and residential buildings neighbouring the corridor.

3.7 Visual Catchment

The visual catchment is the area of land from which part or all of the Project area is visible. This is largely determined by landform features, topography and land cover, which in combination may obscure or filter views.

Given the scale and linearity of the Project area, the visual catchment encompasses a wide amount of the surrounding area (refer **Appendix C - LV01:** Regional Context and Site location). Each visual catchment (refer **Appendix C - LV07:** Site Areas and Landscape Analysis) is described in detail in Section 4 of this report. In summary:

- To the north, the visual catchment of the Project area is predominantly restricted by the rising topography of the Oteha Valley Escarpment (containing the vegetated slopes of Gills Road Reserve and Hooton Reserve), Albany Heights and Fairview Heights, as the characteristics of the landform's wider contextual features a low ridgeline near Lonely Track Road, to the north, beyond the Project area;

- To the east, the ridgeline aligned north to south, identified as the “East Coast Road ridgeline”, defines the boundary of the visual catchment to the east, although, intervening topography throughout this area to the east of the Project area does provide some variety in the degree of visibility with its relationship to the Project area;
- The majority of the visual catchment to the south extends to the ridgeline of Sunset Road. However, as a portion of the Project area extends beyond this point, the visual catchment also captures the suburbs of Sunnynook, Forest Hill, and Wairau Valley; and
- The visual catchment towards the west provides some contrast to those identified eastwards. The characteristics of the contextual landform exhibits an overall decent towards the Lucas Creek marine estuary, albeit a range of topographical features. These included, a low ridgeline defined by Spencer Road, traversing northeast-southwest toward Albany, identified in this report, as the “Albany ridgeline”, the Burnside Escarpment and Unsworth Heights.

3.8 Summary

In summary, the Project area is located within a highly modified urban environment and within or adjacent to the existing road network of SH1 and SH18 (refer **Appendix C - LV07)**.

The Project area traverses two valleys (Oteha Valley and Albany Valley) as well as the Spencer and Sunset Road Ridgelines. This rolling topography forms two catchments which eventually drain to Lucas Creek and the Waitemata Harbour via three watercourses (Oteha Stream, Alexandra Stream and a Lucas Creek tributary).

The landscape features around and within the Project area form distinctive elements within the visual catchment and local context. These features notably include the ridgelines (Albany Heights, Spencer Road, Sunset Road, and East Coast Road), escarpments (Oteha and Burnside), Rosedale Closed Landfill, RWWTP Ponds and local waterways (Alexandra Stream, Oteha Stream and Lucas Creek). The surrounding land use consists of a mix of commercial businesses and residential housing focused to the north and light industry and residential housing to the south.

4 Assessment of Effects

4.1 Introduction

The assessment of potential effects is based on a combination of the landscape's sensitivity and visibility and the nature and scale of the development proposed in relation to the existing transport network. The particular effects considered relate to the physical landscape effects, landscape character effects, natural character effects (where applicable) and visual amenity effects.

For the purpose of this assessment, the Project area has been divided into 5 Site Areas which cover the Project from north to south and east to west, as outlined in **Appendix C - LV8**: Site Areas. Photos within the site areas are contained in **Appendix C - LV16 to LV27** with locations on **LV15:** Photograph locations.

The highest temporary and permanent effect anticipated for landscape and visual amenity within each site area determines the overall effect rating for each of its corresponding sections. Effects ratings have been determined taking into account the mitigation measures listed in Section 5 (both those mitigation measures proposed during construction and the permanent mitigation measures that will be put in place as part of the Project).

A summary of the proposed Project works that have the potential to create landscape and/or visual effects is set out in **Appendix B** within each individual site area. Further detail on earthworks volumes, the method and sequence of construction, and temporary structures and/or buildings anticipated during construction, are located within the Design and Constructability Report in Volume 3. The summary below provides a brief overview of the construction methodology for the Project.

The commencement of construction works for the Project is scheduled for 2018, and many specific details about the construction process have yet to be determined. Construction of the Project will be influenced by a number of factors, including:

- The specimen design for the Project, which is a more detailed design to be undertaken by the appointed contractors, based upon the current preliminary design, during the implementation phase of the Project. This will occur subsequent to the outcome of the Board of Inquiry (BoI);
- The construction duration, and target completion date;
- The procurement method adopted;
- The specific requirements of the appointed contractor; and
- Any technological advances.

A preliminary construction programme has been developed to inform the assessment of the environmental effects. Construction is expected to take approximately 3.5 years and to be undertaken by way of staging, with three stages progressing in tandem.

Table 1 Potential construction staging

Stage	Period	Description
Stage 0	December 2017 – May 2018	Project establishment Detailed design
Stage 1a	June 2018 – August 2018	Commence and complete early works for Paul Matthews diversion and north/southbound ramp tie-ins Commence Busway construction Commence Rosedale Road lowering
Stage 1b	September 2018 – October 2019	Continue Busway construction Commence north-facing ramps construction Commence and complete SH1 southbound widening Complete Rosedale Road lowering Commence and complete McClymonts Bridge Extension
Stage 1c	November 2019 – June 2020	Continue Busway construction Continue north-facing ramps construction Commence SH1 northbound widening
Stage 1d	July 2020 – December 2020	Continue Busway construction Complete north-facing ramps construction Complete SH1 northbound widening Commence and complete Constellation Drive Lowering Part 1 and connection to northbound ramps
Stage 2a	January 2021 – March 2021	Complete Busway construction Commence and complete Constellation Drive Lowering Part 2 as well as connection to southbound ramp Commence and complete Paul Matthews connection
Stage 2b	April 2021 – September 2021	Complete Busway construction Commence and complete Constellation Drive Lowering Part 3 and Part 4 final arrangement Commence and complete SH1 median works

The Project has been divided into eight construction zones as follows:

- Zone 1 – SH18/SH1 Interchange;
- Zone 2 – UHH - SH1 to Albany Highway;
- Zone 3 – SH1 Northbound;
- Zone 4 – SH1 Southbound;
- Zone 5 – SH1 Median;
- Zone 6 – Albany Park & Ride;
- Zone 7 – Busway Albany to Greville Road;
- Zone 8 – Busway Greville Road to Constellation Station;

- Rosedale Road Lowering (as part of Zones 3, 4 and 8); and
- McClymonts Bridge Replacement (as part of Zones 3, 4 and 7).

In addition to the above, **Appendix C – LV28-37** depicts the areas of proposed planting within the Project area. Details of the vegetation to be removed are contained within the Aboricultural Statement which is appended to the Assessment of Terrestrial Ecological Effects. Cross sections through parts of the Project are c in **Appendix C-LV38-45**.

4.2 Site Area 1: Northernmost point of Project area to Spencer Road Bridge - LV09

4.2.1 Location, Context and Character

Site Area 1 covers the Project area located along SH1 extending south to Spencer Road, including the proposed Spencer Road Bridge (which does not form part of the Project). The area also extends west into the Albany Park and Ride facility, and along McClymonts Road. This area contains a mix of Mixed Housing Suburban Zone and Mixed House Urban Zone land located mainly within Oteha and Businesses zones within the Albany commercial centre.

The topography of the area descends to the south from the Albany Heights Ridgeline and Oteha escarpment to the Oteha Valley containing the Lucas Creek Estuary before continuing to descend west. The topography then rises towards the East Coast Road ridgeline and the Spencer ridgeline forming the extent of the site area.

The Oteha escarpment forms a prominent landscape feature and contains stands of Manuka and Kanuka. Similar vegetation types occupy the eastern and western sides of SH1, immediately north of Oteha Valley Road as well as two storm water ponds. Lucas Creek traverses this section of the Site parallel to Oteha Valley Road as it winds south east towards Albany. Further south, grass verges occupy the edges of Oteha Valley Road and SH1. A section of vegetation occupies the verge between the Oteha Valley Road northbound off-ramp (Exit 410) and the Albany Park and Ride.

4.2.2 Extent of Visibility and Viewing Audience

Given the lineal character of the area and the elevated slopes of Albany Heights and Fairview Heights to the north, Oteha to the east and Albany to the west, the visual catchment captures a wide variety of viewing audiences, including residential uses, workers, recreational users and the travelling public viewing audiences.

The viewing audiences identified within the extent of visibility include residents of Albany Heights, Fairview Heights and Oteha, visitors to Albany Lakes Reserve, Bay City Park and Westfield Albany, workers of Westfield Albany and commercial business along Don Mckinnon Drive. Viewing audiences traveling north and south along SH1 as well as road users and pedestrians along the surrounding local roads notably Don Mckinnon Drive, Gills Road, McClymonts Road, Elliot Rose Ave, Cornerstone Drive, Civic Crescent, Oteha Valley Road, Masons Road and Spencer Road (refer **Appendix C - LV09**) have also been identified.

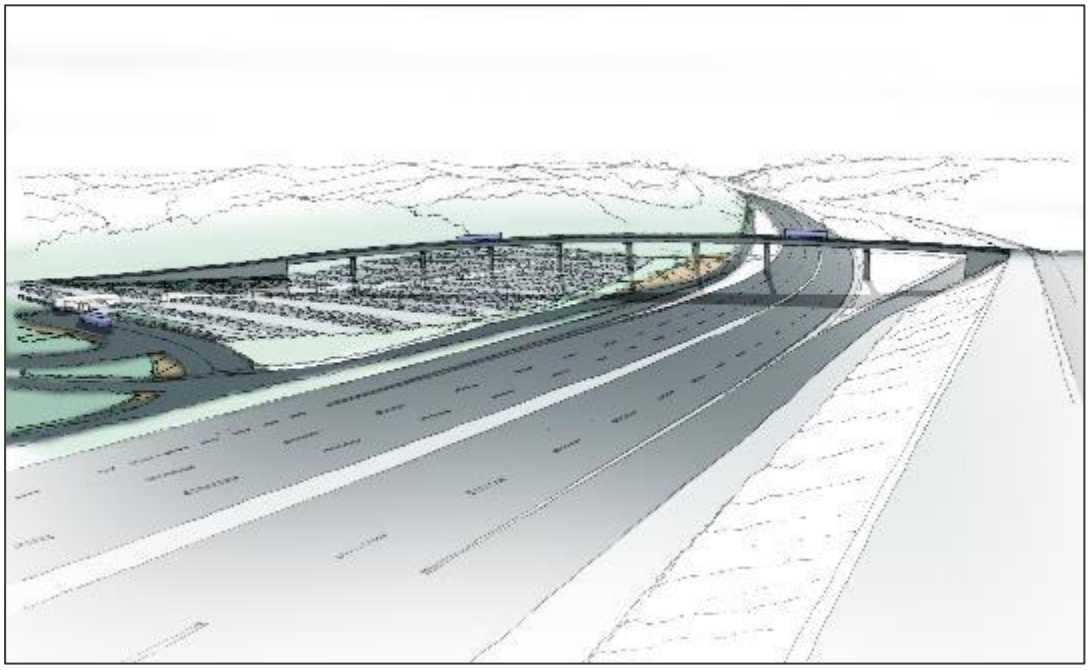
The most sensitive viewing audiences are the elevated residents of Fairview Heights and Albany Heights as well as residents along Masons Road, Medallion Drive and Spencer Road due to their fixed views toward the Project (refe**r Appendix C - LV09**). Visitors and workers of surrounding commercial businesses are not considered as susceptible to visual effects due to the nature of their activities and their focus away from SH1. Similarly, road users and pedestrians within this environment are not considered particularly sensitive to change as the roads are not considered scenic, effects are transitory in nature, and works, particularly in and alongside road corridors, are considered an anticipated activity.

4.2.3 Summary of Key Project Elements

The anticipated works in this area consist of a number of construction activities to complete major built elements pertinent to the Project. The primary built elements include the widening of SH1, maintenance bays, a busway, a bridge across SH1 into the Albany Park n Ride, a SUP, McClymonts Road bridge and stormwater outfall structures in Lucas Creek. In addition, three new wetlands are proposed within this area.

Figure 2 below shows an artist's impression of one option for the crossing into the Albany Station. This structure is subject to detailed design and the sketch in **Figure 2** is illustrative only in terms of indicating the proposed bulk of the structure.

Figure 2 Preliminary sketch of busway bridge over SH1 – indicative only



4.2.4 Level of Temporary Effects

The potential landscape effects within Site Area 1 would result from the removal of roadside vegetation including mixed native planting and exotic trees,[4] earthworks associated with the new wetlands, and the earthworks associated with the construction of the busway and SUP. These areas are primarily alongside the existing road corridor inside the existing designation, and within land which is highly modified. The further modification of these areas will have a limited impact on the value of the landscape features and character and therefore overall, the landscape, landscape character and natural character effects during construction are considered low.

Adverse visual effects from the west are anticipated to be limited due to the audience's low sensitivity and transient nature associated with road users, pedestrians and commercial activities within this environment. Distant effects from viewing audiences in the visual catchment and transitory close proximity effects from road users are anticipated. However, given these works are either within or adjacent to the existing road corridor construction in these road corridors is an anticipated activity.

The highest visual effects during construction will be upon the sensitive residential viewing audiences to the east of SH1, namely Fairview Heights and Oteha, particularly within close proximity to the works and notably the McClymonts Road bridge. Although these viewing audiences are sensitive to visual

[4] Section 4.1, Volume 3: Assessment of Terrestrial Ecological Effects.

change, construction activities will be occurring alongside the existing road corridor which in itself contains infrastructure of a large scale. The proposed construction hoarding will limit views towards the works. Nevertheless, these viewing audiences residing in this existing context, will on occasion experience works within very close proximity and as a result, construction will adversely interrupt current views. Therefore, overall the adverse visual effects during construction are anticipated to be moderate - low.

4.2.5 Level of Permanent Effects

The landscapes within this area have already been altered as a result of earthworks within this modified environment and as a result are not particularly sensitive or of high landscape value. The addition of new mitigation and amenity planting areas along road verges as outlined in **Appendix C - LV28-37**, would provide an increase in the amount of amenity planting over that which is currently in place. Once the works in this area have been completed, and the mitigation measures have been established to full effect, it is anticipated that the permanent adverse landscape, landscape character including natural character effects will overall be very low, with some beneficial effects resulting from mitigation planting.

Mitigation planting along road verges, in addition to the low elevation of the busway and SUP, will integrate the Project appropriately within the context of the motorway environment. The permanent visual effects would be the highest for some residents immediately to the east of SH1 and the Project area. Distant viewing audiences would have a contextual view of the site within a modified landscape and therefore the magnitude of visual change would low.

A number of residents along Masons Road, Lavender Garden Lane and McClymonts Road, may experience increased views of the road corridor (proposed to include the busway, SUP, McClymonts Road bridge and the new busway bridge) However, views of SH1 and the current McClymonts Road bridge currently exist from these locations. Additionally, views towards new pedestrianised features such as the SUP and the footbridge, would improve the amenity value of the view for some close proximity viewing audiences particularly along Masons Road. Residents may be afforded views of the new busway bridge. However, as their positions are elevated and currently afford contextual views of the existing transport environment, the addition of the bridge would not result in any more than low adverse visual effects.

Residents, road users and pedestrians will experience very low visual change resulting from the realignment of the McClymonts Road bridge due to the presence of the existing bridge (which would be removed) currently located within a similar position. Road users and residents will also experience low adverse effects with the inclusion of the new busway bridge over SH1 to Albany Park n Ride. It is anticipated that road users traveling north, will for a short duration, have their current view of the Oteha Escarpment interrupted as they approach the busway bridge shortly after McClymonts bridge to the south. Bridge structures are a common built feature within road corridors (particularly within the Project area). Therefore, overall although there would be some beneficial amenity effects associated with the presence of the footbridge and SUP, it is considered that there would be low adverse visual effects.

4.3 Site Area 2: Spencer Road to Greville Road - LV10

4.3.1 Location, Context and Character

This area covers the Project area from Spencer Road to Greville Road which includes widening the existing designation along the SH1 corridor and areas for construction yards north of Greville Road. This area adjoins the residential housing on Pinehill to the east and the commercial centre of Albany to the west.

The topography of the area from north to south rises to a crest shortly after Spencer Road before gently descending toward Greville Road. The residential slopes of Pinehill reach the East Coast Road ridgeline to the east of the Project area. To the west, the elevation and topography recedes towards the Lucas Creek Estuary.

There is limited vegetation of note within this area of the Project although a large amount of grass occupies the verges and roadsides either side of SH1, McClymonts Road Greville Road and the Albany Expressway. Some vegetation is present between Don Mckinnon Drive and SH1, however much of this vegetation is of low value and consists of weed species such as gorse and tobacco weed.

4.3.2 Extent of Visibility and Viewing Audience

The majority of the visual catchment is contained by the elevated slopes of Albany Heights and Fairview Heights. The western facing slopes of Oteha to the east in addition to the slopes of Pinehill provide the extent of the eastern visual catchment. To the west, the visual catchment opens towards Albany and Bushlands Park Drive. Intervening topography, such as the engineered batter either side of the SH1 to the east of Don Mckinnon Drive and the Rosedale Closed Landfill, limit the extent of visibility towards sections of the Project area.

The viewing audiences identified within the extent of visibility include distant views from residents in Albany Heights and Fairview Heights, residents of Pinehill to the east and Albany and Bushlands Park Drive to the west and southwest, and commercial business along Corinthian Drive and Tawa Drive. Viewing audiences traveling north and south along SH1 will also afford visibility toward the Project area, as well as road users and pedestrians along the surrounding local roads, particularly Greville Road, Albany Expressway, Tawa Drive, Corinthian Drive, Oracle Drive, Don Mckinnon Drive, Hugh Green Drive and McClymonts Road, Masons Road and Spencer Road.

The most sensitive viewing audiences are the western facing residents of Pinehill as well as residents along Bushlands Park Drive.

4.3.3 Summary of Key Project Elements

The anticipated works in this area consists of a number of construction activities to complete the major built elements of the Project. The primary built elements include a construction yard (between SH1and the Albany Expressway), a wetland, maintenance bays, busway, SUP and bridge over Greville Road.

4.3.4 Level of Temporary Effects

The landscape and landscape character effects would primarily be generated by earthworks relating to the construction of the busway and SUP, in addition to the cut and fill of modified slopes along SH1 and the formation of a wetland. It is anticipated that vegetation removal would consist of grass occupying highway verges and some isolated tree removal consisting of some mixed native planting and exotic trees[5] within the proposed construction yard north of Greville Road. These areas are primarily alongside the existing road corridor and within land which has been highly modified. Therefore, overall the landscape and landscape character effects during construction will be low.

The predominant visual effects during construction will be on the sensitive residential viewing audiences to the east of SH1 within Pinehill, notably residents immediately adjacent to SH1 along Coxton Lane and Colliston Rise, residents on Pinehill's upper slopes and residents along Bushlands Park Drive. Attractive construction hoarding applied to the interface with close proximity residents will reduce some of these temporary visual effects, although it is noted that these residents already back onto the existing motorway environment, and therefore may have slightly reduced sensitivities to visual change resulting from the works. Adverse visual effects from the west are anticipated to be

[5] Section 4.1, Volume 3: Assessment of Terrestrial Ecological Effects

limited due to the audience's low sensitivity and the transient nature of road users, pedestrians and commercial activities.

Transient visual audiences along SH1 (road users) would experience some impacts for only a short duration within the road corridor. In addition, works within road corridors are considered an anticipated activity for these viewing audiences. Distant viewing audiences would view much of the works within the context of the transport orientated environment. The overall adverse visual effects during construction are anticipated to be low.

4.3.5 Level of Permanent Effects

The permanent landscape, and landscape character effects of the Project in this area will be very low, with some beneficial effects. This is due to the significant increase in vegetative cover in the Project area, alongside road verges and in some areas of previously occupied construction yards as shown in **Appendix C - LV28-37.** The busway and SUP will have some permanent landscape impacts through earthworks, and loss of isolated areas of grass and vegetation. However, given the proposed mitigation planting in addition to recontoured landscape within an already modified environment, overall these effects are considered to be very low.

The addition of vegetation within large areas of road verges in accordance with **Appendix C - LV28-37**, will provide visual relief to the permanent built elements within the site area. In addition, these permanent built elements are proposed adjacent to or within the existing road corridor, set within the landscape at a low elevation and would be viewed in the context of the existing built landscape. Viewing audiences will therefore observe the Project alongside the existing transport environment, and as the nature of the Project builds upon this environment and is consistent with the current land use and activities. The level of adverse visual amenity effects is considered very low once the Project is completed, with some beneficial effects resulting from mitigation planting.

4.4 Site Area 3: Greville Road to RWWTP Ponds - LV11

4.4.1 Location, Context and Character

Site Area 3 extends from the southern edge of Greville Road and reaches the northern edge of the embankment of the RWWTP Ponds. This area principally adjoins industrial land uses with the exception of the Rosedale Closed Landfill.

The topography gently descends in elevation from Greville Road towards Rosedale Road at the low point of Oteha Stream. The topography then rises along SH1 for a short duration before progressively descending to the RWWTP Ponds.

Landscape features within the context of Site Area 3 include the closed Rosedale Closed Landfill (which forms a distinctive grassed hill and faces to the west), the Oteha Stream, and the Burnside Escarpment to the west.

4.4.2 Extent of Visibility and Viewing Audience

The extent of visibly to the north is principally contained by the south facing slopes of Pinehill and Albany. To the east, the Rosedale Closed Landfill frames a large portion of the visual catchment. However, visibility of the works may be afforded from the commercial properties along Arrenway Drive and the western facing slopes of Windsor Park, southeast of the Project area. Views may also be afforded of the Project works within this area from Rosedale from the southeast. To the west, the elevated topography of Burnside Escarpment frames part of the visual catchment although towards Rosedale Road and beyond, the catchment opens out towards the southwest. To the south, the visual catchment is largely contained by the rising topography of Unsworth Heights.

The viewing audiences identified within the extent of visibility include distant views from residents of Pinehill to the northeast, Bushlands Park Drive to the west, Rosedale to the southeast, commercial business along Tawa Drive, Miro Place, Titoki Place and Cowley Place to the west as well as Triton Drive, Arrenway Drive and Apollo Drive to the east. Viewing audiences traveling north and south along SH1 and along the on and off-ramps of Greville Road will also have visibility toward the Project area, as well as road users and pedestrians along the surrounding local roads, particularly Greville Road, Rosedale Road Albany Expressway, Tawa Drive and Apollo Drive.

The most sensitive viewing audiences will be the residents of Bushlands Park Drive located approximately 150m from works along the off-ramp to the Albany Expressway. More distant, sensitive viewing audiences include residents of Unsworth Heights and some south facing residents in Pinehill who have contextual views of the existing transport corridor environment.

4.4.3 Summary of Key Project Elements

The anticipated works in this area consist of a number of construction activities to complete the major built elements pertinent to the Project. The primary built elements include maintenance bays, busway, SUP, and the busway and SUP bridge over Rosedale Road.

4.4.4 Level of Temporary Effects

The landscape, landscape character, and natural character effects would primarily be generated by earthworks relating to the construction of the busway and SUP, in addition to the cut and fill of modified slopes (including retaining walls) along SH1 and the formation of an off-ramp dry basin. It is anticipated that vegetation removal would consist of grass occupying the western face of the Rosedale Closed Landfill, in addition to the highway verges and some isolated tree and vegetation removal including mixed native planting and exotic trees.[6]

During construction, vegetation removal and earthworks are anticipated within the Oteha Stream and embankments for the construction of two new stormwater outfalls. Although vegetation clearance and earthworks in this area is limited and the section of stream has a low level of natural character value, vegetated stream environments are considered to be sensitive to change. It is therefore considered that the temporary adverse landscape, landscape character, and natural character effects relating to works within the Oteha Stream and embankments are moderate-low.

The existing landform of Rosedale Closed Landfill will also be affected by the works. The impact to the landfill is due to the location of the SUP and busway proposed along the eastern edge of SH1. There have been a number of options considered in this area. A multi-criteria analysis was undertaken for these options which considered, amongst other factors, the potential landscape and visual effects. The preferred option achieves the least physical landscape effect and visual impact upon the surrounding viewing audiences. The preferred option will, however, require the removal of part of the western face of the landfill and will therefore result in earthworks and the removal of some mixed vegetation.

In general, the potential landscape effects for Site Area 3 are located in areas primarily alongside the existing road corridor and within land which has been highly modified, and affecting vegetation which is not considered to be significant. Overall, when considering the landscape effects upon Site Area 3, effects are determined to be low in significance.

Residential viewing audiences along Bushlands Park Drive, located approximately 200m to the west will view the Project works from an elevated position the context of the motorway and existing commercial environment flanking either side of SH1. The most visible works from this location are anticipated to be the new busway and SUP and associated bridge over Rosedale Road. The visual effects during construction will primarily be upon the viewing audiences in close proximity to the works

[6] Section 4.1, Volume 4: Assessment of Terrestrial Ecological Effects

which are either commercial viewing audiences or road users and pedestrians with low sensitivity to visual change considering their activities and the existing motorway environment. Construction hoarding applied to some of these areas will limit views reducing visibility towards the works.

Commercial viewing audiences along Tawa Drive, Miro Place, Titoki Place, Cowley Place, Triton Drive, Arrenway Drive, Apollo Drive and Rosedale Road to the east will experience these close proximity views. Most of these properties are not fronting the motorway environment. However, commercial viewing audiences at 9 Arrenway Drive and 121 Rosedale Road around the proposed Rosedale Road busway and SUP bridge will experience higher adverse visual effects.

Although distant views are attainable from Unsworth Heights to the south, and Albany Heights to the north, these sensitive viewing audiences are viewing the works from a considerable distance (approximately 850m and 2km respectively), and would be viewing the works in the context of the wider view (including the existing motorway environment).

Transient visual audiences along SH1 (road users) would experience some very low adverse effects for a short duration within the road corridor, as works within road corridors are considered an anticipated activity for these viewing audiences.

Therefore, the adverse visual effects during construction would range from very low to low for the majority of viewing audiences. However, moderate-low adverse visual effects are anticipated for viewing audiences located at 9 Arrenway Drive and 121 Rosedale Road, who are in close proximity to the proposed Rosedale Road busway and SUP bridge.

4.4.5 Level of Permanent Effects

The increase in vegetation within the site area alongside road verges and along retaining walls as proposed in **Appendix C - LV28-37**, will offset the majority of landscape effects resulting from vegetation removal. The inclusion of a busway and SUP will have some permanent landscape impacts through earthworks, and the permanent loss of isolated areas of grass and vegetation. However, the proposed mitigation planting along road verges and along the toe of the retaining walls, in addition to recontoured landscapes within an already modified environment, would result in low adverse landscape effects.

The addition of vegetation within large areas of road verges and along the toe of sensitively designed retaining walls (incorporating a visually recessive colour) would soften the appearance of the adjoining permanent built elements proposed for this area. In addition, these permanent built elements are proposed to be located adjacent to or within the existing road corridor, and would be viewed in the context of the existing built landscape. Therefore, the visual amenity effects are considered to be very low for the majority of viewing audiences, although two viewing audiences (located at 9 Arrenway Drive and 121 Rosedale Road) would experience low permanent adverse visual effects (due to their proximity and the magnitude of visual change). The majority of viewing audiences would experience very low adverse effects for this area, with some beneficial impacts resulting from proposed mitigation planting as proposed in Appendix C – LV39-40.

4.5 Site Area 4: RWWTP Ponds to Paul Matthews Road & Southernmost Point of Designation - LV12

4.5.1 Location, Context and Character

Site Area 4 extends from the northern edge of the RWWTP Ponds and reaches the boundary of the Project area to the south. This area also extends west to the junction of Paul Matthews Road and UHH. The area supports a variety of land uses including public open space around the RWWTP Ponds, the NHHS (proposed to be relocated), commercial business adjacent to Constellation Drive and Paul Matthews Road and the residential suburbs of Albany Heights.

The elevation of the area remains low at the RWWTP Ponds and as it continues southwards, the elevation gently ascends to meet Sunset Road, before descending once again. From the UHH / SH1 juncture, the landform declines gradually towards Alexandra Stream. The RWWTP Ponds, the vegetated northern embankments, and the large open areas of Constellation Reserve, and the Watercare land consisting of the RWWTP, form the predominant landscape features.

4.5.2 Extent of Visibility and Viewing Audience

Given the size of the site area and the rolling topography that it encounters, the extent of the visual catchment covers a wide area. However, the full degree of the proposed works in this area is not anticipated to be visible from any one location. The extent of visibility northwards theoretically extends as far as Albany Heights and Fairview Heights. However, the views from these areas in the north will be partially screened by intervening topography such as the Burnside Escarpment and the low position of the Project area adjacent to the RWWTP Ponds.

The East Coast Road Ridgeline will form the primary eastern edge of the catchment and therefore some areas will have views toward the proposed works, although these are likely to be quite limited. Southwards, the majority of the site area would be visually contained by the Sunset Road ridgeline. However, as the Project area continues beyond this area and southwards, views to a wider area would result. To the west, the visual catchment is partially contained by the Albany Highway although, the elevation of the ridgeline does decrease as it continues northwards, and therefore views are opened towards Lucas Heights in the distance.

From the west, distant views of the works from residents of Lucas Heights and mid-range views from commercial businesses in Rosedale (particularly along Paul Matthews Drive) will occur. Residents in Unsworth Heights to the south and some commercial businesses along Constellation Drive will also potentially be able to see the proposed works.

Views of the works across the RWWTP Ponds from commercial business to the east along Apollo Drive and west of East Coast Road may occur, although these views would be viewed through vegetation occupying the northern embankment, and/or at great distances. Similarly, the views of the works from commercial businesses along Arrenway Drive and Cowley Place and residents along Bushlands Park Drive will be through vegetation and/or at great distances. Residential viewing audiences to the south of Sunset Road including Sunnynook may also have limited views of the works. Viewing audiences traveling north and south along SH1 and along the on and off-ramps of Greville Road will also have visibility of the Project, as well as road users and pedestrians along the surrounding local roads, particularly UHH and Constellation Drive.

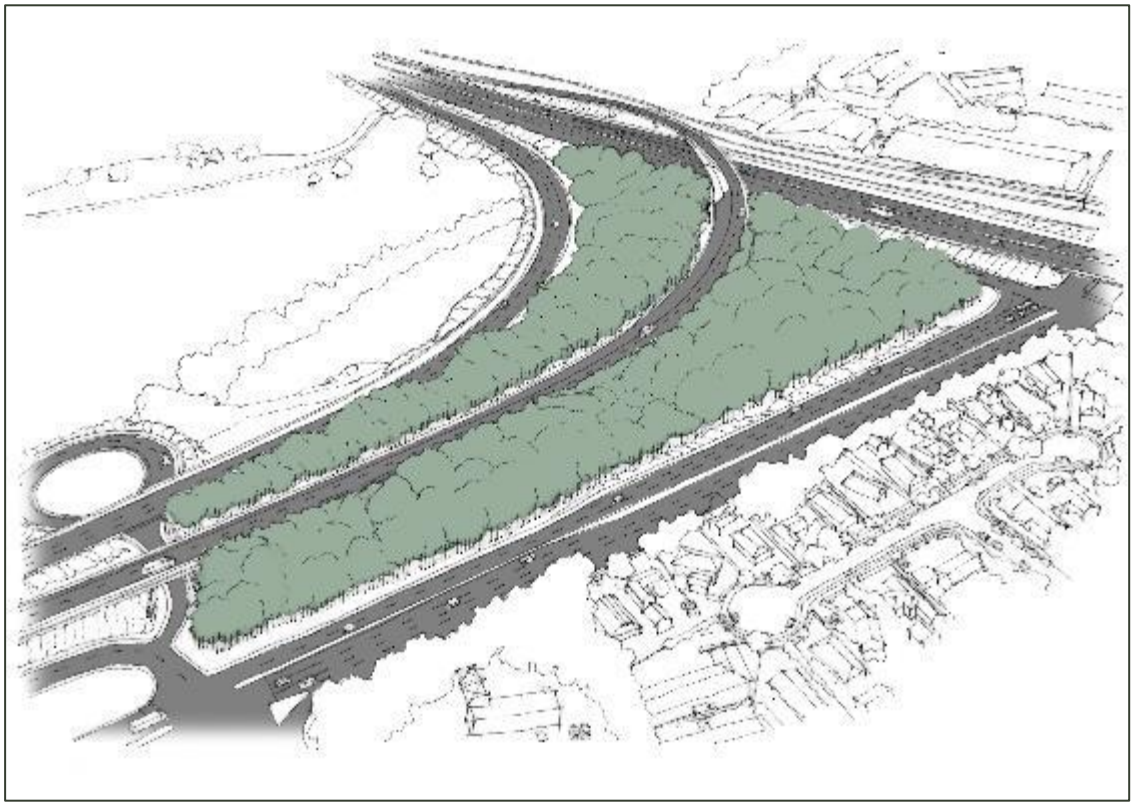
The most sensitive viewing audiences are the residents of Unsworth Heights due to their proximity and unimpeded fixed views of the proposed works within Site Area 4.

4.5.3 Summary of Key Project Elements

The anticipated works in this area consist of a number of construction activities to complete major built elements of the Project. The primary built elements include construction yards, maintenance bays, wetlands, the busway, the SUP, the SH1 to SH 18 ramps (**Figure 3** below – note, sketch only illustrating indicative bulk of structure) and the reconfigured and redesigned Constellation Bus Station.

The sketch in **Figure 3** below shows the high level conceptual design of the SH1 to SH18 ramps. This structure is subject to detailed design and the sketch in **Figure 3** is illustrative only in terms of indicating the proposed bulk of the structure.

Figure 3 Preliminary Sketch of SH18 ramp to SH1 – indicative only



4.5.4 Level of Temporary Effects

The landscape and landscape character effects within Site Area 4 would primarily result from the loss of grassed open space within the eastern portion of Constellation Reserve (refer **Appendix C - LV05**). This is associated with the construction of the SH1 to SH18 ramps. Other landscape effects including earthworks, grass and some vegetation removal (including mixed native planting and exotic trees[7]), would be generated from the construction of the busway and SUP, SH18 improvements and the reconfiguration of the Constellation Bus Station, in addition to the formation of several new wetlands.

A large amount of earthworks is required for the formation of this infrastructure. These areas are, however, generally located alongside the existing road corridor and within land which has already been highly modified. There is, however, some perceived naturalness associated with existing vegetation and open space that currently occupies Constellation Reserve, which would be removed and modified during the construction of the Project. However, there is currently very limited public access to the reserve. The extent of the works will occupy the majority of the reserve and this will reduce the open space character for road users who currently have transient views towards it from SH1 and SH 18 and fixed views from Unsworth Heights. It is considered that the temporary adverse visual effects resulting from the reduction in open space for viewers surrounding Constellation Reserve would be high. Overall, the temporary landscape and landscape character effects within the remainder of Site Area 4 during construction are considered moderate to low. Overall, the adverse effects in Site Area 4 are considered to be moderate.

The commercial viewing audiences of Paul Matthews Road and Constellation Drive would have close proximity views towards the works. However, the low sensitivity to visual change of these viewing audiences and works typically taking place at the rear of these premises and construction hoarding

[7] Section 4.1, Volume 4: Assessment of Terrestrial Ecological Effects.

with interpretive panels, where practicable, would result in very low or low adverse visual effects. Road users and pedestrians are also in close proximity to the works, however these audiences are transitory and are considered to have a low sensitivity to visual change within this environment, and would therefore experience very low to low adverse visual effects. Residential viewing audiences within Unsworth Heights, which are potentially large in number, are considered to have a high sensitivity to change. These viewing audiences will experience views for a long duration from a range of fixed positions, in both close proximity and more distant locations.

It is recognised that residents from Unsworth Heights will have varying degrees of visibility of the works, and that works will be taking place in the context of the existing transport environment. However, the works will result in viewing audiences losing views of an open grass space and would instead view a construction site and works associated with the Project.

The elevated landform of Unsworth Heights will allow residents to view a wide area of construction. Therefore, it is considered that the adverse visual effects for residential viewing audiences facing north, during construction would be moderate-high to high (depending on their position relative to the works). Unsworth Heights residents who afford views of the works along SH1 and at the existing Northern Busway are expected to have low adverse visual effects during construction. It is considered that viewing audiences from these relatively close proximity locations are to some degree, desensitised to the proposed infrastructure works given the presence of the existing transport corridor of SH1, and views towards the existing Constellation Bus Station. Therefore, overall the adverse visual amenity effects during construction upon viewing audiences within this site area are considered to be moderate.

4.5.5 Level of Permanent Effects

Notwithstanding the loss of open space, mitigation planting as proposed in **Appendix C - LV28-37**, would provide a significant increase in vegetative cover in the site area, alongside road verges and in previously occupied construction yards. Vegetation would also be planted along elevated sections of the busway and SUP to screen and soften the presence of block walls adjacent to commercial business along Constellation Drive. Additionally, a significant amount of planting within Constellation Reserve will to a large extent mitigate the removal of the open grass area and retain a perceived natural landscape character. The construction of the busway and SUP will have some permanent landscape impacts as a result of earthworks, and the loss of isolated areas of grass and vegetation. Mitigation planting will, however, amount to a far greater area of vegetation than what currently exists within the site area, and therefore the permanent landscape, and landscape character effects are considered to be moderate - low.

Although Constellation Reserve provides one of the last remaining areas on undeveloped land, the addition of vegetation within large areas of road verges and within Constellation Reserve would also provide a high degree of visual mitigation for the surrounding viewing audiences, thereby reducing visual effects and balancing the presence of the most significant built structures, including the busway, SUP, and new ramp bridge. In addition, these permanent built elements are positioned adjacent to or within the existing road corridor and therefore change in the context of the existing road corridor is considered to have a greater capability to be visually absorbed.

The Constellation Bus Station once completed will be visually larger than the current station. It is proposed that two stairwell and lift towers to a height of approximately 11.2m, in addition to a pedestrian overpass would be built. A third platform is also proposed to be added to the station (located within the existing grass verge between SH1 and the Busway pavement). Bus stations of a similar design currently exist along SH1 and are a recognisable and anticipated feature along the existing busway, beside the State highway. Additionally, there is already a busway station in the same

location. It is considered that the busway station will remain at a height and distance from these sensitive viewing audiences that it will result in low adverse visual effects.

The existing transport environment which the Project will continue to build upon already forms a prominent feature for transient viewing audiences. In addition to this, transient viewing audiences would be moving through the transport corridor and would experience the project for a limited duration. As such their level of visual sensitivity to change is considered to be low. As previously outlined, the nature of the completed Project is similar to the existing transport environment and in the majority of areas, the magnitude of change is considered is very low. The magnitude of visual change within Constellation Reserve is considered to be low for these viewing audiences as the open grassed space would be replaced with an area containing a balance of built structures and vegetation adjacent to the existing transport environment. It is therefore considered that this would result in very low to low adverse visual effects overall for these transient viewing audiences.

The greatest degree of visual effects would be upon the residential viewing audiences of Unsworth Heights facing northwards towards the SH18 ramp to SH1. Although mitigation planting is proposed, viewing audiences may still obtain views of the proposed transit lane and motorway off-ramp to SH18. Therefore, the level of adverse visual amenity effects is considered moderate at the completion of the Project, with some beneficial visual effects resulting from mitigation planting.

4.6 Site Area 5: Paul Matthews Road to Albany Highway - LV13 and LV14

4.6.1 Location, Context and Character

Site Area 5 extends from the northern edge of the Paul Matthews Road to the Albany Highway. The area adjoins public open space (conservation as well as informal recreation), business (Light Industry and Neighbourhood Centre zone) and Residential zone. The elevation of the area descends to the low point of Alexandra Stream and then ascends towards Albany Highway Alexandra Stream and its vegetated embankments are a key landscape feature of the area.

4.6.2 Extent of Visibility and Viewing Audience

The extent of visibility northwards is principally contained by the south facing slopes around Cowley and Arrenway Drive to the north of the RWWTP Ponds, in addition to the vegetated northeastern embankments of the RWWTP Ponds and Burnside Escarpment beyond. To the east, businesses along Constellation Drive form the foreground of the visual catchment in addition to distant views from Apollo Drive. To the south, Unsworth Heights determines the field of view and to the west the field of view extends to Albany Highway. The extent of visibility opens to the west somewhat, across the NHHS and Albany Highway.

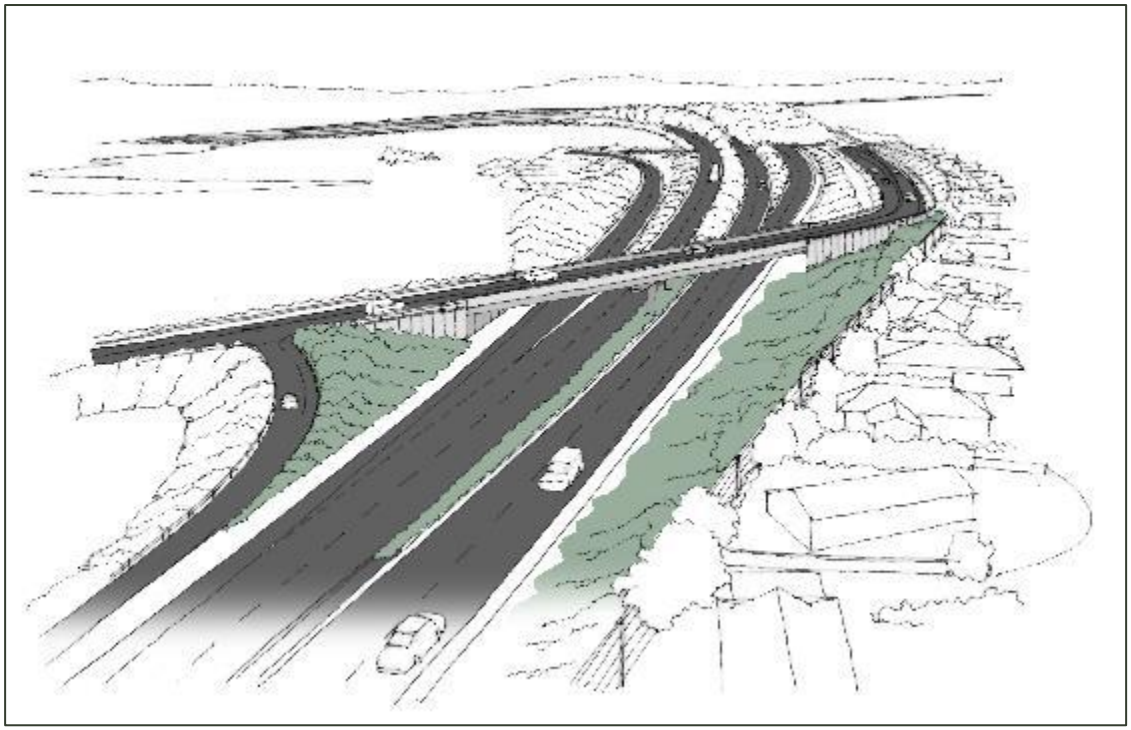
The viewing audiences in close proximity to the works include residents in Unsworth Heights, residents in Greenwich Gardens Retirement Village, commercial proprieties along Omega Street and Paul Matthews Road, Bush Road, and road users and pedestrians along the surrounding local roads. Views may be afforded from commercial business along Apollo Drive and Arrenway Drive across the RWWTP Ponds although these views would be viewed through vegetation occupying the northern embankment of the RWWTP Pond. Viewing audiences traveling north and south along SH1 and along the on and off-ramps of Constellation Drive will also be afforded visibility toward the Project area.

The most sensitive viewing audiences are the residents Unsworth Heights and residents of Greenwich Gardens Retirement Village due to their proximity and unimpeded fixed views of the works.

4.6.3 Summary of Key Project Elements

The anticipated works in this area consist of a number of construction activities to complete major built elements of the Project. The primary built elements include the SUP, wetlands, and a bridge linking Paul Matthews Road to SH18 (refer **Figure 4** below - note, sketch only illustrating indicative bulk of structure). Stormwater ponds are shown in both Rook and Bluebird Reserves. It is understood that only one of these ponds will be implemented in this Project. The sketch in **Figure 4** below shows the high level conceptual design of the bridge linking Paul Matthews Road to SH18. This structure is subject to detailed design and the sketch in **Figure 4** is illustrative only in terms of indicating the proposed bulk of the structure.

Figure 4 Sketch of bridge linking Paul Matthews Road to SH18 – indicative only



4.6.4 Level of Temporary Effects

The landscape, landscape character, and natural character effects would primarily be generated by earthworks relating to the construction SUP, the cut and fill of modified slopes along SH18 and the formation of a wetland (note that there are two wetland options, one at Rook reserve and the other at Bluebird Reserve but only one of these will be implemented). It is anticipated that vegetation removal would consist of grass occupying highway verges and within both Rook and Bluebird Reserves which will involve some isolated tree and vegetation removal including mixed native planting and exotic trees.[8] Some vegetation removal and limited earthworks are anticipated within the Alexandra Stream embankments, however these works will not be within the stream itself and the affected area will be limited. These areas are primarily alongside the existing road corridor, and within land which has been highly modified. Therefore, overall the landscape and landscape character effects during construction are considered moderate - low.

The predominant visual effects during construction will be upon residential viewing audiences of Unsworth Heights, commercial properties north of SH18 and road users and pedestrians of SH18 and surrounding roads. The most sensitive viewing audiences of Unsworth Heights would be viewing the

[8] Section 4.1, Volume 3: Assessment of Terrestrial Ecological Effects.

works in the context of the commercial land uses to the north, within road corridors and within the wider context of the view. Construction hoarding with interpretive panels will be applied to these areas along the interface of SH18 and these residents will lessen the temporary visual effects. Transient visual audiences (road users and pedestrians) would experience a moderate level of visual change when viewing the Project from within the existing road environment. This change will result in some adverse visual effects albeit for only a short duration within the road corridor. Nevertheless, works within road corridors are considered an anticipated activity to these viewing audiences, and therefore overall, the adverse visual effects during construction are considered to be low.

4.6.5 Level of Permanent Effects

The permanent landscape, landscape character and natural character effects are considered to be very low in this area. This is due to only a slight reduction of vegetation along the northern edge of SH18 balanced with an increase in vegetation within the southern edge of SH18. The inclusion of a SUP and bridge over SH18 linking to Paul Matthews Road in addition to the inclusion of a new wetland would have some permanent landscape impacts resulting from earthworks, and loss of isolated areas of grass and vegetation. However, overall given the proposed mitigation planting in addition to recontoured landscape within a modified environment, these effects are considered to be limited.

The new built features within an environment already containing features of a similar scale and nature would not result in significant adverse visual amenity effects. The most sensitive viewing audiences of Unsworth Heights would continue to view the permanent visual features (most prominent would be the new Paul Matthews Road Bridge over SH18) in the context of a road corridor and light industry visual environment. However, mitigation planting along road verges and sections of sensitively designed noise walls are proposed. Road users, pedestrians and viewing audiences in commercial business will experience very low to low adverse visual effects given the low sensitivity to change and the consistent activity of the Project within the context of the existing transport corridor. Therefore, the permanent visual amenity effects are considered to be low after mitigation measures have been implemented.

5 Landscape Recommendations

5.1 Mitigation Measures

This section outlines the recommended landscape and visual mitigation measures for the Project. These have been grouped into the proposed activities and built elements relating to the Project. The objective of the mitigation measures is to ultimately reduce anticipated landscape and visual effects outlined in Section 6 of this report.

A draft UDLF has been developed for the Project. A Landscape Management Plan will be required by the conditions of consent and will be developed in accordance with the guiding principles set out in the indicative UDLF. In addition, the Landscape Management Plan will provide for the mitigation measures set out in Sections 5.1.1 and 5.1.2 below.

5.1.1 During construction

The overarching mitigation measures for all activities and built elements during construction are as follows:

- Limit works area to the greatest extent practicable;
- Where practicable, during construction install construction hoarding with interpretive panels in selected areas which are in close proximity and visible to the public, to provide information about the Project and its progress;
- Limit the removal of trees and vegetation is limited where practicable;
- Avoid works within the dripline of trees and riparian margins of waterways wherever practicable; and
- Reinstate vegetation and grass areas (in accordance with Appendix C - LV28-37) where practicable.

5.1.2 Permanent Elements

It is proposed that mitigation planting and additional planting (including street trees) are included as permanent feature of the Project, as proposed in **Appendix C - LV28-37**. The 'mitigation and enhancement planting' (coloured dark green) within these planting plans totals over 30ha, and aims to appropriately sit the Project within the existing context by integrating the road corridor and in particular above ground structures.

Additional planting (coloured light green) and street trees shown on these plans, totals approximately 5.9ha. These areas are not as integral to mitigating the landscape and visual effects resulting from the Project, however it is recommended that these areas are also planted to further incorporate both the Project and the existing transport corridor into the wider urban environment. The character and scale of this planting is not fully determined at this stage, however cross sections prepared in **Appendix C – LV38 – 45**, do provide an indication of the likely nature of the planting. Additionally, there is clear guidance around the approach to landscape design and planting relating to transport projects including the NZ Transport Agency Landscape Guidelines[9], and the NZ Transport Agency P39 Standard Specification for Highway Landscape Treatments[10].

[9] http://www.nzta.govt.nz/resources/nzta-landscape-guidelines/index.html

[10] https://www.nzta.govt.nz/resources/landscape-treatments/

In addition to the above landscape treatments, **Table 2** below sets out the measures proposed to mitigate the permanent effects of the Project.

Table 2 Mitigation Measures – Per Built Element

Item	Description
Elevated ramps, bridges and other structures	Use visually recessive colours and materials Ensure height of structures is as low as practicable Consider earth mounding with vegetation to provide visual relief of elevated structures Vegetate with tall species where public are in close proximity to the back of buildings to avoid vandalism to properties
MSE Block Wall, L-Shape Gravity Wall, Board Pile Wall	Use visually recessive colours and materials Ensure overall height of structures is as low as practicable Consider mounding or vegetating in front of walls particularly where the wall meets adjacent properties to screen structures
Wetland / stormwater ponds / dry basins and swales	Provide native vegetation around wetland and pond surroundings Consider vegetating swale with plant species suitable for roadside swale planting
Steel UC Wall with concrete panels	Use visually recessive colours and materials Ensure overall height of structures is as low as practicable Consider visually aesthetic designs or graphics to make walls less visually intrusive
Stormwater drainage outflow	Recontour embankments to provide an environment for planting Vegetate disturbed areas with appropriate plant species
1V:3H Earthworks slope with rip rap armour	Rising slope of armour should be as steep as practicable to avoid greater visibility of structure extending into pond environment
Noise walls	Refer to the NZ Transport Agency State Highway Noise Barrier Design Guide Version 1 2010 Consider visually aesthetic designs or graphics to make walls less visually intrusive

6 Conclusion

6.1 Summary of Overall Effects

Following construction and after the implementation of mitigation measures, the level of landscape and visual effects will vary depending on the site area and context. **Table 3** and **Table 4** summarise the level of effects anticipated on the landscape and visual amenity of the proposed works in the Project area.

Table 3 Summary of Temporary Effects with mitigation measures

Site Area	Level of Landscape Effects	Level of Visual Effects
Site Area 1	Low	Moderate - Low
Site Area 2	Low	Low
Site Area 3	Low	Low
Site Area 4	Moderate	Moderate
Site Area 5	Moderate - Low	Low

Table 4 Summary of Permanent Effects with mitigation measures

Site Area	Level of Landscape Effects	Level of Visual Effects
Site Area 1	Very Low	Low
Site Area 2	Very Low	Very Low
Site Area 3	Low	Very Low
Site Area 4	Moderate - Low	Moderate
Site Area 5	Very Low	Low

6.1.1 Summary of overall Landscape Effects

Landscape effects will largely be due to earthworks, the removal of vegetation, as well as works within Oteha Stream embankments, and Lucas Creek and Alexandra Stream embankments. Removal of vegetation within stream embankments will alter the character of these areas by heightening the impression of further human modification. However, this will occur in isolated areas, adjacent to the road environment and revegetation will take place within disturbed areas. Within some areas trees will need to be removed, however, replacement planting and revegetation to compensate vegetation loss will be undertaken. A large amount of mitigation and amenity planting is proposed throughout the Project to offset both landscape and visual amenity effects.

The temporary adverse natural character and landscape effects are interim effects only and would reduce once the Project is complete. Following mitigation, it is considered that permanent adverse natural character and landscape effects anticipated at the completion for the Project can be managed and mitigated to result in low adverse effects overall.

6.1.2 Summary of overall Visual Effects

The construction of the Project is anticipated to be staged, over a period of time, and therefore visual effects will occur progressively. However, viewing audiences may concurrently experience adverse effects from more than one site area at a time. Site Areas 1, 3 and 4 are overall, anticipated to generate the highest level of adverse visual amenity effects during construction due to sensitive viewing audiences in close proximity to the works. However, these effects would be temporary in nature and would reduce once the Project is completed. Where the public are in close proximity to the works, such as the Albany Park n Ride and Constellation Reserve, fencing may include hoardings with viewing holes to the site and interpretive panels providing key information on the Project and its progress.

Permanent visual effects will predominantly result from the removal of vegetation and the presence of built structures including walls, bridges, and on-ramps / off-ramps. However, contextually appropriate noise walls, extensive mitigation planting, and views towards new pedestrianised features will ensure an acceptable level of visual change.

During construction, transient viewing audiences including road users and pedestrians are located within an existing transport environment that dominates their view. The construction of the project would remain consistent with road works and infrastructure activities commonly anticipated by transient viewing audiences within such significant road corridors. Once the Project is completed, transient viewing audiences will continue to engage with a similar visual environment to which currently exists. Nevertheless, some low adverse visual effects resulting from an increased prominence of the road corridor and new structures associated with the Project are anticipated. Notwithstanding this, the introduction of over 35ha of additional vegetation, coupled with and improved connectivity for road users, and provision of new walking and cycling facilities, will provide an improved journey experience for these users.

Appendices

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Appendix A
Landscape and Visual Effects Assessment Methodology

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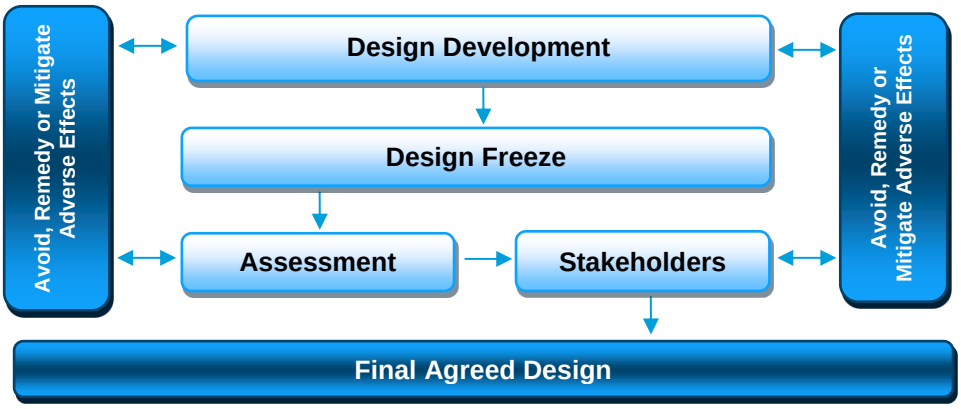
Introduction

The landscape and visual effects assessment process provides a framework for assessing and identifying the nature and significance of potential landscape and visual effects that may result from a proposed development. Such effects can occur in relation to changes to physical elements and the existing character of the landscape and impacts on viewing audiences and visual amenity. This process should include an iterative design development approach which seeks to avoid, remedy or mitigate adverse effects and where appropriate include stakeholder engagement (see **Figure A1**).

Figure A1 Design feedback loop (Adapted from GLVIA3)



When undertaking landscape and visual effects assessments, it is important that a structured and consistent approach is used to ensure that findings are clear and as objective as possible. Judgement should always be based on training and experience, and be supported by explicit evidence and reasoned argument.

The existing landscape and its visual context form the 'baseline' for landscape and visual effects assessments. In order to assess such effects, the landscape must first be described, including an understanding of the key characteristics that make an area distinctive. This process, known as landscape characterisation, is the basic tool for understanding landscape character and may involve subdividing the landscape into distinct character areas or types and describing the characteristics of each area. The condition of the landscape (i.e. the state of an individual area of landscape or landscape feature) should also be described alongside a judgement made on the value or importance of the potentially affected landscape.

Although landscape and visual effects assessments consider the effect of the proposed development on a landscape, they form separate procedures. The assessment of the potential effect on the landscape forms the first step in this process and is carried out as an effect on an environmental resource (i.e. landscape elements, features and character).

The assessment of visual effects considers how changes to the physical landscape affect the viewing audience.

The types of effects can be summarised as follows:

Landscape effects:
Change in the physical landscape, which may change its character or value.

Visual effects:
Change to specific views which may change the visual amenity experienced by people.

This outline of the landscape and visual effects assessment methodology has been undertaken with reference to the Quality Planning Landscape Guidance Note[11] and its signposts to examples of best practice which include the UK guidelines for landscape and visual impact assessment[12] and the New Zealand Landscape Institute Guidelines for Landscape Assessment[13].

A separate assessment is required to assess changes in natural character in coastal areas and other waterbodies.

Landscape Effects

Assessing landscape effects requires a thorough understanding of the landscape character and importance or value of the landscape. Using this baseline, a *determination* of landscape sensitivity and the magnitude of change which results from a proposed development can be made to determine the overall significance of landscape effects.

Landscape Sensitivity

The determination of the sensitivity of the landscape resource is described in terms of both the susceptibility of an area of landscape to change and the value of the landscape.

The sensitivity of the landscape depends upon the degree that a particular landscape or feature can accommodate change. This will vary upon the following factors:

- Physical elements such as topography / hydrology / soils / vegetation;
- Existing land use;
- The pattern and scale of the landscape;
- Visual enclosure / openness of views and distribution of the viewing audience;
- The value or importance placed on the landscape; and
- The scope for mitigation, which would be in character with the existing landscape.

The susceptibility to change takes account of both the attributes of the receiving environment and the characteristics of the proposed development. It considers the ability of a specific type of change occurring without generating adverse effects and/or achievement of landscape planning policies and strategies.

Landscape value derives from the importance that people and communities, including tangata whenua, attach to particular landscapes and landscape attributes. This may include the classification of Outstanding Natural Landscape (RMA s.6(b)) based on important biophysical, sensory/ aesthetic and associative landscape attributes which have potential to be affected by a proposed development.

Magnitude of Landscape Change

The magnitude of landscape change judges the amount of change that is likely to occur to existing areas of landscape, landscape features, or key landscape attributes. In undertaking this assessment, it is important that the size or scale of the change is considered within the geographical extent of the area influenced and the duration of change, including whether the change is reversible. In some situations the loss /change or enhancement to existing landscape elements such as vegetation or earthworks should also be quantified.

When assessing the significance of landscape effects, it is important to be clear about what factors have been considered when making professional judgements. This can include consideration of any

[11] http://www.qualityplanning.org.nz/index.php/planning-tools/land/landscape
[12] Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)
[13] Best Practice Note Landscape Assessment and Sustainable Management 10.1, NZILA

benefits which result from a proposed development. **Table A1** below has been compiled to help guide this process.

Table A1 Determining the significance of landscape effects

Contributing Factors		Higher	Lower
Sensitivity	**Susceptibility to change**	The landscape is strongly distinctive with important biophysical, sensory and associative aspects. There is an absence of landscape detractors which make it highly vulnerable to the type of change which would result from the proposed development.	The landscape lacks any distinctive biophysical, sensory or associative aspects. It has many detractors and has the ability to accommodate the proposed development without undue consequences to landscape character.
	The value of the landscape	The landscape requires protection as a matter of national importance (ONF/L).	The landscape is of low or local importance.
Magnitude 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 aesthetic or perceptual elements.	The majority of key features or elements are retained. Key characteristics of the landscape remain intact with limited aesthetic or perceptual change apparent.
	Geographical extent	Landscape character area scale.	Site scale, immediate setting.
	Duration and reversibility	Permanent. Long term (over 10 years).	Reversible. Short Term (0-5 years).

Visual Effects

To assess the visual effects of a proposed development on a landscape, a visual baseline must first be defined. The visual baseline identifies the area where the development may be visible, the potential viewing audience, and the key representative public viewpoints from which visual effects are assessed.

The viewing audience comprises the individuals or groups of people occupying or using the properties, roads, footpaths and public open spaces that lie within the visual envelope or zone of visual influence of the site and proposal. Where possible, computer modelling can assist to determine the actual extent of visibility together with field work which should be undertaken to confirm this. Where appropriate, key representative viewpoints should be agreed with the relevant local authority.

Visual Sensitivity

Visual sensitivity is dependent upon the susceptibility of the viewing audience to change and the value attached to views. The susceptibility of the viewing audience is determined by assessing the occupation or activity of people experiencing the view at particular locations and the extent to which their interest or activity may be focussed on views of the surrounding landscape. This relies on a landscape architect's judgement in respect of visual amenity and reaction of people who may be affected by a proposal. This should also recognise that people more susceptible to change generally include: residents at home, people engaged in outdoor recreation whose attention or interest is likely to be focussed on the landscape and on particular views; visitors to heritage assets or other important visitor attractions; and communities where views contribute to the landscape setting.

The value or importance attached to particular views may be determined with respect to its popularity or numbers of people affected or reference to planning instruments such as viewshafts or view corridors. Important viewpoints are also likely to appear in guide books or tourist maps and may include facilities provided for its enjoyment. There may also be references to this in literature or art, which also acknowledge a level of recognition and importance.

Magnitude of Visual Change

The assessment of visual effects also considers the potential magnitude of change which will result from the nature of a proposed development and its potential visibility. This takes account of the size or scale of the effect, any mitigation measures and their impact over time and the geographical extent of views. Preparation of any simulations of visual change should be guided by best practice as identified by the NZILA[14].

The assessment of visual effects should also distinguish between temporary (often associated with construction) and permanent effects where relevant. The duration of the temporary effects may also be a consideration when evaluating the magnitude of visual change.

The magnitude of change resulting from the proposed development is combined with the sensitivity of the viewing audience to determine the overall significance of visual effects.

It should also be noted that a change in view is not always negative and does not automatically generate adverse effects. **Table A2** below has been prepared to help guide this process:

Table A2 Determining the significance of visual effects

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 where the focus is typically incidental to its landscape context. Views from transport corridors.
	Value attached to views	Viewpoint is recognised by the community such as an important view shaft, identification on tourist maps or in art and literature. High visitor numbers.	Viewpoint is not typically recognised or valued by the community. Infrequent visitor numbers.
Magnitude of Change	**Size or scale**	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 proposed development.	Most key features of view retained. 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 proposed development.
	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. Long term (over 15 years).	Transient / temporary. Short Term (0-5 years).

Nature of Effects

In combination with assessing the significance of effects, the landscape and visual effects assessment also considers the nature of effects in terms of whether this will be positive (beneficial) or negative (adverse) in the context within which it occurs. Neutral effects can also occur where landscape or visual change is considered to be benign in the context of where it occurs.

This assessment of the nature effects can be further guided by **Table A3** set out below:

[14] Best Practice Guide: Visual Simulations BPG 10.2, NZILA

Table A3 Determining the Nature of Effects

Nature of effect	Use and Definition
Adverse (negative):	The proposed development 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
Neutral (benign):	The proposed development would complement (or blend in with) the scale, landform and pattern of the landscape maintaining existing landscape and / or visual amenity values
Beneficial (positive):	The proposed development would enhance the landscape and / or visual amenity through removal of restoration of existing degraded landscapes uses and / or addition of positive elements or features

Determining the Overall Significance of Landscape and Visual Effects

The landscape and visual effects assessment concludes with an overall assessment of the likely significance of landscape and visual effects. This step also takes account of the nature of effects and the effectiveness of any proposed mitigation.

This process informs an overall judgement identifying which effects are likely to be significant, including determination of whether effects are more or less than 'minor' where relevant[15] as indicated in **Table A4** below. This assessment is used to guide the significance of landscape and visual effects using an adapted seven point scale derived from NZILA's Best Practice Note:

Table A4 Determining the overall significance of landscape and visual effects

Effect Rating	Use and Definition
Very High:	Total loss to the characteristics or key attributes of the receiving environment and /or visual context amounting to a complete change of landscape character.
High:	Major change to the characteristics or key attributes of the receiving environment and /or the visual context within which it is seen; and/or a major effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* *High: adjective- **1.** Extending above the normal level. **2.** Great in amount, value, size, or intensity.*
Moderate- High:	A moderate - high level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or have a moderate - high level of effect on the perceived amenity derived from it.
Moderate:	A moderate level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or have a moderate level of effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* *Moderate: adjective- average in amount, intensity, or degree*
Moderate - Low:	A moderate - low level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or have moderate - low level of effect on the perceived amenity derived from it.
Low:	A low level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or have a low effect on the perceived amenity derived from it. *Oxford English Dictionary Definition* *Low: adjective- **1.** Below average in amount, extent, or intensity.*
Very Low:	Very low or no modification to key elements/ features/ characteristics of the baseline or available views, i.e. approximating a 'no change' situation.

[15] As required in RMA Section 95A (in relation to notification determination) and 104D (in relation to non-complying activities). For the purpose of Section 95E in relation to whether a person is affected, moderate-low significance of effects qualify as 'minor'.

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Appendix B
Sources of Landscape and Visual Effects

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Introduction

This section outlines the physical works to be carried out in each site area which have the potential to generate landscape and visual effects.

Site Area 1: Northernmost Point of Designation to Spencer Road Bridge

Sources of Temporary Effects

The following landscape and visual changes anticipated during construction will be:

- Installation of an external construction fence and/or road barriers within sections of the site to screen activities beyond from public view and restrict access;
- Establishment of construction support areas;
- Excavation and construction of MSE block walls;
- Excavation and construction of Gravity wall;
- Removal of existing stormwater ponds to the east of SH1
- Construction of the Shared Use Path along the eastern edge of SH1 and McClymonts Road (southern edge)
- Realignment and widening of existing Oteha Valley Road northbound off-ramp
- Earthworks to fill slope between Oteha Valley Road northbound off-ramp and SH1
- Excavation and construction of the proposed wetlands
- Construction of busway along eastern edge of SH1
- Construction of board pile walls
- Construction of a steel UC wall with concrete panels
- Construction of Busway Bridge over SH1 to Albany Park n Ride
- Removal of existing bus ramp at McClymonts Road
- Removal and realignment of McClymonts Road Bridge over SH1
- Removal and pruning a number of trees and vegetation including:
  - Vegetation along Oteha Valley Road Northbound on-ramp
  - Vegetation between Albany Park and Ride and Oteha Valley Road northbound off-ramp
  - Vegetation between McClymonts Road and SH1
  - Vegetation between Elliot Rose Ave and SH1
  - Removal of grass areas/grass verges

Sources of Permanent Effects

Following construction the following permanent visible features will remain:

- MSE block walls
- Gravity wall
- Shared Use Path along the eastern edge of SH1, and McClymonts Road (southern edge)
- Widened road corridor of SH1
- Realigned Oteha Valley Road northbound off-ramp
- Grassed/vegetated slope between Oteha Valley Road northbound off-ramp and SH1
- Three wetlands and associated vegetation

- Busway along eastern edge of SH1
- Board pile walls
- Steel UC wall with concrete panels
- Busway Bridge over SH1 to Albany Park and Ride
- Realigned McClymonts Road Bridge over SH1
- Reinstatement of grass areas and revegetation of road verges

Site Area 2: Spencer Road to Greville Road

Sources of Temporary Effects

The following landscape and visual changes anticipated during construction will be:

- Installation of an external construction fence and/or road barriers within sections of the site to screen activities beyond from public view and restrict access
- Establishment of construction yards
- Excavation and construction of MSE block walls
- Excavation and construction of the proposed wetland between SH1 and Albany Expressway
- Construction of busway along eastern edge of SH1
- Construction of the Shared Use Path ramp connection to Greville Road
- Construction of new busway and Shared Use Path bridge over Greville Road
- Construction of board pile walls
- Construction of a steel UC wall with concrete panels
- Widening of existing Greville Road Bridge
- Removal and pruning a number of trees and vegetation including:
  - Vegetation along Albany Expressway
  - Removal of grass areas/grass verges

Sources of Permanent Effects

Following construction the following permanent visible features will remain:

- MSE block walls
- Wetland with associated vegetation
- Busway along eastern edge of SH1
- Ramp connection to Greville Road
- Busway and Shared Use Path bridge over Greville Road
- Board pile walls
- Steel UC wall with concrete panels
- Widened Greville Road Bridge
- Reinstatement of grass areas and revegetation of verges

Site Area 3: Greville Road to RWWTP Ponds

Sources of Temporary Effects

The following landscape and visual changes anticipated during construction will be:

- Installation of an external construction fence and/or road barriers within sections of the site to screen activities beyond from public view and restrict access
- Establishment of construction yard
- Excavation and construction of MSE block walls
- Construction of the Shared Use Path along the eastern edge of SH1
- Construction of a transit lane along eastern edge of SH1
- Construction of swales along edges of SH1
- Widening of SH1
- Earthworks to fill slope between SH1 and verges and landfill
- Excavation and construction of the two proposed dry basins
- Construction of busway along eastern edge of SH1 1
- Construction of board pile walls
- Lowering of Rosedale Road to maintain existing headroom under widened Rosedale Road Bridge
- Realignment of existing Greville Road off-ramp and on-ramp
- Change of land use at 121 and 123 Rosedale Road to accommodate proposed wetland
- Construction of Busway Bridge over Rosedale Road
- Removal and pruning a number of trees and vegetation including:
  - Vegetation within the Rosedale Closed Landfill and between Tawa Drive and SH1
  - Removal of grass areas/grass verges
- Construction of a steel UC wall with concrete panels
- Construction of enforcement bay

Sources of Permanent Effects

Following construction the following permanent visible features will remain:

- MSE block walls
- Shared Use Path along the eastern edge of SH1
- Transit lane along eastern edge of SH1
- Swales along edges of SH1
- Widened State SH1
- Fill slope between SH1 and verges and landfill
- New dry basins and associated planting within verges of SH1
- Busway along eastern edge of SH1
- Board pile walls
- Lowered Rosedale Road
- Realigned existing Greville Road off-ramp and on-ramp
- Busway Bridge over Rosedale Road
- Steel UC wall with concrete panels
- Reinstatement of grass areas and revegetated verges

Site Area 4: RWWTP Ponds to Paul Matthews Road and Southernmost Point of Designation

Sources of Temporary Effects

The following landscape and visual changes anticipated during construction will be:

- Installation of an external construction fence and/or road barriers within sections of the site to screen activities beyond from public view and restrict access
- Establishment of construction yard
- Excavation and construction of proposed wetlands following removal of existing Auckland Council Moro pond, Refuse pond, and Constellation pond
- Removal of existing stormwater filters
- Construction and earthworks to form slope with rip-rap armour – along western edge of SH1 adjoining RWWTP Ponds
- Construction of the Shared Use Path along SH1 and SH18
- Construction of a transit lane along SH1 to SH18
- Construction of Ramp Bridge over SH1
- Excavation and construction of MSE block walls
- Widening of SH1
- Earthworks to fill slope on verges
- Construction of busway along eastern edge of SH1
- Realignment of existing Constellation Drive on-ramp
- Realignment of existing Constellation Drive Southbound off-ramp
- Widening of Constellation Drive Bridge
- Construction of Steel UC wall with concrete panels
- Construction of Busway and Shared Use Path bridge over Constellation Drive (continued)
- Removal and pruning a number of trees and vegetation including:
  - Vegetation along northern embankment of RWWTP Ponds to the east of SH1
  - Vegetation to the south east of Constellation drive (between new busway and Shared Use Path bridge over constellation drive and SH1
  - Removal of trees within Constellation Reserve (also known as Rosedale South Park)
  - Removal of vegetation between SH1 and UHH off-ramp
  - Removal of grass areas/grass verges
- Reconfiguration of existing platforms and busway facilities at Constellation Bus Station to accommodate busway and Shared Use Path
- Removal of Constellation Bus Station Bus Ramp

Sources of Permanent Effects

Following construction the following permanent visible features will remain:

- New wetland and associated planting (originally light industry land use)
- Rip-rap armour – along western edge of SH1 adjoining RWWTP Ponds
- Shared Use Path along SH1 and SH18
- SH18 Ramp Bridge and northbound on-ramp

- MSE block walls
- Widening of SH1
- Busway along eastern edge of SH1
- Realigned Constellation Drive on-ramp and off-ramp
- Widened Constellation Drive Bridge
- Relocated Pylon and Pylon Access from SH18
- Steel UC wall with concrete panels
- Busway and Shared Use Path bridge over Constellation Drive
- Reinstatement of vegetation and grass areas including revegetation
- Reconfigured existing platforms and busway facilities at Constellation Bus Station to accommodate busway and Shared Use Path

Site Area 5: Paul Matthews Road to Albany Highway

Sources of Temporary Effects

The following landscape and visual changes anticipated during construction will be:

- Installation of an external construction fence and/or road barriers within sections of the site to screen activities beyond from public view and restrict access
- Construction of Paul Matthews Road Bridge over SH18
- Construction of board pile wall
- Construction of MSE block walls
- Construction of combined TL5 Concrete barrier / Retaining Wall
- Excavation and construction of proposed wetlands
- Construction of two outfalls into Alexandra Stream riparian margins
- Construction of L-Shape Gravity Wall
- Construction of Steel UC Wall with concrete panels
- Closure of existing off-ramp to Z (Petrol Station)
- Closure of existing off-ramp to Unsworth Drive
- Construction of Shared Use Path along northern edge of SH18 in addition to connections to Paul Matthews Road, Alexandra Stream pathways, William Pickering Drive and Albany Highway
- Removal and pruning a number of trees and vegetation including:
  - Vegetation to between SH18 and existing commercial properties (between new Shared Use Path and SH1), and SH1
  - Vegetation along Alexandra Stream
  - Vegetation between William Pickering Drive and SH18

Sources of Permanent Effects

Following construction the following permanent visible features will remain:

- Paul Matthews Road Bridge over SH18
- Board pile wall
- New wetlands within Rook and Bluebird Reserve and associated planting
- Combined TL5 Concrete barrier / Retaining Wall

- Two outfalls into Alexandra Stream riparian margins
- MSE Block Walls
- L-Shape Gravity Wall
- Steel UC Wall with concrete panels
- New Unsworth Drive Bridge over SH18
- Shared Use Path along northern edge of SH18 in addition to connections to Paul Matthews Road, Alexandra Stream pathways, William Pickering Drive and Albany Highway
- Reinstated vegetation and grass areas

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