Boffa Miskell

Southwest Wastewater Treatment Plant NoR Project

Landscape, Visual and Natural Character Effects Assessment

Prepared for Watercare

29 August 2023

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Executive Summary

Watercare Services Limited (Watercare) are proposing a wastewater treatment plant to service the Kingseat, Clarks Beach, Glenbrook Beach and Waiuku communities. The wastewater treatment plant will be contained entirely within an existing agricultural field on the Glenbrook peninsular. This assessment assesses the potential landscape visual and natural character effects (LNCEA) as a result of the proposed public work. This LNCEA is prepared to accompany the Notice of Requirement (NoR) to designate the site at 372 Glenbrook Beach Road.

The wastewater treatment plant proposes above ground buildings and structures that range in height from between 2m and 14m (approximately). The majority of the buildings and structures will be approximately 8m in height. The wastewater treatment plant will be delivered in three stages which will incrementally increase the capacity of the wastewater treatment plant. The development of theses stages will be directly linked to the growth of the serviced communities. This assessment assumes the following time periods for each stage.

- Stage 1 - proposed mitigation planting will have a minimum three year growth period before the project is completed.
- Stage 2 – mitigation planting will be established to a minimum of three years, in this way the Stage 1 and Stage 2 conditions are comparable.
- Stage 3 – mitigation planting will have a minimum period of 20 years before construction of this stage is complete.

The surrounding landscape is rural in nature and influenced by the natural character of the Taihiki River to the east of the site. The surrounding working rural landscape comprises large areas of pasture, orchards and perennial crops, however there are smaller primarily residential lots distributed across the landscape.

There are no Outstanding Natural Landscapes (ONLs), Outstanding Natural Features (ONFs), Outstanding Natural Character Areas (ONCs or High Natural Character Areas (HNCs) within the surrounding landscape context of the Glenbrook Peninsula. However, the Taihiki River is designated as a marine SEA.

The existing site is used primarily for short rotation cropland and contains two watercourses, three natural inland wetlands and two artificial irrigation ponds. The site has primarily open boundaries with the exception of the southern boundary which is defined by bamboo and exotic trees and part of the western boundary which is defined by an exotic hedge.

Viewing audiences are located to the north, south, east and west of the site and range from approximately 2km to 10m of the site boundary. Viewing audiences broadly comprise people in residences, road users, rural workers and leisure users of the Taihiki River.

A range of mitigation and design control measures are proposed to manage adverse landscape, visual and natural character effects related to the public work. These include a mitigation planting strategy and design control measures to be applied to the wastewater treatment plant.

It is considered in this assessment that the proposed public work will result in :

- No direct adverse effects on the Taihiki River SEA, the potential for adverse on the coastal environments can be managed. Natural character effects will be **Low** adverse.
- The rural character of the site will be retained overall and landscape character effects will range from **Moderate** adverse without mitigation to **Low – Moderate** to **Low** adverse with mitigation implemented.
- Visual effects will vary across the landscape dependent on the nature of the audience, distance to site and the openness of views of the public work. Without mitigation visual effects will range from **Moderate- High** to **Very Low** adverse. With the implementation of the mitigation strategy effects will range from **Low-Moderate** adverse to **neutral** (i.e.no adverse effects).

The assessment concludes that the short term adverse effects on the landscape, visual and natural character of the site and surrounding landscape context can be managed in the long term by mitigation and design control measures recommended in this report.

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1.0 Introduction

Watercare Services Limited (Watercare) is a lifeline utility providing water and wastewater services to 1.7 million people in Auckland. Watercare supplies reliable, high-quality drinking water to homes and businesses in the Auckland region and collects, treats, and discharges their wastewater in environmentally responsible ways. Its services are vital for life, keep people safe and help communities to flourish.

As a council-controlled organisation (CCO), wholly owned by Auckland Council, Watercare manages water and wastewater assets worth over $14 billion and plan and build infrastructure to ensure that growth is supported today and into the future. Watercare's vision is to be "trusted by our communities to deliver exceptional performance every day". Watercare's mission is "reliable, safe and efficient water and wastewater services".

The Southwest Wastewater Treatment Plant ("the public work") is being undertaken as part of Watercare's wastewater servicing arrangements for the Kingseat, Clarks Beach, Glenbrook Beach and Waiuku communities. The wastewater treatment plant and associated proposed construction activities will be located entirely within agricultural fields at 372 Glenbrook Beach Road, to the west of the Taihiki River.

The purpose of this Landscape and Natural Character Effects Assessment "(LNCEA") is to assess the level of effects the public work will have on the natural character, landscape character, views and values. The LNCEA is prepared to accompany the Notice of Requirement (NoR) to be submitted by Watercare to Auckland Council to designate the site at 372 Glenbrook Beach Road for wastewater purposes. The first part of the report sets out an understanding of the public work in its broader landscape and statutory context. The second part sets out an assessment of the project within its landscape context and identifies the level and nature of landscape, visual and natural character effects.

The location of the project and its surrounds have been visited to understand its existing landscape values, character and the physical and visual relationship the area has with the surrounding natural and built environment. As part of this investigation the visual catchment and viewing audiences of the wider area have been identified and considered.

2.0 Project Overview

An Assessment of Effects on the Environment Report ("AEE") prepared by Stantec (and associated appendices of the NoR, Appendix B in particular) discuss the project in greater detail. The proposed wastewater treatment plant includes pre-treatment, secondary and tertiary treatment processes. Treated wastewater will be temporarily stored on-site before moving to storage located at Watercare's designated site at Clarks Beach prior to being discharged into the Waiuku River.

The Notice of Requirement anticipates that the treatment plant will be constructed in three stages to meet projected population growth in the area. The development of the treatment plant is directly related to the growth in population (see Table 1 below). The Notice of Requirement also includes a condition requiring development of a Mitigation Planting Strategy (MPS) and its implementation as set out below.

Project Stage	Stage 1	Stage 2	Stage 3
Plant Capacity	20,000 PE	30,000 PE	60,000 PE
Description	This is construction of the plant catering for the current population as well as growth up to 20,000 PE..	This is an upgrade to Stage 1 construction to increase capacity from 20,000 PE to 30,000 PE. Involves some additional physical works within the footprint of the Stage 1 facility.	This is a 'duplicate' of the Stage 2 plant to double capacity from 30,000 PE to 60,000 PE, constructed within the same property.

Table 1: Proposed Wastewater Treatment Works staging and description

The indicative layout of the project and staging is shown in Figure 1 and Figure 2 (below). This assessment assesses the effects of the complete project up to Stage 3 in conjunction with the implementation of the mitigation planting strategy (section 8.0 and Appendix 5 of this report). It is anticipated that at Stage 1 and 2 mitigation planting will be at a less mature state.

In summary, the proposed equipment, buildings and storage include the following:

- a control building and workshop
- two foul water and sludge liquor pump stations
- two inlet pump stations
- two inlets
- four activated sludge reactors
- four generators
- three sludge thickening and storage ponds
- two emergency storage ponds
- two stormwater treatment ponds
- internal roading and lighting
- partial tide storage and pump station
- The materials used for the proposed structures will be :
    - reinforced concrete
    - galvanised steel
    - stainless steel
    - fibre reinforced plastic (FRP)

The colour palette for the painted components of the structures will comply with the Watercare General Civil Construction Standard[1]. The colour palette tables are in Appendix 3 of this report.

[1] Watercare General Civil Construction Standard, Ver.1.1 – dated 19 June 2019 [accessed online may 2023] https://wslpwstoreprd.blob.core.windows.net/kentico-media-libraries-prod/watercarepublicweb/media/watercare-media-library/esf/general_civil_construction_standard.pdf

The above ground buildings and structures (the inlet works, activated sludge reactors, control building and other equipment building) of the proposed treatment plant will range in height from between 2m and 14m (approximately). The majority of the buildings and structures will be approximately 8m in height. It is acknowledged that the size, position and location (within the established project envelope) of the proposed buildings are still under development and may change following the NoR process.

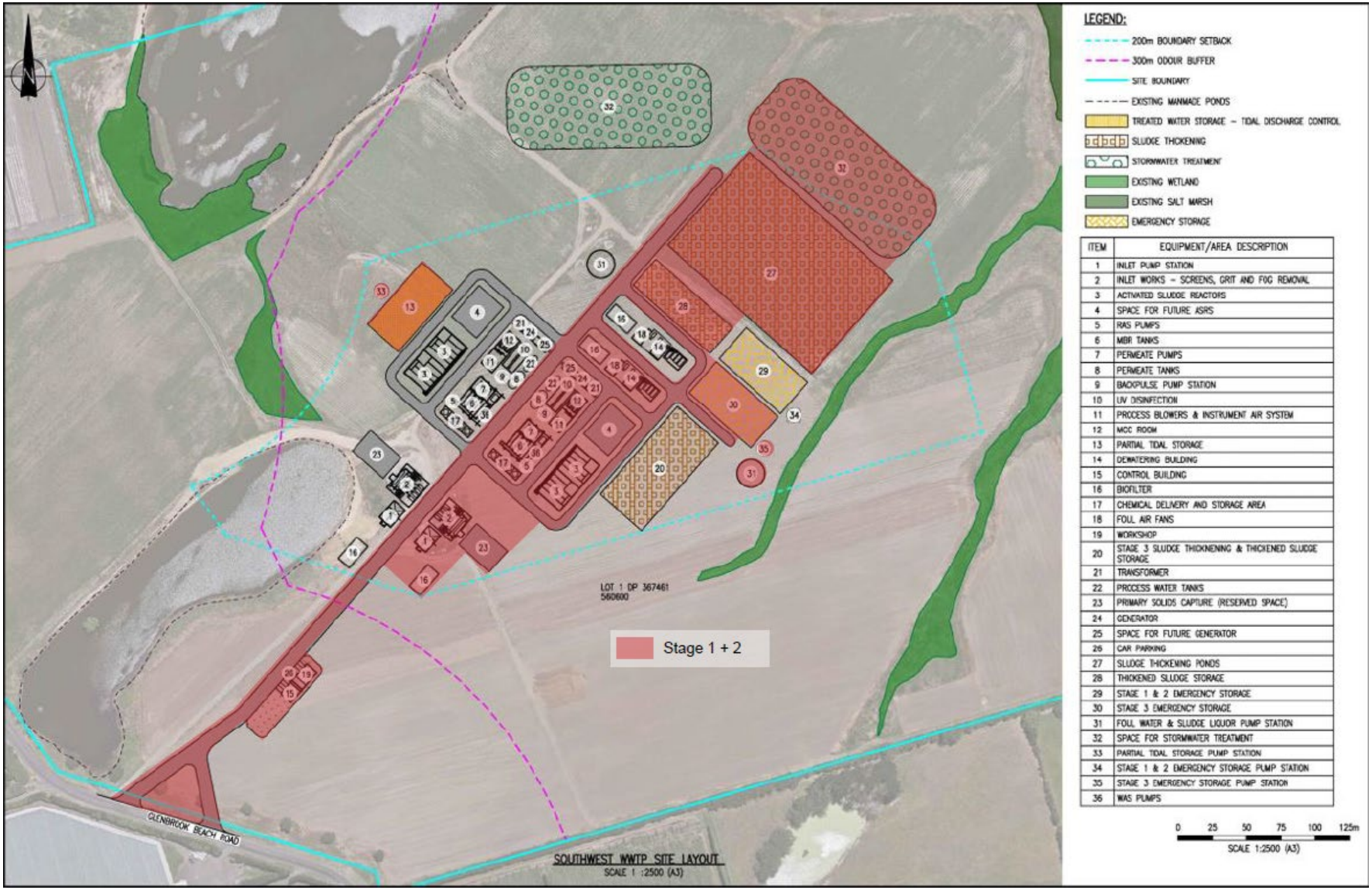

Figure 1: Southwest Wastewater Treatment Plant Stage 1 and 2 site layout

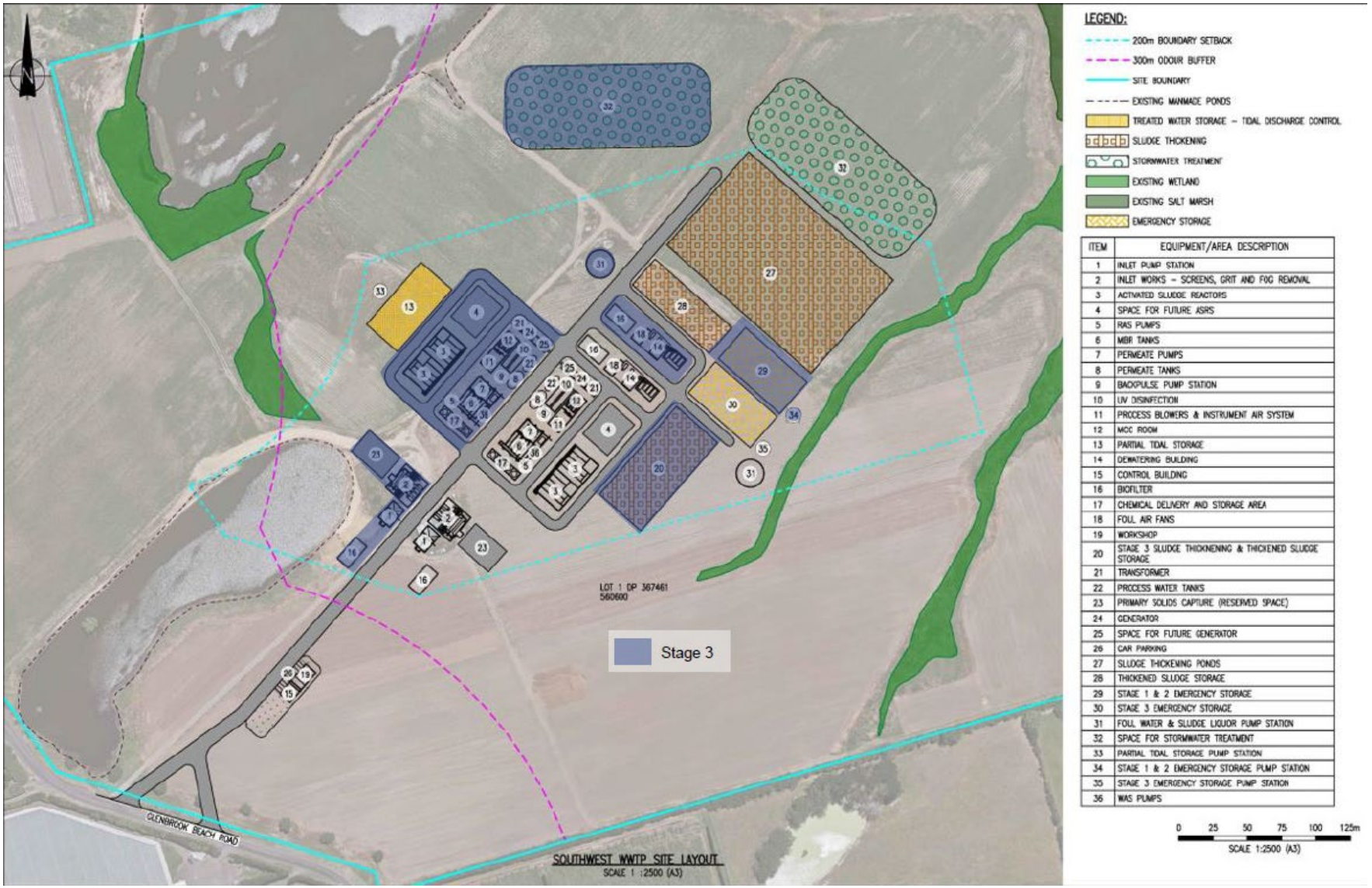

Figure 2: Southwest Wastewater Treatment Plant Stage 3 site layout

3.0 Assessment Approach

This assessment has been undertaken and peer reviewed by NZILA registered landscape architects with reference to the Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines[2] (2022), Quality Planning Landscape Guidance Note[3] and its signposts to examples of best practice.

A method statement and outline of the effects ratings used in this assessment is provided in **Appendix 1**. In summary, this assessment provides ratings based upon a combination of quantitative information where available and qualitative professional judgements by the authors. The ratings are based upon a seven-point scale which includes very low, low, low-moderate, moderate, moderate-high, high and very high ratings. These ratings are used within this assessment to describe the level (and significance) of the potential landscape, natural character and visual amenity effects that would result from the project. While natural character, landscape and visual effects assessments are closely related, they form separate procedures. Natural character effects consider the characteristics and qualities and associated degree of modification relating specifically to waterbodies and their margins, including the coastal environment.

A desktop study was completed to inform the assessment, which included a review of the relevant information relating to the landscape and visual aspects of the project. This information included:

- the statutory setting of the project area and surrounding context
- base map data (such as contours and aerial photography)
- project drawings
- ecological assessment
- construction methodology.

Initially a desktop survey was undertaken in the preparation of this report. Following this initial survey a site visit was undertaken to ground truth findings and gain further understanding of the receiving environment. A site visit was first undertaken on 2 March 2023, in fine weather conditions. Our site visit included visiting the area to understand the physical and sensory impact the project would have on the site and the broader landscape, and to identify potential viewing audiences. Subsequent site visits were also taken in May and June 2023 to obtain viewpoint photographs for visual simulations. Site visits for viewpoint and simulation were undertaken in clear and fine conditions with suitable natural lighting levels.

As discussed above the proposal will be delivered in a series of stages[4], the implementation of these stages is directly linked to the growth of the serviced communities. In order to provide a consistent approach within this assessment, we have established a series of conservative

[2] 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

[3] https://www.qualityplanning.org.nz/node/802

[4] See Table 1 in the Project Overview

assumptions for each project stage. These assumptions include a minimum time for the proposed mitigation planting strategy to be planted and grow before each stage is complete. Details of the proposed planting species, size at planting and size at each project stage are included in the Mitigation Planting Strategy (Appendix 5).

- Stage 1 - it is assumed at this stage that the proposed mitigation planting will have a minimum three year growth period before the project is completed.
- Stage 2 – the proposed upgrades to the wastewater treatment plant will primarily be within structures and buildings within Stage 1. As a worst case scenario it is assumed that mitigation planting will be established to a minimum of three years. In this way the Stage 1 and Stage 2 conditions are comparable.
- Stage 3 – it is assumed that mitigation planting will have a minimum period of 20 years before construction of this stage is complete.

4.0 Statutory Context

The following planning provisions are relevant to this project.

4.1 The Resource Management Act 1991 (RMA)

The project is within a working rural landscape adjacent to natural features. The potentially relevant sections of the RMA addressed in this report are:

> ***Section 6(a)*** *– the preservation of natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate, subdivision use and development*
>
> ***Section 6(b)*** *- the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development*
>
> ***Section 6(c)*** *- the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna*
>
> ***Section 7(c)*** *– the maintenance and enhancement of amenity values*
>
> ***Section 7(f)*** *– maintenance and enhancement of the quality of the environment*

4.1.1 Natural Character (Section 6(a))

Part 2, Section 6(a) of the RMA requires *'the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development'* as a matter of national importance.

The assessment of natural character applies to the potentially affected freshwater streams and wetlands as identified in the ecological assessment, the Taihiki River which is part of the coastal marine area and their margins in accordance with RMA section 6(a) While the RMA does not

provide a definition of natural character, Objective 2 of the New Zealand Coastal Policy Statement 2010 (NZCPS)[5] relates to preserving the natural character of the coastal environment and protecting natural features and landscape values through recognising the characteristics and qualities that contribute to natural character, natural features and landscape values and their location and distribution.

The concept of natural character has been considered in a number of Environment Court decisions[6] which have noted that "natural" and "natural character" may connote a range of qualities and features created by nature as distinct from artificial constructions (such as man - made structures), including things such as pasture, exotic trees, or wildlife, both feral and domestic[7]. A definition of natural character has also been adopted in the NZCPS guidance note[8].

Natural character comprises the natural elements, patterns and processes of waterbodies and their margins, and how they are perceived and experienced. This assessment interprets natural character as being the degree of naturalness of waterbodies and their margins*'* consistent with the above definitions:

The degree or level of natural character within an environment depends on the:

1. *extent to which the natural elements, patterns and processes occur*
2. *nature and extent of modification to the ecosystems and landscape / seascape*
3. *degree of natural character is highest where there is least modification*
4. *effect of different types of modification upon natural character varies with context and may be perceived differently by different parts of the community.*

The process to assess natural character involves an understanding of the many systems and attributes that contribute to a waterbody including biophysical and experiential factors. This can be supported through the input of technical disciplines such as aquatic and terrestrial ecology, and landscape architecture, which have been drawn on for this assessment.

This natural character effects assessment involves the following steps:

- description and assessment of the existing level of natural character
- description of any anticipated change to the natural character and the ongoing / future level of natural character
- consideration of whether the public work is appropriate and the significance of the effects.

The natural character of the site have been considered in reference to:

- the physical location of the public work and the surrounding landscape
- AUP zoning
- Auckland Regional Policy Statement Review: Landscape (Boffa Miskell, 2009)
- Natural Character Assessment Auckland Regional (Stephen Brown 2009 - 2010)

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[6] *Save Wanaka Lakefront Reserve Incorporated v Queenstown Lake Council and Wanaka Watersports Facility Trust* [2017] NZEnvC 88, paragraphs 175–176

[7] *Harrison v Tasman DC* [1994] NZRMA 193 (PT);

[8] NZCPS 2010 Guidance note Policy 13: Preservation of natural character

Based on this information it has been determined that the majority of the public work (including all buildings 400m from the AUP Indicative Coastline) are placed outside of what is considered to be the coastal environment (approximately 200m from the AUP Indicative Coastline). It is acknowledged that the proposed stormwater and treatment ponds are closer to the Indicative Coastline and will partly be within the coastal environment.

Existing environment information in addition to effects determined in the Ecological Effects Assessment[9], has assisted in relation to identifying certain biophysical attributes within the waterbodies and their margins, the natural character values and effects as referred to in this report.

4.1.2 Outstanding Natural Features and Landscapes (Section 6(b))

Part 2, Section 6(b) of the RMA requires *'the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development'* as a matter of national importance.

There are no outstanding nature features or landscapes identified in the Regional Policy Statement (RPS) within the project area or its immediate vicinity and therefore Section 6(b) is not relevant in relation to this assessment.

4.1.3 Significant Indigenous Vegetation and Significant Habitats of Indigenous Fauna (Section s6(c))

Part 2, Section 6(c) of the RMA requires *'the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna' as a matter of national importance.*

There are areas of significant indigenous vegetation and significant habitats of indigenous fauna as the AUP RPS identifies a marine Significant Ecological Areas ('SEA') that is located within the site. Areas of significant indigenous vegetation and significant habitats of indigenous fauna also include the wetlands, streams and salt marsh area of the Taihiki River SEA[10], which has a SEA-M2 classification. The ecological values in these areas vary and are detailed in the Ecological Effects Assessment.

4.1.4 Amenity Values and the Quality of the Environment (Section 7(c) and 7(f))

Section 7 identifies a range of matters that shall be given particular regard in achieving the purpose of the RMA. Section 7(c) in relation to the maintenance and enhancement of amenity values and Section 7(f) – maintenance and enhancement of the quality of the environment are particularly relevant to our assessment of this Project.

Section 2 of the RMA defines the 'environment' to include:

(a) ecosystems and their constituent parts, including people and communities; and

[9] Prepared by Boffa Miskell, Appendix F to the AEE.

[10] Taihiki River SEA (ID 31), Schedule 4 Significant Ecological Areas – Marine Schedule [accessed on the 04/05/2023]: https://unitaryplan.aucklandcouncil.govt.nz/Images/Auckland%20Unitary%20Plan%20Operative/Chapter%20L%20Schedules/Schedule%204%20Significant%20Ecological%20Areas%20-%20Marine%20Schedule.pdf

(b) all natural and physical resources; and

(c) amenity values; and

(d) the social, economic, aesthetic and cultural conditions which affect the matters stated in paragraphs (a) to (c) or which are affected by those matters[11]

In relation to the amenity values of a landscape these are considered to include the "*natural and physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes"*[12]. These aspects are considered in this report in relation to potential effects on views and visual amenity.

4.2 Auckland Council (Auckland Unitary Plan)

The site subject to the Notice of Requirement is located in the Auckland Region and subject to the Auckland Unitary Plan – Operative in Part 2016 (AUP) and falls predominantly within the Rural – Mixed Rural Zone, with smaller areas adjacent to the Taihiki River zoned as Rural - Rural Coastal Zone, Manukau Harbour Coastal Area and General – Coastal Marine Zone. It is understood that the designation cannot apply to the General – Coastal Marine Zone as this is in the CMA and is not land.

4.2.1 Zoning

Rural – Mixed Rural Zone

This zone provides for rural production and non-residential activities described in the zone description (H19.4.1) of the AUP as being on a scale compatible with smaller sized sites. Land use and development within the zone is varied and includes traditional activities such as horticulture, viticulture, intensive farming and equine activities as well as produce sales or retail services such as cafés, restaurants, tourist and visitor-related facilities. The zone has flexibility to accommodate a broad range of rural production and non-residential land uses and maintain qualities and character of the landscape. Within rural zones the AUP (H19.10.2) permits residential dwellings up to 9m in height, other buildings have a permitted height up to 15m.

The key Objectives for this zone are set out in Section H19.4.2 of the Auckland Unitary Plan, as follows:

1) *The existing subdivision pattern is used by a range of rural production activities and non-residential activities that support them.*

2) *The continuation of rural production and associated non-residential activities in the zone is not adversely affected by inappropriate rural lifestyle activity.*

    i. *Rural character and amenity values of the zone are maintained while anticipating a mix of rural production, non-residential and rural lifestyle activities.*

Relevant Policies identified in this zone are set out in Section H19.4.3 and include the following:

[11] Resource Management Act 1991, Part 1, 2 (1)

[12] ibid.

(2) Manage reverse sensitivity effects by:

a. limiting the size, scale and type of non-rural production activities;

b. retaining the larger site sizes within this zone;

c. limiting further subdivision for new rural lifestyle sites; and;

d. acknowledging a level of amenity that reflects the presence of:

ii. non-residential activities which may generate noise, light and traffic levels greater than those normally found in areas set aside for rural lifestyle activities.

Rural – Rural Coastal Zone, Manukau Harbour coastal area

The purpose of the Rural Coastal zone as described in the zone description (H19.5.1) of the AUP is to retain and enhance the rural character and amenity values, local coastal character and biodiversity values of Auckland's rural harbour's, estuaries and coastline. The zone enables rural production activities, local non-residential activities, maintain recreational opportunities, manage the effects of existing scattered rural lifestyle development and support marine-related activities.

The key Objectives for this zone in the Manukau Harbour coastal area are set out in Section H19.5.9.1 and include the following:

1) The rural and coastal character and visual amenity values are maintained.

2) Activities in the area are managed to protect the ecological values of the Manukau Harbour, particularly identified wader bird habits and the visual and landscape interconnections between land and sea.

3) Identified special character areas as set out in Policy H19.5.9.3(3) are protected from inappropriate subdivision, use and development.

4) The quality and quantity of coastal and riparian vegetation in the coastal area are improved.

Relevant Policies identified in this zone are set out in Section H19.5.9.3 and include the following:

1) Recognise the significance of the coastal margin setback in maintaining the natural character of the coastal edge and contributing to the visual amenity values, as well as providing a natural buffer to coastal erosion and flooding.

2) Require dwellings and other significant built development to locate outside the coastal margin setback.

5) Avoid activities and development of a type or scale or location that adversely affects the public use and enjoyment of the Āwhitu Regional Park for

(a) active and passive recreation, both on land and in the adjoining coastal marine area;

(b) appreciation of open space, scenic and natural landscape values; and

(c) farmland management.

(6) Require enhancement of the coastal edge and riparian margins as part of any development for rural lifestyle purposes or non-residential activities.

5.0 Existing Environment

5.1 Wider Context

The public work is located in rural land near the rural coastal community of Glenbrook, approximately seven kilometres to the north of Waiuku and 15 kilometres to the east of Pukekohe. Glenbrook is a rural community which has been influenced by the Glenbrook Steel Mill. Sited adjacent to the Waiuku River, the steel mill opened in 1968 and its success drew associated industries and workers to the area. The mill processes approximately 90% of the country's steel and remains an influential element within the wider landscape and is visible in part along the Glenbrook peninsular (see Photo 1 below).

Photo 1: View south west from the property at 454 Glenbrook Beach Road, the Glenbrook Steel Mill exhaust stacks can be seen over foreground vegetation.

The landscape is characterised by its flat to strong rolling terrain defined by the extensive and branching complex inland reaches of the Taihiki River to the east and Waiuku River to the west. The sweeping coastal margin of Clarks Beach abuts the Manukau harbour and defines the northern aspect of the character area. The rivers either side of the peninsular create an extended network of small streams and inlets within predominantly pastoral farmland.

The dominant landcover is pasture, however there are also significant areas of agricultural orchard and perennial crops within geometric fields bordered by tall exotic shelterbelt planting.

The extent of modification of the landscape for agriculture has resulted in a scarcity of remnant pre-settlement indigenous vegetation. There are no strong patterns of riparian vegetation present within the wider landscape.

Figure 3: Site location (in blue) within the wider landscape context

Urban residential development is located at the Clarks Beach Township and Glenbrook Beach. These coastal residential communities have continually expanded over the last ten years, and further expansion is expected in line with underlying AUP urban zoning (Future Urban Zone, Single House Zone, Mixed Housing Suburban Zone and Business – Neighbourhood Centre Zone). Rural residential properties are generally located within proximity to roadways and other agricultural buildings are more sparsely distributed across the landscape.

There are no Outstanding Natural Landscapes (ONLs), Outstanding Natural Features (ONFs), Outstanding Natural Character Areas (ONCs or High Natural Character Areas (HNCs) within the surrounding landscape context of the Glenbrook Peninsula. The Taihiki and Waiuku Rivers have several expansive marine Significant Ecological Area (SEA) overlays and small terrestrial pockets of terrestrial SEAs along the margins of the rivers (refer to Figure 5).

Photo 2: View along a branch of the Taihiki River from the north east corner the site.

5.2 The Site

The site has a total area of approximate 56ha and is located to the east of Glenbrook Beach Road approximately half way up the Glenbrook Peninsula, southeast of Glenbrook Beach. The site has a gently undulating topography which gently falls to the east towards the Taihiki River. The natural landform of the site has been modified over time to enable farming practices and the construction of two artificial irrigation ponds. One of the artificial irrigation ponds is located in the south west part of the site adjacent to Glenbrook Beach Road, the second irrigation pond straddles the northern boundary of the site and extends into neighbouring land. The highest point of the site is situated near its centre, at approximately RL16m and features two large agricultural sheds, measuring 6m and 4.5m in height respectively.

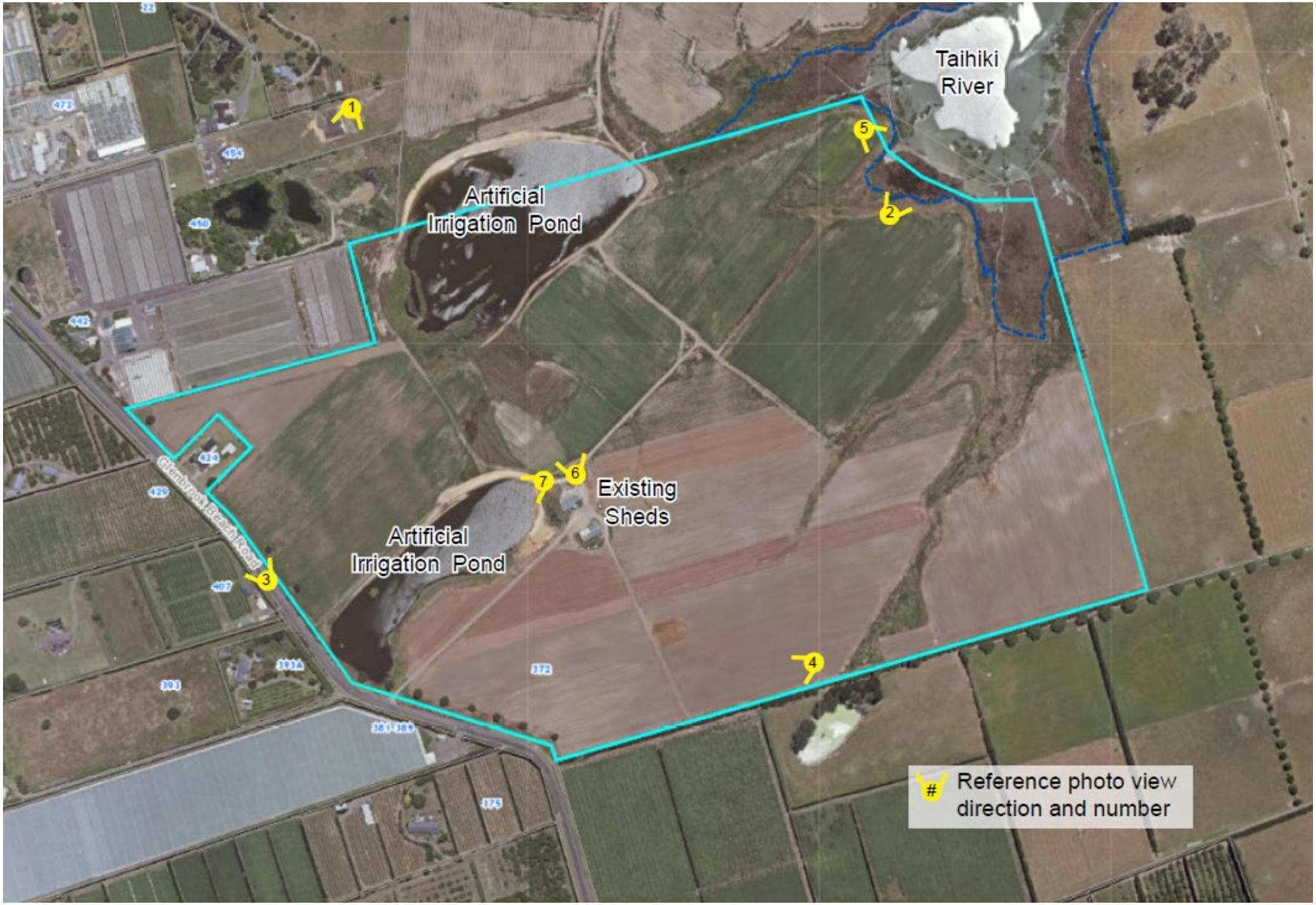


Figure 4: Site boundary (in blue) and reference photo location plan

The edges of the site are defined by a combination of rural boundary treatments, that are typically found within the surrounding landscape. The western boundary, which abuts Glenbrook Beach Road, is defined by a combination of post and wire fencing and tall exotic Barberry (berberis) hedgerows (see Photo 3 below). An intermittent line of oak trees reinforce the southern section of the eastern boundary where there is no hedgerow coverage. This eastern boundary surrounds a residential property at 424 Glenbrook Beach Road on three sides, with a post and rail fence, the property at 424 Glenbrook Beach Road has a hedgerow along its northern boundary.

Photo 3: View north along Glenbrook Beach Road. The boundary to the 407 Glenbrook Beach Road property is to the left of the photograph and the western boundary of the site is on the right.

The site's southern boundary abuts an orchard, the two lots are separated by a thick linear band of exotic shelter belt species. This shelter belt contains a mix of exotic trees and shrubs, but primarily comprises bamboo (see Photo 4 below). This vegetated boundary provides a tall dense screen to the neighbouring property and is typical form of enclosure within the wider landscape context.

Photo 4: View west from within the site along the southern boundary of the site

The eastern boundary of the site borders pastoral land and at its northern end adjoins a tidal estuary of the Taihiki River. This border is defined by a post and wire fence, which extends into the Taihiki River SEA area and is periodically partially submerged by the estuary. The salt marsh area at the end of a branch of the Taihiki River extends in to the north east of the site and is included in the SEA (see Photo 5 below).

Photo 5: View south along the eastern boundary of the site and salt marshes across the end of the Taihiki River SEA

The northern boundary of the site borders with a commercial pine tree nursery and agricultural fields. The nursery is bordered on its southern side by a tall visually permeable mesh type fence, which is a typical form of surrounding for this type of agriculture. There is no physical

demarcation of the legal boundary between the site and agricultural land to the north, the artificial irrigation pond straddles the two lots (see Photo 6 below).

Photo 6: View north from the site towards the northerly artificial irrigation pond and neighbouring land.

The site contains three natural inland wetlands which drain into the Taihiki River to the east. These wetlands follow naturally formed pathways, although these have been partly altered by long term farming practices. The 'natural wetland' to the north flows into the northern artificial irrigation pond (see Photo 6 above). The second artificial irrigation pond extends from the western site boundary adjacent to Glenbrook Beach Road towards the centre of the site (see Photo 7 below). These irrigation ponds are periodically used to irrigate the surrounding farmland and do not contain indigenous or riparian vegetation.

Photo 7: View from within the site looking west towards Glenbrook Beach Road overlooking the western artificial irrigation pond.

The site is currently used primarily for short rotation cropland. Although there are a variety of vegetation typologies around the southern and western boundaries, other forms of vegetation within the main body of the site are scarce. Riparian vegetation is present within the two watercourses that run to the south of the site. Cumulatively the riparian vegetation is a small fraction of the overall vegetation within the site.

5.3 Natural Character Condition

As outlined in the methodology statement the primary aspects of natural character are the biophysical (abiotic and biotic elements) landscape attributes. Abiotic elements are non-living elements within the environment (e.g. landform and water, hydrological processes, geomorphology, climate). Biotic elements are living elements within the landscape and include plants and animals.

These attributes reflect the extent that natural elements, patterns and processes occur and the extent of human modification. Secondary experiential aspects associated with the context of such waterbodies and their margins have also been considered.

As outlined in section 4.1.1 and the Appendix 1 Method Statement the natural character study, and analysis has been undertaken in relation to the "*wetlands, and lakes and rivers and their margins*" and the area of CMA (that is part of the Taihiki River marine SEA) that occur within the site. Most notably the affected area relating to the proposed buildings and ponds.

The Taihiki River SEA comprises a range of sheltered habitats:

- predominantly sandy intertidal flats
- mangroves

- pockets of saltmarsh.

These habitats are important for providing nursery areas for young fish and wading birds due to the lack of major sediment inputs and shoreline vegetation.

Our ecology team have identified and surveyed wetlands, artificial irrigation ponds and parts of the Taihiki River and are indicated in Figure 4 below. The drawing titled 'Wetland Survey' illustrates the wetlands, watercourses and salt marsh extents within the site and immediate surrounding area.

An evaluation of the natural character relating to the active bed, margins and context of waterbodies within the site is provided in Appendix 2. Our evaluation considers the freshwater and terrestrial ecological report which forms part of the application. A summary of these findings are provided below.

Table 2: Wetlands

Natural Inland Wetland Number	Degree of Natural Character	
	Biophysical Active Bed + Biophysical Margins	Experiential
Wetland 1	Very low	Very Low
Wetland 2	Very Low	Very Low
Wetland 3	Very Low	Very Low

Table 3: Watercourses

Watercourse Name	Degree of Natural Character	
	Biophysical Active Bed + Biophysical Margins	Experiential
Taihiki River Tributary	High	High
Watercourse 1	Low	Low
Watercourse 2	Low	Low

In summary, the existing wetlands all have a **Very Low** natural character rating due to their predominantly exotic biotic values and human influences through farming practices such as arable farming. The "wetlands" are a result of continual land reprofiling and farming practices creating shallow depressions which have collected deposits of silt and cultivated exotic species over time. The impacts of season arable farming practices, introduction of exotic species and other human influences have reduced the associated natural character levels.

The Taihiki River has the highest level of natural character due to its sheltered nature, salt marsh, indigenous riparian vegetation and uninterrupted intertidal flows. Watercourse 1 and Watercourse 2 to the south of the site are both considered to be of low value and have Low Biophysical and Experiential degrees of natural character. However, it is recognised that Watercourse 2 has better marginal vegetation.

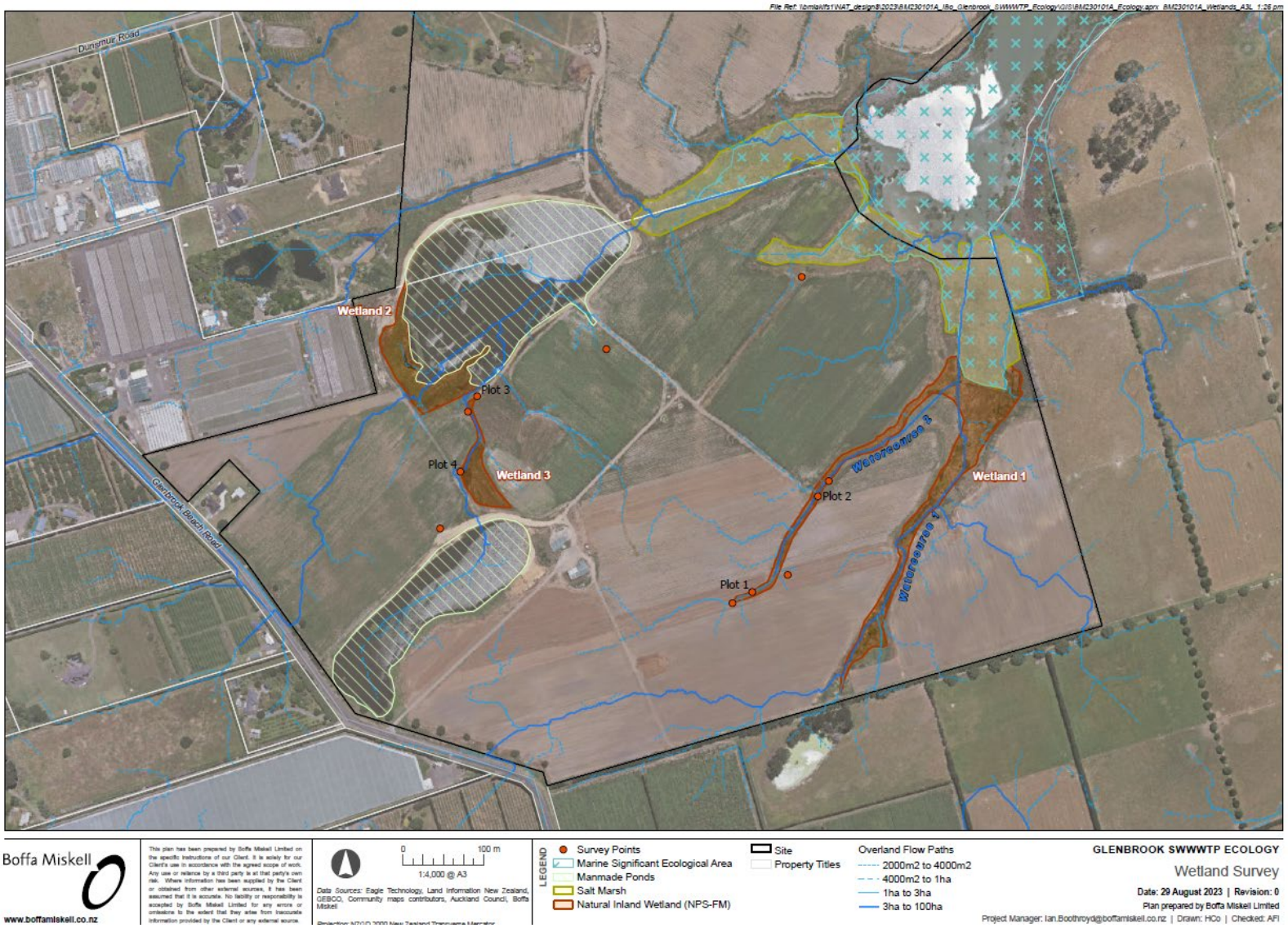


Figure 5: Boffa Miskell Wetlands survey (source Assessment of Ecological Effects[13])

[13] Boffa Miskell Limited 2023. *Glenbrook Road Wastewater Treatment Plant: Assessment of Ecological Effects*. Report prepared by Boffa Miskell Limited for Watercare Services Ltd. .

5.4 Key Landscape Attributes and Values

This assessment considers that the key characteristics and values of the site are broadly captured within the natural and physical environment, perceptual and associative dimensions.

The natural and physical environmental elements in relation to the site are considered to be the:

- gently undulating landform
- remnant natural river pathways
- margins of the Taihiki River including the salt marsh area
- streams and wetland areas related to the Taihiki River.

The natural streams/wetlands within the site vary in the condition of the natural attributes they exhibit. For example the streams and natural wetlands have been modified by the ongoing farming use of the land and do not contain substantial areas of indigenous riparian vegetation. However, as natural waterways these streams and natural wetlands have value, due to their interplay of physical, associative and perceptual attributes. As an SEA the Taihiki River is recognised for its ecological value and is noted as one of the least impacted harbour habitats in the Manukau Harbour.

The steams and natural wetlands within the site are in a relatively poor quality and condition due to long term farming practices altering, removing and degrading natural elements and quality. All of the streams/wetlands primarily contain exotic pastoral vegetation.

The perceptual qualities of the site are characterised by the short rotation cropland and large irrigation ponds. This rural land use is consistent with the surrounding rural environment, although it is recognised that the type of rural industry are typically surrounded by tall shelterbelts creating enclosure. The proximity of the site to the Taihiki River and its margins heightens the natural qualities of the site and in particular the sites north eastern corner. The cycle of ploughing, tilling, growth cycle and harvesting of crops are prominent influences in the perceptual values of the site as a productive landscape. The presence of rural farming equipment and storage sheds add to associated activities and to the perception of a productive landscape.

The associative values of the landscape are the intangible elements that influence how places are perceived. The AUP RPS currently identifies no elements or features within the site or its immediate margins that have cultural history or cultural value. Similarly, the Archaeological Assessment undertaken by (CFG Heritage) does not observe any archaeological evidence. The Archaeological Assessment does recognise that the Waiuku / Glenbrook are contain numerous pā and there is reasonable cause to suspect that the during construction archaeological deposits will be discovered.

The project team are currently undertaking consultation with local iwi to determine any potential impacts on culturally sensitive elements or features. The project team will continue this dialogue as the proposal develops and is refined over time.

Associative values include the values that the local community will likely hold for this landscape, that of a working rural landscape on the fringes of the wide Taihiki River.

6.0 Visual Catchment and Associated Viewing Audiences

To determine the visual catchment and viewing audience of the site and the public work once constructed in full, a desktop study was undertaken of the aerial photography including land use, landform (contours) and vegetation patterns baseline data.

Using the information gathered, the nature and qualities of potential viewing audiences of the site were identified and representative viewpoint photographs were taken to assist in determining the likely level and nature of change. Initially representative view photographs have been taken from the nearest available public locations where photographs of the site could be captured. After consultation with surrounding residential stake holders additional viewpoint photographs were taken from residential properties at:

- 393A Glenbrook Beach Road
- 429 Glenbrook Beach Road
- 450 Glenbrook Beach Road
- 454 Glenbrook Beach Road
- 62A Dunsmuir Road

These viewpoint photographs are available in Appendix 4: Graphic Supplement, a selection of these viewpoints have been used to create visual simulations. Visual simulations have been produced in line with the assumptions set out in the Assessment Approach showing:

- the existing view
- the view after the completion of Stage 1 and Stage 2 with a minimum of three years of mitigation planting growth;
- at Stage 3 with a minimum of 20 years of mitigation planting growth; and:
- each of the stage views without mitigation planting.

The site is located on land which has a low lying aspect similar to the land in the surrounding landscape. The slightly elevated portion of land towards the centre of the site, although more visible within the site, is not prominent within the wider landscape. The existing agricultural buildings/sheds towards the centre of the site are the most visible above ground built elements in the site. The building/sheds are visible within the immediate surrounds however, in particular looking east from on Glenbrook Beach Road.

The topographical characteristics of the area and intervening shelterbelt vegetation restrict the visual catchment of the site. The public works will predominantly be visible from the west and north, although some views from the east will also be available.

Based on the above analysis, viewing audiences have been determined and categorised into the following geographical groups.

Viewing Audience Group 1 to the North of the Site

- Residents of properties to the north of the site accessed from Glenbrook Beach Road and Dunsmuir Road and workers within agricultural industries to the north.

Viewing Audience Group 2 to the South of the Site

- Workers within agricultural industries to south of the site, road users and distant elevated residential audiences accessed from Glenbrook Beach Road.

Viewing Audience Group 3 to the East of the Site

- Recreational users of the Taihiki River
- Residents and road users to the east of the Taihiki River at the western extents of Estuary View and Percy Millen Drive.

Viewing Audience Group 4 to the West of the Site

- Residents, agricultural workers and road users along Glenbrook Beach Road, to the west of the site. In particular residences with open primarily eastern facing outlooks.

The range of viewpoints representing the key audiences listed above are presented in Figure 2, photographs of these viewpoints are provided in Appendix 4: Graphic Supplement. The distribution of the viewing audience groups are shown in Figure 6 below.

Table 4: Visual Assessment Viewpoints

VP No.	Viewing Audience Group No.	Location	Direction of View	Distance to Applicant property and project element (Approx.)	Reason for Selection
1	Group 1	From outside the entrance to 149 McLarin Road	South east	1km from the nearest part of the site boundary and 1.3km from the highest point of the site.	Representative of the two residential properties located at 149 McLarin Road.
2	Group 1	From the southern end of the deck of the residential property at 454 Glenbrook Beach Road	South	125m from the nearest part of the site boundary and 520m from the highest point of the site.	Representative of views from the residential property at 454 Glenbrook Beach Road.
3	Group 2	From Glenbrook Beach Road, at the south corner of the site.	North east	8m from the nearest part of the site boundary and 270m from the highest point of the site.	Representative of views from vehicles travelling north on Glenbrook Beach Road.
4	Group 2	From the entrance to 126 Glenbrook Beach Road	North	2.3km from the nearest part of the site boundary and 2.6km from the	Representative of views elevated properties from Glenbrook Beach Road.

				highest point of the site.	
5	Group 3	From close to the entrance for residential property at 131 Percy Millen Drive	West	1.8km from the nearest part of the site boundary and 2.3km from the highest point of the site	Representative of views elevated properties facing west from Percy Millen Drive.
6	Group 4	From Glenbrook Beach Road opposite the residential property at 393A Glenbrook Beach Road.	East	On the boundary of the site and 340m from the highest point of the site.	Representative of views road users and the residential property at 393A Glenbrook Beach Road.
7	Group 4	From the north west corner of the site form Glenbrook Beach Road.	East	On the boundary of the site and 530m from the highest point of the site.	Representative of views road users and the residential property at 424 Glenbrook Beach Road.
8	Group 4	From the residential property at 393A Glenbrook Beach Road.	East	On the boundary of the site and 340m from the highest point of the site.	Representative of view from the residential property at 393A Glenbrook Beach Road.
9	Group 1	From near the southern boundary of the residential property at 450 Glenbrook Beach Road.	South	On the boundary of the site and 410m from the highest point of the site.	Representative of views from the south eastern corner of the residential lot at 450A Glenbrook Beach Road.

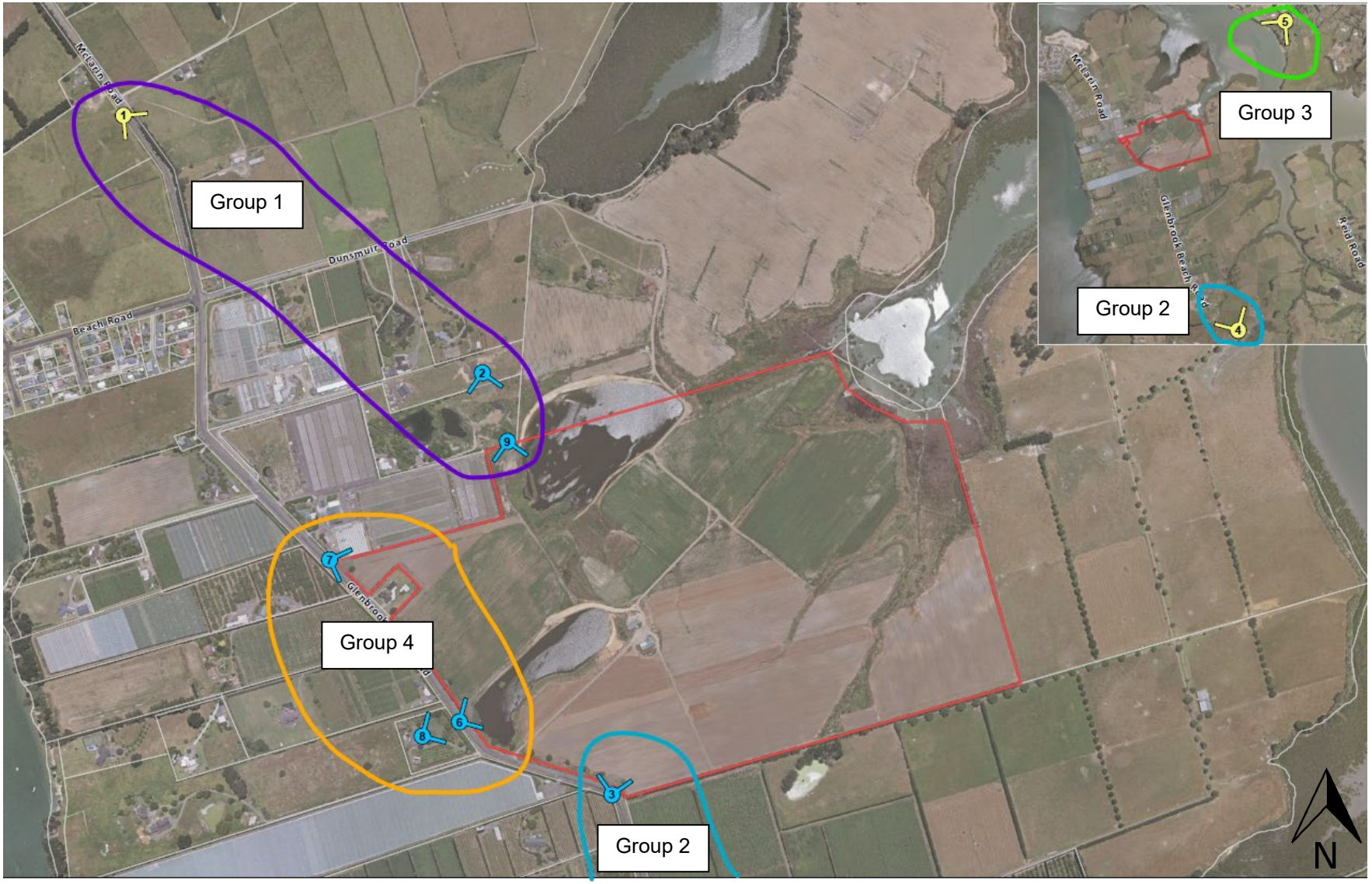


Figure 6: Viewpoint location plan with marked up audience groups

7.0 Assessment of Effects

The effects addressed in this assessment, include those that occur in relation to changes to:

- landscape effects: landscape attributes and values
- visual effects: character and visual amenity (i.e. viewing audiences and their outlook)
- natural character effects: in relation to the modification of the coastal environment

Natural character, landscape and visual effects can result from change in the components, character or quality of the landscape values. Usually these are the result of landform or vegetation modification or the introduction of new structures, facilities or activities. This assessment assesses the potential effects based on a combination of the nature of the landscape and visibility, and the nature and scale of the project in relation to the existing characteristics of the site.

The degree to which effects on the landscape, visual and natural character are generated are dependent on a number of factors; these include the:

- degree to which the project contrasts, or is consistent, with the qualities of the surrounding landscape
- proportion of the project that is visible, determined by the observer's position relative to the objects viewed
- distance, backdrop and foreground context within which the project is viewed
- area or extent of visual catchment from which the project is visible
- number of viewers, their location and situation (static or moving) in relation to the view
- predictable and likely known future character of the locality
- quality of the resultant landscape, its aesthetic values and contribution to the wider landscape character to the area.

A change in a landscape does not necessarily constitute an adverse landscape or natural character effect. Landscape is dynamic and constantly changing over time in both subtle and more dramatic transformational ways, these changes are both natural and human induced. What is important in managing landscape change is that substantial and / or inappropriate adverse effects are avoided or sufficiently mitigated to ameliorate the effects of the change in land use.

7.1 Landscape Effects

7.1.1 Effects on Landscape Attributes and Values

Implementation of the public work will require alteration of the landform and the introduction of new structures and buildings. This will permanently change part of the site's landform. Although the gently undulating landform is a legible feature of the landscape the landform is not

noteworthy or a highly valued feature, due to its highly modified nature and prevalence in the wider landscape. The MPS includes provision for the planting of an indigenous species (such as Pittosporum crassifolium - Karo) hedge along the western site boundary adjacent to Glenbrook Beach Road. This hedge will replace the exotic Barberry hedgerow further south to the south east corner of the and will visually limit views into the site and the perception of the altered landform.

Considering the values and attributes of the site's topography it is assessed that any adverse physical landscape effects will be **Very Low** adverse.

While the existing streams and wetlands within the site are of a low quality and value in terms of ecology and natural character, the ecological condition (and values) of the streams and natural wetland in part contribute to the physical, associative and perceptual values of the landscape. The dominance of exotic vegetation and the continued modification of these streams and wetlands reduce the streams' and natural wetlands' associative and perceptual values. Progressive farming practices over an extended period of time have damaged and stripped the streams/wetlands of their natural qualities.

All three stages of the development of the proposed wastewater treatment plant will be established at a minimum of 20m from the existing streams/wetlands. The footprint of the project will not further degrade the quality of the streams/wetlands or reduce their value from a landscape character perspective. Overland flow paths and runoff from sealed surfaces introduced by the project may cause secondary impacts on these wetlands. However, it is considered that any secondary impacts on the landscape would result in minimal changes to the watercourses/wetlands. With consideration of the condition and value of the streams/wetlands and the proximity of project, it is anticipated that effects will be **Low** adverse on these waterbodies.

The margins of the Taihiki River in the north east corner of the site are the most highly valued element within the site and immediately surrounding environment. The lack of impact and influence from artificial activities is one of the key attributes of the SEA. The undisturbed nature of the coastal area and its tidal movements are influential to the physical, associative and perceptual values of the landscape. However, it is noted that the associative and perceptual values of the Taihiki River are influenced by the farming activities along the coast. The project is sited approximately 200m from the edge of the CMA and will have no direct impacts on the coastal area or it's margins. from within the SEA. Due to the separation of the project from the SEA, adverse effects on the coastal environment are assessed to be **Very Low** adverse.

7.1.1 Landscape Character Effects

The construction of the wastewater treatment plant will alter the undulating landform attributes of the site. Although the landform is a legible topographical feature the landform has been continuously altered though its farming use and does not contain unique or important landscape features. The proposed sunken thickening, storage and stormwater treatment ponds will permanently alter the landform in the site but this will not be noticeable in the wider landscape context. The shape and form of the proposed ponds can be designed to integrate within the surrounding landform, similar to the existing artificial irrigation ponds. The proposed ponds will have limited visual influence on the surrounding landscape. The ponds will be positioned to a minimum of 20m from existing streams and wetlands and 200m from the edge of the Taihiki River SEA.

The proposed structures are located towards the elevated centre of the site and have footprints ranging from 145m^2 to 1025m^2. The two existing agricultural structures will be removed, two

inlet works and two inlet pump stations will be placed in the approximate location of these existing structures. All of the structures will be located to the east of this high point on an east facing slope, facing away from Glenbrook Beach Road. All structures will be set back from the existing watercourses and the Taihiki River SEA and will have no direct impact on these features.

No valuable indigenous vegetation will be removed to accommodate the project and new planting proposed in the MPS will overall be beneficial to the landscape. Vegetation removed will be limited to pastoral/agricultural crop vegetation which does not have a particular landscape value. The proposed MPS will provide bands of indigenous planting with a line of fast growing exotic species to the north and east of the wastewater treatment plant and an indigenous hedgerow along the western site boundary.

The proposed fast growing exotic Tasmanian Blackwood trees within the MPS to the north of the public works are intended to quickly establish to provide visual screening and landscape integration. After the band of indigenous planting has established to a height to sufficient level of screening (estimated to be after approximately 15-20 years) the exotic trees will be removed. The retained bands of indigenous vegetation and the surrounding hedge will provide some integration of the site into the landscape, particularly at the northern, eastern and western extents of the site.

No indigenous riparian vegetation will be removed to accommodate the project and construction activities will be located a minimum of 20m from natural inland wetlands and 200m from the Taihiki River SEA. The proposed mitigation planting will comprise a combination of exotic and indigenous species (full details in section 8.0 and Appendix 5 of this report) planted in patterns that reflect the existing landscape character. In combination with the continued management of the balance of the land as arable production the proposed mitigation planting will integrate the site with the surrounding landscape. The general lack of vegetation along the shores of the Taihiki River are a noted feature of the coastal area and SEA. The proposed mitigation planting will not introduce vegetation along the coastal edge of the Taihiki River to preserve this landscape feature.

Within the context of the combined physical, associative and perceptual attributes of the site, the introduction of the public work will result in **Moderate** adverse landscape character effects. By Stage 3 of the project the proposed MPS planting will have become an established feature in the landscape effects on landscape character are anticipated to reduce to between **Low-Moderate** and **Low** adverse.

The public work will introduce new structures and additional artificial ponds that will result in a localised change to the physical landscape that will be confined within the site boundaries. No noteworthy or highly valued vegetation or watercourses will be removed and the proposed landscape mitigation will be appropriate within the landscape.

7.2 Natural Character Effects

Section 5.3 of this assessment describes the areas containing natural character are the identified streams, wetland and the coastal marine area (the Taihiki River) and the degree of natural character for these features and consider the biophysical and experiential attributes. A total of two watercourses and three natural wetlands have been identified, in addition to the Taihiki River SEA.

The proposed elements of the project will not directly impact any of the natural character areas. The project will introduce a range of structures and facilities and into the site, which will meet the minimum ecological offset from the wetlands, streams and the Taihiki River.

The existing biophysical, hydrological functions and ecology of the three wetlands are considered to have reduced degrees of natural character (Low/Very Low for biophysical and Low for Experiential). Whilst defined as 'wetlands', providing hydrological functions, these wetlands are primarily made up of exotic species and of low quality habitats. Their degraded condition and context within arable farmland have reduced their degree of natural character.

Watercourse 2 has a lower level of naturalness than Watercourse 1, due to its current condition. Watercourse 2 has Very Low biophysical attributes and Low experiential qualities and will not be altered or degraded by any part of the project.

Watercourse 1 has Moderate biophysical attributes and Moderate experiential qualities, although not a "pristine" natural character environment this stream has been fenced to protect it from further degradation and impacts from farming activities. Protecting the edge of this stream has preserved the natural character of the stream margins. This watercourse is approximately 160m from the proposed wastewater treatment plant and is anticipated to be unimpacted by the project.

The planting mitigation strategy proposes two bands of indigenous vegetation along the eastern boundary of the site to provide a soft landscape buffer between the coastal environment and the project work.

The coastal environment have the highest degree of natural character (High for biophysical qualities and High for experiential qualities) and is a valued feature within the wider landscape. The intertidal flows are an important element of the experiential qualities of the Taihiki River and its perception within the landscape.

The project will be set back approximately 120m from the edge of the Taihiki River and will not directly impact its margins or active bed. With the above in mind, it is considered the adverse effects on the natural character attributes will be **Low adverse**.

7.3 Visual Effects

Visual effects are effects on landscape values as experienced in views. The nature of a view depends on how it is perceived and the extent to which it is valued or not. It includes how the landscape in the view is understood, interpreted and what is associated with it.

The viewing audience groups identified in Table 4 have been assessed regarding the type of viewing audiences, the composition of their view and the nature and degree of visual effect in relation to the project.

The following assessment refers to viewpoint photographs and visual simulations in Appendix 4: Graphic Supplement have been provided to assist with understanding the project and change to the view in relation to the surrounding context.

7.3.1 Viewing Audience Group1 to the North of the site

Figures References:

- *Figure 6, Appendix 4: Graphic Supplement*
- *Viewpoint 1, Viewpoint 2 and Viewpoint 9*

Viewing Audiences

- **Residents accessed to the south of Dunsmuir Road and workers within agricultural industries to the north**

Existing Views

This viewing audience group comprises approximately eight residential properties and workers within the PF Olsen Nursery Limited and Seedling Systems Limited. This group of audiences are defined by their position to the north of the site's northern boundary. The gently undulating landform to the north of the site is typical of the topography in the wider area and extends all the way to the end of the peninsula.

Residential properties are primarily located between the site's northern boundary and Dunsmuir Road, however there are two other elevated residential properties approximately 1km to the north of the project. The nine properties between the site and Dunsmuir Road sit between approximately the RL10m and RL15m, similar to the highest point of the project ground level. These properties are primarily orientated to the east and north east to face towards the Taihiki River and away from the site. Peripheral and secondary southern views towards the site are available from properties not surrounded by vegetation. Long distance elevates views are potentially available from residential properties at 149 McLarin Road. These properties sit at RL20m and RL27m respectively and have a north south orientation.

The viewing audiences with south facing views are most relevant for this project. These views south are characterised by the south facing slopes which face towards the proposed site. The south facing slopes are interspersed with linear hedgerows, amenity planting around residential properties and shelterbelt planting comprising a mix of indigenous and exotic vegetation. The existing vegetation, in addition to landform characteristics contribute to views towards the project site being limited. Viewing audiences with views towards the site that are not fully screened by intervening vegetation or landform are:

Residents at:

- 450 Glenbrook Beach Road
- 454 Glenbrook Beach Road
- 62A Dunsmuir road,
- 149 McLarin Road

Workers at:

- PF Olsen Nursery Limited, 442 Glenbrook Beach Road
- Seedling Systems Limited, 472 Glenbrook Beach Road.

Proposed Views

At Stage 1 and 2 of the public work when mitigation planting is young, the new buildings and structures will be immediately apparent for properties with open views over the site. People in residential properties at 450 and 454 Glenbrook Beach Road, 62A Dunsmuir Road and 149 McLarin Road will experience open southerly views of the project.

Due to the hydraulic requirements of the wastewater treatment plant, two inlet pump stations are situated at the highest point of the site's landform and they will break the line of the ridge in the far distance and be visible against the sky in views from these locations. It is acknowledged that the two inlet pumpstations at approximately 14m in height are within the permitted building height within the zone.

The lower buildings, expected to be between 5m and 9m in height, will be sited on the lower lying parts of the site and will be contained within the existing backdrop of the view. The materiality of the majority of the proposed buildings will appear similar to many other large agricultural builds. However, it is recognised the inlet pump stations will have material elements that are less commonly seen in the rural landscape including:

- metal storage tanks and piping
- coloured cranes and lifting equipment

Although these material elements are less common in the rural landscape, they are not exclusive to wastewater treatment plants and can be found in other established rural industries such as dairying and grain processing and storage facilities.

The MPS that is proposed involves planting to the north of the site with a thick band of indigenous shrubs and exotics such as Tasmanian Blackwood trees. When the exotics reach the height of approximately 6m in height (3-4 years after planting) the trees will start to soften and filter views of the smaller buildings and structures to the east of the Inlet Pump Station. When these trees reach approximately 9 – 10m (between Stage 2 and Stage 3 of the project) in height they will visually soften and partially screen the majority of the project, however the tops of the tallest buildings are expected to remain visible through gaps in the vegetation. The strategy involves removing the exotics once the band of mixed indigenous planting has reached a sufficient height to provide the same level of screening.

Impacts related to the use of lighting around the site are anticipated to last for short durations intermittently when the plant is required to be accessed in low light conditions. These lights will be a new component in the typically unlit rural landscape. However, use of lighting is not unusual as it is recognised there are times when agricultural crops, found widely in the immediate area, are harvested at night time for prolonged periods under artificial lighting.

Views from within the PF Olsen Nursery and Seedling Systems rural businesses at 442 Glenbrook Beach Road, will primarily have glimpse views over the top of existing shelterbelts along the eastern boundaries of the properties and adjacent residential properties. Filtered views of the project will be available through the southern net mesh along the tall boundary fence around the PF Olsen Nursery. Although oblique views of the project will be available, amenity views are not a priority for these workers who will predominantly be focused on work tasks within the lot.

It is anticipated that at Stage 1 and 2 of the public work, dwellings at 450 and 454 Glenbrook Beach Road, 62A Dunsmuir Road and 149 McLarin Road will have views that are predominantly open and uninterrupted. The proposed mitigation planting will partially soften the lower parts of the public work. Despite the mitigation planting these dwellings will experience **Moderate-High** adverse effects. Between Stage 2 and Stage 3 of the public work mitigation

planting will become more established (after approximately 10 years) and form a partial screen of the projects, these adverse effects will reduce to M**oderate** and **Low Moderate.**

Visual effects on residential properties with partial views towards the site and views from rural workers will be **Low - Moderate** adverse at Stage 1 and 2 of the public work mitigation and reduce down to **Low** adverse once mitigation planting has established to form a more proficient screen at Stage 3. Well contained residential properties with no view towards the site are expected to experience no change in the view as a result of the project, however glimpsed views of the tallest buildings may be available over intervening vegetation, for some properties, resulting in **Very Low** adverse effects on residents' views.

7.3.2 Viewing Audience Group 2 to the South of the site

Figures References

- *Figure 6, Appendix 4: Graphic Supplement*
- *Viewpoint 3, and Viewpoint 4*

Viewing Audiences

- Workers within the nurseries orchards and agricultural industries to south of the site, road users and distant elevated residential audiences accessed from Glenbrook Beach Road.

Existing Views

This group of viewing audiences is defined by their position to the south of the site's southern boundary. The landform for this audience is typical of the landscape along the peninsula and is undulating in nature, which limits some low- lying views. Further south along the peninsula (approximately 2km) towards the mainland the ground level rises steeply and affords those in north facing properties a panoramic over the peninsula, Waiuku and Taihiki Rivers.

Views from audiences to the south in the short to middle distance are restricted by undulating landform and intervening vegetation. The land immediately adjacent to the site's southern boundary is primarily agricultural in nature and features a single residential property which is heavily surrounded by shelter belt and crop vegetation. Further south along either side of Glenbrook Beach Road a cluster of residential properties are sited between 640m and 1.3km from the site boundary. These properties are positioned within close proximity to the road and are surrounded by amenity, shelter belt or a combination of vegetation covers. These properties generally have an east west orientation, which is perpendicular to the project.

Long distance views from the south are available from elevated residential audiences, at approximately RL60m. These properties are afforded far reaching panoramic views along the peninsula over the falling landform. These extensive views extend north across to the Manukau Harbour and to the Waitakere Ranges in the very far distance. Residential audiences with short to middle distance views are interspersed with shelter belt vegetation with a predominantly east west orientation. These tall, generally evergreen linear bands of shelter belt vegetation restrict views of activities and development within the enclosed and adjacent fields.

Road users travelling north along Glenbrook Beach Road experience predominantly enclosed views that are limited to the short distance. Either side of the road corridor is bordered by a mix of indigenous and exotic shelterbelt, field boundary and residential amenity vegetation. Where there are breaks in the road-side vegetation short to middle distance views of arable fields and rural residential properties are afforded. The most open view towards the site is available as the

road approaches the southwestern corner of the site before the road turns in a north westerly direction. From the southwestern corner, road users travelling north have views directly over the site.

In relation to the project, the long distance elevated residential audiences along Glenbrook Beach Road and short distance road users are the most relevant. Distant road users and lower lying residential audiences are not afforded open views of the site due to intervening landform and vegetation.

Proposed Views

From locations to the south of the site along Glenbrook Beach Road views of the site will remain relatively limited due to the enclosed nature of the road and shelter belt planting along the boundaries of the road. Glimpsed views of the control and workshop buildings that are likely to be close to the road will be available from approximately 1.6km to the south of Glenbrook Beach Road. These buildings will become more apparent in the view as road users approach the site to the north. From the southwest corner of the site the wastewater treatment works will be visible in the short to medium distance on elevated ground. The two tallest buildings (Inlet Pump Works) will be sited at highest point of the landform in the site that is approximately 2m higher than Glenbrook Beach Road and will be a noticeable new tall feature within the landscape. While the appearance of the overall cluster of buildings will differ from other agricultural buildings within the immediate vicinity it is not uncommon that the rural landscape will contain a collection of large buildings including with similar materials including concrete, steel and pipework. It is anticipated that visual effects related to open views of the site for road users will be **Low** adverse.

Once the proposed indigenous hedge planting along the western boundary of the site proposed in the MPS is established and reaches a height of approximately 3m, it is anticipated that the hedge will screen the project for road users from the south. Although the proposed planting will limit short distance views this is in keeping with the enclosed nature of the majority of Glenbrook Beach Road. It is anticipated that there will be **no adverse effects** (i.e. neutral) on road users to the south.

People in residential properties and farm workers in the short to medium distance of the southern site boundary are expected to continue to have no direct views of the site or the project. The low lying nature of the land and established layers of boundary and intervening vegetation is anticipated to continue to restrict views of the site and therefore project.

Long distance elevated properties accessed from Glenbrook Beach Road will be able to view the majority of the site, although from a distance of approximately 2.5km. The site will be viewed within the context of the very long distance panoramic views along the peninsula and out over the Manukau Harbour. The project will be distinguishable from other existing developments as a linear collection of light coloured buildings and structures. The lit elements of the site will stand out in the generally unlit landscape, but only for intermittent short bursts when access in low light conditions is required. At this distance and elevation the project will not alter the experience of the landform or backdrop to views. The project will introduce additional built form into views. At this distance and angle of view the proposed mitigation planting will not reduce visual effects related to the project. However, within the context of the wider view the project will be seen as a relatively small element in the view. With the above considered, it is considered that visual effects on long distance residential audiences will be **Low** adverse.

7.3.3 Viewing Audience Group 3 to the East of the site

Figures References:

- *Figure 6, Appendix 4: Graphic Supplement*
- *Viewpoint 5*

Viewing Audiences:

- Recreational users of the Taihiki River
- Residents, workers and road users to the east of the Taihiki River at the western extents of Estuary View Road and Percy Millen Drive.

Existing View

Audiences within this group are characterised as being on or to the east of the Taihiki River. People using water craft for recreational use on the Taihiki River will have views over low lying land. Road users to the east of the Taihiki River predominantly travel perpendicular to the site (Percy Millen Drive and Estuary View Road) which restricts the visibility along the road. The closest residential audiences and workers within rural businesses are approximately 1.6km from the edge of the site and the majority of audiences are further away.

Roads, dwellings and rural businesses set back from the edge of the Taihiki River do not have views over the river or the site due to intervening boundary vegetation and landform. The site is most visible for rural workers and residents at the western extents of Percy Millen Drive and Estuary View Road. These properties are generally orientated to have westerly views over the Taihiki River and in the general direction of the site. Views from these western audiences have some open aspects towards the Taihiki River and the site. However, views are generally restricted by tall mature bands of vegetation along the river banks and amenity vegetation surrounding properties. Views into the site from these locations are further limited by the linear bands of vegetation along the field boundaries to the east of the site.

Proposed Views

Viewings from road users to the east of the site are anticipated to remain contained within the surrounding established roadside and boundary vegetation. Views from residential audiences to the west of Percy Millen Drive with views into the site will view the proposed lower buildings in the eastern portion of the site leading up to the tallest structures to the west. The proposed buildings and structures will appear similar to those described in Viewing Audience Group 1, the project will feature materials and elements that are in keeping with common and less common rural buildings. The tallest proposed buildings will be furthest away from these audiences (approximately 2km) and will be viewed against the distant skyline.

Views from recreational users of the Taihiki River will experience low angle views of the wastewater treatment plant. Although it is expected that these views will be intermittent, the low angle of view will exacerbate the height of the buildings for this audience.

The mitigation planting strategy proposes planting along the eastern extent of the site. This planting will provide visual integration and screening for recreational users of the river after approximately 6 years between Stage 1 and Stage 2 of the project. As described above existing mature vegetation to the east of the site will continue to provide some screening of the site. By Stage 3 of the public work the proposed mitigation vegetation will have reached a height of 10m

to 15m and provide a proficient screen when viewed from the river. Where views are available from recreational users of the Taihiki River visual effects will be **Very Low** adverse.

At Stage 1 of the public work the proposed mitigation planting will not be tall enough to provide screening of the treatment plant for elevated residential audiences. Where uninhibited views are available of the proposal form residential audience adverse visual effects are anticipated to be **Low-Moderate.**

At Stage 3 of the public work the proposed mitigation is anticipated to provide screening of buildings and structures which are lower lying in the landscape. Taller buildings and structures that are positioned in more elevated parts of the site will be softened but not screened entirely by the mitigation planting. It is anticipated that visual effects on residential audiences with views over the site will range from **Low** to **Very Low**. It is acknowledged that the majority of residential audiences to the east of the site will have no view of the public works.

7.3.4 Viewing Audience Group 4 to the West of the site

Figures References

- *Figure 6, Appendix 4: Graphic Supplement*
- *Viewpoint 6, Viewpoint 7 and Viewpoint 8*

Viewing Audiences

- 393A Glenbrook Beach Road
- Residents, agricultural workers and road users along Glenbrook Beach Road, to the west of the site. In particular residences with open primarily eastern facing outlooks.

Existing View

This group of audiences are defined by their position to the west of the project. With the exception of residential property at 424 Glenbrook Beach Road all audiences are positioned to the west of Glenbrook Beach Road.

Residential and occupational audiences to the west of Glenbrook Beach Road are generally well contained by the pattern of shelterbelt vegetation surrounding the predominantly orchard and perennial crop land uses. These tall linear stands of trees provide a proficient visual screen which restricts the view from the majority of the land to the west of Glenbrook Beach Road. As a result of the existing vegetation and low lying landform visual audiences to the west of Glenbrook Beach Road are not able to obtain view of the existing site or its existing structures, with the exception of the property at 393A.

The residential property at 424 Glenbrook Beach Road is orientated to have northeast and southwest primary outlooks. The project will be positioned to the east of the property at the approximately same ground level. The lack of vegetation around the northern and eastern boundaries of the residence allows for open easterly views across the site towards the Taihiki River. The view from this property is characterised by the openness of the panoramic view and lack of tall vegetation with in the short to middle distance. Vegetation within the view comprises low lying arable and pastoral fields and taller trees and shrub trees, in particular towards the southern aspects of the view. Views from the residential property at 393A Glenbrook Beach Road are similar to those of 424 Glenbrook Beach Road. Although, the property at 393A is lower lying in the landscape the existing intervening amenity vegetation within the garden in the foreground which will filter views towards the site. A tall shelterbelt of exotic trees along the boundary between 393A and Glenbrook Beach Road was recently removed due to the death of

the trees. It was observed on site that this shelterbelt is currently in the process of being replaced.

Road users experience oblique and views of the site when travelling north or south along Glenbrook Beach Road. The northern half of the western road boundary is bordered by a barberry hedgerow, approximately 2m in height, heavily filters views into the site. The southern half of the western boundary is more open, widely spaced exotic trees provide little screening of views.

Proposed Views

During Stage 1 of the public work when mitigation planting is young, open views of the public work to the east will be available for road users on Glenbrook Beach Road. The tallest buildings (Inlet Pump Stations) at the highest point of the site will appear prominent against the sky from this low lying viewpoint. It is anticipated that the majority of the eastern portion of the project will be obscured by intervening landform and the larger taller Inlet Pump Stations buildings. It is anticipated that visual effects related to open views of the site for road users at this time will be **Low** adverse.

Once the indigenous hedge mitigation planting along the boundary of Glenbrook Beach Road proposed in the MPS has established to approximately 3m (after approximately 3 years), views of the project will be mostly screened. However, breaks in the hedge along Glenbrook Beach road are required around the site entrance, western artificial irrigation pond and nearby curve in the road to allow clear sight lines for safe visibility of the road and the site entrance. If the western artificial irrigation was removed, additional planting could be provided to extend the proposed boundary hedge. Where there are breaks in vegetation open perpendicular views will still be available of the project. Although the proposed planting will limit short distance views this is in keeping with the enclosed nature of the majority of Glenbrook Beach Road. Where mitigation planting is in place it is anticipated that there will be no adverse (i.e. neutral) effects on road users. Where there are gaps in vegetation visual effects on road users will continue to be **Low** adverse.

Views from the property at 393A Glenbrook Beach Road will experience views of the project across the eastern most artificial irrigation pond. It is not possible to provide mitigation planting between Glenbrook Beach Road and the south western irrigation pond. Views from 393A will be partially filtered by amenity vegetation to the east of the property, beyond this initial amenity vegetation is approximately 330m of open space towards the site. Views of the project for this audience will be similar to the open road views described above. As a result of the lack of mitigation planting it is anticipated that adverse views on this audience will be **Low-Moderate** adverse.

With the exception of views from the property at 393A Glenbrook Beach Road, residential properties to the west of Glenbrook Beach Road have a predominantly western looking outlook and have views to the east restricted by the tall shelterbelt and amenity vegetation. It is anticipated that these properties will experience no views of the project.

At Stage 1 when the proposed shelterbelt planting will be up to 4m in height the residential audiences at 424 Glenbrook Beach Road will experience filtered views of the project from the ground floor of the property. From second storey windows occupants will be able to see the majority of the proposed buildings and structures with some intervening screening to break up the mass or form of the built form. It is anticipated that the tallest buildings and structures in the project will be viewed against the sky making these elements stand out further. As described in the Viewing Group to the North the project will feature materials and elements that are in keeping with common and less common rural buildings. At this early stage of mitigation planting the following visual effects are anticipated to be experienced:

- from the ground floor of the property **Low-Moderate** adverse
- from the second storey of the property **Moderate-High** adverse.

After approximately 8 year and by Stage 3, once the proposed shelter belt planting around the property has established (to approximately 6-8m in height 6 years after planting) it is anticipated that there will be no views from the ground floor of the property at 424 Glenbrook Road. Although it should be noted that the shelter belt around the property will ultimately limit views of the wider landscape, which constitutes a sizable change in the type of view currently available from this property and this could constitute an adverse effect. The view is in keeping with recognised landscape patterns and boundary treatment within the rural landscape. Residents within the second storey of the property, once the proposed vegetation reaches 6-8m in height, will have the potential obtain partial views of elements of the wastewater treatment plant through intervening vegetation. As a result, at this time, visual effects on second storey views are an anticipated to be **Low** adverse.

8.0 Mitigation strategy

The public work will be subject to an Outline Plan and any designation conditions will need to be implemented.

A range of interventions and control measures to help to mitigate the landscape and visual effects of the project on the surrounding environment have been considered. This report recommends that such measures are undertaken as part of the project. The landscape and visual effects have been assessed within the assumption that these measures are implemented as part of the project, while recognising that some mitigations such as planting will take several years to reach their full potential. Full details of the proposed planting mitigation strategy are presented in Appendix 5: Mitigation Planting Strategy.

There are two types of mitigation measures that have been used for the public work:

- Intrinsic measures - comprise part of the development design through an iterative process
- Additional mitigation measures – that are designed to specifically address any remaining (residual) negative (adverse) effects of the final development proposals.

The mitigation strategy has three key objectives to reduce adverse effects as a result of the public work. These objectives will be achieved by implementing supporting actions to reduce or remove adverse effects on the landscape character, visual environment and natural character.

1) **Integrate the perimeter of the site with the surrounding landscape and coastal edge.**
    - Naturalise the shape and form of the proposed ponds and storm water storage areas to integrate with the surrounding landform.
    - Maintain a rural land use around the perimeter of the site. The balance of the site outside of the wastewater treatment plant security fencing, will be used for arable or pastoral farming.
    - Explore opportunities for riparian vegetation and enhancement of the Taihiki River, salt marshes and tributaries.

- Soften the transition between the coastal environment and the core of the site.

2) Reduce the **visibility of the public works from the surrounding landscape**

The public work will be most visible from Glenbrook Beach Road to the west, the Taihiki River to the east and some rural-residential properties to the north. The proposed MPS provides vegetation to break up the bulk and scale of the structures and where possible screen the project from view. The proposed mitigation planting in the will comprise:

- An indigenous species hedge (*Pittosporum crassifolium,* Karo) along the western site boundary adjacent to Glenbrook Beach Road. This hedge will replace the exotic Barberry hedgerow and extend further south to the south east corner of the site.
- A tall shelterbelt of evergreen trees around three sides of the residential property at 424 Glenbrook Beach Road. This planting will reflect the character of the shelterbelt planting that surround agricultural production lots along Glenbrook Beach Road and the surrounding landscape. Trees will be set back a minimum of 4m form the property boundary to provide
- A linear belt of indigenous trees and shrubs along the southern edge of the northern artificial irrigation pond. This planting will provide screening for some of the lower buildings and will soften the appearance and reduce the bulk and scale of the taller buildings/structures. This approximately 20m wide band of indigenous shrubs will be trees are supported by a single line of fast growing[14] exotic evergreen trees Tasmanian Blackwood (*Acacia melanoxylon*). The Tasmanian Blackwood trees will provide screening in the early years of the project. When the band of indigenous planting has established to a height that provides a sufficient screen the Tasmanian Blackwood trees will be removed. Ultimately the project will have a band of indigenous screen vegetation in this area.
- In the north west corner of the site along the boundary with the property 450 Glenbrook Beach Road, an approximately 1450m^2 block of low indigenous shrubs will be planted. This planting will comprise a mix of indigenous species Tikōuka, Coprosma 'Poor Knights', Wire-netting Bush, Harakeke and Puka. This planting will be maintained to a low height, in accordance with the wishes of the adjacent landowner at 450 Glenbrook Beach Road.
- Along the eastern site boundary adjacent to the Taihiki River two 15m wide linear bands of indigenous trees and shrubs are proposed to provide a visual buffer for visual audiences to the east and landscape integration coastal environment.

- Neutral/low reflectivity finishes to the proposed structures to reduce glare and contrast with the surrounding rural landscape
- Replacement of bright yellow or red standard non safety elements of the structures to neutral or recessive colours (eg. the standard yellow crane to be replaced with a blue crane)

[14] *Acacia melanoxylon* growth rate growth rates will be approximately 1m per year and expected to reach approximately 7m in height after 5 years.

3) Reduce impacts related to proposed lighting

The project will not be continuously lit, however security lighting will be required when the wastewater treatment plant needs to be accessed after daylight hours. Potential landscape and visual effects related to lighting of the project are considered in three parts- skyglow, glare and light spill effects. Mitigation measures to reduce effects related to lighting will:

- limit the duration that lighting is used by using timers
- use directional cones to limit and focus the light downwards and reduce effects related to light spill, glare and sky glow
- use LED bulbs where possible to focus the light to a narrow area and reduce the amount of light spill

9.0 Evaluation in Relation to Statutory Provisions

9.1 RMA - Section 6

In relation to the preservation of natural character values with respect to the wetlands, streams and coastal marine area and their margins the project will avoid direct impacts on these features. These features do not have high or very high degrees of natural or ecological value. It is considered that adverse effects will be on natural character values will be **Very Low**.

The site is broadly characterised by the low lying undulating landform and agricultural land use. There are no outstanding landscapes affected. The north east corner of the site includes part of the coastal marine area that includes the Taihiki River SEA, specifically a section of salt marsh within the site boundary. The public work will be sited a minimum of 200m and proposed buildings and structures will be a minimum of 400m from the coastal boundary. Taking the above into account it is considered effects on significant vegetation, with mitigation will be **Low** adverse.

9.2 RMA – Section 7

Section 7(c) *– the maintenance and enhancement of amenity values*

Section 7(f) *– maintenance and enhancement of the quality of the environment*

The amenity values of the site are in part derived from its rural land use and its relation to the coastal environment (the Taihiki River). It is however recognised that the site holds a number of natural and physical qualities and characteristics which contribute to the amenity values. This includes the streams, wetlands and the underlying topographical landform of the site. Whilst these natural qualities are degraded through its historic land ongoing horticultural use, they individually and collectively contribute to the aesthetic values of the site.

The project will by its very nature, impact on the amenity values and the quality of the environment. Whilst the current ‘condition’ of a number of areas within the site, other than the Taihiki River, do not hold high qualities in relation to the physical resources and peoples appreciation of aesthetic coherence, it is considered the nature of the proposed activity and resultant landscape condition will mean that the proposed wastewater treatment plant adverse

effects on the environment and associated amenity values will be **Moderate - High**. With the successful implementation of the MPS such as that proposed, and considering the wider property, its environment and associated amenity values, effects are anticipated to be **Low-Moderate** adverse.

9.3 Auckland Unitary Plan

The proposed wastewater treatment plant will be sited within the Rural - Mixed Use zone and adjacent to the Rural – Rural Coastal zone. This will impact on the rural characteristics and amenity values of the neighbouring rural zoned land, however it is noted that many of the adjoining sites to the south and west are well contained and buffered from the site. In this case, the rural characteristics and amenity values to the north will subtly change the anticipated characteristics and qualities associated with the rural zones.

10.0 Recommendations and Conclusion

10.1 Recommendations

In order to manage the adverse effects related to the public work to ensure that the effects on the wider landscape character, visual audiences and coastal environment are managed appropriately the following mitigation measures and design control measures are proposed.

Mitigation and Design Control Measures

- MPS The proposed MPS in Appendix 5 of this assessment is developed and refined in consultation and partnership with iwi
- The MPS is planted as soon as possible after the public works are consented and prior to the construction of the wastewater treatment plant. This will allow for vegetation to establish and start mitigation as soon as possible.

Wastewater treatment plant design control measures

- Replace non-essential high visibility materials and finishes with more recessive, materials and colours to reduce or remove materials that will appear incongruous in the landscape.
- Naturalise the form and shape of stormwater ponds to integrate with the existing landform.
- Introduce indigenous riparian planting into stormwater ponds to naturalise their form and integration into the landscape.
- Implement and earthworks plan that avoids the use of retaining structures and integrates the proposal into the landscape.
- Reduce light pollution by:
    - limiting the duration that lighting is on by using timers

- using directional cones to limit and focus the light downwards and reduce effects related to light spill, glare and sky glow
- only using LED bulbs (where possible) to focus the light to a narrow area and reduce the amount of light spill

10.2 Conclusion

The proposed public work will introduce a buildings, structures and land use into the established rural landscape. Whilst the site is within proximity to the coastal environment and the Taihiki River SEA, the public work will have no direct impacts on these features. It is recognised that there is the potential for adverse effects on the coastal environment, however these can be managed by implementing the MPS.

The rural character of the site will primarily be retained around the borders of the site. The preservation of rural character and the integration of the site will be achieved through the implementation and management of the MPS.

Views from the wider context are limited in the wider context by existing landform and vegetation patterns within the landscape. Some audiences will experience partially screened or glimpsed views of the public work, as the proposed mitigation planting develops over time these views will be further restricted or screened. Residential audiences identified to the north and west of the project work with open views over the site will experience an obvious change in the view after Stage 1 is completed and mitigation planting is young. However, as the MPS planting becomes more mature visual effects will be reduced.

It is considered that short term adverse effects on the landscape, visual and natural character of the site and surrounding landscape context can be managed in the long term by mitigation and design control measures recommended in this report.

Appendix 1: Method Statement

9 May 2023

This assessment method statement is consistent with the methodology (high-level system of concepts, principles, and approaches) of 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022. The assessment provides separate chapters to discuss landscape, visual and natural character effects where relevant, but is referred to throughout as a Landscape Effects Assessment in accordance with these Guidelines. Specifically, the assessment of effects has examined the following:

- *The existing landscape;*
- *The nature of effect;*
- *The level of effect; and*
- *The significance of effect.*

The Existing Landscape

The first step of assessment entails examining the existing landscape in which potential effects may occur. This aspect of the assessment describes and interprets the specific landscape character and values which may be impacted by the project alongside its natural character where relevant as set out further below. The existing landscape is assessed at a scale(s) commensurate with the potential nature of effects. It includes an understanding of the visual catchment and viewing audience relating to the project including key representative public views. This aspect of the assessment entails both desk-top review (including drawing upon area-based landscape assessments where available) and field work/site surveys to examine and describe the specific factors and interplay of relevant attributes or dimensions, as follows:

Physical –relevant natural and human features and processes;

Perceptual –direct human sensory experience and its broader interpretation; and

Associative – intangible meanings and associations that influence how places are perceived.

Engagement with tāngata whenua

As part of the analysis of the existing landscape, the assessment should seek to identify relevant mana whenua (where possible) and describe the nature and extent of engagement, together with any relevant sources informing an understanding of the existing landscape from a Te Ao Māori perspective.

The project team are currently undertaking consultation with local iwi to determine any potential impacts on culturally sensitive elements or features. The project team will continue this dialogue as the proposal develops and is refined over time.

Statutory and Non-Statutory Provisions

The relevant provisions facilitating change also influence the consequent nature and level of effects. Relevant provisions encompass objectives and policies drawn from a broader analysis of the statutory context and which may anticipate change and certain outcomes for identified landscape values.

The Nature of Effect

The nature of effect assesses the outcome of the project within the landscape. The nature of effect is considered in terms of whether effects are positive (beneficial) or negative (adverse) in the context within which they occur. Neutral effects may also occur where landscape or visual change is benign.

It should be emphasised that a change in a landscape (or view of a landscape) does not, of itself, necessarily constitute an adverse landscape effect. Landscapes are dynamic and are constantly changing in both subtle and more dramatic transformational ways; these changes are both natural and human induced. What is important when assessing and managing landscape change is that adverse effects are avoided or sufficiently mitigated to ameliorate adverse effects. The aim is to maintain or enhance the environment through appropriate design outcomes, recognising that both the nature and level of effects may change over time.

The Level of Effect

Where the nature of effect is assessed as **'adverse'**, the assessment quantifies the level (degree or magnitude) of adverse effect. Assessing the level of effect entails professional judgement based on expertise and experience provided with explanations and reasons. The identified level of adverse natural character, landscape and visual effects adopts a universal seven-point scale from **very low** to **very high** consistent with Te Tangi a te Manu Guidelines and reproduced below.

Landscape Effects

A landscape effect is an outcome for a landscape value. In essence, this takes account of the proposed change to a landscape's character and values (as identified across relevant landscape dimensions) and in the context of what change can be anticipated in that landscape as a result of relevant zoning and policy. The level of effect can also be influenced by the size or spatial scale, geographical extent, duration and reversibility of landscape effects within the specific context in which they occur.

Visual Effects

Visual effects are a subset of landscape effects. They are consequence of changes to landscape values as experienced in views. To assess where visual effects of the project may occur requires an identification of the area where it may be visible and the specific viewing audience(s) affected. Visual effects are assessed with respect to landscape character and

values. This can be influenced by several factors such as distance, orientation of the view, duration, extent of view occupied, screening, backdrop etc. as well as potential change that could be anticipated in the view as a result of zone / policy provisions of relevant plans.

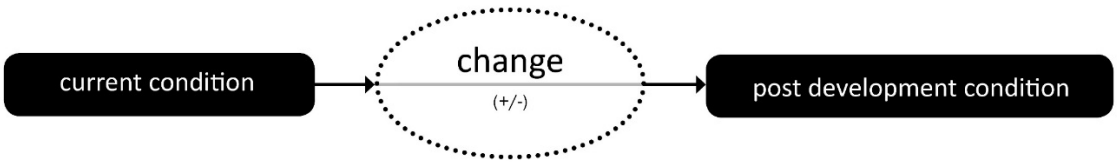
Natural Character Effects

Natural Character, under the RMA, specifically concerns *'the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development'*. Therefore, the assessment of natural character effects involves examining the proposed changes to natural elements, patterns and process which may occur in relevant landscape / seascape contexts only.

As with assessing landscape effects, the first step when assessing natural character effects involves identifying the relevant physical and experiential characteristics and qualities which occur and may be affected by a project at a commensurate scale. This can be supported through the input of technical disciplines such as geomorphology and marine, aquatic, and terrestrial ecology as well as input from tāngata whenua. Through this assessment, natural character also considers the level of naturalness and essentially reflects the current condition of the environment assessed in relation to the universal seven-point scale. A higher level of naturalness means the waterbody and/or margin is less modified and vice versa.

A natural character effect can be conceived of as a change to the current condition of parts of the environment where natural character occurs. Change can be negative or positive. The resultant level of natural character effects is influenced by the existing level of naturalness within which change is proposed; a greater level of effect will generally occur when the project reduces the naturalness of a less modified environment. In short, the process of assessing natural character effects can be summarised as follows:

- Identify the characteristics and qualities which contribute to natural character within a relevant context and defined spatial scale(s), including the existing level of naturalness;
- Describe the changes to identified characteristics and qualities and the consequent level of natural character anticipated (post construction); and
- Determine the overall level of effect based on the consequence of change.



The Significance of Effects

Assessing the significance of effects may be required in certain RMA situations. To support transparency in such circumstances, the assessment may qualify where the level of effect falls in terms of being 'minor'[15] or 'significant'[16]. This assessment has adopted the following scale applied to relevant RMA circumstances[17], acknowledging low and very low adverse effects generally equate to 'less than minor'.

[15] Whether the adverse effect on a person is less than minor (RMA, 95E); whether the adverse effect on the environment is no more than minor (RMA, 95D); or when assessing a non-complying activity whether the adverse effects of the activity on the environment will be 'minor' (RMA, 104D).

[16] Triggering requirement to consider alternative sites, routes, and methods for Notices of Requirement (RMA s171(1)(b)), alternatives in AEEs (RMA s6(1)(a) of the 4th Schedule); or effects on natural features and landscapes within the coastal environment to be avoided (New Zealand Coastal Policy Statement (NZCPS) Policy 13 (1)(b) and 15(b)).

[17] Seven-point level of effect scale. Source: Te tangi a te Manu, Pg. 151

Appendix 2: Natural Character Evaluation

Table 2.1: Stream Natural Character Evaluation

Taihiki River Tributary	
Existing Natural Character Description	Rating
Biophysical – Active Bed • Wide and continuous depth in the main channel of the tributary and intermittent draining to salt marsh at the furthest extent of the tributary. • Slight degradation of the salt march through agricultural and sediment run off. • Moderate to high mud content within the tributary • Good flow of water from the tributary of the brackish Taihiki River. • Longfin eel, Inanga, Koaro, Redfin Bully, Banded Kokopu, Common Smelt, Shortfin eel, Yelloweye Mullet, Gambusia, Grey Mullet are all present within the Taihiki River and its tributaries[18]. • Extensive patches of degraded and recovering sea rush which comprise the majority of vegetation.	High
Biophysical – Margins • The riparian edge has been damaged progressively by farming practices • Evidence of historic attempts to convert the saltmarsh area to farmland, degrading the edge of the estuary • The vegetation of the outer margin of the salt marsh consists of a combination of exotic grasses including carrot weed (*Daucus carota*) and paspalum, and a variety of rushes (sharp fruited rush and sea rush) and native sedges,	High
Experiential • Elements of human modification along the margins and wider landscape somewhat reduce the sense of naturalness and remote qualities of the salt marsh. • The wider Taihiki River is notably unmodified and has experienced a limited amount of modification • The tidal hydrological processes and movements increase the sense of naturalness and	High

[18] These species are recorded in the New Zealand Freshwater Fish Database (NZFFD) but have not been confirmed through BML surveys.

Watercourse 1	
Existing Natural Character Description	Rating
Biophysical – Active Bed • Shallow open channel heavily laden with sediment • Ephemeral flows in a general south to north direction for approximately 900m before discharging into the Taihiki River • Eels and inaga have the potential to be present but have not been confirmed through surveys	Low
Biophysical – Margins • The riparian edge has been damaged progressively by farming practices • Predominantly comprises a mix of barnyard grass and exotic willow weed (an invasive species) • Intermittent bare earth sections are apparent in the upper reaches of the watercourse	Low
Experiential • Elements of human modification along the margins and wider catchment, and the presence of exotic species reduces the naturalness and remote qualities of the stream corridor.	Low

Watercourse 2	
Existing Natural Character Description	Rating
Biophysical – Active Bed • Shallow open channel heavily laden with sediment • Ephemeral flows in a general south to north direction for approximately 450m before discharging into the Taihiki River	Low
Biophysical – Margins • The riparian edge has been damaged progressively by farming practices • Predominantly comprises a mix of exotic willow weed (an invasive species) • Intermittent bare earth sections are apparent in the upper reaches of the watercourse	Low
Experiential • Elements of human modification along the margins and wider catchment, and the presence of exotic species reduces the naturalness and remote qualities of the stream corridor.	Low

Table 2.2: Wetland Natural Character Evaluation

Wetland 1	
Existing Natural Character Description	Rating
Biophysical – Active Bed and Margins	Very Low
• Located along an ephemeral flow path depression which feeds into Watercourse 2. • Vegetation within the wetland primarily comprised exotic grass barnyard grass species, willow weed (an invasive species) is found close to the edges of the wetland. • Sediment deposits and sparse vegetation and evident drainage patterns characterise the nature of the wetland. • Increase sedimentation and reduced water quality • No effective riparian buffer • No threatened or at risk flora or fauna species	
Experiential	Very Low
• Highly modified from its original shape, form and assumed vegetation cover. • Direct human effects related to historic and on-going farming practices within the site.	

Wetland 2	
Existing Natural Character Description	Rating
Biophysical – Active Bed and Margins	Very Low
• Located on the margin of the northern artificially constructed irrigation pond that is expected to have previously been a larger wetland. • Vegetation within the wetland comprises a mixture of willow weed (an invasive species) and a variety of native and exotic rushes including sharp fruited rush, giant rush, leafless rush and sea rush • Sediment deposits and sparse vegetation and evident drainage patterns characterise the nature of the wetland. • Increase sedimentation and reduced water quality • No effective riparian buffer • No threatened or at risk flora or fauna species	
Experiential	Very Low

- Highly modified from its original shape, size and assumed vegetation cover.
- Direct human effects related to historic and on going farming practices and the construction of the large artificial irrigation pond.

Wetland 3	
Existing Natural Character Description	Rating
Biophysical – Active Bed and Margins • Located within a slight depression between the two artificially constructed irrigation ponds. an ephemeral flow path depression which feeds into Watercourse 2. • Vegetation within the wetland primarily comprised exotic willow weed (an invasive species). • Sediment deposits and sparse vegetation and evident drainage patterns characterise the nature of the wetland. • Increase sedimentation and reduced water quality • No effective riparian buffer • No threatened or at risk flora or fauna species	Very Low
Experiential • Highly modified from its original shape and form • Direct human effects related to historic and on-going farming practices within the site.	Very Low

Appendix 3: Watercare: General Civil Construction Standard: Colour Palette Tables

Table C5.2-1 Water reticulation services colours

Location	PBS 5252 Colour No.	Colour (Resene)
Pipe bridges	12 B 29	Karaka Green
Pipework and valves in chambers	16 A07	Boulder
Pump station and reservoir pipework	18 E 53	Bahama Blue
Pumps	00 A 09	Haze Grey
Inlet valves at reservoirs and pump stations	14 E 56	Fun Green
Outlet valves at reservoirs and pump stations	04 E 53	Guardsman Red
Check valves at reservoirs and pump stations	06 D 45	Peru Tan

Location	PBS 5252 Colour No.	Colour (Resene)
Valves with actuators and control valves at reservoirs and pump stations	06 D 45	Peru Tan
Scour valves at reservoirs and pump stations	08 A 14	Bokara Grey (this is black)
Safety handrails	08 E 53	Yellow
Monorail beams at reservoirs and pump stations	12 D 43	Trendy Green
Pump room, motor room, control room floor	00 A 09	Haze Grey

Table C5.2-2 Wastewater reticulation services colours

Location	PBS 5252 Colour No.	Colour (Resene)
Pipe bridges	12 B 29	Karaka Green
Pipework and valves in chambers	00 A 09	Haze Grey
Pump station pipework and valves	00 A 09	Haze Grey
Pumps in drywell	00 A 09	Haze Grey
Electric motors	As Supplied	
Ventilation fans and ducting	Match walls	
Safety handrails	08 E 53	Yellow
Gantry cranes and monorail beams	08 E 53	Yellow
Pump room, motor room, control room floor	00 A 09	Haze Grey

Table C5.2.3-1 Paint system, preparation and application

***Note** - See tables C5.2.3-2/3 for codes used in this table for preparation and paint systems. The colour codes correspond to BS5252.*

	Item	Preparation	Paint system	Colour BS 5252
a)	Aluminium hatch covers			Unpainted
b)	Cast iron pipework and valves inside control building	Refer to the material supply standard		12D43
c)	Cast iron pipework in wet well	Refer to the material supply standard		Light grey
d)	Copper pipework	T9	S8	To match background
e)	Downpipes, lifting hatch support rails	T6	S9	10B21 (to match roof)
f)	Floor (Concrete) of Switchboard Room	TG-2010-108820 (see note)		Light grey
g)	Formica toilet partition, PVC waste pipes			Unpainted
h)	Galvanised steel handrails and ladders	T6/T7	S9	12D43
i)	Galvanised Steel, fittings and brackets inside valve chamber	T6/T7	S9	12D43
j)	Gutters	-	Colorsteel	Lichen
k)	Interior wooden doors and frames	T4	S17	Clear
l)	Roof - upper surface	-	Colorsteel	Lichen
m)	Roof underside - fibrous plaster	T5	S7	White
n)	Stainless steelwork in wet well or storage tank			Unpainted
o)	Structural Steel, Monorails etc.	TG-2010-108802 (see note)		22B19
p)	Walls of building & valve chambers, concrete, interior to be **unpainted** – *if nominated as being painted in the particular clauses, use -*	T1	S1	10B15
q)	Walls of building, concrete masonry, Exterior,	T1	S2	10A03
r)	Walls of building, concrete, exterior to be **unpainted,** *- if nominates as being painted in the particular clauses, use -*	T1	S2	10A03
s)	Walls of building, plasterboard, interior	T15	S18	10B15
t)	Walls, concrete masonry, retaining or free standing walls, exterior locations			Unpainted
u)	Walls, concrete, interior and ceiling of wet well and access platform	T1	S14	White
v)	Woodwork - roof beams	-	-	Unpainted

Appendix 4: Graphic Supplement

Appendix 5: Mitigation Planting Strategy

About Boffa Miskell

Boffa Miskell is a leading New Zealand professional services consultancy with offices in Whangarei, Auckland, Hamilton, Tauranga, Wellington, Nelson, Christchurch, Dunedin, and Queenstown. We work with a wide range of local and international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, cultural advisory, graphics and mapping. Over the past five decades we have built a reputation for professionalism, innovation and excellence. During this time we have been associated with a significant number of projects that have shaped New Zealand's environment.

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