# Boffa Miskell Harania Flood Resilience Works - Tennessee Bridge

Landscape and Natural Character Effects Assessment Prepared for Healthy Waters 31 October 2024





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Cover photograph: [View east across the existing pipe bridge from the Lenore Foreshore Reserve, © Oliver May, 2024]

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# Introduction

# 1.1 Background

The January 2023 floods, followed closely by Cyclone Gabrielle, marked a period of unprecedented weather challenges for Auckland. The floods, and the subsequent cyclone caused significant infrastructural damage, with an estimated 8,000 homes destroyed or damaged and thousands of residents' lives affected. The events underscored the city's vulnerability to extreme weather, prompting Auckland Council to endorse the "Making Space for Water Programme" developed by Healthy Waters. This initiative aims to mitigate flood risks through a series of blue-green networks, addressing critical flood-prone areas with sustainable stormwater solutions. Project Description

A detailed description of the full project works can be found in the Assessment of Effects on the Environment (AEE) report<sup>1</sup>.

The Tennessee Bridge project involves removing the current embankment which carries the existing Eastern Interceptor, an approximately 2.6 m diameter reinforced concrete wastewater pipe. The replacement will comprise a new pipe, pipe bridge and pedestrian bridge in the coastal marine area (CMA) to open up the waterway capacity to allow increased flood conveyance. Diversion chambers are required at either end of the new pipe, connecting it to the existing pipe to facilitate the change over from the old pipe to the new pipe bridge diversion.

### 1.2 Scope of the report

Boffa Miskell Limited (BML) has been engaged to undertake a Landscape and Natural Character Effects Assessment (LNCEA) for the proposed Tennessee Bridge which connects the Lenore Foreshore Reserve to the west and the Blake Road Reserve to the east in Mangere (otherwise referred to as The Site in this report). The Site is zoned Open Space – Informal Recreation Zone (OS-IRZ), Coastal - Coastal Transition Zone, Coastal - General Coastal Marine Zone and Water within the Auckland Unitary Plan – Operative in Part (AUP OiP). This LNCEA has been prepared to accompany a resource consent application for the Tennessee Bridge project under the Severe Weather Emergency Recovery (Auckland Flood Resilience Works) Order 2024.

The following Landscape and Visual Assessment assesses the landscape and visual effects of the proposed combined pipe bridge and footbridge bridge during construction and operation) on the immediate and surrounding environment character.

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<sup>&</sup>lt;sup>1</sup> Harania Flood Resilience Works – Tennessee Bridge Assessment of Effects on the Environment, Beca Limited, November 2024.

### 1.3 Assessment Process

This assessment follows the concepts and principles outlined in *Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines*<sup>2</sup>. A full method is outlined in **Appendix 1** of this report. In summary, the effects ratings are based upon a seven-point scale which ranges from very low to very high.

The Site was visited on the 14<sup>th</sup> October during fine weather to investigate the Site and the surrounding area, obtain representative viewpoint photographs from visual audiences and record information on the natural and built environment.

# 2.0 Existing Environment

## 2.1 Landscape Context and Site Description

The Site is located over the Tennessee Branch, a tributary of the Harania Creek, between the Lenore Foreshore Reserve and Blake Road Reserve, accessed from Bicknell Road and Blake Road respectively (refer to Figure 1 below). The Lenore Foreshore Reserve and Blake Road Reserve are large open spaces which acts as a buffer between the Mangere East residential area and the Ōtāhuhu Industrial area.



Figure 1: Site location and surrounding context

<sup>&</sup>lt;sup>2</sup> 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

The existing pipe embankment across the Tennessee Branch is approximately 44m long and 10-20m wide, has two culverts to allow water flow through the embankment, and is informally used for as a pedestrian bridge between the two reserves (refer to Photograph 1 below). Beyond the two (OS-IRZ) reserves residential development either side of the bridge comprises low density residential development zoned as a Single House (SHZ). Further to the east and north, separated from the Blake Road Reserve by another tributary of the Harania Creek are two large areas of Light Industry (B-LIZ) zoned land in the Ōtāhuhu Industrial area.



Photograph 1: View east across the existing pipe bridge embankment

The proposed Site boundary comprises the extent of the construction areas of the Western Compound (approximately 1,750m2) in the Lenore Foreshore Reserve, the Eastern Compound (approximately 5,500m2) in the Blake Road Reserve and the temporary works area within the Tennessee Branch corridor (refer to Figure 2 below). The Western Compound boundary extends up to the boundary of residential properties at Abiru Crescent (58 and 60) and Bicknell Road (32 and 34) and Eastern Compound abuts the residential properties at Blake Road (81, 83, 87, 89 and 91).



Figure 2: Indicative construction compounds and staging area which define the Site boundary.

The surrounding topography is low lying to the south rising to the north with slight undulations. Earthworks mounded either side of the existing pipeline creates an embankment and an artificial high point within the two reserves. To the south of the existing embankment the low lying landform is within an identified flood plain (refer to Figure 3 below). The residential properties accessed from Blake Road and Bicknell Road are single storey dwellings and sit lower in the landscape than the existing pipe bridge embankment, the residential dwellings at Abiru Crescent have two storeys and sit slightly higher in the landscape.



Figure 3: Flood prone areas and flood plains in the arear surrounding the Site (indicatively shown in red).

The Lenore Foreshore Reserve is an esplanade reserve which primarily serves as a buffer between residential development and the Tennessee Branch and has very few amenity features or facilities. The Blake Road Reserve is a larger open space surrounded on three sides by a watercourse and contains community facilities including a BMX Track, basketball court and informal sports fields (refer to Photograph 2 below).



Photograph 2: View southwest from within the Blake Road Reserve.

Vegetation within the Tennessee Branch predominantly comprises Manawa / mangroves with small areas of salt marsh within the low lying areas and riparian margins of the watercourse which extend to the north and south of the embankment (refer to Photograph 3 below). The margins of the watercourse contains a combination of indigenous and exotic vegetation. Indigenous species within the margins include kānuka, mānuka, ngaio, karo, tarata/lemonwood, tī kōuka and exotic species include pampas, fennel, macrocarpa, redwood, bush wattle and tree privet.



Photograph 3: View south from the existing pipe bridge over the mangrove forest.

There are no Notable Trees or tree groups, Outstanding Natural Landscapes (ONLs), Outstanding Natural Features (ONFs), Outstanding Natural Character Areas (ONCs) or High Natural Character Areas (HNCs) within the Site or the immediate surrounding context. A marine Significant Ecological Area<sup>3</sup> (SEA) is located to the north of the existing embankment and is listed in the AUP OiP as 'Ambury intertidal flats'. The mangroves to the south of the pipe bridge are not listed as an SEA.

# 2.2 Natural Character Condition

As outlined in the methodology outlined in Appendix 1: Method Statement, the natural character study and analysis has been undertaken in relation to the "*wetlands, and lakes and rivers and their margins*" that occur within the Site.

This section describes the existing natural character of the Site in relation to the physical, perceptual and associative attributes (refer Appendix 1: Method Statement). These attributes reflect the extent that natural elements, patterns and processes occur and the extent of human modification. Secondary experiential aspects associated with the context of such waterbodies and their margins have also been considered.

Most notably the affected area relating to the proposed pipe bridge and footbridge is the Tennessee Branch and its margins. The construction footprint for the proposed works area for the stream will be approximately 50m length of the stream and an area of approximately 2500m<sup>2</sup>. As described above the Tennessee Branch corridor contains a large area of mangroves and is bordered on either side by indigenous and exotic riparian vegetation.

The natural character of river, streams and watercourses are informed in part by cultural associations and the relationship of mana whenua with awa. Water is a taonga of huge importance to lwi. Water is linked to identity, used for transport, gathering food and other

<sup>&</sup>lt;sup>3</sup> (SEA) SEA-M2-23a overlays mangrove forest

materials. Healthy Waters have engaged with local iwi in the development and design of the proposal.

The Te Ākitai Waiohua and Te Ahiwaru iwi have been approached to ensure that design decisions are sensitive to cultural issues. Both iwi have undertaken Cultural Values Assessments (CVAs) to represent the relationship between the iwi, the natural environment and the proposed project area.

The Te Ahiwaru CVA<sup>4</sup> outlines the importance of the Te Ararata Awa and it's wider connection with the swamp mosaic of Taotaoroa, a key cultural feature of Mangere. The CVA identifies the following key factors as potentially resulting in adverse effects on the awa:

- Disruption of the natural water flow
- Permanent or temporary loss of biodiversity through the removal of vegetation
- Restriction of views and connections to the awa

The CVA also provides recommendations and principals to be implemented into the design and mitigation of potential landscape and natural character effects:

- We recommend the support our aspirations of ecological and ancestral landscape enhancement. Utilise native plants and specimen trees only for landscaping, amenity and mitigation planting;
- Prioritise natural solutions like daylighting and naturalisation of the streams wherever possible
- Develop stream and wetland management plans as consent conditions that expressly provide for Te Ākitai Waiohua input into the plans;
- Utilise the Kāinga Ora Ngā Hau o Māngere Ngahere Planting Guide to help inform local planting;
- Develop a final landscaping plan; and;
- Utilise ecological assessments and Native Freshwater Fauna and Management Plans to account for Te Ākitai Waiohua cultural values in stream and wetland works

The Te Akitai CVA<sup>5</sup> details the historic cultural relationships between the iwi and the awa. The CVA advocates for the ongoing involvement with Te Ākitai Waiohua Kaitiaki Team (Kaitiaki Team) to provide cultural advice on Te Ākitai Waiohua cultural values, history, whakapapa (genealogy), tikanga (protocol), kawa (ceremony) and korero (talk) on the project. The Te Ākitai Waiohua support the Te Aranga Cultural Landscape Principles, these principles have been adapted to create a set of recommendations. These recommendations are listed in full in the AEE.

The Tonkin + Taylor ecology consultants have surveyed the stream and the riparian habitat, and fully describe extents of the watercourse and riparian margins within the Site and the immediate surrounding area. The full ecological assessment is available in the "Ecological Impact Assessment" and an assessment of the coastal and fluvial geomorphic processes are provided in the "Coastal and Fluvial Geomorphic Effects Assessment" appended to the AEE.

<sup>&</sup>lt;sup>4</sup> Te Ahiwaru Cultural Values Assessment\_HWD Flood Resilience Project Charania Te Ararata\_v1.0, [dated] 17 September 2024

<sup>&</sup>lt;sup>5</sup> Cultural Values Assessment by Te Ākitai Waiohua for Healthy Waters Harania Flood Resilience Project [dated September 2024]

An evaluation of the natural character relating to the active bed, margins and context of the stream within the Site is provided in Appendix 3. Our evaluation considers the ecological report which forms part of the application. A summary of these findings are provided below.

#### Table 1: Watercourse

	Degree of Natural Character			
Watercourse Name	Biophysical Active Bed + Biophysical Margins	Experiential		
Tennessee Branch	High + Moderate - High	Moderate		

In summary, the existing stream has High/Moderate - High and Moderate natural character ratings due to the combination of modified and unmodified elements within the stream and its margins. The existing embankment across the Tennessee Branch and the two culverts are the most apparent examples of human modification (refer to Photograph 1 above).

The existing embankment defines part of the "Indicative Coastline" in the AUP OiP, as such the Tennessee Branch to the north of the existing pipe bridge embankment is at the edge of the coastal marine area (CMA) and to the south of the embankment is not. The low lying plateau to the north and south of the existing embankment are dominated by mangrove (*manawa/Avicennia marina*) forests (refer to Photograph 3 above and Photograph 4 below). To the north of the existing embankment the majority of the stream is unmodified, to the south of the embankment the urbanisation of the land to the east and west of the Tennessee Branch, in the 1960s and 1970s, has resulted in modification for additional pipe crossings further upstream.



Photograph 4: Mangrove Forest within the low lying plateau of the Tennessee Branch to the north of the existing pipe bridge.

Indigenous riparian margins along Harania Creek are typical of native revegetation species and predominantly comprise:

- kānuka (Kunzea robusta)
- mānuka (Leptospermum scoparium)
- harakeke (Phormium tenax)
- lemonwood (*Pittosporum eugenioides*)
- karamu (Coprosma robusta)
- ngaio (Myoporum laetum)
- tī kōuka/cabbage tree (Cordyline australis)

Exotic specimen trees in proximity to the Site, within Blake Road Reserve include Monterey cypress (*Hesperocyparis macrocarpa*), Sequoia and Eucalyptus species.

The surface bed material was observed to comprise a silty sand with cohesive marine clays approximately 0.1 m below a fine silty sand layer. The wider catchment is underlain by mud, silt and clay with a dense sand layer. The flow of the stream was observed to have to be moderately slow with some visible suspended sediment (refer to Photograph 5 below). It is noted that debris including tree limbs and litter have been observed within the stream particularly after heavy rainfall. A range of aquatic fauna have been identified within the Tennessee Branch, a full list of species is provided in the Ecological Management Plan provided by Tonkin + Taylor, appended to the AEE. The notable "high value" species identified are Inanga (*Galaxias maculatus*), Longfin eel/tuna (*nguilla dieffenbachia*) and Smelt/pōrohe (*Retropinna retropinna*).



Photograph 5: Slow moving stream with suspended sediment to the north of the existing pipe bridge embankment.

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#### 2.3 Key Landscape Attributes and Values

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

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

- Low lying flat topography
- Connection to extensive areas of mangrove to the north and south
- The Tennessee Branch and plateaus
- Steep banks adjacent to the reserves
- Extensive mangrove forests
- Established indigenous riparian vegetation within the riparian margins and banks.
- Tall established indigenous and exotic trees in the Blake Road Reserve.

#### 2.4 Visual Catchment and Associated Visual Audiences

To understand the visual catchment of the Site and the proposed works, a desktop study was undertaken utilising aerial photography, landform (contours) and building /vegetation patterns to identify visual audiences and the extent of visibility. During the visit to the Site and the surrounding area the assumptions made in the desktop study were ground truthed.

Using the combined information gathered, the nature and gualities of potential viewing audiences of the Site were identified and representative viewpoint photographs were taken to assist in determining the likely level and nature of change. Representative viewpoint photographs have been taken from the nearest available public locations where views of the Site could be obtained.

As discussed earlier the Site is located between residential areas to the east and west, and open reserve space to the north. The visual catchment of the Site is limited by the combination of:

- low lying topography
- surrounding built environment, and
- existing vegetation either side of the watercourse and within the reserves.

The proposal will predominantly be visible from the adjacent reserves and immediately adjacent residential audiences.

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

#### Viewing Audience Group 1 to the North of the Site

Users of the Lenore Foreshore Reserve and Blake Road Reserve

#### Viewing Audience Group 2 to the South of the Site

Users of the Lenore Foreshore Reserve

- Residents of properties at 76 and 79 Archboyd Avenue
- Road users and pedestrians travelling along Archboyd Avenue and Bicknell Road

#### Viewing Audience Group 3 to the East of the Site

- Users of the Blake Road Reserve
- Residents of properties at 80, 838, 85, 87, 89 and 91 Blake Road

#### Viewing Audience Group 4 to the West of the Site

 Residents of properties at 32 and 34 Bicknell Road and 46, 48, 52B, 58, 60 Abiru Crescent

The range of viewpoints representing the key audiences listed above are presented in Appendix 2: Graphic Supplement, Figure 1 and VP 1 -11.

# 3.0 Proposal Description

A detailed description of the full project works can be found in the Assessment of Effects on the Environment (AEE) report (Beca Limited, November 2024). In brief, and of relevance to this assessment, the project works comprise:

- The formation and operation of two construction laydown / compound areas. The laydowns/ compounds will be used for the storage of materials, machinery, construction related activities, site offices (e.g. portacom and containers), ablutions and carparking.
- Installation of an approximately 2700mm internal diameter wastewater pipe parallel to the Eastern Interceptor and associated pipe bridge within the CMA. This will require piles and piers within the CMA.
- Installation of two chambers (upstream and downstream) which tie the new pipe into the Eastern Interceptor.
- Demolition and removal of the embankments, culverts and section of existing Eastern Interceptor between the two chambers.
- The construction and use of a temporary staging platform within the CMA. This will require piles within the CMA, of which will remain permanently below the bed of the CMA.
- Temporary damming and diversion of water required for construction.
- Construction of new pedestrian bridge on top of the pipe bridge to maintain walking access between Lenore Foreshore Reserve and Blake Road Reserve.
- Vegetation clearance, including within the coastal and riparian margins, and the removal of seven exotic trees.
- Earthworks associated with temporary and permanent works, including within the coastal and riparian margins.
- Following the completion of the works a proposed Replacement Planting Plan (described in detail later in this assessment) will be implemented.

Construction of the flood resilience works is likely to occur over a period of approximately 15 months. Within the construction period the levels of activities will not be consistent, peaks in activity during the earthworks, pilling and bridge installation will have a greater visibility and visual influence on the surrounding landscape.

# 3.1 Earthworks

A total of approximately 3050m<sup>2</sup> and 4600m<sup>3</sup> of earthworks will be required for the flood resilience works, including within the coastal yard and riparian yard and Sediment Control Protection Area1. This includes approximately 4000m<sup>3</sup> of cut and 600m<sup>3</sup> of fill.

# 3.2 Vegetation removal and tree works

Approximately 1885m<sup>2</sup> of terrestrial vegetation, including within the coastal yard and riparian yard are required to be removed to enable the works, including seven exotic standalone trees in the Blake Road Reserve and a small area of . Additionally, a total area approximately 1000 m<sup>2</sup> of mangroves will be cleared from the works area to the north and south of the existing pipe bridge (Eastern Interceptor).

All vegetation will be removed via excavator with a selector grab and transported up to the compound area for processing. Where possible the vegetation will be chipped and stored in the working area for reuse.

### 3.3 Tennessee bridge

The Tennessee bridge works involve the diversion of the Eastern Interceptor via a 2700mm internal diameter (2830mm outer diameter) pipe. The pipe will be supported on three concrete piers with pipe cradles. The piers will be located within the CMA with piled foundations approximately 14-15 m apart. Two working platform / staging options are proposed, with the final methodology to be determined by the contractor. Both options have been considered in the assessment of effects on the environment. The two options are:

- Option 1 temporary staging: includes the construction of gravel working platforms, temporary staging, and haul roads.
- Option 2 culvert extension and working platform: includes the extension of the existing culverts approximately 10m downstream, and construction of gravel working platforms across the width of the watercourse.

Further detail of these options is provided in the AEE. This assessment of effects on the environment report considers these two options within one 'envelope of effects'.

The proposed replacement footbridge is designed to provide a formalised pedestrian access across Tennessee Branch to replace the existing informal access. The proposed footbridge will sit on top of the proposed replacement pipeline. The current concept design for the bridge proposes that the northern and southern façades of the bridge deck are clad with vertical "timber" slats which will break up the bulk and scale of the bridge form (refer to Figure 4 below). The design of the bridge will continue to be developed in collaboration with iwi.



Figure 4: Tennessee Footbridge Concept Sketch

# 4.0 Assessment of Effects

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

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

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

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

- degree to which the project contrasts, or is consistent, with the qualities of the surrounding landscape
- proportion of the project that is visible, determined by the observer's position relative to the objects viewed
- distance, backdrop and foreground context within which the project is viewed

- area or extent of visual catchment from which the project is visible
- number of viewers, their location and situation (static or moving) in relation to the view
- predictable and likely known future character of the locality
- quality of the resultant landscape, its aesthetic values and contribution to the wider landscape character to the area.

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

This assessment includes a Replacement Planting Plan and recommendations to address the potential adverse effects. This assessment considers effects with and without the inclusion of mitigation.

#### 4.1 Landscape Effects

#### 4.1.1 Effects on Landscape Character, Attributes and Values

Landscape character is derived from the distinct and recognisable pattern of elements that occur consistently in a particular landscape. It reflects particular combinations of geology, landform, soils, vegetation, land use and features of human settlement. It creates the unique sense of place defining different areas of the landscape.

The implementation of the proposal will require :

- the alteration of the landform
- removal of existing trees
- removal of riparian and marginal vegetation
- temporary and permanent alteration of the Tennessee Branch
- the removal of the existing pipeline; and;
- the construction of the new pipeline and footbridge

The highest valued physical aspects of the Site are the mature trees within the adjacent reserves, the Tennessee Branch and indigenous riparian vegetation along the watercourse (refer to Photograph 4 above).

It is anticipated that the proposed construction activities will result in the removal of seven exotic standalone trees within the southern portion of the Blake Road Reserve and one tree in the Lenore Foreshore Reserve. The removed trees will comprise Coastal Redwood (*sequoia sempervirens*), Gum tree (*eucalyptus*) and Monterey cypress (*cupressus macrocarpa*) species in the Blake Road Reserve and a Karo (*pittosporum crassifolium*) tree in the Lenore Foreshore Reserve. Additionally a linear group of small trees will be removed within the Blake Road Reserve along the northern boundary of the property at 91 Blake Road comprising Tecoma spp., Monkey apple (*syzygium smithii*) and Karo (*pittosporum crassifolium*).

Vegetated areas removed to enable construction will comprise:

- 1,820m<sup>2</sup> of native vegetation.
- 65 m<sup>2</sup> of exotic shrubland (monkey apple hedgerow).
- 181 m<sup>2</sup> of rank grassland.

The removal of vegetation will be predominantly located within the riparian and coastal margins of the Tennessee Branch surrounding the existing embankment and the proposed new pipeline/footbridge. Amenity grassland in the Eastern Compound and Western Compounds will be covered during construction and reinstated after the works are complete.

The existing standalone trees are an overt feature which characterises the western and southern boundaries of the Blake Road Reserve. The removal of the seven exotic trees will be an apparent and notable change within the reserve and will reduce the vertical vegetated mass within the reserve, the sense of enclosure within the open space and the separation from the surrounding residential areas.

The removal of riparian vegetation either side of the Tennessee Branch will be extensive on either side of the stream. This removal of vegetation will sever the connectivity of the vegetation along the Tennessee Branch, although this will be on a temporary basis. The proposed Replacement Planting Plan (RPP) includes the provision for planting indigenous riparian species along the Tennessee Branch to mitigate the temporary loss of vegetation.

The large areas of amenity grassland occupied by construction areas in the Lenore Foreshore Reserve and Blake Road Reserve will temporarily alter the localised area of the open spaces. After the completion of the construction the amenity grass will be replaced and after approximately 6 months the proposed reinstated planting will be fully established.

Within the context of the combined physical, associative and perceptual attributes of the Site, the construction activities will result in **Moderate** adverse effects during construction. Immediately following the construction phase when the RPP has been instated, adverse landscape effects will reduce to **Low-Moderate** adverse. After approximately 5 years when the mitigation planting has established adverse landscape effects will reduce to **Neutral**.

### 4.2 Visual Effects

Visual amenity effects are influenced by a number of factors including the nature of the proposal, the landscape absorption capability and the character of the Site and the surrounding area. Visual amenity effects are also dependent on distance between the viewer and the proposal, the complexity of the intervening landscape and the nature of the view.

The viewing audience groups identified in Section 2.4 Visual Catchment and Associated Visual Audiences have been assessed regarding the type of viewing audiences, the composition of their view and the nature and degree of visual effect in relation to the project.

This visual assessment has been undertaken with photographs from publicly accessible land and the Site. Individual private properties have not been visited, views for these audience have been assessed using a combination of representative nearby photographs, desktop analysis and reverse views from the Site. The following assessment refers to viewpoint photographs in Appendix 2: Graphic Supplement which have been provided to assist with understanding the project and changes to the view in relation to the surrounding context.

#### 4.2.1.1 Viewing Audience Group 1 to the North of the Site

Figures References:

- Figure 1, Appendix 2: Graphic Supplement
- Viewpoint 1 and Viewpoint 2

#### Viewing Audiences

Users of the Lenore Foreshore Reserve and Blake Road Reserve

#### Existing Views

This audience group comprises people within the Lenore Foreshore Reserve and Blake Road Reserve. This audience is defined by their position to the north of the Site's northern boundary. The generally flat landform is typical of the low lying flat landscape of the Site and the surrounding area.

People within the Lenore Foreshore Reserve are likely to be transient in nature and expected to be using the open space for dog walking, due to the eclosed nature of the reserve and the lack of recreational space or equipment. Views south towards the Site are enclosed to the west by residential properties and to the enclosed to the east by tall established vegetation along the margins of Tennessee Branch. The rising landform towards the existing buried pipeline to the south further encloses this viewing audience.

Similar to the Lenore Foreshore Reserve, people within the Blake Road Reserve are expected to be transient in nature undertaking dog walking or other recreational activities. Tall vegetation surrounding tree and shrub vegetation around the eastern, western and southern boundaries of the open space and the rising landform along the existing pipeline enclose views within the open space. Views within the reserve are characterised by the balance of the open amenity grassland and surrounding vegetation. The existing pipe and embankment are screened by the surrounding dense marginal vegetation, which are notable element in views from both reserves.

#### Proposed Views During Construction

During construction of the proposal people within both reserves will experience open views of the construction compound, construction machinery and stored materials. The introduction of construction activities within the reserves will reduce the amenity and tranquillity of the open space. The removal of vegetation within the southern boundary of the Blake Road Reserve and surrounding the Tennessee Branch will remove notable elements of the existing view. However, the loss of vegetation will be relatively small change within the context of the extensive construction compounds. During construction it is anticipated that people within the Lenore Foreshore Reserve and Blake Road Reserve will experience up to **Moderate** temporary adverse visual effects.

#### Proposed Views Post Construction

Following the completion of the construction works and the implementation of the RPP it is anticipated that the removal of the removed vegetation around the Tennessee Branch and the southern boundary of the Blake Road reserve will reduce the level of enclosure in views. The new culvert and footbridge will be visible above the proposed replacement RPP planting which replaces the removed mature vegetation. The bulk and scale of the footbridge structure will be broken up by the timber cladding along the chamber. Retained vegetation to the north of the construction footprint will partially screen the proposed footbridge and retained vegetation to the south will diffuse the bridge by providing a vegetated backdrop which diffuses the form of the footbridge. Immediately following the completion of the construction works it is anticipated that

this audience group will experience **Low Moderate** to **Low adverse** visual effects. Once the proposed RPP planting has established to a height of 2m (after approximately 5 years) it is anticipated that the adverse visual effects will reduce to **Very Low** adverse and after the vegetation has matured (after approximately 10 year) the effects will be **neutral**.

#### 4.2.1.2 Viewing Audience Group 2 to the South of the Site

Figures References:

- Figure 1, Appendix 2: Graphic Supplement
- Viewpoint 3 and Viewpoint 4

#### Viewing Audiences

- Users of the Lenore Foreshore Reserve
- Residents of properties at 76 and 79 Archboyd Avenue
- Road users and pedestrians travelling along Archboyd Avenue and Bicknell Road.

#### Existing Views

This audience group comprises people within the Lenore Foreshore Reserve, residential properties and road users at the eastern end of Archboyd Avenue approximately 130m to the south. The residential audiences have a generally north and south orientation and experience oblique views towards the Lenore Foreshore Reserve and the Site. As discussed above, people within the Lenore Foreshore Reserve will be transient in nature, road users of a similarly transient nature and will have fleeting views towards the Site.

Views to the north east towards the Site from this audience are characterised by the amenity grassland and riparian vegetation along the Tennessee Branch in the short to medium distance. Due to the low lying nature of the landform, views are limited to the short to medium distance. Tall evergreen exotic trees within the Blake Road Reserve can be seen above the riparian and marginal vegetation in the foreground.

#### Proposed Views During Construction

During construction this audience group will experience short distance views of the southern end of the Western Compound. The views of the construction machinery and material storage will be partially screened and filtered by riparian and marginal vegetation in the foreground. Tall construction machinery is expected to be visible over the top of retained vegetation. Views of construction activity will be available where vegetation is removed in proximity to the proposed pipe bridge. The construction activity will be a new discordant but limited element within the views. The prevalence of the construction activity in the view will vary throughout the construction period based on the intensity of construction activity and machines in the Site. As a result it is anticipated that visual effects will vary from **Low - Moderate** to **Low** temporary adverse for these audiences throughout construction.

#### Proposed Views Post Construction

After the construction and mitigation planting is complete it is anticipated that people within this audience group will experience filtered and partially screened views of the pipe bridge and footbridge from the road and residential properties. Views from within the Lenore Foreshore Reserve will be more extensive with direct views available of the footbridge and chambers. The bulk and form of the bridge will be broken up by the timber slatted façade (or similar developed design). Visual effects are anticipated to range from **Low** to **Very Low** adverse initially, however after the Replacement Planting Plan has established to a height of 2m (after approximately 5 years) it is anticipated that the adverse visual effects will be **neutral**.

#### 4.2.1.3 Viewing Audience Group 3 to the East of the Site

#### Figures References:

- Figure 1, Appendix 2: Graphic Supplement
- Viewpoint 7 and Viewpoint 8

#### Viewing Audiences

• Residents of properties at 80, 83, 85, 87, 89 and 91 Blake Road

#### Existing Views

This audience group comprises residential properties accessed from Blake Road which back onto the Blake Road Reserve and the Tennessee Branch. The properties which back on to the reserve (91, 89, 87, 85 and 80) sit lower than the landform built up around the existing pipeline. A linear group of Tecoma spp., Monkey apple (*syzygium smithi*) and Karo (*pittosporum crassifolium*)trees along the southern boundary of the reserve combined with the elevated landform visually screen views to the north into the reserve. Views from the majority of this audience towards the existing embankment are prohibited by adjacent properties and existing vegetation. The residential properties at 80 and 91 Blake Road are orientated to the west and north west and have open outlooks towards the Tennessee Branch and the existing embankment.

#### Proposed Views During Construction

During construction, screening trees and vegetation will be removed from within the reserve adjacent to the boundary of the property at 91 Blake Road. The removal of this vegetation will open up views towards construction machinery in proximity of the proposed pipe bridge and foot bridge within the Western Compound for the properties at 80 and 91 Blake Road. Other residential properties within this group will experience oblique views of construction activity however, the primary northern outlooks from these properties will be remain contained by the existing trees to the north. The visibility of the construction activity in the view will vary based on the intensity of construction activity and machines on Site. As a result it is anticipated that visual effects will vary from **Moderate - High** temporary adverse to **Low - Moderate** temporary adverse for the properties at 80 and 91 Blake Road and **Low - Moderate** to **Very Low** temporary adverse for the rest of the audience group throughout construction.

#### Proposed Views Post Construction

After the construction and mitigation planting is complete it is anticipated that the views for the majority of this audience will return to what they were prior to construction resulting in **neutral** effects. The residential properties at 80 and 91 Blake Road are anticipated to experience glimpsed and partial views of the proposed footbridge. As described above, the bulk and form of the bridge will be broken up by the timber slatted façade (or similar developed design). Visual effects are anticipated to range from **Low** to **Very Low** adverse for these two properties initially, however after the Replacement Planting Plan around the bridge has established to a height of 2m (after approximately 5 years) it is anticipated that the adverse visual effects will be **neutral**.

#### 4.2.1.4 Viewing Audience Group 4 to the West of the Site

#### Figures References:

- Figure 1, Appendix 2: Graphic Supplement
- Viewpoint 9, Viewpoint 10 and Viewpoint 11.

#### Viewing Audiences

Residents of properties at 32 and 34 Bicknell Road and 46, 48, 52B, 58, 60 Abiru Crescent

#### Existing Views

This audience group comprises people in two storey and single storey dwellings with easterly and northeasterly views from the rear of the properties over the Lenore Foreshore Reserve towards the Tennessee Branch and residential development to the southeast. The properties at 32 and 34 Bicknell Road and 60 Abiru Crescent back onto the Western Compound. The views from these properties are characterised by their short distance views of the mature vegetation within the Tennessee Branch corridor and medium to long distance views of residential development and the Ōtāhuhu Industrial area.

#### Proposed Views During Construction

During the construction phase of works this audience group will experience short to medium distance views of the Western Compound and the construction of the new culvert and footbridge. The properties at 32 and 34 Bicknell Road and 60 Abiru Crescent, immediately adjacent to the Western Compound will be most impacted. Properties further to the north, south and set further back from the works will have oblique or partially filtered views of the construction activity. Tall construction machinery used for piling and lifting will be visible from a greater distance over intervening residential development and vegetation. Generally, the visibility of the construction activity in the view will vary based on the intensity of construction activity and machinery on Site. As a result it is anticipated that temporary adverse visual effects will vary from **Low - Moderate** to **Low** for the majority of the audience group throughout construction. However, it is anticipated that the properties at 32 and 34 Bicknell Road and 60 Abiru Crescent will experience **Moderate** adverse temporary visual effects for the majority of the construction activity in the views temporary visual effects for the majority of the construction activity in the visual effects will increase to **Moderate - High** adverse when the construction activity in the Western Compound is at its peak. The level of visual effects experienced by these audiences due to their proximity to the works and their uninterrupted views.

#### Proposed Views Post Construction

After the construction and mitigation planting is complete it is anticipated that the majority of this audience group will experience filtered and partially screened views of the pipe bridge and footbridge between the retained vegetation. Properties at 32 and 34 Bicknell Road and 60 Abiru Crescent are anticipated to experience short distance open views of the new pipe bridge and footbridge. As described area the timber slatted façade (or similar developed design) will help to break up the bulk and form of the bridge, the proposed mitigation planting will provide further visual mitigation as it becomes established. Visual effects are anticipated to be **Very Low** adverse for the majority of the audience group and will reduce to neutral as the mitigation planting establishes. Visual effects from the properties at 32 and 34 Bicknell Road and 60 Abiru Crescent are anticipated to initially be **Low** adverse, however after the Replacement Planting Plan has established to a height of 2m (after approximately 5 years) it is anticipated that the effects will reduce to **neutral**.

# 4.3 Natural Character Effects

In terms of natural character, the highest degree of naturalness occurs where there is the least amount of human induced modification. Structures, such as bridge piers, retaining structures and engineered banks and can adversely change and alter the natural character of an area. The significance of this effect is dictated by the size, location and sensitivity of the receiving environment.

Section 2.2 *Natural Character Condition* of this assessment describes the areas containing natural character as the stream and wetland area within the Site. The degree of natural character for these features considers the biophysical and experiential attributes.

The existing biophysical and hydrological functions of the stream are anticipated to be adversely impacted during the construction of the pipe bridge, footbridge, the minor realignment of the main stream channel within the CMA, and the staging area to enable construction. As described earlier in this assessment the vegetation removed either side of the existing embankment will comprise exotic and indigenous riparian and marginal vegetation and mangroves within the Tennessee Branch.

The abiotic values of the unmodified steep stream banks, plateau and naturally defined watercourse will be impacted by the construction and operation of the pipe bridge and footbridge. The margins of the stream will be regraded to accommodate a chamber on each bank and the main stream channel within the CMA will be permanently realigned to avoid the proposed bridge piers.

Impacts on the abiotic and biotic values of the stream and coastal bed are anticipated to be limited to the area located within the footprint and immediately surrounding area of the existing embankment. The construction of the new bridge will permanently alter the coastal marine bed and the stream to the north of the existing pipe bridge. Although, this is in the context of the already modified and culverted Tennessee Branch. It is anticipated that no further impacts will experienced downstream in the CMA.

During construction the proposed removal of vegetation, described previously, will remove indigenous riparian vegetation and mangroves either side of the existing pipe embankment. As discussed earlier in the assessment the vegetation to the north of the existing pipe embankment is in the CMA and part of the coastal environment. This vegetation is highly valued and are a defining feature of the Tennessee Branch's character. On balance the total area of vegetation removed will be a relatively small within the context of the extensive riparian vegetation. The proposed staging area to construct the pipe bridge and footbridge will alter the banks of the stream and temporarily disrupt the abiotic processes of the stream. It is anticipated that a total area of 1885m2 of indigenous vegetation and be the temporary loss of approximately 1000m<sup>2</sup> of mangroves in the coastal marine during construction. Post construction the proposed area of clearance will be replanted with indigenous riparian species that are found in the wider marginal and salt marsh vegetation, the entirety of the removed area of mangroves will be replaced. With the above in mind, it is considered the adverse effects on the natural character attributes of the stream and coastal environment will be **Low - Moderate** adverse.

During operation it is anticipated that the pipe bridge and footbridge will influence the active flowing stream, however the works are anticipated to allow for an increased flow compared to that existing through the two culverts. This outcome is in line with objectives of the project to improve the flow of the stream and reduce blockages during and after storm events. With the above in mind, it is anticipated that the operational effects on the natural character attributes of the stream will be **Low** adverse. The proposed pipe bridge and footbridge will appear more formalised than the existing pipe bridge crossing. Once the proposed RPP planting has

established (approximately after 5 years) it is anticipated in the experiential values of the Tennessee Branch will be broadly the same, resulting in **neutral** effects.

# 5.0 Mitigation Strategy

A proposed Replacement Planting Plan (RPP) has been developed to address the landscape and visual effects as a result of the construction of the proposed culvert and footbridge. The landscape and natural character effects have been assessed with the consideration that the proposed RPP will be implemented as part of the proposal. The RPP has been developed with consideration of the recommendations of the CVA's to ensure that the natural character (including cultural values) is maintained or enhanced. This assessment recognises that planting will take several years to provide a mitigation role and will reduce the landscape and natural character effects. Full details of the RPP are presented in Appendix 4: Replacement Planting Plan.

The mitigation strategy has two key objectives to reduce adverse effects as a result of the proposal. These objectives will be achieved by implementing supporting actions to reduce or remove adverse effects on the landscape character and natural character.

#### 1) Replace riparian and mangrove vegetation removed during construction

- Propose indigenous species historically found within the local area or currently present in the existing landscape.
- Propose replacement mangrove forest in the freshwater and coastal marine area.

The proposed riparian mitigation planting will comprise four planting typologies of indigenous riparian species selected based on species found within the surrounding riparian corridor(listed below).

- Harania Saltmarsh (616m<sup>2</sup>)
- Harania Salt Meadow (286m<sup>2</sup>)
- Harania Bank (1,106m<sup>2</sup>)
- Harania Low Mix for Viewshafts (95.4m<sup>2</sup>)
- Harania Chamber (64m<sup>2</sup>)
- Mangrove Reestablishment Area (700m2)

A total area of 2,167.4m<sup>2</sup> riparian, saltmarsh and bank vegetation plus mangrove vegetation lost will be planted to replace the vegetation lost during construction.

#### 2) Replace amenity vegetation in reserves

The proposed specimen trees will replace the trees removed within the Blake Road Reserve during construction. This planting will restore the screening and enclosure of the vegetation removed. The location of these specimen trees will be determined in consultation with the project arborist and Auckland Councils Urban Forest Team.

# 6.0 Recommendations

Based on the above assessment, in order to suitably mitigate identified adverse landscape and natural character effects it is recommended that the following measures are embedded in the implementation of the proposed new pipe bridge and pedestrian bridge.

- The proposed RPP shall be implemented immediately following planting season following the removal of the temporary accessway.
- That all planting shall be maintained for 5 years following planting to establish natural growth height and form, for the purposes of maintaining the landscape and natural character mitigation that the vegetation provides.
- Where practicable, the procurement of plants come from Makaurau Marae Nursery, which are specimens eco-sourced from the same ecological district as the Site.
- That a vegetation maintenance plan is prepared and provided to Council for certification prior to the implementation of the RPP that addresses:
  - o Plant maintenance during the first five years
  - o Replacements
  - Weed and pest control measures.

# 7.0 Conclusions

In conclusion, the landscape character, visual amenity and natural character of the Site and the surrounding landscape area able to be maintained after the establishment of the proposed combined pipe and footbridge. The visibility of the project works area is broadly limited by the density of development and vegetation surrounding the Site.

Landscape character effects are anticipated to be as a result of the removal of indigenous riparian vegetation and mangroves along the stream and within the CMA. During construction the character of the landscape will be adversely affected due to the removal or vegetation and the large compound areas within the reserves. The adverse landscape effects will primarily be reduced after the end of the construction works, the remaining effects will be mitigated by the proposed RPP planting.

Residential, road and pedestrian audiences potentially affected by the proposed construction works and the new pipe bridge and pedestrian bridge will be limited to those with short distance views of the Site during the construction works, therefore adverse effects will be temporary. During the operation of the new pipe bridge and footbridge it is anticipated that there will be no long term adverse visual effects on audiences once the mitigation planting has matured (after approximately 10 years).

Natural Character effects are anticipated to be localised to the construction footprint and will not extend to the wider landscape. The abiotic effects will be a result of the earthworks and structural elements to accommodate the CMA crossing, and the minor realignment of the main channel to avoid the new bridge piers. The biotic effects will be related to the removal of existing indigenous riparian vegetation and mangroves. During operation it is anticipated that these effects will be effectively mitigated through the Replacement Planting Plan. Similarly, the experiential effects on the natural character will only be impacted during construction.

It is anticipated that the proposed pipe bridge and footbridge can be established and maintained without compromising the landscape, natural character and visual amenity of the Site or the wider context. Any potential adverse long term effects will be mitigated through the RPP to provide locally appropriate indigenous and replacement vegetation. It is considered that the landscape character, visual amenity and natural character can be maintained following the establishment of the Project with either construction methodology in the assessed envelope.

# Appendix 1: Method Statement

31 October 2024

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

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

#### The Existing Landscape

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

Physical -relevant natural and human features and processes;

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

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

#### Engagement with tāngata whenua

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

#### Statutory and Non-Statutory Provisions

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

#### The Nature of Effect

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

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

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#### The Level of Effect

Where the nature of effect is assessed as '**adverse**', the assessment quantifies the level (degree or magnitude) of adverse effect. The level of effect has not been quantified where the nature of effect is neutral or beneficial. Assessing the level of effect entails professional judgement based on expertise and experience provided with explanations and reasons. The identified level of adverse natural character, landscape and visual effects adopts a universal seven-point scale from **very low** to **very high** consistent with Te Tangi a te Manu Guidelines and reproduced below.

		1	1			
VERY LOW	LOW	LOW-MOD	MODERATE	MOD-HIGH	HIGH	VERY HIGH
	**********************			**********************		

#### Landscape Effects

A landscape effect relates to the change on a landscape's character and its inherent values and in the context of what change can be anticipated in that landscape in relation to relevant zoning and policy. The level of effect is influenced by the size or spatial scale, geographical extent, duration and reversibility of landscape change on the characteristics and values within the specific context in which they occur.

#### Visual Effects

Visual effects are a subset of landscape effects. They are consequence of changes to landscape values as experienced in views. To assess where visual effects of the proposal may occur requires an identification of the area from where the proposal may be visible from, and the specific viewing audience(s) affected. Visual effects are assessed with respect to landscape character and values. This can be influenced by several factors such as distance, orientation of the view, duration, extent of view occupied, screening and backdrop, as well as the potential change that could be anticipated in the view as a result of zone / policy provisions of relevant statutory plans.

#### Natural Character Effects

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

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

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

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



#### The Significance of Effects

Decision makers assessing resource consent applications must evaluate if the effect on individuals or the environment is less than minor<sup>6</sup> or if an adverse effect on the environment is no more than minor<sup>7</sup>. For non-complying activities, consent can only be granted if the s104D 'gateway test' is satisfied, ensuring adverse effects are minor or align with planning objectives. In these situations, the assessment may be required to translate the level of effect in terms of RMA terminology.

This assessment has adopted the following scale applied to relevant RMA circumstances<sup>8</sup> (refer to diagram below), acknowledging low and very low adverse effects generally equate to 'less than minor' and high / very high effects generally equate to significant<sup>9</sup>.

					SIGNIF	ICANT
LESS THAN M	LESS THAN MINOR MORE THAN MINOR					
VERY LOW LOW-MOD MODERATE MOD-HIGH HIGH VERY H					VERY HIGH	

<sup>&</sup>lt;sup>6</sup> RMA, Section 95E

<sup>&</sup>lt;sup>7</sup> RMA, Section 95E

<sup>&</sup>lt;sup>8</sup> Seven-point level of effect scale. Source: Te tangi a te Manu, Pg. 15

<sup>&</sup>lt;sup>9</sup> The term 'significant adverse effects' applies to specific RMA situations, including the consideration of alternatives for Notices of Requirement and AEEs, as well as assessing natural character effects under the NZ Coastal Policy Statement.

Appendix 2: Graphic Supplement





# Tennessee Bridge Replacement



# Contents

### FIGURES

Figure 1:

Viewpoint Plan

# SITE PHOTOGRAPHS

VP	1:	View south from the Lenore Foreshore Reserve
VP	2:	View southwest from the Blake Road Reserve -
VP	3:	View west from the Blake Road Reserve - Single
VP	4:	View west from the southern boundary of the Bla
VP	5:	View north from the Lenore Foreshore Reserve -
VP	6:	View north from outside 79 Archboyd Avenue - S
VP	7:	View west from the side entrance to 83 Blake Ro
VP	8:	View northwest from outside 87 Blake Road - Sin
VP	9:	View east from the Lenore Foreshore Reserve to (Existing)
VP	10:	View east from the Lenore Foreshore Reserve to (Existing)
VP ·	11:	View east from outside 35 Bicknell Road - Single

Single Frame FoV40 (Existing)
Single Frame FoV40 (Existing)
Frame FoV40 (Existing)
Iake Road Reserve - Single Frame FoV40 (Existing)
Single Frame FoV40 (Existing)
Single Frame FoV40 (Existing)
Coad - Single Frame FoV40 (Existing)
to the rear of 58 Aribu Crescent - Single Frame FoV40
to the rear of 32 Bicknell Road - Single Frame FoV40

e Frame - Single Frame FoV40 (Existing)







Projection: NZGD 2000 New Zealand Transverse Mercator

Viewpoint Loc Viewpoint Locations Land Parcels

40 m

MAKING SPACE FOR WATER Viewpoint Plan Date: 29 October 2024 | Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: Mark.Lewis@boffamiskell.co.nz | Drawn: SGa | Checked: OMa

Figure 1





Date of Photography: 12:11am 14 October 2024 ails NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

View south from the Lenore Foreshore Reserve

Data Sources: Photography - BML

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# Existing View

### TE ARARATA CULVERT REPLACEMENT

Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa



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Date of Photography: 11:59am 14 October 2024 NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

View southwest from the Blake Road Reserve

Data Sources: Photography - BML

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# Existing View

# TE ARARATA CULVERT REPLACEMENT

Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa



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Date of Photography: 11:53am 14 October 2024 NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

View west from the Blake Road Reserve

Data Sources: Photography - BML

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# Existing View

# TE ARARATA CULVERT REPLACEMENT

Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa



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Date of Photography: 11:51am 14 October 2024 NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

View west from the southern boundary of the Blake Road Reserve

Data Sources: Photography - BML

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# Existing View

### TE ARARATA CULVERT REPLACEMENT

Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa



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Date of Photography: 11:44am 14 October 2024 NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

View north from the Lenore Foreshore Reserve

Data Sources: Photography - BML

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# Existing View

### TE ARARATA CULVERT REPLACEMENT

Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa



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Date of Photography: 12:18pm 14 October 2024 NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

View north from outside 79 Archboyd Avenue

Data Sources: Photography - BML

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# Existing View

### TE ARARATA CULVERT REPLACEMENT

Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa



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Date of Photography: 11:55am 14 October 2024 NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

View west from the side entrance to 83 Blake Road

Data Sources: Photography - BML

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# Existing View

# TE ARARATA CULVERT REPLACEMENT

Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa



Boffa Miskell www.boffamiskell.co.nz

Date of Photography: 11:56am 14 October 2024 NZST

Horizontal Field of View: 40°Vertical Field of View: 25°Projection: NAImage Reading Distance @ A3 is 50 cm

View northwest from outside 87 Blake Road

Data Sources: Photography - BML

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Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa

# Existing View

# TE ARARATA CULVERT REPLACEMENT



Boffa Miskell www.boffamiskell.co.nz

Date of Photography: 12:10pm 14 October 2024 NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

TE ARARATA CULVERT REPLACEMENT View east from the Lenore Foreshore Reserve to the rear of 58 Aribu Crescent Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa

Data Sources: Photography - BML

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# Existing View



Boffa Miskell www.boffamiskell.co.nz

Date of Photography: 12:10pm 14 October 2024 NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

TE ARARATA CULVERT REPLACEMENT View east from the Lenore Foreshore Reserve to the rear of 32 Bicknell Road Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa

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# Existing View



Boffa Miskell www.boffamiskell.co.nz

Date of Photography: 12:15pm 14 October 2024 NZST

Horizontal Field of View : 40° Vertical Field of View : 25° Projection : NA Image Reading Distance @ A3 is 50 cm

View east from outside 35 Bicknell Road

Data Sources: Photography - BML

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# Existing View

# TE ARARATA CULVERT REPLACEMENT

Date: October 14 2024 Revision: 0 Plan prepared by Boffa Miskell Limited Project Manager: oliver.may@boffamiskell.co.nz | Drawn: OMa | Checked: OMa

# Appendix 3: Natural Character Evaluation

#### **Table 3.1: Stream Natural Character Evaluation**

Tenne	ssee Branch	
Existin	g Natural Character Description	Rating
Bioph	ysical – Active Bed	High
•	The stream bed contains silty sand with cohesive marine clays approximately 0.1 m below a fine silty sand layer.	
•	A low flow width of approximately 4m and a full bank width of approximately 13m.	
•	A steady flow of water is well contained within the banks, the water flow varies considerably during times of heavy rain fall.	
•	Debris has been noted as collecting in the stream, particularly after heavy rain fall.	
•	High value aquatic fauna within the creek and the wider catchment include Inanga ( <i>Galaxias maculatus</i> ), Longfin eel/tuna ( <i>nguilla dieffenbachia</i> ) and Smelt/pōrohe ( <i>Retropinna retropinna</i> ).	
•	The existing culverts beneath the existing pipe bridge embankment disrupts the natura stream bed	
Bioph	ysical – Margins	Moderate -
•	The narrow low flow stream and the wider full flow stream have banks ranging from steeply incised, channelised and partially banks either side of the existing pipe bridge embankment.	High
•	The majority of species long the watercourse are indigenous riparian species along the margins of the Tennessee Branch.	
•	Mangrove forest bordering the active channel width and not within the tidal channel.	
Exper	ential	Moderate
•	The existing pipe bridge embankment and culverts are the most apparent indications of human modification.	
•	The stream channel is naturalised and not directly modified either side of the existing pipe bridge, however the stream channel has shifted sin the last 80 years likely due to the pipe bridge embankment.	
•	The existing pipe bridge crossing allows for open views to the south up stream over the mangroves and marginal riparian plants. Views to the north from the pipe bridge are more enclosed by vegetation in the near distance.	
•	Views of the stream channel are primarily screened by tall marginal planting either side of the stream.	

- The wider landscape surrounding the stream is notably heavily urbanised.
- The regular low flow of the stream is not a notable process in the wider environment.

Appendix 4: Replacement Planting Plan

PLAN	T SCH	EDULE				
SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	CONT	SPACING	QTY
SHRUB A	REAS					
	1.1	HARANIA - SALTMARSH				616 m <sup>2</sup>
	Apo sim	Apodasmia similis	oioi	11	70% @ 500 mm	1 793
	Jun ehn	Juncus kraussii australiensis	sea rush	11	30% @ 500 mm	768
	oun onn	HARANIA - SALT MEADOW				286 m <sup>2</sup>
	Cot sil	Cotula coronopifolia	bachelors button	1L	40% @ 400 mm	743
	Goo rad	Goodenia radicans	Remuremu	1L	60% @ 400 mm	1,115
		HARANIA - BANK				1,106
	Ast ban	Astelia banksii	Koowharawhara	1L	5% @ 1,000 mm	57
	Aus fly	Austroderia fulvida	Toetoe	1L	2.5% @ 1,000 mm	29
	Cop rep	Coprosma repens	taupata	1L	2.5% @ 500 mm	115
	Cop rob	Coprosma robusta	karamū	1L	2.5% @ 1,000 mm	29
	Cor aus	Cordyline australis	tı kōuka	1L	5% @ 1,000 mm	57
	Kun rob	Kunzea robusta	kānuka	1L	20% @ 1,400 mm	117
	Lep sco	Leptospermum scoparium	mānuka	1L	15% @ 1,400 mm	89
	Mel ter	Melicope ternata	Wharangi	1L	7.5% @ 1,400 mm	44
	Myo lae	Myoporum laetum	Ngaio	1L	2.5% @ 2,000 mm	8
	Nes ser	Nestegis apetala	Coastal Maire	8L	2.5% @ 2,000 mm	8
	Ole yil	Olearia solandri	coastal tree daisy	1L	2.5% @ 1,400 mm	15
	Pho ten	Phormium tenax	harakeke	1L	10% @ 2,000 mm	29
	Pit cra	Pittosporum crassifolium	Karo	1L	2.5% @ 2,000 mm	8
	Pit eug	Pittosporum eugenioides	Tarata	1L	2.5% @ 2,000 mm	8
	Pla div	Plagianthus divaricatus	mākaka	1L	5% @ 1,400 mm	30
	Pla cos	Planchonella costata	Tawāpou	8L	2.5% @ 2,000 mm	8
	Sop mic	Sophora microphylla	kōwhai	8L	2.5% @ 2,000 mm	8
_	Vit lue	Vitex lucens	Pūriri	8L	7.5% @ 4,000 mm	5
		HARANIA - LOW MIX FOR VIEW SHAFTS				95.4 m
	Apo sim	Apodasmia similis	oioi	1L	50% @ 500 mm	198
	Fic nod	Ficinia nodosa	พīพī	1L	50% @ 500 mm	198
		HARANIA - CHAMBER				64 m²
	Cop prs	Coprosma repens 'Prostrata'	Taupata	1L	50% @ 600 mm	93
	Mue axi	Muehlenbeckia axillaris	Pohuehue	1L	50% @ 600 mm	93

12 (No.) 45L TREES TO BE PLANTED FOR ADDITIONAL MITIGATION PLANTING. SPECIES AND LOCATIONS TO BE DETERMINED BY PROJECT ARBORIST IN CONJUNCTION WITH AUCKLAND COUNCIL PARKS.

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Extent of Works (TBC)

<u>KEY</u>

– – Mangrove Restablishment Area



Sensitivity: General

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