Project Number: 3-WW021.02

Eastern Hills Reservoir

Landscape and Visual Assessment

9 November 2023

CONFIDENTIAL

EASTERN HILLS RESERVOIR
Construction Transport Assessment

Wellington Water

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REV	DATE	DETAILS
1	14/9/23	For external legal review
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Executive Summary

Wellington Water Limited has commissioned WSP to conduct a Landscape and Visual Assessment to evaluate the landscape, natural character and visual effects of the proposed Eastern Hills Reservoir in Naenae, Lower Hutt. The Proposed Site is located within the Eastern Hutt Hills on Te Whiti Park Ridge, which is adjacent to the existing Naenae Reservoir at the top of Summit Road. The aim of this assessment is to understand the potential effects of The Proposal on the landscape values, landscape character and visual amenity of this landscape, which may vary from positive to neutral to adverse.

Historically, the Eastern Hutt Hills were densely covered in beech forest, which has since been cleared to make way for pasture, market gardens and later residential development. Today the slopes display a mix of regenerating native and exotic plants with the landform consisting of steep hills, covered in vegetation, flattening out into the Hutt Valley. The steep hills provide a backdrop to the Hutt Valley and are largely undeveloped although residential housing occupies lower parts of the slopes. A network of recreation tracks are located throughout the Eastern Hutt Hills attracting various outdoor enthusiasts, including horse riders, mountain bikers, walkers and trail runners.

The Proposed Site occupies the relatively gentle top of a lower spur (Te Whiti Ridge), where the terrain has 'eased' in terms of slope gradient. The existing Naenae reservoir is square in form and sits immediately north of the Proposed Site. To the west and north of the Proposed Site, Waiwhetū Stream intersects the landscape travelling from east to west.

Construction of The Proposal will require bulk earthwork volumes of approximately 90,000 m^3 (in-ground volume) for the reservoir and associated pipelines down the hill towards Waiwhetū Stream. Vegetation will be cleared for the construction of the reservoir and delivery pipes, including a 2m clearance buffer zone for access, fencing and sediment controls. Vegetation is also to be cleared on a small hill section north of the proposed reservoir. The Proposal includes the construction of a 15ML, 55.2m external diameter x 8.35m tall circular concrete reservoir, the installation of inlet and outlet pipes and the reinstatement of a firebreak and access track around the reservoir site.

WSP has carried out an assessment of landscape, natural character and visual effects which is outlined in this report. We have also provided recommendations for measures to avoid, remedy and mitigate potential adverse effects, and to promote positive effects within the landscape. Other specialists were engaged with as part of our assessment, to gain an understanding of relevant aligned expertise, and include planning, ecology, cultural and recreation.

To reduce the adverse effects, mitigation measures have been proposed for the construction and operations phases. During construction the mitigation measures include adherence to the Construction Environmental Management Plan, the use of hoardings, locating storage areas away from residential areas and contouring of earthworks to blend with the surrounding landform. During operations the mitigation measures include establishment of taller indigenous broadleaved hardwoods to the west, northeast and east of the proposed reservoir. A planting plan (Appendix B) has been produced for mitigation planting. The following tables summarise the landscape, natural character and visual effects of The Proposal after construction and during operations.

Table 1 Landscape and Natural Character Effects Rating of The Proposal During Construction and Operations. Effects Rating after mitigation and remediation is also identified.

Type of Effect	Rating Before Mitigation & Remediation	Rating After Mitigation & Remediation (5 to 10 years)
Landscape Effects During Construction	Moderate Adverse	Low-Moderate Adverse
Natural Character Effects During Construction	Low-Moderate Adverse	Low Adverse
Visual Effects During Construction	Moderate Adverse	Low - Moderate Adverse
Landscape Effects During Operations	Moderate Adverse	Low Adverse
Natural Character Effects During Operations	Low-Moderate Adverse	Low Positive

Table 2 Visual Effects Rating of The Proposal During Operations Relative to Specific Viewpoints

Viewpoint	Location	Visual Effect Rating Before Mitigation & Remediation	Visual Effect Rating After Mitigation & Remediation (5 to 10 years)
1	View from outside 25 Summit Road looking southeast towards The Proposed Site.	Low Adverse	Very Low Adverse
2	View from the western end of Summit Road looking east towards The Proposed Site.	Low-Moderate Adverse	Low Adverse
3	View from Purser Grove Playground looking east towards The Proposed Site.	Moderate Adverse	Low Adverse
4	View from the centre of Naenae Park looking west towards The Proposed Site	Moderate – High Adverse	Low - Moderate Adverse

Contents

1 Introduction

WSP has been commissioned by Wellington Water Limited (WWL) to prepare a Landscape and Visual Assessment to assess the landscape· visual and natural character effects of the proposed Eastern Hills Reservoir (previously called "Naenae 2") and infrastructure (**The Proposal**), adjacent to the existing Naenae Reservoir at the top of Summit Road, Naenae, Lower Hutt (**The Proposed Site**).

WWL is proposing to construct an additional potable water reservoir to meet WWL's target levels of service and cater for projected population growth. Current reservoir storage within the Lower Hutt Central and Taita Water Storage areas (WSA) does not meet target levels of service which leaves this area vulnerable to bulk water supply interruptions and the potential for unreliable water supply. Future development and population growth will place additional demand on the network.

This report should be read alongside the main Assessment of Environmental Effects (AEE), which contains further details on The Proposal objectives. The description of The Proposal relies on the drawings prepared by WSP which includes:

- General Overview, Reservoir and Pipelines – Construction Envelopes Earthworks – Option 2, Drawing Number: 3-WW02102_W010
- Reservoir Pipework Valvehouse Layout, Drawing Number: 3-WW021.02: W003

1.1 Purpose of the Report

The purpose of this report is to assess the landscape effects, including visual effects of The Proposal. A Landscape and Visual assessment is required to ascertain any potential effects of The Proposal on the landscape character, landscape values and visual amenity on the landscape. Effects may be positive, neutral or adverse.

1.2 Previous Landscape Options Assessment

A high-level options assessment, *Wellington Water Lower Hutt Central Reservoir: Landscape Advice Note*[1], was prepared by WSP in March 2022, outlining the potential effects of The Proposal on three potential sites (Naenae 2, Gracefield 2 and Cambridge Terrace). These three sites were a 'short-list' from an overall fourteen possible sites that had been originally investigated. This was part of a high-level multi criteria assessment for site scoping purposes and not a full Landscape and Visual Assessment of one or all of the sites being considered. Naenae 2, now called "Eastern Hills", was identified as the most favourable in the Landscape Advice Note.

1.3 Defined Terms

1.3.1 Landscape Effects

Landscape effects are related to the physical change of the landscape which may or may not be seen but are otherwise understood to exist. Effects include positive or adverse (negative) effects. Landscape effects are also concerned with the effects on landscape character and levels of amenity derived from this character i.e., whether a change to the landscape setting is appropriate or not. Effects during construction may arise, as well as operational effects. Refer to the Recreational Assessment appended to the AEE for recreational effects.

[1] WSP (2022) Wellington Water Lower Hutt Central Reservoir: Landscape Advice Note,

1.3.2 Natural Character Effects

"*Natural character is an area's distinctive combination of natural characteristics and qualities, including degree of naturalness*[2]". However, natural character is focused specifically to the coastal environment (including the coastal marine area), wetlands, lakes and rivers, and their margins, not landscapes in general. Naturalness is assessed as the 'naturalness' of degree of modification of an area and the distinct combination of natural characteristics and qualities within the area.

1.3.3 Visual Effects

Visual effects are a subset of landscape effects. The assessment of visual effects is the analysis of a visual change to the landscape because of a proposed development. Visual sensitivity is influenced by several factors including The Proposal's visibility, the number of viewers (referred to as the viewing audience) and viewing time, the visual qualities of the proposed change, and the ability to absorb the development into the existing visual landscape. The visibility of a landscape change can either have a positive, neutral, or adverse (negative) visual effect. Visual effects can be temporary (e.g., during construction) or permanent and/or cumulative (arising over time or in combination with the effects).

[2] Tuia Pito Ora New Zealand Institute of Landscape Architects (July 2022). ***Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines***, p.205.

2 Methodology

This assessment has been undertaken using best practice guidance for Landscape and Visual Assessment as provided by 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022 (TTatM).

TTatM places emphasis on and seeks alignment between Te Ao Māori and Te Ao Pākehā concepts of landscape. TTatM defines landscape character as comprising each landscape's distinctive combination of physical attributes (e.g., landform and ecological aspects), associative attributes (e, g. heritage and cultural values) and perceptual attributes (e.g., legibility of landcover patterns and aesthetic qualities). Visual effects are considered a subset of landscape effects, rather than of separate or greater value than other landscape considerations, in accordance with TTatM best practice.

Effects arise from change in the values associated with the landscape, not simply as a result of the change itself. Visual impacts are the result of change to the landscape and are a consequence of that change. The methodology for this Landscape and Visual Assessment comprises the following:

- Desktop research was undertaken, including document and mapping overlay reviews.
- A site visit was carried out on 15 March 2023. The purpose of the site visit was to identify the potential visibility of The Proposal, view and assess the site context, and the site itself. During the visit the site and surrounding context was walked, with several ground-based photographic images taken from the site looking outwards from the existing reservoir site, typically to the surrounding landscape.
- In addition, drone photography was obtained from elevated locations approximating the upper extent of the tank. This enabled a clear understanding of the extent and location of the various potentially affected parties living within the receiving environment which were largely located on the rising ground to the south of the site.
- To assist with the site visit, a Zone of Theoretical Visibility map was produced and reviewed. The methodology for creating this and the limitations are outlined in Appendix A.
- A Landscape and Visual assessment was undertaken. This included:
    - Landscape effects, including visual and natural character effects.
    - Consideration of measures to avoid, remedy and mitigate potential adverse effects, and to promote positive effects.
- A number of representative viewpoints were identified from publicly accessible locations. Photographs were taken with a 50mm focal length lens camera in order to assess the likely visual effect of The Proposal in the landscape relative to the transitory and fixed viewing audiences. Visual Simulations have been produced and are included in Appendix A.
- The Visual Simulations were completed in 3DS Max and Photoshop as per the Tuia Pito Ora New Zealand Institute of Landscape Architects (2010) Best Practice Guide: Visual Simulations BPG 10.2 NZILA. Existing contour data was obtained from Land Information New Zealand (LINZ), and the proposed contour data was provided by the WSP Civil Engineering Team. Meshes of the existing and proposed terrain were completed. The Proposal was then built in 3DS Max and then rendered out. This image was then superimposed in Photoshop. There are limitations within this process, and there is the possibility that the placement of the proposed intervention is between 1-3m out.

- Engagement with other technical specialists, included planning, ecology, cultural and recreation to gain an understanding of relevant aligned expertise.

The TTatM seven-point scale of effects has been used in this Landscape and Visual Assessment when assessing the potential adverse landscape effects arising from The Proposal. The effects scale ranges between: 'Very Low' to 'Low' to 'Low-Moderate' to 'Moderate' to 'Moderate-High' to 'High' to 'Very High' (Appendix C and Figure 1).

Figure 1: Seven-point scale of effects.
Source: TTatM, 2022.

Mitigation measures are discussed in Section 0 of this LVA.

3 Existing Landscape

3.1 Wider Landscape Context

The Proposed Site is located within the Eastern Hutt Hills on Te Whiti Park Ridge (Figure 2). To the west is the suburb of Fairfield and to the north is the suburb of Naenae. These two urban areas are located within the floodplain of the Hutt River. Historically, the Eastern Hutt Hills were densely covered in beech forest, with podocarps such as rimu and kahikatea found on the lower slopes. This vegetation was cleared for timber to make way for pasture, market gardens and later residential development[3].

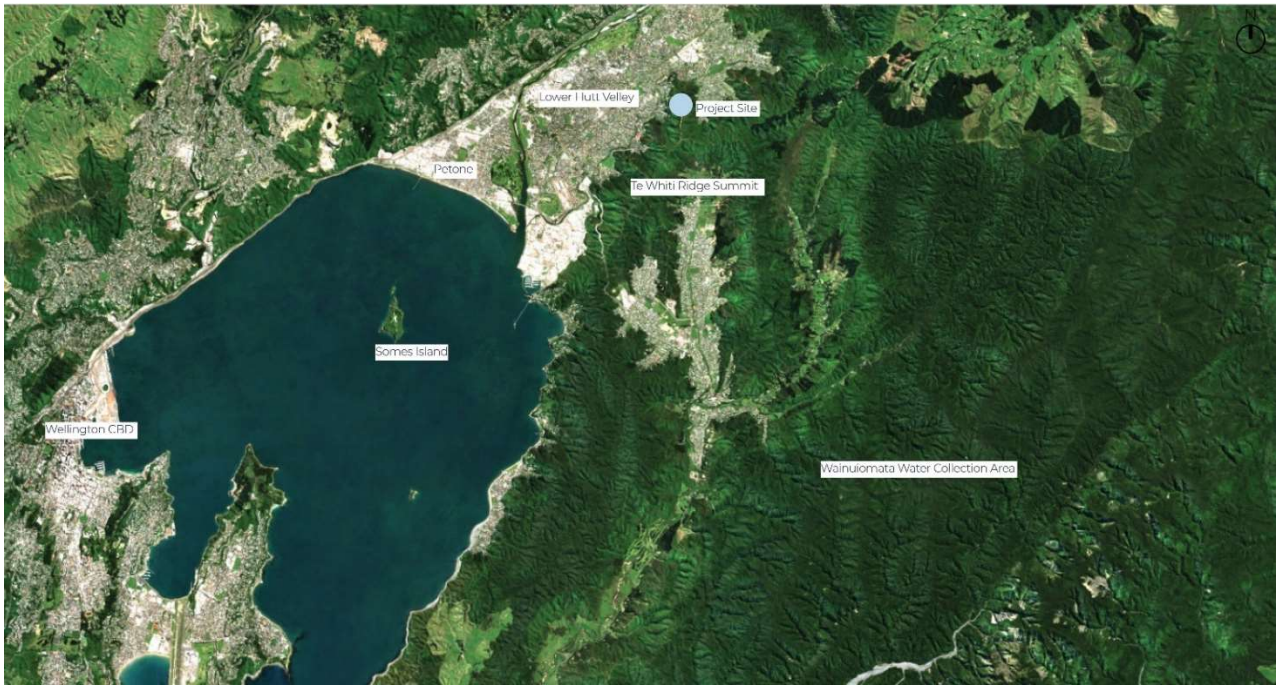


Figure 2: Wider Context Map.

Today, the slopes display a mix of regenerating native plants, including kanuka, lowland beech species, and kamahi (Figure 3). However, areas with drier conditions, such as spurs and north-facing slopes, include large areas which are interspersed with gorse. Additionally, there are patches of pine plantations, especially in the slopes surrounding Pinehaven, and in some areas wilding pines can be found. In the past, the Eastern Hutt Hills experienced wildfires, prompting the creation of firebreaks to prevent their spread. However, the frequency of fires has reduced in recent years.

The landform consists of steep hills, covered in vegetation, flattening out into a valley known as the Hutt Valley. This valley is predominately where most of the urban development has occurred and consists mainly of standalone one and two storey houses, business centres and commercial/light industrial buildings. The steep hills provide a backdrop to the Hutt Valley and are largely undeveloped. The landform is largely unmodified.

There are several roads that provide access between the Hutt Valley and several valleys to the east. Trig stations have been strategically placed on the highest points along the ridgeline above

[3] Boffa Miskell, 2012. *Hutt Landscape Study: Landscape Character Description*. Obtained from https://www.gw.govt.nz/assets/Documents/2022/03/Hutt-Landscape-Study-2012.pdf

the Hutt Valley. Other notable features include water reservoir (Naenae Reservoir) and a landfill located above Stokes Valley.

A network of recreation tracks are located throughout the Eastern Hutt Hills. These hills attract various outdoor enthusiasts, including horse riders, mountain bikers, walkers, and trail runners. Refer to the Recreational Assessment attached to the AEE for recreational effects.

Figure 3: View from Te Whiti Riser to the wider Eastern Hutt Hills.

3.2 Local Landscape

The Proposed Site is located along the eastern slopes above Hutt Valley. The site occupies the relatively gentle top of a lower spur where the terrain has 'eased' in terms of slope gradient. Below the site/spur top, the terrain drops sharply to the valley floor. The broader landform above and further east of the site rises steeply to over 300m elevation.

The Proposed Site spans an established firebreak and rough 4WD access track, which starts uphill from the sealed Summit Road's endpoint. North of the Proposed Site, there is an existing square concrete reservoir measuring 1,800m^2 in size (Naenae Reservoir). Surrounding this intervention, the entire site is covered in a combination of exotic and regenerating native vegetation. Local residents use the firebreak as a recreation track and houses are located close to the west of the site with access from Tilbury Street and Summit Road. To the west and north of The Proposed Site, Waiwhetū Stream intersects the landscape travelling from east to west.

Figure 4: View from firebreak on Te Whiti Ridge across existing Naenae Reservoir and the Hutt Valley.

Figure 5: Firebreak / walking track up Te Whiti Ridgeline east of The Proposal.

3.3 Landscape Character

Landscape character encompasses everything about a landscape including its physical, associative and perceptual dimensions. The Eastern Hutt Hills form a prominent and unmistakable scenic backdrop on the eastern side of the valley. When combined with the fault

escarpment on the western side, the hills create a sense of enclosure that defines the unique character of the Hutt Valley.

The vegetation that adorns the Eastern Hutt Hills is predominately lowland forest that blankets the hilly terrain. It showcases a diverse mosaic of regenerating vegetation, shaped by historical fire events, which is regionally representative. This includes pockets of pre-European podocarps and hard beech *(Fuscospora truncate)* trees. Approximately two-thirds of the forest in this area is estimated to be between 90 and 110 years old, adding to its ecological significance.

The Proposed Site within the Eastern Hutt Hills differs from the wider landscape. This site is primarily characterised by exotic vegetation and regenerating forest. The presence of human interventions, such as the firebreak track and the existing square concrete reservoir, signify the influence of human activity in this particular area. Additionally, the adjoining suburbs of Fairfield and Naenae further contribute to the human influence in this area. The Proposed Site exhibits modified character resulting from a combination of natural processes, such as fire events, and human interventions. This dynamic interplay has shaped the landscape over time, contributing to its unique qualities.

3.4 Landscape Values

As stated in TTatM, *"Landscape values are the various reasons why a landscape is valued – the aspects that are important or special or meaningful and are ascribed by people. Values may relate to each of a landscape's dimensions, or the interaction between the dimensions*[4]*."*

The Eastern Hutt Hills hold a multitude of values that greatly contribute to their overall significance. One notable value is the ample opportunities they offer for recreational activities. Throughout the hills, a well-established network of recreation tracks attracts a diverse range of outdoor enthusiasts. Horse riders, mountain bikers, walkers and trail runners utilise these tracks.

In addition to the recreational value, the mosaic of vegetation found in these hills adds to their overall landscape value. Areas featuring pre-European Podocarps and Hard Beech trees contribute to the rich tapestry of plant life. It is worth noting that nearly two-thirds of the forest in this area is estimated to be between 90 and 110 years old, adding to the ecological and historical significance of the landscape. The Eastern Hutt Hills are also home to various bird species, including the iconic New Zealand pigeon (kereru), furthering enhancing their ecological importance.

Moreover, the presence of the hills plays a vital role in fostering a sense of place within the local community. Their distinct presence is not only visible from Lower Hutt but also contributes to the connection between the landscape and the people residing in the nearby residential catchment. This connection to the hills further strengthens the local community's sense of identity and belonging.

While The Proposed Site may not showcase the older vegetation present in the other parts of the Eastern Hutt Hills, it is essential to consider the overall value of the landscape. The Proposed Site features a recreational track, the Firebreak Track, identified through Greater Wellington Regional Council GIS, and which is frequently utilised by nearby residents. This track serves as a gateway for accessing the extensive recreation network that spans the Eastern Hutt Hills.

Cultural values have been discussed in the Cultural Impact Report[5]. Of particular note, the Cultural Impact Report identified the Waiwhetū Stream is of high cultural significance, including its water quality as it flows by the Waiwhetū Marae and later past the Owhiti Urupā at Seaview.

[4] Tuia Pito Ora New Zealand Institute of Landscape Architects (July 2022). ***Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines.*** Page 105
[5] Raukura Consultants (Februrary 2023). *Cultural Impact Report: Naenae Drinking Water Reservoir*

The Waiwhetū Stream is highly modified with sections of the stream being channelised. Additionally, vegetation has been cleared within the riparian margins of the stream, contributing to degraded natural character values.

In some areas of the riparian stream, native riparian planting is evident, often to the south of the stream. However, the stream is located within a highly urbanised environment with residential houses in close proximity. This contributes to a diminished level of naturalness.

4 The Proposal

4.1 Description of The Proposal

The Eastern Hills (previously Naenae 2) Reservoir will be a circular 15ML, above ground concrete reservoir with a 55.2m external diameter and an above-ground height of 8.35m. It will be located adjacent to the existing Naenae Reservoir at the top of Summit Road, Fairfield, Lower Hutt.

The reservoir will be constructed at the same bottom water level (BWL) and top water level (TWL) elevation as the existing reservoir and will require earthworks volumes of approximately 83,000 m^3 (in-ground volume), with erosion and sediment control measures required during construction.

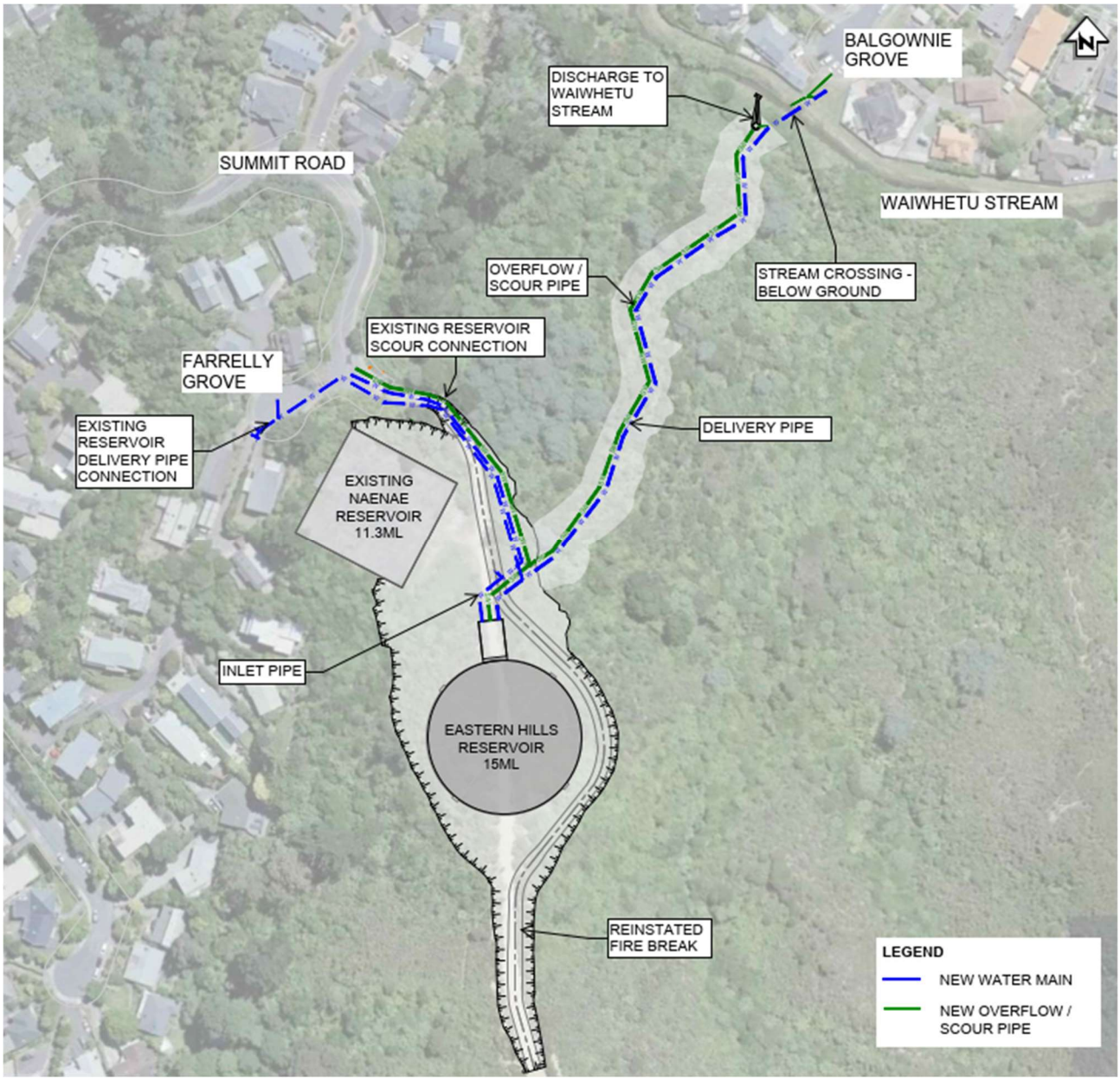


Figure 6: Eastern Hills Reservoir Site Plan.

A new inlet pipe supplying water to the reservoir will be constructed in a trench from a connection with the existing Naenae reservoir inlet pipe. This new connection is located at the intersection of Summit Road and Farrelly Grove with the proposed alignment then running along the current vehicle access to the Reservoir. Both reservoirs will be supplied via the same existing bulk main from the Waterloo water treatment plant.

A new 750 diameter delivery pipe supplying water to the potable water network will run from the Reservoir down the hill to the north and across Waiwhetū Stream and into the potable water network along local roads. The new Waiwhetū Stream pipe crossing will be below-ground. A 525 diameter pipe will connect the existing Naenae Reservoir outlet to this new delivery pipe as shown in Figure 6. The corridor for the construction of the delivery pipe and scour pipe will require a further 7,000 m^3 of earthworks (in-ground volume).

An overflow/scour pipe from the reservoir will be constructed adjacent to the delivery pipe down the hill, before discharging into the Waiwhetū Stream near Balgownie Grove. The purpose of the pipe is for emergency discharges or when the reservoir needs to be drained for maintenance or inspections. The pipe will discharge via scour protection, such as rip-rap or baffles, directly to Waiwhetū Stream. In addition, the existing reservoir overflow pipe will be constructed to tie-in to

the proposed Reservoir overflow pipe as shown in Figure 6. Construction will take approximately two and a half years.

A portion of the existing gravel firebreak track between Summit Road and The Proposal will be sealed.

5 Statutory Provisions

The purpose of reviewing the statutory provisions in this report is to help frame the Landscape and Visual Assessment. It is not to undertake a planning assessment of The Proposal against the provisions.

This Landscape and Visual Assessment is prepared recognising the statutory framework of the Resource Management Act in accordance with Schedule 4, clause 7(1)(b)[6] which seeks that, in any assessment of a proposed activity, consideration is given to landscape and visual effects.

In preparing this Landscape and Visual Assessment, the following statutory and planning documents have been considered:

5.1 Resource Management Act 1991 (RMA)

- Section 2 of the RMA which outlines the interpretation and application of the act.
- Section 5 sets out that the purpose of the RMA is to promote the sustainable management, and defines sustainable management as: "*managing the use and development of natural and physical resources in a way which enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety while sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; and safeguarding the life supporting capacity of air, water, soil and ecosystems; avoiding, remedying or mitigating any adverse effects of activities on the environment*."
- Section 6(a) the RMA which requires the preservation of the natural character of the coastal environment, wetlands, lakes and rivers and their margins from inappropriate subdivision, use and development.
- Section 6(b) of the RMA which requires *"the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development"*. The Proposal site does not include any outstanding natural features/landscapes, or any areas of outstanding natural character.
- Section 7(c) of the RMA which requires decision makers to have regard to "*the maintenance and enhancement of amenity values*".
- Section 7(f) of the RMA, which requires decision makers to have regard to "*the maintenance and enhancement of the quality of the environment*".

5.2 Regional Policy Statement for the Wellington Region

- The reservoir is defined as regionally significant infrastructure[7] which is recognised as a priority and providing benefits.

5.3 Hutt City Council District Plan (HCCDP)

While the Proposal will be authorised by a designation rather than district consents, the following provisions of the [HCDP] will be relevant under s 168A(3)(a) of the RMA.

[6] Two matters that should be considered when preparing an assessment of effects on the environment.

Subject to the provisions of any policy statement or plan, any person preparing an assessment of the effects on the environment should consider the following matters:

(b) any physical effect on the locality, including any landscape and visual effects:

[7] Regionally significant infrastructure is defined in Appendix 3 of the Operative Regional Policy Statement for the Wellington Region, Wellington Regional Council

- The site spans across both the General Residential and Passive Recreation Zones, and has the following relevant overlays:
  - Significant Natural Resource Site (SNR12 – Eastern Hills Bush)
- Chapter 4 of the HCCDP, sets out that the purpose of the General Residential Zone is that *"Residential Activities are the dominant activities in the General Residential Activity Area. Any non-residential activities that locate in the General Residential Activity Area are compatible with the low to medium density residential development and high levels of amenity anticipated for the zone"*.
- Chapter 7 of the HCCDP, sets out that the purpose of the Passive Recreation Zoning is "*to conserve and protect the Eastern Hills, Stokes Valley and Wainuiomata Hills which have high conservation and amenity values*" and "*to allow recreation and leisure activities which are consistent with the natural and undeveloped character of the area*".
- Chapter 13 of the HCCDP, sets out that the purpose of the regionally significant network utilities is *"to recognise and protect the benefits of the regionally significant network utilities"*. These are to be identified and recognised and the Regional Policy Statement needs to be given effect to.
- Chapter 14 of the HCCDP, set outs that the purpose of the significant natural resource site is "*to identify and protect significant natural, cultural and archaeological resources in the City from inappropriate subdivision, use and development"*. In particular, the significant values associated with the Significant Natural Resource Site are *"Lowland forest on hill country. Contains a fire-induced regionally representative regenerating vegetation mosaic, including areas of pre-European Podocarps and Hard Beech. Nearly two-thirds of the forest is 90-110 years old. Plants – Arthropodium cirrhatum, Fuchsia excorticata and Podocarpus totara. Large species diversity due to different topography. Many bird species, including NZ pigeon*".

The Hutt City District Plan directs users to consider relevant effects associated with an activity. From a landscape perspective, the following are considered to be relevant matters.

The Proposal will be located within the HCCDP Significant Natural Resource Overlay, specifically Significant Natural Resource 12. Any site development or activity in a Significant Natural Resource ordinarily requires a Restricted Discretionary Activity consent under Rule 14E 2.2. Discretion is restricted to the items below under Rule 14E 2.2.1:

- (i) Extent and effects of the works. Assessment will be made of the following relevant factors:
  - The extent to which the resource is to be modified, damaged or destroyed;
  - The extent to which The Proposal may compromise natural character, visual amenities and landscape values;
  - The impact on the coastal environment; (not relevant here) and
  - The recognition and protection of cultural significance.

Within the HCCDP, under rule 13.3.1.33 water reservoirs are a Restricted Discretionary Activity, with the following matters related to this Landscape and Visual Assessment below:

- (a) Design and external appearance
- (g) Visual effects including impacts on:
  - The residential and recreational use of the land in the vicinity of the proposed utility
  - The existing character, landscape, streetscape and amenity values of the locality
  - Key public places, public viewing points, the coast, and significant recreational areas

- (i) Cumulative effects
- (j) Any potential interference with public use and enjoyment of the land and the operation of land uses in the vicinity
- (k) Measures to mitigate the bulk and scale of the utility, including screening, colour and finish treatment, earth mounding and/or planting, viewing distances, the location of support structures
- (q) Rehabilitation of the site following any construction or future maintenance period
- (t) Any adverse effects on an area of native vegetation

Accordingly, the relevant provisions of the HCCDP highlight the following matters as being particularly relevant for the consideration of the Notice of Requirement:

- The clearing of the existing vegetation and modification of the ground plane, which may compromise the natural character, visual amenities and landscape values.
- The works occurring around Waiwhetū Stream, which may have an impact on the natural character.
- The bulk size of The Proposal within the receiving environment.
- The loss of access to the recreation track during construction
- Establishment of mitigation planting to rehabilitate the site following construction.

6 Methodology to Assess Landscape, Visual and Natural Character Effects

6.1 Visual Catchment and Viewing Audience

To determine the visual catchment and viewing audience, desktop mapping including viewshed maps, and site visits were undertaken.

The viewshed mapping (refer **Appendix A** Zone of Theoretical Visibility Map LA004) was undertaken to understand who may potentially be affected by The Proposal within the wider viewing catchment. There are dwellings extending to within approximately 70m from The Proposed Site, where there would likely be some views of The Proposal.

Throughout this process it was determined that the fixed viewers include the local residents who live in the residential areas outlined within the viewshed mapping. Within this mapping, occupational viewers will also be present, especially in the light industrial area adjacent to Naenae Road and Vogel Street. The Hutt Valley Railway Line runs from Wellington through to Upper Hutt Station. Transient viewers include those travelling along the trainline, the streets outlined within the viewshed mapping and recreational users of the Firebreak Track.

The visual effects on a fixed, or permanent viewing audience are considered to have greater importance than effects on transient viewers due to the greater length of viewing time. Any adverse effects experienced by occupational viewers are generally accepted as the potentially affected parties are typically within the receiving environment from 9am to 5pm, engaged in working activities that do not permanently occupy the buildings. Any visitors to these buildings such as customers or visitors will be there for short periods of time and as such cannot be considered affected to an unacceptable level by The Proposal.

The descriptions and discussions in previous sections about setting, site, planning context and proposed activities form the baseline discussion to this assessment.

6.2 Visual Simulations

Visual simulations[8] have been produced to illustrate the likely extent of the potential landscape and visual effects of the proposed reservoir (Refer **Appendix A** Supporting Maps and Photo Essay).

The fact that parts of the reservoir will be visible and change aspects of the character of the existing landscape does not necessarily mean that these effects will be inappropriate or unacceptable. The visibility, scale, nature and duration of the effect, the visual complexity and scale of the existing landscape, the visual sensitivity of the viewer and the size of the viewing audience, all influence the degree of the project's potential landscape and visual effects. Visual sensitivity is a measure of how critically changes to a landscape will be regarded and this depends on a range of viewer preferences and view characteristics.

The assessment that follows describes the nature of effect against the existing environment and that a viewer will experience from each particular viewpoint, along with the magnitude of effects, during both the construction and operational phases of the project.

[8] The visual simulations have been produced relative to NZILA Best Practice Guide 'Visual Simulations BPG 10.2.

6.3 Landscape and Visual Effects Relative to Specific Viewpoints

The potential visual effect ranking is a combination of the extent to which the proposed reservoir is a focus, the extent to which the proposed reservoir has changed the landscape, along with the duration of the view and the effects of distance.

The nature of the potential effect is described, based on the environmental and design information available. Importantly, change is not an effect per se[9]. By way of example, it is not the quantity of the earthworks that is relevant, rather the effect of the earthworks on (say) visual amenity values or on the character of a stream.

An evaluation of the magnitude of the effect is then provided, with an overall rating for landscape and natural character effects, and specific ratings relative to identified viewpoints for visual effects. Magnitude is influenced by variables[10], for example the dimensions of the reservoir, distance from a viewpoint and the effects of intervening landform or vegetation. A relative scale is used to rank magnitude and reasons provided to justify the ranking. The 7-point scale, based on the current NZILA LVA Guidelines is used. Appendix C outlines these rankings in descending order (this is the same scale as is used for assessing landscape effects).

The mitigation component that is factored into the above actual effects 'equation' is a combination of the project's mitigation measures previously outlined in Section 0 and known effectiveness of previous 'landscape' rehabilitation conditions.

Figure 7: Effects diagram.

In this assessment, the focus is on the long-term effects of the project, being the 'Actual Effect'. Mention is made of a number of short-term effects that will appear during construction and then cease after the construction phase. Once the project is complete, the initial effects being 'Nature of Effect' and its 'Magnitude' will be reduced via the proposed landscape mitigation measures – 'Mitigation', resulting in the 'Actual Effect'.

[9] TTatM page 135 notes: *Change itself is not an effect: landscapes change constantly. It is the implications of change for a landscape's values that is the effect.*
[10] In other words, an assessment of magnitude can be thought of as an assessment of variables.

7 Landscape, Natural Character and Visual Effects

7.1 Landscape, Natural Character and Visual Effects During Construction

7.1.1 Landscape Effects During Construction

The physical changes to the landscape arising from the construction of The Proposal include:

- Construction of a 15ML, 55.2m external diameter x 8.35m tall circular concrete reservoir including construction activity of machinery, site fencing, site management practices, temporary site offices and containers, haul roads and construction traffic manoeuvring.
- Bulk earthworks volumes of approximately 90,000 m^3 (in-ground volume) for the reservoir and associated pipelines down the hill towards Waiwhetū Stream.
- The clearance of vegetation for the construction of the reservoir and delivery pipes, including a 2m clearance buffer zone for access, fencing and sediment controls. Vegetation is also to be cleared on a small hill section north of Naenae Reservoir. Refer to Appendix D for the earthworks drawing.
- Installation of inlet and outlet pipes.
- Excavation adjacent to and through Waiwhetū Stream.
- Small temporary staging bridge over the Waiwhetū Stream.
- Temporary closure of a firebreak and access track around the existing reservoir site throughout the construction period.
- Night works as described in the Construction Methodology[11]

[11] Connect Water (2023), Construction Methodology, Eastern Hills Reservoir, 31 May.

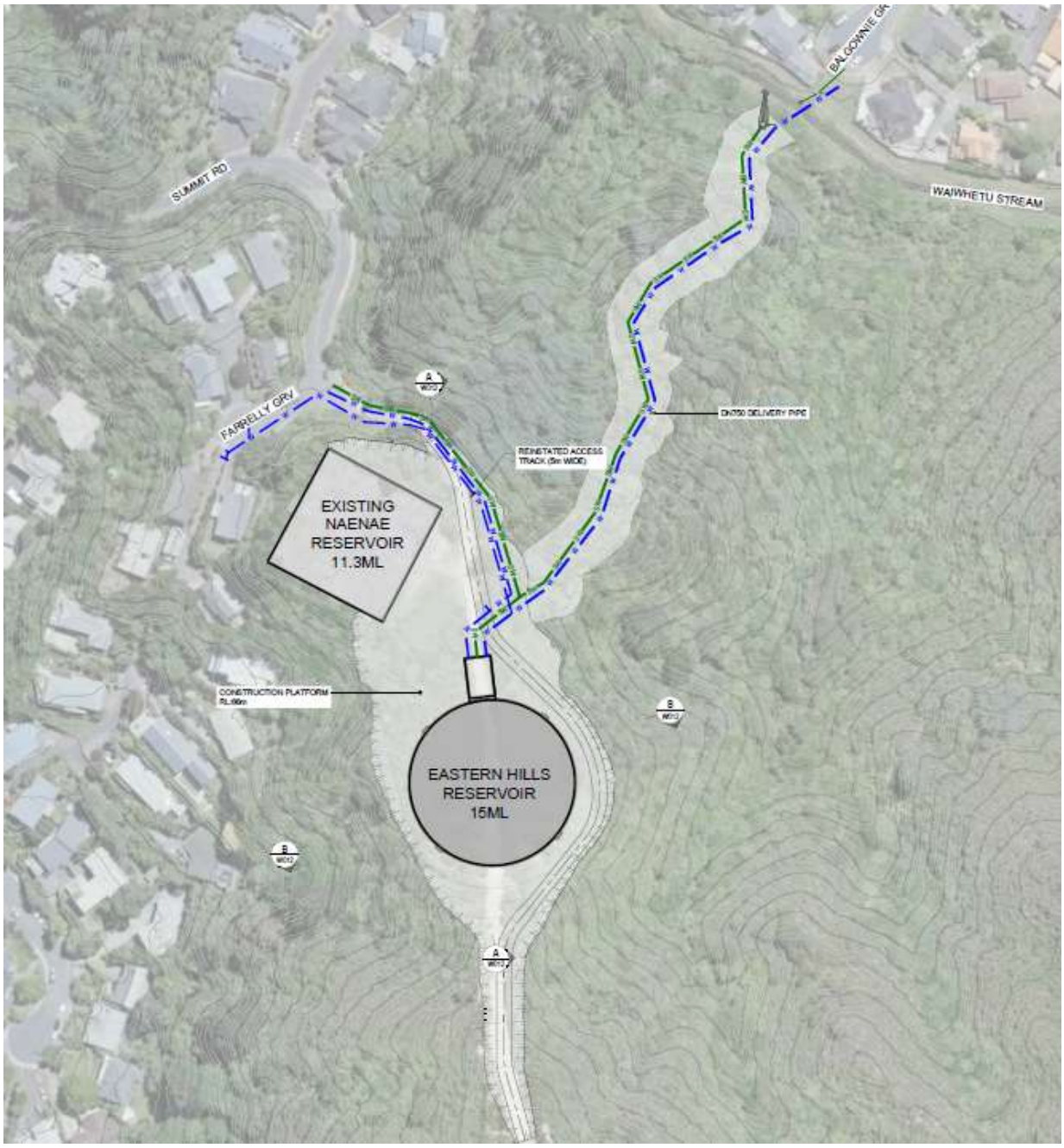


Figure 8: Earthworks Plan (Indicating vegetation clearance area).

The landscape effects during construction have been assessed as having a Moderate Adverse impact due to the following reasons:

- Temporary Nature: The effects are temporary in nature (occurring over an approximately two and a half years period), indicating that they will not have a long-term impact on the landscape.
- Impact of Vegetation Clearance on Landscape Character: The construction activities will affect the landscape character of The Proposed Site. This however is very small when compared to the scale of the Eastern Hutt Hills. The most significant impact according to the EIA[12], is the removal of mānuka and kānuka which are nationally 'Threatened'.
- Impact on Landscape Values: The construction activities will affect the landscape values of The Proposed Site. This is because the construction works will temporarily prevent use of the existing track which is currently used for recreation purposes.

[12] WSP (2023) Eastern Hills Reservoir, Ecological Impact Assessment.

7.1.2 *Natural Character Effects During Construction*

Natural character effects during the construction phase are expected to arise from the impacts of constructing the small temporary staging bridge, delivery pipe, overflow/scour pipe and the discharge to Waiwhetū Stream. These effects are likely to arise from changes to the existing environment, including potential impacts to the Waiwhetū Stream. These effects are likely to arise from the clearance of vegetation, fencing and sediment controls, as well as construction activity including construction machinery and site management practices such as dust mitigation via watering. These effects will be temporary.

Based on the reasons stated above, the natural character effects during construction have been evaluated as Low-Moderate Adverse.

7.1.3 *Visual Effects During Construction*

The visual effects during the construction phase are expected to arise from alterations to the existing environment. These effects are likely to include the presence of construction machinery, security fencing, and site management practices such as dust mitigation via watering and vegetation removal. It is important to note that these effects are temporary and consistent with typical construction sites. Four nights of night works (total) have been proposed across the whole construction programme. This will introduce artificial lighting into the landscape.

Based on the reasons stated above, the visual effects during construction have been evaluated as Moderate Adverse.

Regarding the Landscape, Natural Character and Visual Effects during construction, Table 3 summarises the level of potential effect for each.

7.1.4 *Summary of Landscape, Natural Character and Visual Effects During Construction*

Table 3: Rating of Landscape, Natural Character and Visual Effects During Construction

Type of Effect	Rating without mitigation
Landscape Effects During Construction	Moderate Adverse
Natural Character Effects During Construction	Low-Moderate Adverse
Visual Effects During Construction	Moderate Adverse

In terms of whether the effects are adverse or positive, for all types of effect, they have been assessed as adverse. This is primarily due to the disruption caused by construction activities occurring within the landscape. This includes construction machinery and site management practices such as dust mitigation via watering. Artificial lighting will also be introduced into the landscape, for four nights of night works which will have an impact on the visual effects. Vegetation clearance has the largest impact on the landscape effects.

7.2 Landscape, Natural Character and Visual Effects During Operations

7.2.1 *Landscape Effects During Operations*

Changes to the physical setting arising from The Proposal include:

- Operation of a 15ML, 55.2m external diameter x 8.35m tall circular concrete reservoir.
- Permanent landscape changes as a result of earthworks from the construction of The Proposal.

- New inlet pipe supplying water to the reservoir from the existing reservoir.
- Delivery pipe connecting to the potable water network. This pipe will be trenched under the stream Waiwhetū Stream.
- An overflow/scour pipe which discharges into the Waiwhetū Stream. Scour protection will be provided by coconut matting or planting on the opposite stream bank. The existing reservoir overflow pipe has been modified and connected to this new system.
- Vegetation clearance, including indigenous and exotic shrubland to make way for the reservoir, access road, hardstand areas and buried pipework.
- Reinstatement of a fire-break and access track around the reservoir site.

The landscape effects during operations have been assessed as Low-Moderate Adverse because of the following:

- Located within a modified landscape: Significant change has already occurred on this site and in close proximity due to the construction of the existing reservoir, so the site possesses a reasonable capacity to accommodate further changes, including the addition of another reservoir and its associated infrastructure.
- Adjacent to an existing reservoir: The Proposal is situated adjacent to an already established square concrete reservoir, meaning that the proposed reservoir will not introduce a completely new element to the surrounding scene.
- Utilisation of existing infrastructure: The existing road infrastructure will be used for access, resulting in minimal additional impact on the surrounding landscape as a new road is not required to be constructed. This approach aims to minimize the removal of vegetation cover. Part of the existing firebreak track will be resurfaced so that it can be used for required access.
- Presence of urban development: The Proposed Site is located close to existing urban development, including residential housing. It sits at the edge or above areas of varying degrees of urban development.
- Extensive earthworks: The proposed reservoir earthwork volumes are estimated to be approximately 90,000m^3, which will alter the existing landscape character to a notable extent.
- Introduction of built development: The construction of a reservoir and its associated infrastructure will introduce a human made form into the site.
- Vegetation clearance: The vegetation present on The Proposed Site will be cleared, resulting in a modification of the landscape through changes in the vegetation cover.
- Re-establishment of the recreation track: After construction, the recreation track will be re-established with a new alignment, providing an opportunity for the public to continue enjoying the recreational benefits offered by the Eastern Hutt Hills.
- No Lighting: The Proposal includes no exterior lighting which means there will be no visual disturbance from The Proposal at night.

7.2.2 Natural Character Effects During Operations

Natural character effects refer to the area's distinctive combination of natural characteristics and qualities, including a degree of naturalness. It focuses specifically on the coastal environment (including the coastal marine area), wetlands, lakes and rivers, and their margins. The Proposed Site is not within the coastal environment.

The natural character of The Proposed Site includes:

- A freshwater watercourse, Waiwhetū Stream that crosses The Proposed Site from east to west. To the north of the stream there is residential housing and to the south, are the foothills of the Eastern Hutt Hills. Waiwhetū stream discharges into the Hutt River.

The natural character effects during operations have been assessed as Low Adverse because of the following:

- The removal of vegetation will not be out of character with the existing modified environment of the Waiwhetū Stream which includes channelised sections of stream and open areas where vegetation has been removed.
- The proposed delivery pipe will be trenched under the stream Waiwhetū Stream and will not affect the natural character of the stream.
- Built elements, including residential dwellings, fencing and the existing reservoir overflow pipe are an aspect of the existing stream environment and context. The proposed overflow/scour pipe will be integrated with the existing piped network.

7.2.3 Visual Effects During Operations

Four viewpoints have been selected to assess the existing visual qualities and the likely visual impacts of the proposed reservoir on the fixed, occupational and transient viewing audience. Relative to the likely common views of the proposed reservoir, viewpoints have been selected in order of closing proximity to the proposed reservoir.

- VP1: View from outside 25 Summit Road looking south east towards The Proposed Site
- VP2: View from the western end of Summit Road looking south east towards The Proposed Site
- VP3: View from Purser Grove Playground looking east toward The Proposed Site
- VP4: View from the centre of Naenae Park looking west towards The Proposed Site

The location of these four viewpoints is shown at Appendix A: Supporting Maps and Photo Essay - Viewpoint Plan. The reasoning behind considering a particular view and the specific discussion regarding the visibility of the various aspects of The Proposal (during both construction and operations) is provided in Section 7.2.3.1 - 7.2.3.4, relative to the particular viewpoints.

All four view locations were taken from public viewpoints within legal road corridors and represent views commonly experienced by the community. Private residential views are deemed to be represented by these public viewpoints.

Photographs were taken using a 50mm focal length lens camera to demonstrate the relative visibility of The Proposal and its relationship with the surrounding landscape and built forms. The selection of the key viewpoints was based on the following criteria:

- Views which are commonly experienced by the community from public viewing locations.
- An even spread of views across the visual catchment.
- Representative viewpoints that consider a human normal field of vision.

*Figure 9: Viewpoint Reference Plan (see **Appendix A** for A3 plan).*

7.2.3.1 VP1: View from outside 25 Summit Road looking south east towards The Proposed Site

Viewpoint Description

This view illustrates the visibility to The Proposal that residents (fixed viewers) may have when viewed from properties at the eastern end of Summit Road. The transient viewers will consist of people travelling along Summit Road either by vehicle, bike, scooter or foot.

The foreground comprises Summit Road including the footpath. On the lefthand side of the image, a two storey, standalone house can be seen with associated residential fencing. In the midground of the view, to the righthand side, a vegetated bank is prominent which extends through the rear of the view. Behind this bank, the top of the existing reservoir can be seen. In the distance the Eastern Hutt Hills and the existing firebreak track can be seen.

Visibility of Development

This viewpoint will afford a relatively close view of The Proposal. The re-surfaced access road will be prominent, and some vegetation removal will be obvious, but other than this, The Proposal will not be able to be seen. The re-surfaced access road to the concrete reservoir will be seen in place of the existing firebreak track.

Summary

The viewpoint offers a vantage point from which limited elements of The Proposal are visible. Most of The Proposal will not be able to be seen from this viewpoint and the only visual change within the view would be a portion of the existing gravel firebreak track within the view being replaced with the re-surfaced (sealed) access road and the removal of some vegetation. The proposed sealing of the existing firebreak track is only from Summit Road to The Proposal, however this introduces a more urban surfacing into the landscape.

From VP1, The Proposal without mitigation has been assessed as having **Low Adverse** visual effects.

7.2.3.2 VP2: View from the western end of Summit Road looking east towards The Proposed Site.

Viewpoint Description

This view illustrates the visibility of the proposed reservoir that residents (fixed viewers) may have when viewed from properties at the western end of Summit Road. The reservoir will be screened from view by intervening vegetation and landform with visibility of the built elements being limited to a small portion of the balustrade which is semi-transparent. Transient viewers will consist of people travelling along Summit Road either by vehicle, bike, scooter or foot.

The foreground comprises Summit Road including the footpath on the southern side and associated grass berm. In the midground, single and double storey, standalone houses can be seen with residential fencing. In the distance, the Eastern Hutt Hills can be seen.

Visibility of Development

This viewpoint would afford a distant view of The Proposal. The reservoir balustrade will be seen, as well as the altered landform due to the earthworks. The cleared bank to the south of The Proposal will be prominent.

Summary

While the concrete reservoir would not be seen from this viewpoint, The Proposal which includes earthworks and vegetation removal will introduce a noticeable localised modification of the landform visible along the skyline However, from this viewpoint, while the cleared bank is prominent, the changes to the landform are in keeping with the surrounding landscape as the landscape follows a similar form to what is existing. The concrete reservoir would not be seen due to the existing infrastructure (residential houses), vegetation and landform which obscure the view.

From VP2, The Proposal without mitigation has been assessed as having **Low-Moderate Adverse** visual effects.

7.2.3.3 VP3: View from Purser Grove Playground looking east towards The Proposed Site

Viewpoint Description

This view illustrates the visibility to The Proposal that residents (fixed viewers) may have when viewed from properties that are adjacent to Purser Grove Playground. Transient viewers will consist of people walking through the playground or along Purser Grove or Waiwhetū Road.

The foreground comprises lawn and an access path associated with the playground as well as adjacent residential housing. The existing reservoir is visible and set within the context of vegetation and residential housing, which is standalone, single storey and framed by timber fences. In the mid to distant views, the Eastern Hutt Hills can be seen covered in dense vegetation. Within the mid views single storey, standalone housing can be seen interspersed with vegetation.

Visibility of Development

This viewpoint would afford a distant view of The Proposal. The top of the proposed reservoir will be seen situated within the Eastern Hutt Hills adjacent to residential housing. The cleared bank to the south would be prominent. Despite their position at the same elevation the proposed reservoir appears to sit lower in the landscape than the existing reservoir from this viewpoint. This perceived difference in elevation is due to the effect of perspective. The existing reservoir sits closer to the observer than the proposed reservoir from this viewpoint, making the proposed reservoir (which is further away) appear lower in the landscape.

Summary

The viewpoint offers a clear vantage point from which the reservoir will be visible, particularly initially, due to the vegetation that will be cleared. While the reservoir is a significant item of infrastructure introduced into a relatively natural environment, it is located adjacent to the existing reservoir and is foregrounded by a residential setting. The earthworks also cause a significant change in the landscape character and the way in which the ridgeline is read in conjunction with the wider landscape. However, the existing topography and mature vegetation interspersed between built structures will obscure the bulk of the reservoir, reducing these visual impacts.

From VP3, The Proposal without mitigation has been assessed as having **Moderate Adverse** visual effects.

7.2.3.4 VP4: View from the centre of Naenae Park looking west towards The Proposed Site

Viewpoint Description

This view illustrates the visibility of The Proposal that residents (fixed viewers) may have when viewed from properties adjacent to Naenae Park and potentially similar views from residential properties along surrounding roads, depending on the intervening screening by buildings and vegetation within properties. The transient viewers will consist of people utilising Naenae Park.

The foreground comprises of the grassed field of Naenae Park. In the midground of the view, the single storey Naenae Cricket Club Building can be seen. To the rear of this, mature trees can be seen as well as a playground. The Proposal is set within an aspect of the hillside which is predominantly vegetation.

Visibility of Development

This viewpoint would afford a distant view of The Proposal. The entirety of the concrete reservoir will be able to be seen alongside the proposed earthworks set within a vegetated landscape. The cleared bank to the south will be prominent.

Summary

The viewpoint offers a clear vantage point from which The Proposal is highly visible. The significant earthworks and introduction of the human-made structure (the concrete reservoir), introduce forms into views from Naenae Park which are at variance with the existing, predominantly natural landscape. However from this view, the urban environment in the fore and midground provide context for this development.

From VP4, The Proposal without mitigation has been assessed as having **Moderate-High Adverse** visual effects.

7.3 Summary of Landscape, Natural Character and Visual Effects – During Operations

Regarding the Landscape and Natural Character Effects during operations, Table 4 summarises the level of potential effect for each.

Table 4: Ranking of Landscape and Natural Character Effects During Operations

Type of Effect	Rating
Landscape Effects During Operations	Moderate Adverse
Natural Character Effects During Operations	Low-Moderate Adverse

In regard to the four viewpoints discussed in Section 8.2, Table 5 summarises the level of potential visual effect for each.

Table 5: Ranking of Visual Effects During Operations Relative to Specific Viewpoints

Viewpoint	Location	Visual Effect Rating
1	View from outside 25 Summit Road looking southeast towards The Proposed Site.	Low Adverse
2	View from the western end of Summit Road looking east towards The Proposed Site.	Low Moderate Adverse
3	VP3: View from Purser Grove Playground looking east towards The Proposed Site.	Moderate Adverse
4	View from the centre of Naenae Park looking west towards The Proposed Site	Moderate – High Adverse

In terms of whether the effects are adverse or positive, for all four viewpoints where the view is towards The Proposal, the visual effects would be adverse. This is primarily due to the addition of a built structure into these views. The natural character of the landscape will also change given the introduction of an additional built structure. However, the natural character of the landscape is relatively degraded, and from most viewpoints, the structure is tucked into a saddle. The existing backdrop, intervening vegetation and proposed mitigation planting will reduce any adverse effects of The Proposal on natural character. For Viewpoint 4, where the effects are Moderate – High Adverse, management and maintenance of mitigation planting will be critical to ensure that plants have every opportunity to develop and screen The Proposal.

8 Recommendations and Proposed Mitigation Measures

The following additional mitigation and remediation measures are recommended as proposed conditions of consent and have been considered when determining the levels of landscape, natural character and visual effects throughout this Landscape and Visual Assessment.

8.1 During Construction

The recommended mitigation of landscape and visual effects during construction are:

- A Construction Environmental Management Plan.
- Reinstate construction areas around the site by redistributing any leftover fill (if applicable) and shaping the ground to integrate with the surrounding landform.
- Locate construction yard compound, stocking piling areas and machine storage area away from residential properties, and roads as far as practicable.
- Provide hoardings around the boundaries of the site compounds that face onto adjacent landowners and open spaces.
- Where possible, mitigate effects related to lighting during nighttime works through the use of directional lighting to prevent glare/spill light falling on residential properties.
- Retain suitable slash or native stems/branches to be used within landscape planting areas to provide immediate erosion management and habitat for invertebrates and lizards. Location is to be confirmed with the ecologist to ensure that this would not be a risk to Waiwhetū stream during a storm event.
- The earthworks are contoured in a natural manner to reflect the surrounding landform.

Regarding Landscape, Natural Character and Visual Effects during construction, Table 6 summarises the level of potential effect for each, once the above mitigation and remediation recommendations have been implemented:

Table 6: Ranking of Landscape and Natural Character Effects During Construction and After Mitigation and Remediation

Type of Effect	Rating Before Mitigation & Remediation	Rating After Mitigation & Remediation
Landscape Effects During Construction	Moderate Adverse	Low-Moderate Adverse
Natural Character Effects During Construction	Low-Moderate Adverse	Low Adverse
Visual Effects During Construction	Moderate Adverse	Low-Moderate Adverse

8.2 During Operations

The recommended mitigation of landscape, natural character and visual effects during operations are:

- Adopt the proposed landscape planting plan (Refer to **Appendix B**). The proposed planting plan was developed in conjunction with WSP Ecologists to ensure that the native species selected were those appropriate to re-establish lizard habitats. Additionally, plants were chosen that were tall and quick growing to assist with mitigating the visual effects during operations.

- Revegetation of the 2m clearance buffer zone and small hill section north of the Naenae reservoir with native vegetation. Refer to **Appendix B.**
- Revegetation planting is to occur in stages. Fast growing plants are to be implemented in the earlier stages to allow for visual mitigation to occur quickly. This is to allow for slower growing vegetation to establish over a longer time period.
- Revegetation of the delivery pipe clearance zone. Plants to be shallow rooted to minimise adverse impacts on the pipe. Refer to **Appendix B.**
- Plants selected for revegetation should be native and eco-sourced. The exposed site should be considered when selecting species to ensure that the plants will not become stunted due to the existing environmental conditions.
- Planting of taller indigenous broadleaved hardwoods to the west, northeast and east of the reservoir to mitigate visual effects of the reservoir and cleared vegetation for the proposed pipeline once planting is established. This will take approximately 5-10 years to establish dependent on growth rates.
- A 2 year maintenance period is recommended to ensure successful establishment of vegetation, including any replanting that may be required.
- Reinstate the firebreak track providing access to the wider network of trails within the Eastern Hutt Hills.
- Revegetation of the stream banks near the outlet pipe, with native vegetation. This will take approximately 5-10 years to establish dependent on growth rates. Faster growing shrub species will provide initial screening after 5 years, this will be supplemented by taller, but slower tree species longer term.

In regard to the Landscape and Natural Character Effects during construction, Table 7 summarises the level of potential effect for each, once the above mitigation measures and remediation recommendations have been implemented and established:

Table 7: Rating of Landscape and Natural Character Effects During Operations

Type of Effect	Rating Before Mitigation & Remediation	Rating After Mitigation & Remediation (after 5-10 years)
Landscape Effects During Operations	Moderate Adverse	Low Adverse
Natural Character Effects During Operations	Low-Moderate Adverse	Low Positive

In regard to the four viewpoints discussed in Section 7.2.3,

Table 8 summarises the level of potential visual effect for each.

Table 8: Rating of Visual Effect of The Proposal Relative to Specific Viewpoints

Viewpoint	Location	Visual Effect Rating Before Mitigation & Remediation	Visual Effect Rating After Mitigation & Remediation (after 5-10 years)
1	View from outside 25 Summit Road looking southeast towards The Proposed Site.	Low Adverse	Very Low Adverse
2	View from the western end of Summit Road looking east towards The Proposed Site.	Low-Moderate Adverse	Low Adverse
3	View from Purser Grove Playground looking east towards The Proposed Site.	Moderate Adverse	Low Adverse
4	View from the centre of Naenae Park looking west towards The Proposed Site	Moderate – High Adverse	Low - Moderate Adverse

9 Conclusion

This Landscape and Visual Assessment has considered the potential landscape, natural character and visual effects of the proposed reservoir and associated activity from a number of local viewpoints.

During construction, the potential **landscape effects** without mitigation have been assessed as **Moderate Adverse** due to the temporary nature of the works, the impact of vegetation clearance on landscape character and the impact of the construction activities on the landscape. With mitigation this rating will drop to **Low-Moderate Adverse**.

During construction, the potential **natural character effects** without mitigation have been assessed as **Low-Moderate Adverse** due to the potential impacts of construction on Waiwhetū Stream. These include the clearance of vegetation, fencing and sediment controls, as well as construction activity including construction machinery and site management practices. With mitigation this rating will change to **Low Adverse**.

During construction, the potential **visual effects** without mitigation have been assessed as **Moderate Adverse** due to the introduction of construction machinery, security fencing and site management practices into the visual environment. With mitigation this rating will be **Low-Moderate Adverse**.

During operations, the potential **landscape effects** without mitigation have been assessed as **Low-Moderate Adverse** because The Proposal is located within a modified landscape, adjacent to an existing reservoir and the existing infrastructure is being utilised. While there is significant vegetation clearance, mitigation measures recommend that these areas are revegetated. With revegetation and other mitigation measures suggested within Section 0, the rating will reduce to **Low Adverse**.

During operations, the potential **natural character effects** without mitigation have been assessed as **Low Adverse** due to the existing modification to Waiwhetū Stream, existing native riparian planting and the cultural significance of the stream. With mitigation the rating will change to **Low Positive**, due to native revegetation of the stream banks.

During operations and before mitigation, the potential **visual effects** have been assessed as ranging from **Low Adverse** to **Moderate-High Adverse**. This range is due to the variation in visibility of the site from key viewpoints. With mitigation this rating will range from **Very Low Adverse** to **Low-Moderate Adverse**.

10 Limitations

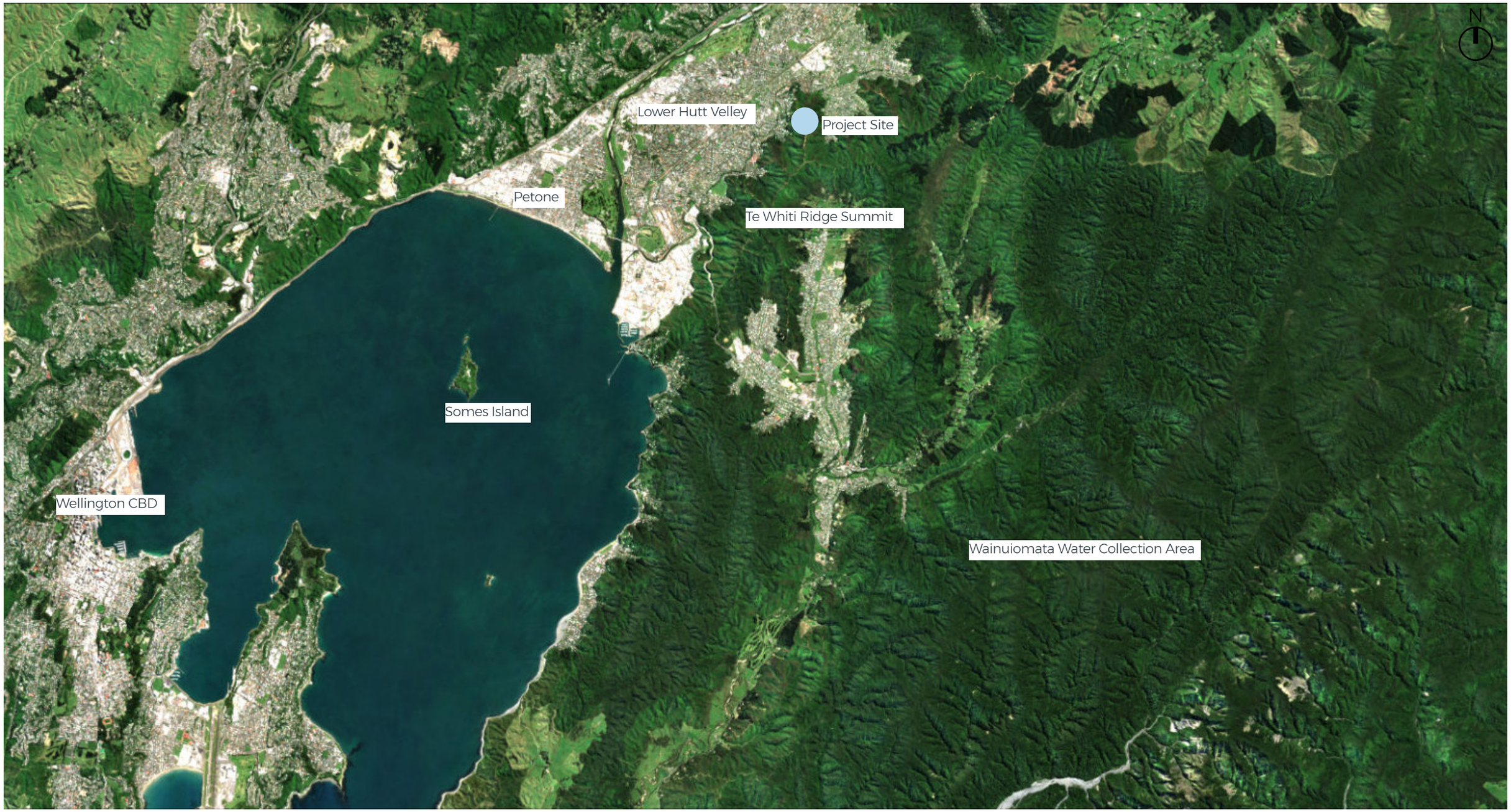
This report ('Report') has been prepared by WSP New Zealand Limited ('WSP') exclusively for Wellington Water ('Client') in relation to this Eastern Hills Reservoir Landscape and Visual Assessment ('Purpose') and in accordance with the Wellington Water Consultant Project Engagement form dated 10th March 2023 ('Agreement'). The findings in this Report are based on and are subject to the assumptions specified in the Report and Offer of Services dated 10th March 2023. WSP accepts no liability whatsoever for any use or reliance on this Report, in whole or in part, for any purpose other than the Purpose or for any use or reliance on this Report by any third party.

Appendix A: Supporting Maps and Photo Essay

Eastern Hills Reservoir Landscape Assessment

Appendix A: Supporting Maps and Photo Essay

November 2023
Version 4



Wider Context Map

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Scale:** 1:75000 **Status:** Issued to Wellington Water **Version:** 4

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow **Sheet Number:** LA001

Key

Project Site

Significant Natural Resource Overlay and Proposed Site

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Scale:** 1 : 7500 **Status:** Issued to Wellington Water **Version:** 4

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow **Sheet Number:** LA002

Key

- Significant Natural Resource
- Project Site
- Waiwhetu Stream

ZTV Methodology

The map was completed in ArcPro using the Viewshed tool. The LiDAR and ground surfaces were resampled to 1m to use as the input raster. The reservoir boundary was used as the observer features. An 8m offset was applied to the reservoir boundary and the height for the reservoir was set to 8m.

ZTV Limitations

The ZTV maps the theoretical visibility of The Proposal. When examining ZTV maps, it is important to understand that:

- ZTV maps do not show how an element in the landscape will appear or the magnitude of visual effects as they only show an indicative area and the extent of the potential viewshed. For example, recessive colours are not considered, which typically reduces the visibility of buildings in the landscape substantially.

- ZTV maps do not take into consideration the potential screening effect of vegetation cover or structures within the area and are solely based on 'bare' topography. It is inevitable that in most cases there will be buildings and trees near most viewpoints that will interrupt or fully screen views of all sites and the proposal.

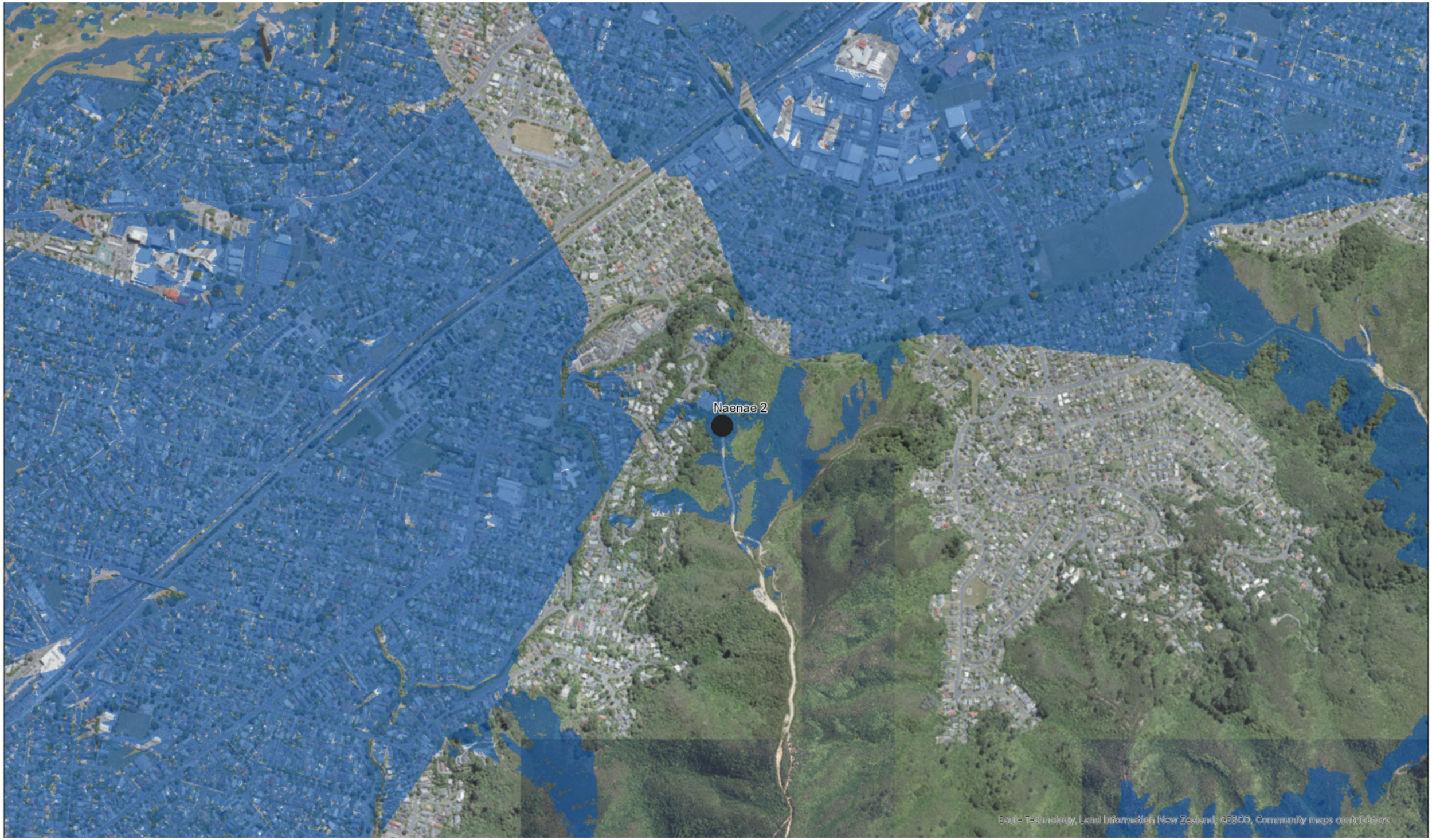
- The accuracy of ZTV maps is limited to the contour information/intervals. ZTV's are an assessment tool which produce a baseline of the potential maximum visibility of the element, however it does not consider the effects of distance of the viewer, intervening elements that may visually distract or detract from views, and atmospheric conditions such as sun/glare or humidity etc. The ZTV assumes an equal baseline condition for all views.

Zone of Theoretical Visibility Methodology

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Scale:** NTS **Status:** Issued to Wellington Water **Version:** 4

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow **Sheet Number:** LA003



Zone of Theoretical Visibility Map

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Scale:** NTS **Status:** Issued to Wellington Water **Version:** 4

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow **Sheet Number:** LA004

Key

Viewshed

Viewpoint Plan

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Scale:** 1:5000 @A3 **Status:** Issued to Wellington Water **Version:** 4

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow **Sheet Number:** LA005

Key

Photographic Viewpoint Locations

Project Site

Key

Photographic Viewpoint Locations

Project site

VP 1: View from outside 25 Summit Road looking south east towards the Proposed Site

Existing Conditions

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA006

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.206102, 174.940651 Photo taken using Canon Camera EOS 5D with 50mm lens at 1:18 pm on 15th March 2023

Key

Photographic Viewpoint Locations

Project site

VP 1: View from outside 25 Summit Road looking south east towards the Proposed Site

No Mitigation

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA007

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.206102, 174.940651 Photo taken using Canon Camera EOS 5D with 50mm lens at 1:18 pm on 15th March 2023

Key

Photographic Viewpoint Locations

Project site

VP 1: View from outside 25 Summit Road looking south east towards the Proposed Site

Mitigation

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA008

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.206102, 174.940651 Photo taken using Canon Camera EOS 5D with 50mm lens at 1:18 pm on 15th March 2023

Key

Photographic Viewpoint Locations

VP 2: View from the western end of Summit Road looking east toward the Proposed Site

Existing Conditions

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA009

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.207018, 174.93683 Photo taken using Canon Camera EOS 5D with 50mm lens at 1.30 pm on 15th March 2023

Key

Photographic Viewpoint Locations

VP 2: View from the western end of Summit Road looking east toward the Proposed Site

No Mitigation

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA010

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.207018, 174.93683 Photo taken using Canon Camera EOS 5D with 50mm lens at 1.30 pm on 15th March 2023

Key

Photographic Viewpoint Locations

VP 2: View from the western end of Summit Road looking east toward the Proposed Site

Mitigation

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

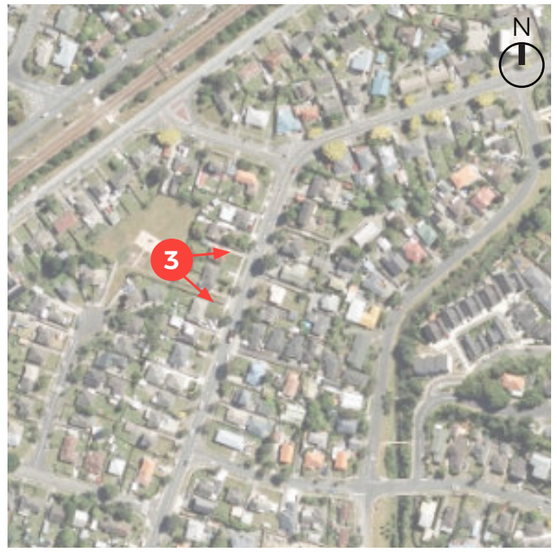
Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA011

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.207018, 174.93683 Photo taken using Canon Camera EOS 5D with 50mm lens at 1.30pm on 15th June 2023

Key

Photographic Viewpoint Locations



VP 3: View from Purser Grove Playground looking east toward the Proposed Site

Existing Conditions

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

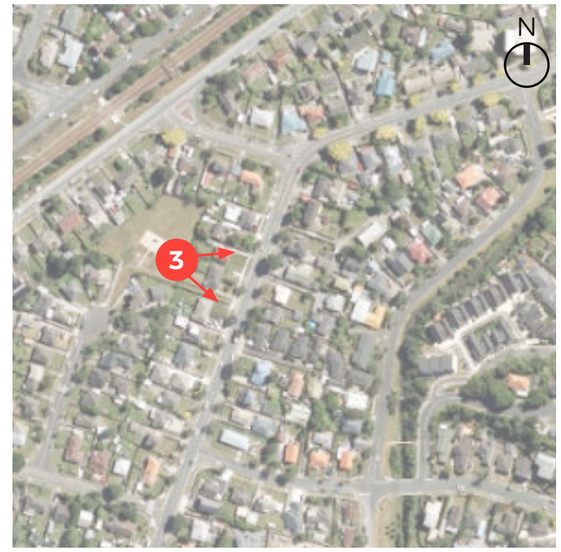
Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA012

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.206267, 174.934356 Photo taken using Canon Camera EOS 5D with 50mm lens at 2.39 pm on 15th June 2023

Key

Photographic Viewpoint Locations



VP 3: View from Purser Grove Playground looking east toward the Proposed Site

No Mitigation

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

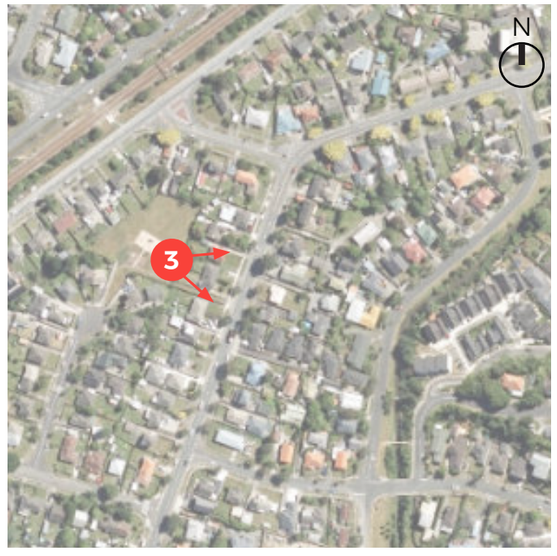
Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA013

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.206267, 174.934356 Photo taken using Canon Camera EOS 5D with 50mm lens at 2.39 pm on 15th March 2023

Key

Photographic Viewpoint Locations



VP 3: View from Purser Grove Playground looking east toward the Proposed Site

Mitigation

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA014

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.206267, 174.934356 Photo taken using Canon Camera EOS 5D with 50mm lens at 2.39 pm on 15th March 2023

Key

Photographic Viewpoint Locations

VP 4: View from the centre of Naenae Park looking west towards the Proposed Site

Existing Conditions

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA015

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.203662, 174.952739 Photo taken using Canon Camera EOS 5D with 50mm lens at 2:03 pm on 15th March 2023

Key

Photographic Viewpoint Locations

VP 4: View from the centre of Naenae Park looking west towards the Proposed Site

No Mitigation

Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA016

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.203662, 174.952739 Photo taken using Canon Camera EOS 5D with 50mm lens at 2:03 pm on 15th March 2023

Key

Photographic Viewpoint Locations

VP 4: View from the centre of Naenae Park looking west towards the Proposed Site

Mitigation

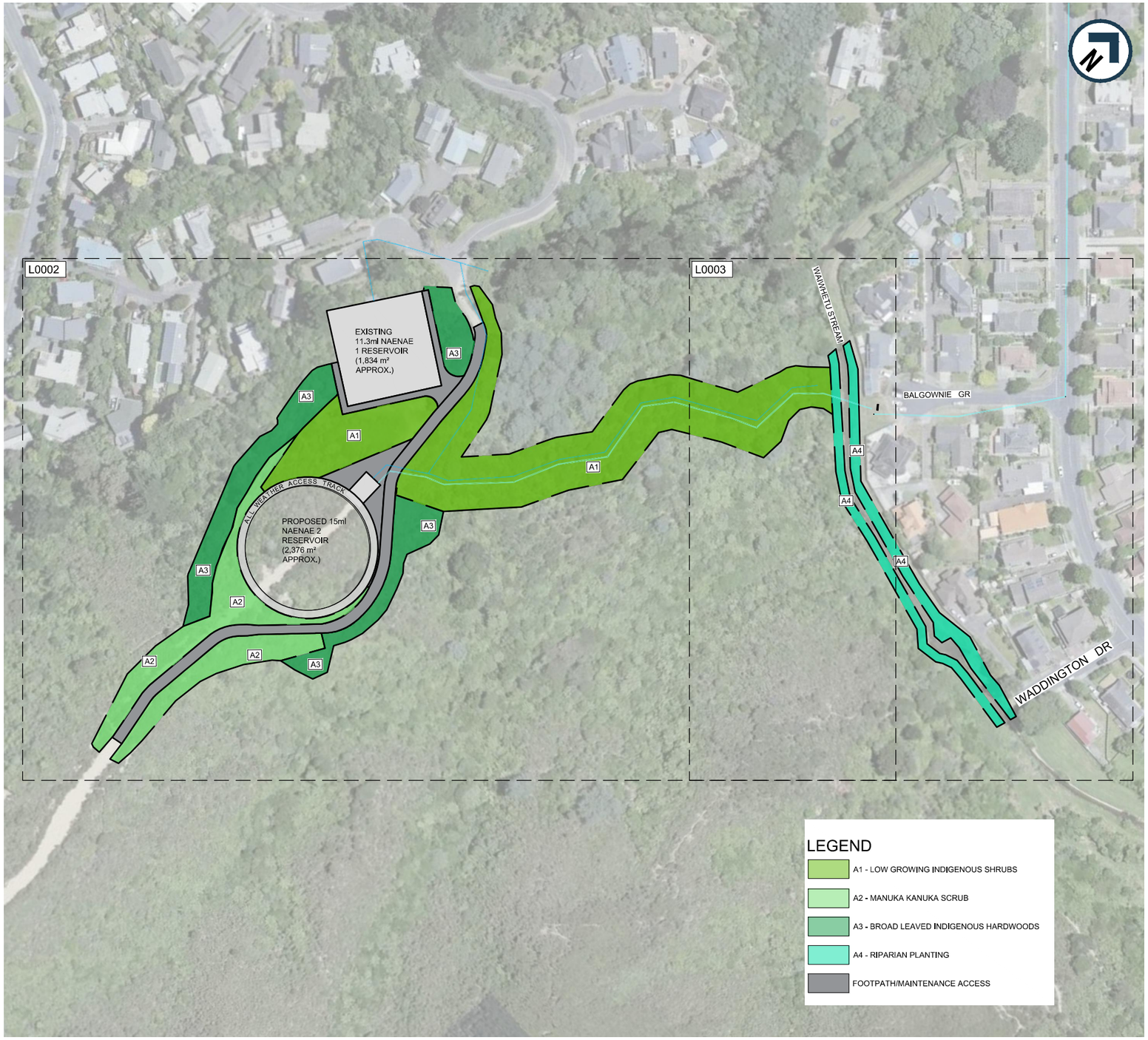
Project Name: Eastern Hills Reservoir | Landscape and Visual Assessment

Date: November 2023 **Status:** Issued to Wellington Water **Version:** 4 **Sheet Number:** LA017

Drawn By: Jack Dunnett **Reviewed By:** Wendy Hoddinott **Approved By:** John Leatherbarrow

Photo Location: -41.203662, 174.952739 Photo taken using Canon Camera EOS 5D with 50mm lens at 2:03 pm on 15th March 2023

Appendix B: Landscape Mitigation Planting Plan



CONCEPT LANDSCAPE PLAN

1:1000 @ A1, 1:2000 @ A3

A1 1:1000 / A3 1:2000 — 0 10 20 30 40 50m

NOTES:

Indicative Only - to be confirmed after vegetation losses have been assessed during the construction phase

No trees to be placed over the pipe alignment, only shrubs or grasses.

Where possible, all native species to be eco-sourced from the ecological areas.

All plants to be placed in a quincunx arrangement. Confirm set out with landscape architect or ecologist prior to undertaking any planting work.

All vegetation removal to be in accordance with the vegetation management plan.

PLANTING SCHEDULE

Botanical Name	Common Name	Quantity	Size	Spacing
A1 - LOW GROWING INDIGENOUS SHRUBS		7178m2		
Asplenium bulbiferum gracillimum	Fern	373	1.5L	5% @ 1m oc
Astelia fragrans	Bush Astelia	746	2.5L	10% @ 1m oc
Coprosma autumnalis	Kanono	94	3L	5% @ 2m oc
Coprosma lucida	Karamu	94	2.5L	5% @ 2m oc
Coprosma robusta	Karamu	94	2.5L	5% @ 2m oc
Dianella nigra	Ink Berry	896	1.5L	12% @ 1m oc
Freycinetia banksii	KieKie	299	2.5L	4% @ 1m oc
Geniostoma ligustrifolium	Hangehange	75	1L	4% @ 2m oc
Leptospermum scoparium	Manuka	112	2.5L	6% @ 2m oc
Muehlenbeckia australis	Pohuehue	280	2.5L	15% @ 2m oc
Myrsine australis	Red matipo	19	2.5L	4% @ 4m oc
Phormium tenax	Harakeke	187	2.5L	10% @ 2m oc
Piper excelsum	Kawakawa	94	2.5L	5% @ 2m oc
Veronica salicifolia	Koromiko	332	2.5L	10% @ 1.5m oc
A2 - MANUKA/KANUKA SHRUB		3804.5m2		
Austroderia toetoe	New Zealand Toetoe	99	2.5L	10% @ 2m oc
Gahnia setifolia	Mapere	44	2.5L	10% @ 3m oc
Kunzea robusta	Kanuka	95	2.5L	60% @ 5m oc
Leptospermum scoparium	Manuka	16	5L	10% @ 5m oc
Pteridium esculentum	Bracken Fern	44	5L	10% @ 3m oc
A3 - INDIGENOUS HARDWOODS		3004.37m2		
Alectryon excelsus	Titoki	4	5L	3% @ 5m oc
Alsophila tricolor	Silver fern	28	5L	8% @ 3m oc
Aristotelia serrata	Makomako	63	2.5L	8% @ 2m oc
Beilschmiedia tawa	Tawa	4	5L	3% @ 5m oc
Brachyglottis repanda	Hedge Ragwort	14	1.5L	4% @ 3m oc
Cordyline australis	Cabbage Tree	24	2.5L	3% @ 2m oc
Corynocarpus laevigatus	Karaka	20	2.5L	10% @ 4m oc
Elaeocarpus dentatus	Hinau	14	2.5L	4% @ 3m oc
Fuchsia excorticata	Tree Fuchsia	42	2.5L	12% @ 3m oc
Fuscospora truncata	Whairaunui	6	2.5L	3% @ 4m oc
Griselinia littoralis	Broadleaf	32	2.5L	4% @ 2m oc
Knightia excelsa	Rewarewa	5	2.5L	4% @ 5m oc
Kunzea robusta	Kanuka	21	2.5L	6% @ 3m oc
Laurelia novae-zelandiae	Pukatea	6	2.5L	3% @ 4m oc
Melicytus ramiflorus	Whitey Wood	11	2.5L	3% @ 3m oc
Metrosideros robusta	Northern Rata	4	5L	3% @ 5m oc
Pittosporum eugenioides	Lemonwood	14	2.5L	4% @ 3m oc
Pseudopanax arboreus	Five Finger	28	2.5L	8% @ 3m oc
Pterophylla racemosa	Kamahi	14	2.5L	4% @ 3m oc
Sphaeropteris medullaris	Black Tree Fern	24	1.5L	3% @ 2m oc
A4 - RIPARIAN PLANTING		1658m2		
Aristotelia serrata	Makomako	77	2.5L	10% @ 1.5m oc
Carex secta	Sedge	345	2.5L	20% @ 1m oc
Cordyline australis	Cabbage Tree	22	2.5L	5% @ 2m oc
Juncus edgariae	Wiwi Rush	154	2.5L	20% @ 1.5m oc
Macropiper excelsum	Kawakawa	44	2.5L	10% @ 2m oc
Phormium tenax	New Zealand Flax	65	2.5L	15% @ 2m oc
Typha orientalis	Oriental Cattail	154	2.5L	20% @ 1.5m oc

PLANT SCHEDULE

No.	Revision	By	Chk	Appd	Date
2	ISSUED FOR REVIEW	M.P	A.K.	J.L.	27/09/23
1	ISSUED WITH CONCEPT DESIGN - FINAL	N.O.	A.K.	J.L.	06/03/23
0	ISSUED FOR INFORMATION	N.O.	A.K.	J.L.	07/12/22

Drawing Originator: Connect Water c/- WSP, PO Box 12-003 Thorndon, Wellington 6144, T 64 4 471 7000

Original Scale (A1) 1:1000 — Reduced Scale (A3) 1/2 SHOWN

Design	M.P	27.09.23	Approved For Construction*
Drawn	H.S.	27.09.23	
Dsg Verifier	A.K.	27.09.23	
Dwg Check	A.K.	27.09.23	Date

* Refer to Revision 1 for Original Signature

Client: Wellington Water

Project: WELLINGTON WATER EASTERN HILLS RESERVOIR

Title: LANDSCAPE CONCEPT PLAN SHEET 01 OF 03

Discipline: LANDSCAPE ARCHITECTURE

Drawing No.: 3-WW021.02_L0001

Rev.: 2

DO NOT SCALE - IF IN DOUBT ASK

A1 REPRODUCTION SCALE: 100 80 60 40 20 0mm

A3 REPRODUCTION SCALE: 50 40 30 20 10 0mm

A1 - LOW GROWING INDIGENOUS SHRUBS (1,466 m²)
(77) Asplenium bulbiferum gracillimum
(153) Astelia fragrans
(20) Coprosma autumnalis
(20) Coprosma lucida
(20) Coprosma robusta
(183) Dianella nigra
(61) Freycinetia banksii
(16) Geniostoma ligustrifolium
(23) Leptospermum scoparium
(58) Muehlenbeckia australis
(4) Myrsine australis
(39) Phormium tenax
(20) Piper excelsum
(68) Veronica salicifolia

A3 - INDIGENOUS HARDWOODS (494 m²)
(1) Alectryon excelsus
(5) Alsophila tricolor
(11) Aristotelia serrata
(1) Beilschmiedia tawa
(3) Brachyglottis repanda
(4) Cordyline australis
(4) Corynocarpus laevigatus
(3) Elaeocarpus dentatus
(7) Fuchsia excorticata
(1) Fuscospora truncata
(6) Griselinia littoralis
(1) Knightia excelsa
(4) Kunzea robusta
(1) Laurelia novae-zelandiae
(2) Melicytus ramiflorus
(1) Metrosideros robusta
(3) Pittosporum eugenioides
(5) Pseudopanax arboreus
(3) Pterophylla racemosa
(4) Sphaeropteris medullaris

EXISTING
11.3ml NAENAE
1 RESERVOIR
(1,834 m²
APPROX.)

A3 - INDIGENOUS HARDWOODS (1,380 m²)
(2) Alectryon excelsus
(13) Alsophila tricolor
(29) Aristotelia serrata
(2) Beilschmiedia tawa
(7) Brachyglottis repanda
(11) Cordyline australis
(9) Corynocarpus laevigatus
(7) Elaeocarpus dentatus
(20) Fuchsia excorticata
(3) Fuscospora truncata
(15) Griselinia littoralis
(3) Knightia excelsa
(10) Kunzea robusta
(3) Laurelia novae-zelandiae
(5) Melicytus ramiflorus
(2) Metrosideros robusta
(7) Pittosporum eugenioides
(13) Pseudopanax arboreus
(7) Pterophylla racemosa
(11) Sphaeropteris medullaris

ALL WEATHER ACCESS TRACK

PROPOSED 15ml
NAENAE 2
RESERVOIR
(2,376 m²
APPROX.)

BENCH SEAT

WAIWHETU STREAM

A1 - LOW GROWING INDIGENOUS SHRUBS (5,723 m²)
(296) Asplenium bulbiferum gracillimum
(593) Astelia fragrans
(74) Coprosma autumnalis
(74) Coprosma lucida
(74) Coprosma robusta
(713) Dianella nigra
(238) Freycinetia banksii
(59) Geniostoma ligustrifolium
(89) Leptospermum scoparium
(222) Muehlenbeckia australis
(15) Myrsine australis
(148) Phormium tenax
(74) Piper excelsum
(264) Veronica salicifolia

A2 - MANUKA/KANUKA SHRUB (1,659 m²)
(44) Austroderia toetoe
(20) Gahnia setifolia
(42) Kunzea robusta
(7) Leptospermum scoparium
(20) Pteridium esculentum

A3 - INDIGENOUS HARDWOODS (943 m²)
(2) Alectryon excelsus
(9) Alsophila tricolor
(20) Aristotelia serrata
(2) Beilschmiedia tawa
(5) Brachyglottis repanda
(8) Cordyline australis
(7) Corynocarpus laevigatus
(5) Elaeocarpus dentatus
(14) Fuchsia excorticata
(2) Fuscospora truncata
(10) Griselinia littoralis
(2) Knightia excelsa
(7) Kunzea robusta
(2) Laurelia novae-zelandiae
(4) Melicytus ramiflorus
(2) Metrosideros robusta
(5) Pittosporum eugenioides
(9) Pseudopanax arboreus
(5) Pterophylla racemosa
(8) Sphaeropteris medullaris

A2 - MANUKA/KANUKA SHRUB (1,020 m²)
(27) Austroderia toetoe
(12) Gahnia setifolia
(26) Kunzea robusta
(5) Leptospermum scoparium
(12) Pteridium esculentum

A1
A2
A3
A4

LEGEND
- A1 - LOW GROWING INDIGENOUS SHRUBS
- A2 - MANUKA KANUKA SCRUB
- A3 - BROAD LEAVED INDIGENOUS HARDWOODS
- A4 - RIPARIAN PLANTING
- FOOTPATH/MAINTENANCE ACCESS

A1 REPRODUCTION SCALE
100 80 60 40 20 0mm

A3 REPRODUCTION SCALE
50 40 30 20 10 0mm

CONCEPT LANDSCAPE PLAN

1:500 @ A1, 1:1000 @ A3

A1 1:500
A3 1:1000
0 20m

No.	Revision	By	Chk	Appd	Date
0	ISSUED FOR REVIEW	H,S	A,K.	J.L.	27/09/23

Drawing Originator: Connect Water
c/- WSP
PO Box 13-003 Thorndon
Wellington 6144
T 64 4 471 7000

Original Scale (A1) 1:500	Design	M.P	27.09.23
	Drawn	H,S.	27.09.23
	Dsg Verifier	A.K.	27.09.23
Reduced Scale (A3) 1/2 SHOWN	Dwg Check	A.K.	27.09.23

Approved For Construction* Date
* Refer to Revision 1 for Original Signature

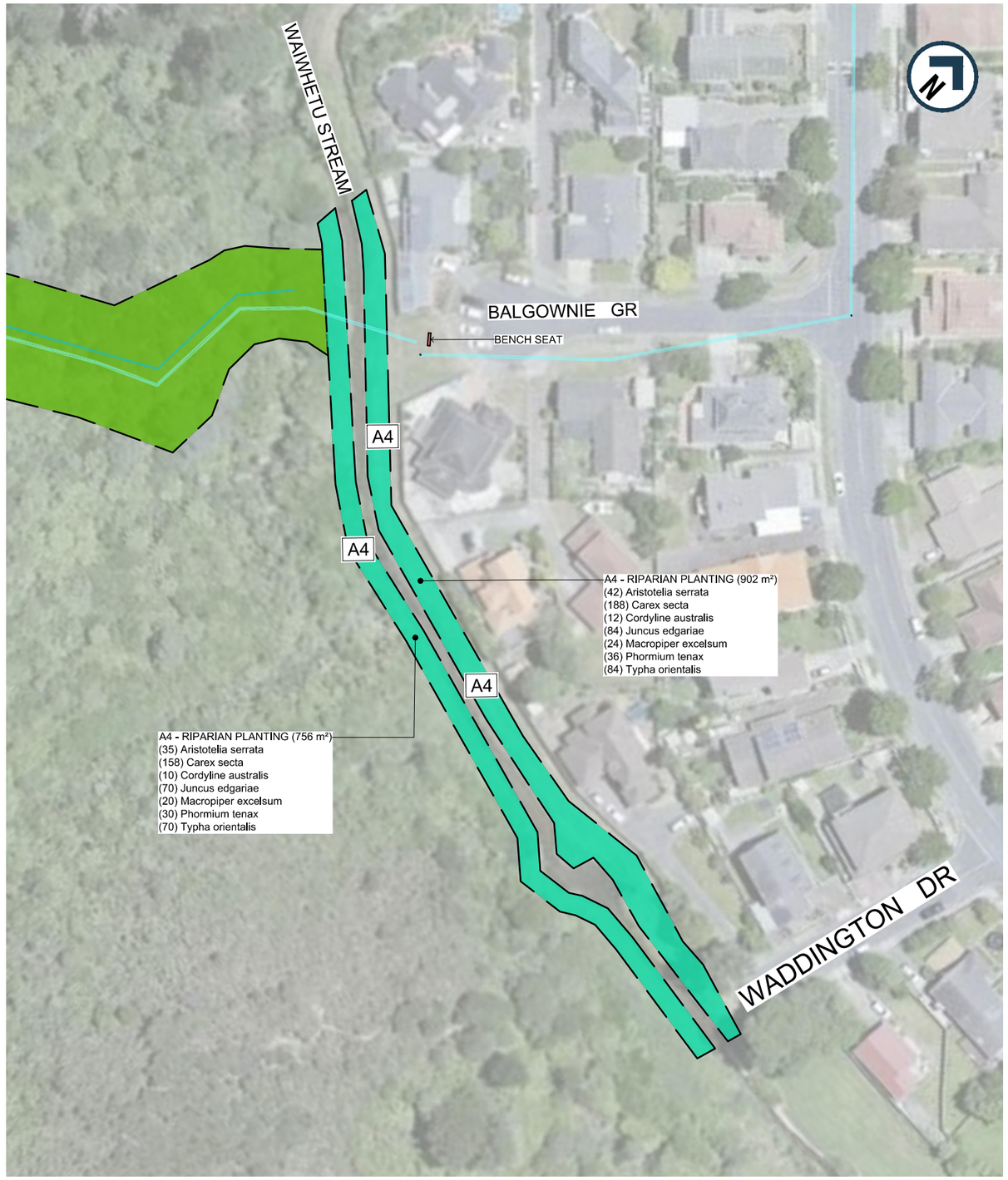
Client: Wellington Water

Project: WELLINGTON WATER
EASTERN HILLS RESERVOIR

Title: LANDSCAPE CONCEPT PLAN
SHEET 02 OF 03

Discipline: LANDSCAPE ARCHITECTURE
Drawing No.: 3-WW021.02_L0002
Rev.: 0

DO NOT SCALE - IF IN DOUBT ASK



LEGEND

- A1 - LOW GROWING INDIGENOUS SHRUBS
- A2 - MANUKA KANUKA SCRUB
- A3 - BROAD LEAVED INDIGENOUS HARDWOODS
- A4 - RIPARIAN PLANTING
- FOOTPATH/MAINTENANCE ACCESS

CONCEPT LANDSCAPE PLAN

1:500 @ A1, 1:1000 @ A3

A1 REPRODUCTION SCALE

100 80 60 40 20 0mm

A3 REPRODUCTION SCALE

50 40 30 20 10 0mm

A1 1:500 | A3 1:1000 — 0 — 20m

No.	Revision	By	Chk	Appd	Date
0	ISSUED FOR REVIEW	H.S	A.K.	J.L.	27/09/23

Drawing Originator: Connect Water c- WSP, PO Box 13-003 Thorndon, Wellington 6144, T 64 4 471 7000

Original Scale (A1) 1:500
Reduced Scale (A3) 1/2 SHOWN

Design	M.P	27.09.23	Approved For Construction*
Drawn	H.S.	27.09.23	
Dsg Verifier	A.K.	27.09.23	
Dwg Check	A.K.	27.09.23	Date

* Refer to Revision 1 for Original Signature

Client: Wellington Water

Project: WELLINGTON WATER
EASTERN HILLS RESERVOIR

Title: LANDSCAPE CONCEPT PLAN
SHEET 03 OF 03

Discipline: LANDSCAPE ARCHITECTURE

Drawing No.: 3-WW021.02_L0003

Rev.: 0

DO NOT SCALE - IF IN DOUBT ASK

Appendix C: Seven Point Scale of Effects

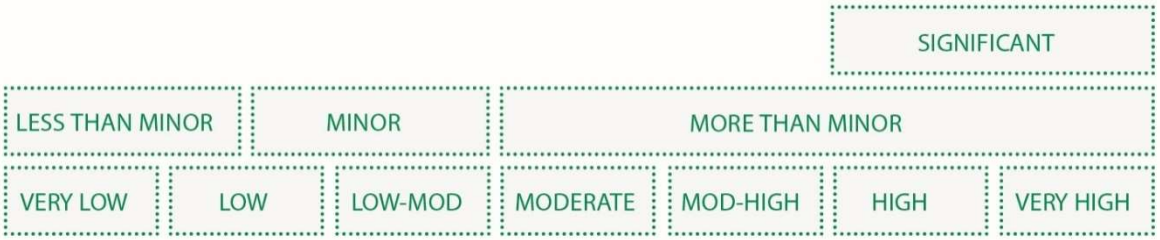
Scale of Effects (7 Point)

From Tuia Pita Ora New Zealand Institute of Landscape Architects Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022 .

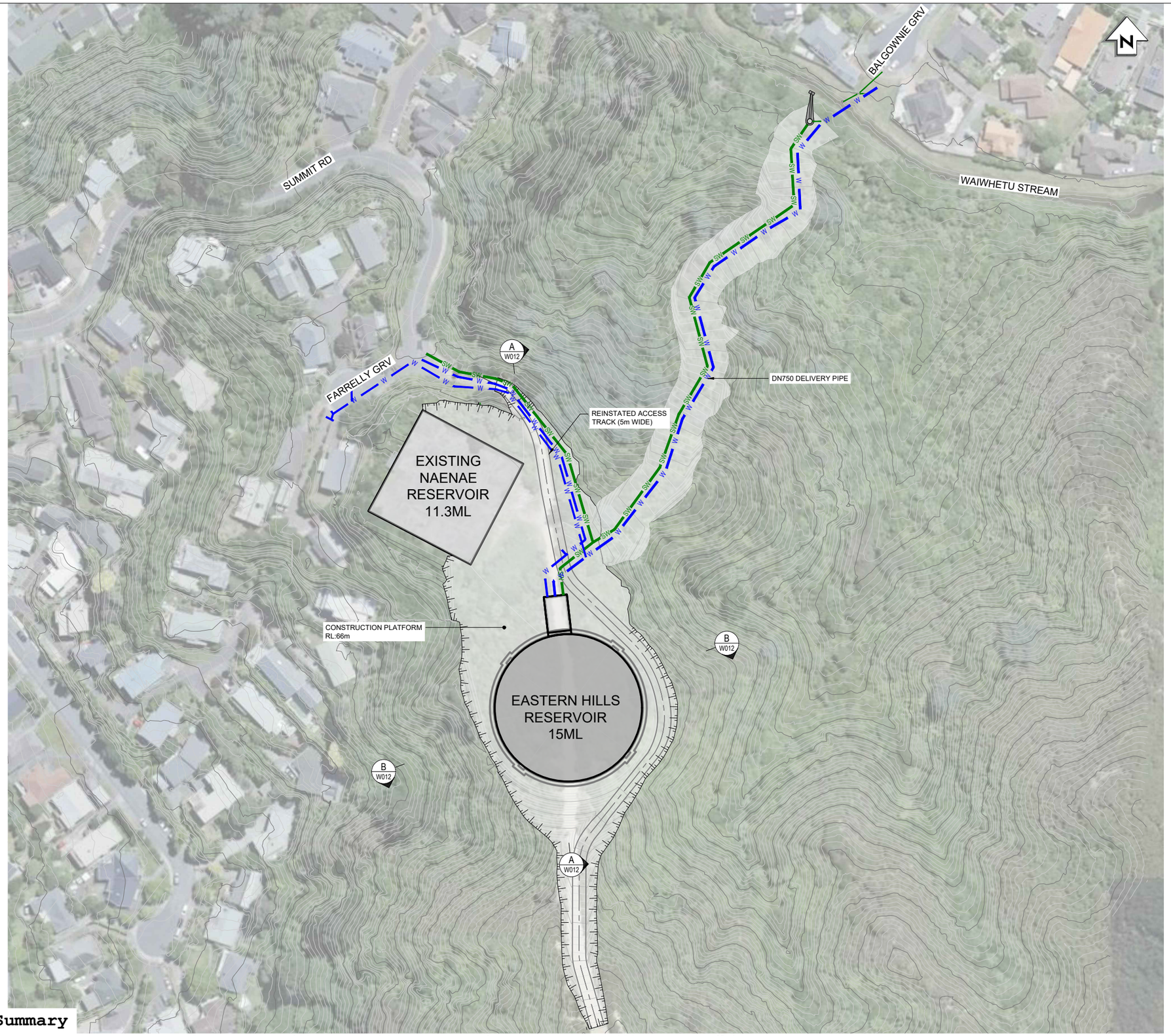
The below seven-point scale is used to describe effects:

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

To assist with RMA planning alignment, the corresponding level of effects are shown in the table below:



Appendix D: Earthworks Drawing



NOTES:

1. DO NOT SCALE OFF DRAWINGS.
2. NEW SLOPE BATTERS 1H:1V
3. FOR EARTHWORKS SECTION REFER TO 3-WW021.02_W0W12

LEGEND

WATER SUPPLY (PROPOSED

DELIVERY / INLET PIPE — W W

OVERFLOW / SCOUR DISCHARGE PIPE — SW

A1 REPRODUCTION SCALE: 0mm 20 40 60 80 100

A3 REPRODUCTION SCALE: 0mm 10 20 30 40 50

0 5 10 15 20 25 30 35

SCALE 1:750 AT ORIGINAL SIZE

Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
Totals			14417.91sq.m	90473.91 Cu. M.	398.00 Cu. M.	90075.90 Cu. M.<Cut>

FOR INFORMATION
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	UPDATED POST INDEPENDENT REVIEW	G.H.	J.L.	J.L.	29/09/23
0	ISSUED FOR INFORMATION	G.H.	J.L.	J.L.	18/08/23

Drawing Originator: Connect Water
c/- WSP
PO Box 12-003 Thorndon
Wellington 6144
T 64 4 471 7000

Original Scale (A1) 1:750
Reduced Scale (A3) 1:1500

Design	L.H.	29/09/23	Approved For Construction*
Drawn	G.H.	29/09/23	-
Dsg Verifier	G.B.	29/09/23	-
Dwg Check	J.L.	29/09/23	Date-

* Refer to Revision 1 for Original Signature

Client: Wellington Water

Project: WELLINGTON WATER
EASTERN HILLS RESERVIOR

Title: RESERVOIR AND SITE PIPELINES
EARTHWORKS

Discipline: CIVIL

Drawing No.: 3-WW021.02_W010

Rev.: 1

DO NOT SCALE - IF IN DOUBT ASK

PLOTTED BY: PIETERSEN, RIAAN

DRAWING PLOTTED: 27-Jul-23

DOCUMENT PATH: \\CORPIANZ\PROJECTSNZ\3W3-WW021.02 NAENAE NO.2 RESERVOIR\HOME\700 DRAWINGS

DOCUMENT NO: 3-WW021.02_W010.DWG

wsp.com/nz