

Harania Flood Resilience Works – Tennessee Bridge

Assessment of Effects on the Environment

Prepared for Auckland Council Healthy Waters Prepared by Beca Limited

8 November 2024



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Revision History

Revision N ^o	Prepared By	Description	Date
0.1	Kaitlyn Ritchie	Draft for Review	6 November 2024
1 Kaitlyn Ritchie		Final for lodgement	8 November 2024

Document Acceptance

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Glossary

Term	Meaning
AC-OIC	Severe Weather Emergency Recovery (Auckland Flood Resilience Works) Order 2024
AEE	Assessment of Effects on the Environment
AMP	Avifauna Management Plan
Auckland Council	Auckland Council Healthy Waters
AUP:OP	Auckland Unitary Plan: Operative in Part
CAR	Corridor Access Request
CEMP	Construction Environmental Management Plan
Consent authority	Auckland Council Regulatory
CMA	Coastal marine area
CNVA	Construction Noise and Vibration Assessment
CNVMP	Construction Noise and Vibration Management Plan
CTMP	Construction Traffic Management Plan
CVA	Cultural Values Assessment
EcIA	Ecological Impact Assessment
EMP	Ecological Management Plan
ESCP	Erosion and Sediment Control Plan
FMP	Fish Management Plan
ITA	Integrated Transport Assessment
LNCEA	Landscape and Natural Character Effects Assessment
MACA	Marine and Coastal Area (Takutai Moana) Act 2011
MMP	Mokomoko (skink) Management Plan
PCA	Pavement Condition Assessment
PSI	Preliminary Site Investigation
RMA	Resource Management Act 1991
SSESCP	Site Specific Erosion and Sediment Control Plan
SWERLA	Severe Weather Emergency Recovery Legislation Act 2023
ТТМ	Temporary traffic management measures
VMP	Vegetation Management Plan

1 Introduction

1.1 Purpose of this report

This Assessment of Effects on the Environment (**AEE**) report has been prepared on behalf of Auckland Council Healthy Waters (**Auckland Council**) by Beca Limited (**Beca**) to support a resource consent application to authorise flood resilience works at the Tennessee Avenue embankment dam within the Harania Catchment. A more detailed description of the activities to be authorised is provided in Sections 4 and 5.

The application is made to Auckland Council (the consent authority).

This report has been prepared in fulfilment of section 88 of the Resource Management Act 1991 (**RMA**), as modified by the Severe Weather Emergency Recovery (Auckland Flood Resilience Works) Order 2024 (**AC-OIC**). Specifically, it has been prepared under the AC-OIC Clause 11 process. Further details on the AC-OIC, information requirements, and related processes are discussed in Section 2 of this report.

1.2 Background

1.2.1 Overview of flood resilience works

The January 2023 floods, followed closely by Cyclone Gabrielle, marked a period of unprecedented weather challenges for Auckland. 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.

The Harania catchment was one of the worst affect areas of Auckland following the January 2023 floods. Auckland Council identified significant flooding, causing risk to life, and widespread flood damage to approximately 60 homes, which occurred due to poor flood conveyance at the locations of the current Tennessee Avenue and Blake Road embankment dams. The outlet culverts of the dam embankments have limited capacity, and they are also submerged below the watercourse beds causing elevated floodwaters on their upstream sides. Proposed flood resilience works at these two embankment dams will remove all of the flood risk from these properties. The works are being progressed in two stages and two corresponding resource consent applications as follows:

- Works at the Tennessee Avenue embankment dam, being the Tennessee Bridge works; and
- Works at the Blake Road embankment dam.

This application and report relate to the Tennessee Bridge works.

The proposed flood resilience works relevant to this application involve 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 and pipe 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. A pedestrian bridge is proposed on top of the pipe bridge. Design drawings are provided in **Appendix A**.

1.2.2 Legislative framework

The Severe Weather Emergency Recovery Legislation Act 2023 (**SWERLA**) commenced on 12 April 2023 for the principal purpose of assisting communities and local authorities affected by severe weather events to respond to, and recover from, the impacts of the severe weather events. Section 7 of the SWERLA provides for the Governor-General to grant exemptions from, modify or extend any legislation listed in Schedule 2,



including the RMA, by way of Order in Council. Subsequently, the AC-OIC was enacted on 25 October 2024. This application is to be considered under the AC-OIC as detailed further in Section 2.

1.3 Summary of resource consent requirements

Resource consent is required for a **Controlled Activity** (as specified in Clause 8 of the AC-OIC) pursuant to Section 9, 12, 13, 14 and 15 of the RMA for flood resilience works:

- on land;
- in the coastal marine area;
- in, on, under or over the beds of rivers or lakes;
- involving the taking, use, damming, or diversion of water; and
- involving the discharge of contaminants to land, water and air;

that are not expressly allowed by a national environmental standard, district rule or regional rule, or contravenes a national environmental standard, district rule or regional rule. The relevant activities are outlined in more detail in Section 6 of this AEE report.

1.4 Appended information

The following information is appended to and form part of this AEE report:

- Appendix A. Indicative Design Drawings
- Appendix B. Proposed Resource Consent Conditions
- Appendix C. Record of Titles
- Appendix D. Ecological Impact Assessment
- Appendix E. Coastal and Fluvial Geomorphic Effects Assessment
- Appendix F. Arboricultural Assessment of Effects
- Appendix G. Landscape and Natural Character Effects Assessment
- Appendix H. Integrated Transport Assessment
- Appendix I. Preliminary Site Investigation
- Appendix J. Geotechnical Assessment Report
- Appendix K. Preliminary Archaeological Assessment
- Appendix L. Planting Plan
- Appendix M. Draft Construction Environmental Management Plan
- Appendix N. Relevant matters of control
- Appendix O. Ecological Management Plan
- Appendix P. Erosion and Sediment Control Plan
- Appendix Q. Communication & Engagement Plan
- Appendix R. Flood Risk Assessment
- Appendix S. Construction Noise and Vibration Assessment
- Appendix T. Draft Construction Noise and Vibration Management Plan
- Appendix U. Draft Construction Traffic Management Plan
- Appendix V. Evidence of consent to carry out the flood resilience works (Watercare)
- Appendix W. Clause 11(2)(n) contact details of people consulted with
- Appendix X. List of the names and contact details required under Clause 14(2)(a)
- Appendix Y. Engagement Collateral.



2 Modified Legislative Framework

2.1 Background

The SWERLA commenced on 12 April 2023 for the principal purpose of assisting communities and local authorities affected by severe weather events to respond to, and recover from, the impacts of the severe weather events. The SWERLA provides for economic recovery and the planning, rebuilding and recovery of affected communities and persons, including:

- Rebuilding of land, infrastructure, and other property of affected communities or of any affected persons;
- Development, building, or rebuilding of land, infrastructure, or other property or access to resources or services in areas not affected by the severe weather events;
- Safety enhancements to, and improvements to the resilience of, that land, infrastructure, or other property;
- Facilitating co-ordinated efforts and processes for short-term, medium-term, and long-term recovery;
- Facilitating the restoration and improvement of the economic, social, and cultural well-being, and enhancing the resilience, of affected communities or of any affected persons; and
- Facilitating the restoration and resilience of the environment.

Section 7 of the SWERLA provides for the Governor-General to grant exemptions from, modify or extend any legislation listed in Schedule 2, including the RMA, by way of Order in Council.

Subsequently, the AC-OIC was enacted on 25 October 2024.

The AC-OIC sets out a truncated process for making and considering resource consent applications under the RMA, which provides certainty that applications for recovery works will be approved in an expedited manner. Details of the OIC relevant to this application are described in the following sections.

The SWERLA and AC-OIC will be repealed/revoked by 31 March 2028.

2.2 Key qualifying definitions under Clause 6 of the AC-OIC

Clause 6(1) of the AC-OIC specifies the meaning of flood resilience works as follows:

(1) In this order, flood resilience works means works that—

- (a) are of a kind described in subclause (2); and
- (b) are carried out-

(i) by or on behalf of the Auckland Council; and

(ii) in any part of the severe weather events affected area that is at a location in the Auckland region specified in subclause (3); and

(iii) for the sole or principal purpose of responding to the impacts of 1 or more severe weather events; and (c) for the purposes of the RMA,—

(c) involve or are concerned with either or both of the following:

(i) improving the resilience of land or infrastructure, or both, to flooding:

(ii) making safety enhancements to land or infrastructure, or both, to avoid or mitigate risks posed by flooding; and

(d) for the purposes of the RMA,—

(i) would ordinarily require a resource consent; and



(ii) are not described in any plan or national environmental standard as a permitted activity; and

(iii) are not a prohibited activity.

Details of how the proposed flood resilience works meet this Clause is provided in the sections below.

2.2.1 Flood resilience works (Clause 6(1)(a))

The AC-OIC defines flood resilience works as follows:

(2) Works of the kind referred to in subclause (1)(a) are any of the following activities:

- (a) regrading and naturalising watercourses:
- (b) removing sediment:
- (c) removing vegetation, including clearing mangroves:
- (d) installing debris capture structures:
- (e) replacing or removing dams, including embankment dams:

(f) replacing or removing culverts:

- (g) replacing or constructing bridges, including footbridges and pipe bridges:
- (h) installing, replacing, or removing pipes:
- (i) constructing or improving accessways for the maintenance of infrastructure:
- (j) relocating infrastructure, such as cables, poles, and roads:
- (k) earthworking:
- (I) stabilising slopes, including by constructing retaining walls:

(m) landscaping:

(*n*) any activity that is incidental or subsidiary to any 1 or more of the activities described in paragraphs (a) to (*m*).

(4) Despite subclause (1), flood resilience works does not include any of the following works:

(a) the subdivision of land:

(b) any activity that would contravene section 15A, 15B, or 15C of the RMA.

The works subject to these resource consent applications meet the definition of flood resilience works. In particular, the Harania catchment was one of the worst affect areas of Auckland following the January 2023 floods with significant flooding, causing risk to life, and widespread flood damage to approximately 60 homes. This was due to poor flood conveyance at the locations of the current Tennessee Avenue and Blake Road embankment dams.

The proposed flood resilience works at the Tennessee Avenue embankment dam have been designed to address flood risk by reducing blockages and increasing conveyance potential at this location to improve the resilience of surrounding land to flooding, improving public safety by reducing flooding and removing an intolerable risk to life. Furthermore, the works will reduce the risk of a potential for a dam breach-induced structural failure of the Eastern Interceptor during flood conditions (i.e. high upstream water levels), improving the resilience of infrastructure to flooding.

The proposed flood resilience work do not involve the subdivision of land or any activity that would contravene section 15A, 15B, or 15C of the RMA.



A full description of the flood resilience works is provided in Section 4.

2.2.2 Auckland Council (Clause 6(1)(b)(i))

These resource consent applications are made by Auckland Council, specifically the Healthy Waters Department.

2.2.3 Severe weather affected area (Clause 6(1)(b)(ii))

The site subject to this application is within a "severe weather affected area", being the Harania location specified in Schedule 1 of the AC-OIC as shown in Figure 2-1.



Figure 2-1: Harania Location (shown in blue) and proposed works area (shown in red) (Source: AC-OIC Schedule 1)

2.2.4 Responding to the impacts severe weather events (Clause 6(1)(b)(iii))

The purpose of the flood resilience works is to respond to impacts of the January 2023 Auckland Anniversary floods. The Harania catchment experiences significant flooding, causing risk to life, and widespread flood damage to approximately 60 homes.



2.2.5 Resource consents (Clause 6(1)(c))

Section 6 of this report details the permitted activities and resource consents required for the flood resilience works. The proposed flood resilience works are not a prohibited activity.

2.3 Controlled activity status and non-notification

Under Clause 8 of the AC-OIC, any work done by, or on behalf of, Auckland Council is to be classified as a controlled activity for the purposes of section 87A(2) of the RMA. Controlled activity status means the relevant consent authority must grant applications for the flood resilience works.

Clause 13(2) of the AC-OIC states that a resource consent application for recovery work must not be publicly notified or given limited notification.

2.4 Content of this application

Clause 11 of the AC-OIC details the type and extent of information required in resource consent applications. Table 2-1 outlines the information requirements and the location of the information within this report.

Sub- clause	Information requirement under Clause 11	Report reference		
(2)(a)	a detailed description of the flood resilience works:	Section 4		
(2)(b)	a map that shows—	Section 2.2.3, Figure 2-1.		
	 (i) the area (the works area), at the relevant location specified in clause 6(3), in which flood resilience works are to be carried out; and 			
	(i) any AUP overlays that apply in the works area or any area that adjoins the works area, or both:	Section 3.2		
(2)(c)	a list of any AUP overlays that apply in either or both of the following:	Section 3.2		
	(i) the works area:			
	(ii) any area that adjoins the works area:	Section 3.2		
(2)(d)	a map that shows each proposed work site in the works area: Section 3.1			
(2)(e)	a general description of each proposed work site in the works area: Section 3			
(2)(f)	for each proposed work site in the works area, a description of —	Section 3.3		
	(i) how the flood resilience works align with existing resource consents relating to the proposed work site; and			
	(ii) any conflicts with existing resource consents relating to the proposed work site:	Section 3.3		
(2)(g)	a map that shows each allotment that is wholly or partly within the boundaries of each proposed work site in the works area:Section 3.1			
(2)(h)	for each proposed work site in the works area, the name and address of each owner and each occupier of each allotment that is wholly or partly within the boundaries of the proposed work site:Section 3.1			
(2)(i)	a description of any cultural values in the works area that have been identified by a relevant Māori entity:	Section 3.9.2.		

Table 2-1: Clause 11 Application Summary of Information provided



Sub- clause	Information requirement under Clause 11	Report reference		
(2)(j)	 an assessment of all potential effects of the flood resilience works with input from appropriate experts, including consideration of— (i) all information reasonably available to the applicant; and 	Section 7, Appendix package		
	(ii) the potential effects on any cultural values in the works area identified by a relevant Māori entity; and	Section 7.3		
	(iii) the potential effects on any values identified in AUP overlays that apply in the works area or any area that adjoins the works area, or both:	Section 7, Appendix package		
(2)(k)	proposals to avoid, remedy, or mitigate potential adverse effects identified by the assessment described in paragraph (j):	Section 8, Appendix package		
(2)(l)	any conditions that the applicant proposes for the resource consent that are—	Appendix B		
	 (i) set out in Schedule 2, of (ii) a variation of, or additional to, a condition set out in Schedule 2: 	Appendix B		
(2)(m)	the reasons for any conditions that the applicant proposes for the resource consent that are a variation of, or additional to, a condition set out in Schedule 2:Appendix B			
(2)(n)	a description of any consultation undertaken in relation to the flood resilience works (including with relevant Māori entities) and the names and contact details of all persons consulted:			
(2)(o)	a list of all relevant Māori entities: Section 9.2			
(2)(p)	a list of the names and contact details of all persons the consentAppendix Xauthority is required to notify under clause 14(2)(a):Appendix X			
(2)(q)	 if the proposed flood resilience works involve the carrying out of any activity that could affect infrastructure that is owned by a person other than the applicant,— (i) a description of the infrastructure; and 	Section 3.3		
	(ii) a description of the location of the infrastructure; and	Section 3.3		
	(iii) evidence that the owner of the infrastructure has consented to the carrying out of the activity:	Appendix V.		
(2)(r)	if the applicant intends to undertake any permitted activity relating to the proposed flood resilience works in the works area, a description of the permitted activity that demonstrates that it complies with the requirements, conditions, and permissions for the permitted activity, if any, specified in the Auckland Unitary Plan (so that a resource consent is not required for that activity under section 87A(1) of the RMA).	Section 6.1.		
3	If the applicant has not carried out any consultation (see subclause (2)(n)), the application must explain why.	N/A		

An assessment of the proposal against the objectives and policies of national policy statements, regional policy statements, and plans or proposed plans, or s105 of the RMA, is not required under Clause 11 of the AC-OIC. Therefore, such an assessment is not included in this report.



2.5 Processing timeframes

Clause 17(1) specifies that the consent authority must give notice of its decision on the application under section 114 of the RMA within 30 working days after the date on which the application contains all the information the consent authority requires to make a decision on an application.

Also, Clause 17(2) specifies that the timeframe above cannot be extended or deferred in any way (e.g. s37, s92(1) further information requests, or s92(2) commissioning of reports).

2.6 Resource consent conditions

Clause 16(2) of the AC-OIC specifies that the consent authority may impose resource consent conditions set out in Schedule 2 of the AC-OIC. Clauses 16(3) and 16(4) of the AC-OIC specify that the consent authority may amend any resource consent condition set out in Schedule 2 of the AC-OIC (except clause 1) or impose additional conditions only if is considered the amendment or additional condition is necessary for the purposes of the authority's responsibility for a matter of control.

Appendix B of this report outline the Schedule 2 conditions that are relevant to these resource consent applications and any proposed amendments and additional conditions.

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3 Description of the Works Area

This section sets out the information requirements of Clause 11(2)(b)-(i) and (q)(i) and (ii) of the AC-OIC which require:
(2) Instead of complying with section 88(2)(b) of the RMA, an application for a resource consent for flood resilience works must include the following information:
(b) a map that shows—
(i) the area (the works area), at the relevant location specified in clause 6(3), in which flood resilience works are to be carried out; and
(ii) any AUP overlays that apply in the works area or any area that adjoins the works area, or both:
(c) a list of any AUP overlays that apply in either or both of the following:
(i) the works area:
(ii) any area that adjoins the works area:
(d) a map that shows each proposed work site in the works area:
(e) a general description of each proposed work site in the works area:
(f) for each proposed work site in the works area, a description of—
(i) how the flood resilience works align with existing resource consents relating to the proposed work site; and
(ii) any conflicts with existing resource consents relating to the proposed work site:
(g) a map that shows each allotment that is wholly or partly within the boundaries of each proposed work site in the works area:
(h) for each proposed work site in the works area, the name and address of each owner and each occupier of each allotment that is wholly or partly within the boundaries of the proposed work site:
(i) a description of any cultural values in the works area that have been identified by a relevant Māori entity:
(q) if the proposed flood resilience works involve the carrying out of any activity that could affect infrastructure that is owned by a person other than the applicant,—
(i) a description of the infrastructure; and
(ii) a description of the location of the infrastructure;

3.1 Site description and location

The Harania catchment (~300 ha) is a primarily urban catchment located on the southern side of Mangere Inlet. Drainage from the catchment is divided into eastern and western watercourses which pass under the Blake Road and Tennessee Avenue embankment dams respectively. The dam embankments were built in the 1960s to contain the 2300 mm semi-elliptical Eastern Interceptor sewer pipeline, now owned and operated by Watercare (described further in Section 3.3). The watercourses converge downstream in the tidal flats upstream of Favona Road which forms part of the Mangere Inlet. To the east of the tidal flats is a large area of reclaimed land: Pacific Steel Reserve.



The proposed work site is located within the Harania catchment at the Tennessee Avenue embankment dam within Blake Road Reserve, Lenore Foreshore Reserve, the coastal marine area (**CMA**) and Harania Creek as shown in Figure 3-1. The property details of each of the sites and details of any occupiers or owners are presented in Table 3-1. Record of Titles for the below properties are provided in **Appendix C**.

Table 3-1: Works site address and owner/ occupier details

Property address	Legal description	Owner/occupier name	Owner/ occupier address
57R Blake Road	LOT 166 DP 47191	Auckland Council	Owner: Auckland
81R Blake Road Mangere East Auckland 2024	LOT 390 DP 47191, LOT 166 DP 47191		Council Private Bag 92300 Victoria Street West
81R Archboyd Avenue Mangere East Auckland 2024 (two parcels)	LOT 5 DP 148631, LOT 106 DP 206463		Auckland 1142



Figure 3-1: Map showing the indicative proposed work site (outlined in red) and each allotment (annotated and outlined in yellow) within the work site boundaries (Auckland Council Geomaps, 2024).

3.2 Land use, zoning and overlays

The proposed work site and surrounding area are subject to the zones, overlays, controls, and designations under the AUP: OP, listed in Table 3-2, and shown in Figure 3-2, and Figure 3-3 below. The works area is located within Blake Road Reserve and Lenore Foreshore Reserve which are utilised as passive recreation



space. Blake Road Reserve has a basketball hoop, BMX track and open fields, whilst Lenore Foreshore Reserve forms part of the esplanade reserve with use limited to walking / running. The existing embankment is utilised as an informal access track between the two reserves. The works are also located within Harania Creek, which (as indicated on the planning maps) is CMA to the north of the embankment and stream to the south. Beyond the reserves, low density residential development is located to the west, south and east of the works area, with industrial development to the northeast.

Table 3-2: Zoning,	overlays	controls,	and	designations	under the	AUP: OP

AUP: OP Zones, Overlays, Controls and Designations				
Zones	Open Space - Informal Recreation Zone			
	Open Space - Conservation Zone			
	Coastal - General Coastal Marine Zone			
	Coastal - Coastal Transition Zone			
	Residential - Single House Zone			
	 Residential - Mixed Housing Suburban Zone* 			
	Business - Light Industry Zone*			
Overlays	Natural Resources: Significant Ecological Areas Overlay - SEA-M2-23a, Marine 2			
Controls	Controls: Coastal Inundation 1 per cent AEP Plus 1m Control-1m Sea level rise			
	 Controls: Macroinvertebrate Community Index – Native 			
	Controls: Macroinvertebrate Community Index - Urban			
Designation	 Designations: Airspace Restriction Designations - ID 1102, Protection of 			
-	aeronautical functions - obstacle limitation surfaces, Auckland International Airport			
	Ltd. The proposed works do not intrude into the airspace designation, being			
	approximately 95m above ground at the works site.			
Modification	Plan Changes, Plan Change 78 - Intensification, Multiple Layers			

*AUP: OP notations for areas that adjoins the works area



Figure 3-2: Map that shows AUP: OP zoning and overlays that apply in the works area or any area that adjoins the works area, or both (Auckland Council Geomaps, 2024).





Figure 3-3: Map that shows AUP: OP zoning, controls, and designations, that apply in the works area or any area that adjoins the works area, or both (Auckland Council Geomaps, 2024).

3.3 Infrastructure

The proposed flood resilience work will involve activities that will affect infrastructure owned by Watercare, specifically, the works directly involve works to the Eastern Interceptor sewer pipeline. The location of the pipeline in relation to the works site is shown in Figure 3-4. The Eastern Interceptor is one of Watercare's largest wastewater transmission pipes and a critical network asset. It transfers wastewater from the eastern suburbs of Auckland, carrying approximately 2,000 L/s (average dry weather), as measured downstream at the Mangere Wastewater Treatment Plant.



Figure 3-4: Map that shows the underground stormwater and wastewater services, that are present in the works area and surrounding areas (Auckland Council Geomaps, 2024).



3.4 Watercourses and Hydrology

As shown in Figure 3-5, the proposed work site is located within Harania Creek. Harania Creek flows through an urban catchment and converges with another watercourse which flows from the east of Blake Road Reserve before discharging into the Harania Creek tidal flats, which then flows out to Mangere Inlet through a culvert beneath Favona Road. The CMA boundary sits immediately to the north of the Tennessee Avenue embankment dam.

Figure 3-6 shows the flood hazards applicable to the works site and surrounding area. Downstream of the works site, the flood hazards are generally limited to the CMA. Upstream of the works site there is an extensive flood plain and flood prone area which covers the watercourse and surrounding urban areas.

The Harania catchment was one of the worst flood affected areas of Auckland following the January 2023 floods. Healthy Waters identified significant flooding, causing risk to life, and widespread flood damage to approximately 60 homes, which occurred due to poor flood conveyance at the locations of the current Tennessee Avenue and Blake Road embankment dams. The hydraulic capacity of the dam embankments is undersized, and they are also submerged below the watercourse beds causing elevated floodwaters on their upstream sides.



Figure 3-5: Watercourses within and surrounding the works site (shown approximately in red) (Auckland Council Geomaps, 2024).





Figure 3-6: Hydrology of the works site (shown in red) and surrounding area (Auckland Council Geomaps, 2024).

3.5 Ecological Values

An Ecological Impact Assessment (**EcIA**) has been prepared by Tonkin & Taylor Ltd (**Appendix D**), which describes the ecological characteristics and values present at the works site in further detail. The works site is located in the Tamaki Ecological District and Harania Creek catchment, with ecological characteristics consisting of mangrove habitat, wetland, permanent stream, a brackish water subtidal channel which connects wetland and freshwater environments to the Mangere Inlet and muddy benthic environments stabilised by mangroves. Manawa/mangroves form the primary vegetation present in Harania Creek estuary and continue upstream until freshwater inputs prevent mangrove establishment. The ecological values identified within the works area are summarised below and an overview of the features shown in Figure 3-7.

3.5.1 Aquatic values

Harania Creek is a shallow, modified urban stream with poor water quality and high sediment loads. The CMA is located downstream (north) of the Tennessee Avenue embankment dam embankment. During low tide, a low flow channel meanders through the mangroves providing connection between the subtidal area and the upstream permanently flowing freshwater environment. The subtidal channel/stream within the project footprint provides wading and foraging habitat for coastal avifauna and fish species, while providing fish passage for indigenous diadromous fish species. The ecological value of the subtidal channel/stream is **Moderate**.



3.5.2 Flora and habitat values

The works area comprises terrestrial, marine and wetland habitat as follows:

- Terrestrial ecosystem types comprise native planted vegetation, exotic specimen trees, exotic shrubland and rank kikuyu grass. The native and exotic vegetation supports a suite of urban bird species and may support native skinks:
 - Native vegetation on the borders of Harania Creek within the works area has a canopy of approximately five to six meters tall and is characterised by typical native revegetation species including kānuka, mānuka, harakeke, lemonwood, karamu, ngaio and tī kōuka/cabbage tree with occasional native ferns in the understory. The native vegetation is of **Moderate** ecological value.
 - Planted, exotic specimen trees and shrubland is located in Blake Road Reserve, distributed throughout the reserve which is of **Negligible** ecological value.
 - An area of approximately 150 m² of rank kikuyu grassland is located wihti the works area, considered to be of Low ecological value.
- Vegetation in the works area comprises:
 - Planted kānuka and manuka trees, up to 4 m tall, locate on the borders of Tennessee Stream, forming part of planted native vegetation areas. As a result of their regional threat classifications, kānuka and mānuka are considered of **Moderate** ecological value.
 - All other identified species (see above) are of **Low** ecological value due to their threat classification, age/size (five to six metres) and having been planted.
- Marine habitat in the works area comprise mangrove habitat and marine benthic habitat:
 - Mangrove habitat is present to the north and south of the Tennessee Avenue embankment dam, characterised as an important habitat which promotes biodiversity. The mangrove habitat provides protection, foraging, breeding and nursery habitat for fish and coastal birds, including species that are classified as At Risk (see Section 3.5.3). The mangrove habitat is of **Moderate** ecological value.
 - Marine benthic habitat and fauna to the north and south of the Tennessee Avenue embankment dam, characterised by muddy intertidal sediments bound by mangrove growth. Low biodiversity is likely within the sediments and the health of similar habitats close to the project footprint are considered poor. The marine benthic habitat is of **Negligible** ecological value.
- Wetland:
 - The mangrove habitat upstream of the embankment is considered to be a natural inland wetland¹ is of Moderate ecological value as noted above.

3.5.3 Fauna values

Fauna present in the works area include avifauna, lizards and birds as detailed below. Native bats are not considered to be present in the works area.

3.5.3.1 Avifauna

A total of 18 native terrestrial birds were recorded at the site through desktop investigations, four of which are classified as nationally At Risk, with the remaining classified as nationally Not Threatened. Five native species were identified during the site visit inclduing riroriro, tauhou, pīwakawaka, matuku moana and kawaupaka. Due to their threat classifications, nationally 'Not Threatened' bird species are of **Low** ecological value and North Island kākā, kāruhiruhi and kawaupaka are of **Moderate** ecological value. Tūī and kererū, despite being nationally 'Not Threatened', are considered of **Moderate** ecological value as key pollinators and seed dispersers.

¹ As defined in the National Policy Statement for Freshwater Management 2020

A portion of the project footprint is in SEA M2 23a - wading bird habitat within mangrove ecosystems along the coastline. Mangrove forest with small pockets of contiguous salt marsh vegetation is recognised within the SEA to provide foraging and nesting habitat for the At Risk – Declining moho pererū / banded rail and footprints were found in the works area. Other coastal birds which may, or have been observed, to utilise the works area include matuku moana, kōtare / sacred kingfisher, kāruhiruhi and kawaupaka. There is also potential for northern New Zealand dotterel/tūturiwhatu to utilise the land-based areas of the project footprint. The ecological value of coastal avifauna ranges from **Low** to **Very High**.

3.5.3.2 Lizards

Copper Skinks and Ornate Skinks (both 'At Risk – Declining') are likely to be present in the works area. Suitable habitat includes rank grass, rocks, exotic ground cover and occasional debris. One copper skink was recorded within the project footprint during Artificial Cover Objects checks on 23 September 2024. Three copper skinks were recorded within 100 m of the project footprint. The ecological value has been assessed as **High**.

3.5.3.3 Fish

A variety of indigenous marine fish with national threat statuses ranging from Introduced and Naturalised to Not Threatened, while several do not have a threat status.

Five native freshwater and diadromous fish species have been recorded in Harania Creek. These include the shortfin eel, longfin eel, common bully, inanga and banded kōkopu. Longfin eel and inanga have a conservation status of Nationally 'At Risk – Declining' and 'At Risk – Regionally Declining', while the rest have a threat status of Not Threatened. Mosquitofish Gambusia affinis, a non-native invasive species, have also been recorded in Harania Creek.

The ecological value of fish that may have the potential to occupy/frequent habitats within the works area range from **Low** to **High**.

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Figure 3-7: Ecological features in the works area (Source: Tonkin & Taylor, Appendix D)



3.6 Coastal Hazards

A Coastal and Fluvial Geomorphic Effects Assessment has been prepared by Tonkin & Taylor Ltd (**Appendix E**), which describes the coastal conditions and analyses coastal inundation and erosion hazards.

This site and surrounding area are subject to coastal inundation as shown in Figure 3-8.



Figure 3-8: Present day coastal inundation extent for a 100-year ARI water level indicated with the dark blue line, coastal inundation extent for a 100-year ARI water level under climate scenario SSP5-8.5 in 2130 indicated with the cyan line (Source: Coastal and Fluvial Geomorphic Effects Assessment, **Appendix E**).

The work site is subject to the Areas Susceptible to Coastal Instability and Erosion as identified on Auckland Council Geomaps. The shoreline is a cliffed coastline, being influenced by erosion of the cliff toe caused by marine and biological processes, weathering and slumping of the over steepened cliff face. A site-specific erosion hazard assessment has been undertaken, which shows the site (irrespective of the flood resilience works being undertaken) is subject to coastal toe erosion in future scenarios up to 2080, and 2130, as shown in Figure 3-9. A long-term erosion rate of 0.03 m/year is expected to occur at the project site in the future.





Figure 3-9: Coastal toe erosion lines for the CMA at Harania Creek, presented at baseline, 2080, and 2130 (Source: Coastal and Fluvial Geomorphic Effects Assessment, Appendix E).

3.7 Arboriculture

An Arboricultural Assessment of Effects has been prepared by the Tree Consultancy Company (**Appendix F**). A full schedule of vegetation present on the works site is provided in Appendix F of the Arboricultural Assessment of Effects, a summary is provided below with the relevant trees in the works area shown on the Tree Location Plan in Figure 3-10.

Within Blake Road Reserve, 18 specimen trees were identified, including mature exotic specimens ranging between approximately 8 m and 27 m in height. At the Blake Road entrance, there are two good quality gum trees (trees 3 and 4) and two Mexican cypress trees (trees 1 and 2), one of which is in poor condition and the other in better condition. South of the basketball court, there are four redwood trees (trees 11 to 14), consisting of two good quality trees, one poor condition tree, and one almost dead tree. Alongside the estuary, there are Monterey cypress trees (trees 15 to 18), with two subordinate and one dead tree at the southern end, while the others are mature specimens with full crowns.

Both slopes of the Tennessee Avenue embankment dam are vegetated with a closed canopy of establishing native trees and plants in the order of 3.0 m to 7.0 m tall. Species observed were cabbage tree, karamū, mahoe, lemonwood, mānuka, kānuka and flax. Pest plants were also observed, including tree privet, brush wattle, and woolly nightshade.

One karo tree (tree 19) in poor condition was identified in Lenore Foreshore Reserve located on the edge of the site compound area, and one good quality honey locust tree (tree 20) is located in the road corridor.





Figure 3-10: Tree Location Plan (Source: The Tree Consultancy Company, Appendix F)

3.8 Landscape and Natural Character

3.8.1 Landscape and Natural Character

A Landscape and Natural Character Effects Assessment (**LNCEA**) has been prepared by Boffa Miskell and is provided at **Appendix G**. The LNCEA describes the existing natural character of the works area in relation to the physical, perceptual and associative attributes which reflect the extent that natural elements, patterns and processes occur and the extent of human modification. Secondary experiential aspects associated with the context of waterbodies and their margins have also been considered.

The natural and physical environmental elements of the works area include:

- Low lying flat topography
- · Connection to extensive areas of mangrove to the north and south
- Harania Creek and tidal flats. To the north of the existing embankment the majority of the watercourse is unmodified, upstream of the embankment the urbanisation of the land to the east and west has resulted in modification for additional pipe crossings.
- 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 Blake Road Reserve.

The existing watercourse has **High/Moderate - High** (in relation to the biophysical attributes) and **Moderate** (in relation to the experiential attributes) natural character due to the combination of modified and unmodified elements within the stream and its margins. The existing embankment is the most apparent example of human modification.



3.8.2 Visual catchment

The works area is located between residential areas to the east and west, and open reserve space to the north. The visual catchment of the works area 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.

3.9 Cultural Values

3.9.1 Treaty Settlements

As shown in the Figure 3-11, the proposed works are not located in any Treaty Settlement - Statutory Acknowledgement Areas as mapped on the AUP: OP maps. The following Statutory Acknowledgement Areas cover the CMA located north of the works site:

- Ngai Tai ki Tamaki (located approx. 225 m from the works)
- Ngāti Tamaoho (located approx. 225 m from the works)
- Te Kawerau a Maki (located approx. 550 m from the works).



Figure 3-11: Treaty Settlement - Statutory Acknowledgement Areas in relation to the works site (Source: AUP:OP)

3.9.2 Customary marine title groups

The proposed flood resilience works are not located in an area subject to an application by any customary marine title groups under the Marine and Coastal Area (Takutai Moana) Act 2011 (**MACA**). There are seven customary marine title groups who have applications which cover the CMA approximately 200 m north of the works site as shown in Figure 3-12.





Figure 3-12: High Court Application Areas under the MACA in relation to the works site (Source: Te Arawhiti)

3.9.3 Cultural values identified

Clause 11(2)(i) of the AC-OIC requires a description of any cultural values identified by a relevant Māori entity (see full list in Section 9.2) to be provided. A description of cultural values identified by Te Akitai Waiohua and Te Ahiwaru in Cultural Values Assessments (**CVA**) prepared for the flood resilience works is provided below.

3.9.3.1 Te Ākitai Waiohua

The CVA prepared by Te Ākitai Waiohua outlines the interests of Te Ākitai Waiohua in the South Auckland area. The CVA prepared is confidential, therefore is not attached to this AEE. It can be provided to the consent authority on request. Historical occupation included within Māngere and Ihumātao including Papahinau, opposite the Waokauri Creek along the Puhinui Peninsula and Te Motu a Hiaroa (Puketutu Island) in the Manukau Harbour. Ancient urupa (burial sites), pa sites and wāhi nohoanga (temporary living sites), wāhi tapu (sacred sites) as well as waka hauling and portage sites are located throughout the area. Archaeological evidence reveals that the wider area was settled from at least 1200AD.

Te Ākitai Waiohua have a strong spiritual association with the land which provide its people with a sense of meaning, connection and purpose. Specifically, this relates to tribal landmarks and resources such as maunga and waterways, including Te Ararata Creek and Harania Creek which traditionally fed the settlements further west. This made the area an obvious source of kaimoana (seafood) and a strategically important transport route that linked the Manukau Harbour to the Tamaki River in the east.

The CVA identifies the main interests of Te Ākitai Waiohua as:

- The recognition and acknowledgment of Te Ākitai Waiohua and its history in Tāmaki Makaurau (Auckland);
- The opportunity for Te Ākitai Waiohua to exercise its role as Kaitiaki in Tāmaki Makaurau;
- The ability for Te Ākitai Waiohua to protect and preserve its interests, resources and taonga in Tāmaki Makaurau.



3.9.3.2 Te Ahiwaru

The CVA prepared by Te Ahiwaru takes a cultural landscape approach to identify the specific sites and culturally important features surrounding the flood resilience works, and considers the relationship of Te Ahiwaru with these sites and features. The CVA prepared is confidential, therefore is not attached to this AEE. It can be provided to the consent authority on request.

Te Ahiwaru seek to restore and enhance mauri within the surrounding environs including restoring the native vegetation and dynamic systems along the coastline of the Manukau Harbour and margins of ancestral waterbodies, rejuvenating native biota and improving the ecological systems of waterbodies and retaining and protecting riparian margins.

The land under and around Ngaa Hau Maangere features various sites of archaeological and historical importance, evidenced in the cultural values of customary and traditional importance to Te Ahiwaru identity. Key cultural features of the area include Te Pane o Mataaoho (Maangere Mountain), Maangere Lagoon, Te Ararata awa, Harania awa, Te Maanukanuka o Hoturoa (Manukau Habour) and Te Motu a Hiaroa (Puketutu Island). These sites all have links to tuupuna (ancestors) through physical remnants of iwi ancestral occupation, cultivation and koorero tawhito (oral history). The landscape and cultural sites act as a source for the whakapapa, mana, tikanga and traditions for current and future generations.

3.10 Transport

An Integrated Transport Assessment (**ITA**) has been prepared by Tonkin & Taylor Ltd (**Appendix H**) which provides an overview of the existing transport network surrounding the works area. The works are located outside of the road reserve, therefore this overview focuses on the key construction traffic routes being:

- To the Eastern Compound located within Blake Road Reserve: from Massey Road, traffic will route via Vine Street and Blake Road to the proposed site access point at the Blake Road Reserve access at the Blake Road cul de sac.
- To the Western Compound located within Lenore Foreshore Reserve: from Buckland Road traffic will
 route via Wickham Way, Garus Avenue, Archboyd Avenue, Bicknell Road to the proposed site access
 point at the existing Lenore Foreshore Reserve concrete vehicle crossing opposite #41 Bicknell Road.

3.10.1 Existing road network and traffic conditions

The existing road network comprises of local, collector, and arterial roads, with speed limits ranging between 30 km/h – 50km/h. In relation to the Eastern Compound route, the average daily, two-way, traffic flows on Massey Road, Vine Street and Blake Road, total to 35,775 vehicle movements. For the western compound, the average daily, two-way, traffic flows on Buckland Road, Wickham Way, Garus Avenue, Archboyd Avenue, and Bicknell Road, total to 31,210 vehicle movements.

The local road network is uncongested however a small amount of congestion in both peak periods is present on Massey Road at the Vine Street intersection and Buckland Road at the Massey Road and Wickham Way intersections.

3.10.2 Public Transport

Bus route 325 travels along Blake Road and Tennessee Avenue with three buses running each hour in each direction (six buses an hour) during the AM and PM peak periods. Bus route 324 travels along Bicknell Road and Archboyd Avenue with two buses running each hour in each direction (four buses an hour) during the AM and PM peak periods. Auckland Transport contracted school bus routes S012, S041, and S059 operate on Massey Road, Vine Street, Blake Road, Tennessee Avenue, Wickman Way, Garus Avenue and Buckland Road.



3.10.3 Walking and cycling

Footpaths are present along both sides of the roads on the proposed construction traffic routes. There is an unofficial walkway over Harania Creek on the current embankment between Lenore Foreshore Reserve and Blake Road Reserve. There are no dedicated cycling facilities adjacent to the Project.

3.10.4 Road safety

With the exception of the Massey Road/Vine Street intersection, overall, the number of crashes, as well as the severity of the crashes, is considered to be low and it is considered that there are no inherent safety issues present on the construction routes. From 2019-2023 there were 26 crashes recorded at the Massey Road/Vine Street intersection. The majority of the crashes that occurred were a result of crossing/turning or straight-lost control/head on crash factors.

3.11 Contaminated Soils

A Preliminary Site Investigation (**PSI**) for the flood resilience works has been prepared by Tonkin & Taylor Ltd (**Appendix I**) to identify the potential historic contaminating land activities and assess the likelihood and potential magnitude of ground contamination. Historical aerial imagery shows that both the eastern and western areas of the works site have been reserve land since 1940, with the embankment constructed around 1959. A walkover inspection on 29 August 2024 revealed no evidence of spills, staining, or hazardous materials, while previous investigations at Blake Road Reserve detected heavy metals and petroleum hydrocarbons in concentrations below Auckland's non-volcanic background levels. Geotechnical investigations in the works area revealed some fill, but no visible signs of contaminants. Potential contamination sources include past filling activities, with likely low levels of metals, petroleum hydrocarbons, and asbestos in the soil.

The PSI concluded that the information reviewed as part of the desk study indicated that it is more likely than not that HAIL activities have not occurred at the site, however given soil testing has not been undertaken, there is a risk that unexpected contamination may be encountered during works.

3.12 Groundwater and Geotechnical

A Geotechnical Assessment Report for the flood resilience works has been prepared by Tonkin & Taylor Ltd (**Appendix J**) to identify the geotechnical and groundwater conditions at the works site. A summary of the geological conditions, groundwater conditions, and land that may be subject to instability, is summarised as follows:

- The works site is underlain by Pliocene to Holocene Takaanini Formation with a dense sand layer (approximately 4 m thick) at about 8 m deep, underlain by East Coast Bays Formation at about 18 – 20 m deep.
- Topsoil is between 0.15 0.3 m.
- Based on groundwater measurements at the works site, and the water level of the adjacent stream (as
 detailed in Table 2.2. of the Geotechnical Assessment Report), the groundwater level surrounding the
 Tennessee Avenue embankment is similar to the stream level (around +1 to +2 mRL). Given this, the
 assessment concludes that the proposed chamber excavations will not encounter winter groundwater
 levels. With no groundwater interaction with the chambers and pipe works on the shore, no take, using,
 damming or diversion of groundwater will occur.
- The streambanks are identified as land that may be subject to instability, due to the ground comprising Holocene or Pleistocene sediments are at a slope of 4 (H) : 1 (V) or steeper.



3.13 Archaeology

A Preliminary Archaeological Assessment for the flood resilience works has been prepared by Origin Archaeology (**Appendix K**). The assessment identified that there are no archaeological sites identified within, or close to, the bounds of the proposed worksite.

3.14 Existing resource consents

Clause 11(f) of the AC-OIC requires a description of how the works align with existing resource consents relating to the proposed work site and any conflicts with existing resource consents relating to the proposed work site. A review of the property files of the proposed work sites has been undertaken to identify any existing and relevant resource consents. A summary of each address is provided below. In summary, the proposed flood resilience works will not conflict with any existing resource consents.

3.14.1 81R Blake Road Mangere East Auckland 2024

There are no existing resource consents within the property files of this address.

3.14.2 81R Archboyd Avenue Mangere East Auckland 2024

There is one resource consent (Application Number 11905), dated 13 February 1998, with a lapse date of 2 years. The resource consent enables the discharge of up to 2,753 m³ /s of treated stormwater, via a filtration pond and constructed outlet to Harania Creek. The proposed works site is located approximately 790 m away from the location of works enabled by consent 11905, hence it is not envisioned that the proposed flood resilience works will generate any conflicts with existing resource consent 11905.

4 Description of the Flood Resilience Work

This section sets out the information requirements of Clause 11(2)(a) which requires:

(2) Instead of complying with section 88(2)(b) of the RMA, an application for a resource consent for flood resilience works must include the following information:

(a) a detailed description of the flood resilience works:

4.1 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.

4.2 Purpose of the flood resilience works

The Harania catchment was one of the worst affect areas of Auckland following the January 2023 floods. Healthy Waters identified significant flooding, causing risk to life, and widespread flood damage to approximately 60 homes, which occurred due to poor flood conveyance at the locations of the current Tennessee Avenue and Blake Road embankment dams. The outlet culverts of the dam embankments have limited capacity, and they are also submerged below the watercourse beds causing elevated floodwaters on their upstream sides.

The observed flood extent from the January 2023 flood event is shown on the left-hand side of Figure 4-1. The figure also shows the number of property parcels where buildings were identified as having an intolerable risk to life, habitable floor flooding and flooding of property. The proposed flood resilience works at these two embankment dams seek to remove flood risk from these properties shown indicatively on the right-hand side in Figure 4-1 and outlined in Table 4-1².

² HW Light Business Case: Lower Harania Flood Risk Reduction Scheme, Healthy Waters, 2024





Figure 4-1: Estimated flood extent January 2023 and flood risk to properties (left), estimated flood extent post works (right) (Source: HW Light Business Case: Lower Harania Flood Risk Reduction Scheme Healthy Waters, 2024)

Table 4-1: Overview of flood affected properties in January 2023 and post flood resilience works (Source: HW Light Business Case: Lower Harania Flood Risk Reduction Scheme, Healthy Waters, 2024).

	Definition	Number of properties affected in catchment in 2023 flood events	Estimated number of properties remaining affected post flood resilience works
Intolerable risk to life	Intolerable risk to life using a rapid risk assessment methodology where the flood level from the January 2023 event was likely in excess of 0.5 m above floor level and the house was surrounded by floodwaters.	13	0
Habitable flood flooding	Properties where the rapid risk assessment methodology indicated that the flood level was likely to be above a habitable floor level.	27	0
Flood affected properties	Dwellings surrounded by floodwater of any depth (includes all previous categories).	55	0

In addition to causing upstream risk to life due to the limited capacity of the outlet culverts, there is potential for a dam breach-induced structural failure of the Eastern Interceptor during flood conditions (i.e. high upstream water levels). A failure at this location could result in ground slumping and sinkhole formation which would be large enough for people to fall into, creating an immediate safety risk. There could also be significant discharge of raw wastewater into the inner Manukau Harbour, causing extensive environmental



damage. Additionally, this would cause widespread public health implications as raw wastewater would back up in the Eastern and Southern Interceptors, causing overflows into private property along their lengths. There are around 10 low-lying locations within 4 km of the area that could overflow under these conditions, eight of which are in private property.

The proposed flood resilience works are being progressed in two stages and two corresponding resource consent applications as follows:

- Works at the Tennessee Avenue embankment dam, being the Tennessee Bridge works; and
- Works at the Blake Road embankment dam.

This application and report relate to the Tennessee Bridge flood resilience works as described in further detail below and Sections 7.1 and 7.7.3.2

4.3 Overview of flood resilience works

The proposed flood resilience works involve 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 and pipe bridge in the 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. A pedestrian bridge is proposed on top of the pipe bridge. The flood resilience works are referred to as the Tennessee Bridge project and a general overview is shown in Figure 4-2.



Figure 4-2: Overview of proposed flood resilience works

The Tennessee Bridge flood resilience works will include the following:

- 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 2700 mm 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 trees,
- Earthworks associated with temporary and permanent works, including within the coastal and riparian margins.
- Landscaping as detailed in the Planting Plan (Boffa Miskell, **Appendix L**).

4.4 Tennessee bridge works

Concept design plans and drawings are provided in **Appendix A**. As the design is a concept, it is subject to further development.

The Tennessee bridge works involve the diversion of the Eastern Interceptor via a 2700 mm internal diameter (2830 mm outer diameter) pipe. The new pipe invert will match the elevation of existing pipe to maintain the hydraulics of the 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. Each pier will require approximately six piles which will be piled approximately 25 m deep. The pile caps will be approximately 5 m by 8 m, each occupying approximately 40 m² of the CMA each, totalling 120 m², and will be located below MHWS. The existing main channel will be realigned horizontally between 0 - 4.8 m toward the true right bank in between the two westernmost piers. Rip rap scour protection will be installed at the base of these two bridge piers.

The sewer will be diverted into the new pipe with two tie-in chambers at either end of the new pipe diversion. Each tie in chamber will be approximately 11-13 m long, 7-10 m wide and 4.3 m deep. The chambers will be mostly underground, with approximately 1 m sitting above existing ground level. Once diverted the existing pipe, embankment and culverts will be removed with a new daylighted channel formed.

A pedestrian bridge will be installed on top of the pipe bridge to maintain the informal pedestrian connection between the two reserves. An indicative design of the pedestrian bridge has been prepared for resource consent purposes; however, the final design will be worked through, including with input from mana whenua, prior to construction. The indicative pedestrian bridge is approximately 3 m wide, along the length of the pipe bridge between the two chambers. The bridge deck will likely be fiberglass reinforced plastic (FRP) grating, with timber balustrades, approximately 1.2 m high above the bridge deck, and 630 mm below as shown in Figure 4-3.

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Figure 4-3: Indicative pedestrian bridge cross section

4.5 Landscaping

Approximately 2170m² of landscaping is proposed as detailed in the Planting Plan prepared by Boffa Miskell, in collaboration with the Project Ecologist and the Project Arborist (**Appendix L**). This includes revegetation of cleared areas with native vegetation, salt marsh and specimen trees. Mangroves will also be allowed to re-establish post construction. The areas used for construction compounds will be re-grassed on completion of the works.


5 Indicative Construction Methodology

This section sets out the information requirements of Clause 11(2)(a) which requires:

(2) Instead of complying with section 88(2)(b) of the RMA, an application for a resource consent for flood resilience works must include the following information:

(a) a detailed description of the flood resilience works:

The construction methodology provided below is indicative only and is intended to provide sufficient detail of the proposed construction activities to inform the proposed works areas, assess the potential effects on the environment, and to identify any necessary measures to avoid, remedy or mitigate those effects. The actual construction methodology will be determined by the contractor.

5.1 Construction programme and sequencing

Construction of the flood resilience works is likely to occur over a period of approximately 12 months and will generally follow the sequence set below. A number of the key construction activities are likely to occur concurrently.

- 1. Site setup, including site establishment, access and fencing.
- 2. Site establishment including clearance, set up of erosion and sediment control, earthworks and installation of temporary works.
- 3. Construction of gravel working platforms, temporary staging, and haul roads.
- 4. Installation of coffer dams at piling locations.
- 5. Screw pile installation.
- 6. Excavation and construction of chambers.
- 7. Pile cap and substructure construction.
- 8. Prepare pipe assembly bed and pipe assembly.
- 9. Remove coffer dams and remediation of foundations.
- 10. Pipe installation and welding in-situ.
- 11. Complete chamber construction around new pipe.
- 12. Pipe cut over.
- 13. Installation of pedestrian bridge
- 14. Removal of access staging.
- 15. Removal of existing pipe, embankment and structures.
- 16. Landscaping and reinstatement works.

Construction works will generally be undertaken during standards working hours (Monday to Saturday, 7:30am – 6:00pm), with night works required for discrete activities (e.g. pipe cut in).

5.2 Construction Management

A Draft Construction Environmental Management Plan (CEMP) has been prepared for the flood resilience works and is provided in **Appendix M**. The purpose of the CEMP is to set out the practices and procedures that will be adopted so that compliance with the proposed conditions of the consent is achieved and to outline all measures to avoid, remedy, or mitigate potential adverse effects associated with the proposed flood resilience works. A final CEMP will be prepared by the contractor prior to construction and provide to the consent authority for certification in accordance with the proposed conditions of consent in **Appendix B**.



5.3 Site compound and access

Two construction compounds will be utilised throughout the construction period as shown in Figure 5-1:

- Eastern compound within Blake Road Reserve
- · Western compound within Lenore Foreshore Reserve



Figure 5-1: Indicative site compound areas and works areas

The eastern compound will occupy approximately 5,500 m² of Blake Road Reserve, with access maintained to the remainder of the reserve. Approximately 3000 m² of the compound will be stabilised with 300 mm of aggregate, with topsoil left in situ with a geotextile layer. The existing basketball court will be used for storage containers. Access to the compound will be via a stabilised entrance from Blake Road. The entrance will include a reinforced concrete slab to protect existing assets from construction traffic.

The western compound will occupy approximately 1,750 m² of Lenore Foreshore Reserve, used to access the tie in chamber on the western side during the pipe bridge construction and will be used at the end of the project to excavate and remove the existing embankment. Access will be off Bicknell Road via the existing concrete entrance and 700 m² of the compound will be stabilised aggregate (as described above for the eastern compound).

Both compounds will be fenced (1.8 m construction fence) with gates to keep the site secure and provide separation from the public.

5.4 Construction traffic

Construction traffic to Blake Road Reserve will access Blake Road from Vine Street off Massey Road. Construction access to Bicknell Road, will be via Archboyd Avenue, Garus Avenue and Wickman Way. Table 5-1 outlines the expected truck movements associated with different aspects of construction.



Table 5-1: Indicative construction traffic

Construction scope	Type of trucks	Indicative approximate truck movements (total during construction)
Site compound establishment, plant and	Truck and Trailer	85
equipment mobilisation	12m Flat Deck	15
	Low Loaders	30
Construction of gravel platforms in CMA	Tipper Truck	161
Access staging installation	Flat deck - Articulated	26
Coffer dam construction and screw pile	12m Flat Deck	3
Install	Concrete Truck	15
	Tipper Truck	94
	Flat deck - Articulated	28
Chamber construction	12m Flat Deck	14
	Tipper Truck	197
	Truck and trailer	77
	Concrete Truck	83
Pile-cap Construction	12m Flat Deck	13
	Concrete Truck	46
Pipe Assembly (including assembly bed	Tipper Truck	53
construction)	Concrete Truck	4
	12m Flat Deck	12
Pedestrian bridge delivery	12m Flat Deck	12
Cofferdam, temporary platform and access	12m Flat Deck	12
staging removal	Flat Deck - Articulated	26
Removal of redundant pipe and existing earth embankment	Tipper Truck	422
Site compound, plant and equipment	Truck and Trailer	85
demobilisation	Flat Deck - Articulated	15
	Low Loaders	30

The existing informal walkway across Harania Creek on top of the embankment will be closed for the duration of the construction works.

5.5 Tennessee bridge

5.5.1 Construction of gravel working platforms, temporary staging, and haul roads

Two working platform / staging options are proposed, with the final methodology to be determined by the contractor. The two options are:

- 1. <u>Option 1 temporary staging:</u> 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 10 m downstream, and construction of gravel working platforms across the width of the
 watercourse.



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

5.5.1.1 Option 1 - temporary staging

Gravel working platforms

For Option 1, it is proposed to construct two gravel working platforms within the CMA, east and west of the existing channel, beneath the alignment of the new pipe bridge as shown in Figure 5-2. The eastern gravel platform will have an approximate area and volume of 405 m² and 365 m³, and the western gravel platform approximately 135 m² and 95 m³. The gravel platforms are required to support coffer dam construction (see below), screw pile installation and to provide additional protection to the cofferdams to limit water ingress. During the bridge construction works, the flow of the stream channel and fish passage will be maintained through the existing culverts pipes until part way through the removal of the existing embankment (see Section 5.5.10).



Figure 5-2: Option1 - Indicative gravel working platforms

Access Staging

Access staging is required to reach the western connection chamber, facilitate pile and pier construction, and position the pipe for lifting onto rollers. This staging system consists of piles, beams, and decking in 9-metre segments, creating a continuous level deck that can support cranes up to 400 tonnes. Crossing Harania Creek requires seven 9-metre sections, totalling approximately 70 m. The platform will be approximately 8.5 - 9 m wide as shown in Figure 5-3.



Figure 5-3: Indicative Schematic of Tennessee works area and temporary staging (Option 1) shown in yellow

The steps for staging installation are as follows:

- 1. Create access from the haul road to the staging start point and establish a pad foundation for the staging start (piling may be required).
- 2. Drive the first pair of 900 mm diameter steel casing piles about 9 m from the pad using a vibro hammer on a crane.
- **3.** Lift and fit a steel headstock across the pair of piles using a large crane.
- 4. Lift and place beams spanning between the headstocks or between the pad and the headstock.
- 5. Lift and place deck panels across the beams.

After completing a 9-metre section, the crane moves onto the staging, and the process repeats bay by bay until all four bays are completed.

5.5.1.2 Option 2 - culvert extension and working platform

For Option 2, it is proposed to extend the existing culverts approximately 10 m downstream into the CMA and construct one gravel working platform within the CMA. The culverts extension will require a temporary manhole to redirect the angle of the existing culvert to enable construction of the western cofferdam. The platform will have an approximate area and volume of 710 m² and 720 m³ as shown in Figure 5-4. The gravel platform will support coffer dam construction (see below), screw pile installation, provide additional protection to the cofferdams to limit water ingress, chamber construction, pile and pier construction, and position the pipe for lifting onto rollers.

During the construction works, the flow of the stream channel and fish passage will be maintained through the extended culverts until part way through the removal of the existing embankment (see Section 5.5.10).





Figure 5-4: Option 2: Indicative gravel working platform

5.5.2 Installation of coffer dams at bridge piling locations.

Three coffer dams will be required within the CMA to enable construction of the pipe bridge piers. The sizing of the coffer dams is not yet determined. Coffer dams will be installed via sheet piles to a dense sand layer using a pile driver mounted on an excavator. This machine will operate from the gravel pad during low tides.

Once the sheet piles for the central coffer dam are installed, the team will move to the western coffer dam, while another team completes the remaining work on the central coffer dam, such as excavation, waler beam installation, and casting the base prop slab. The same process will be repeated for the eastern coffer dam after the western one is completed.

After all three coffer dams are installed, construction staging will be extended at each end to facilitate piling and future lift positions for the crane.

5.5.3 Screw pile installation

The pipe bridge piles will be installed via screw piling which will be undertaken using an approximately 50T excavator from the staging platform and the gravel working platforms. Permanent casings of the top 4 m of the piles will be installed after the screw pile has been installed by using a hollow core auger using the same excavator. Depending on ground conditions and final design requirements, temporary or permanent steel pile casing may be required to support the bored hole until such time that the concrete can be placed.

5.5.4 Excavation and construction of chambers.

Excavation for the western chamber will be battered within Lenore Foreshore Reserve and no temporary retaining structures are required. Excavation for the eastern chamber will likely involve temporary retaining structures.

For both chambers, excavation will be undertaken in two stages. During the first stage the excavation will be taken down to a level approximately 400mm above the invert of the sewer line where excavation will be paused to allow for the installation of approximately 19 screw piles at each chamber. Following installation of the screw piles, the excavation can be completed to enable chamber concrete works to commence.

Construction of the chambers will continue in parallel with the substructure construction (below).



5.5.5 Pile cap and substructure construction

Both the pile cap and the chamber construction will be facilitated by up to a 280-tonne crawler crane. Reinforcement cages will be manually fixed within the coffer dam before formwork shutters are lifted into place by the crawler crane. Once these are properly propped and braced, concrete will be poured using a concrete pump positioned on the staging. A designated concrete wash-down area, consisting of a plasticlined skip, will be situated outside the CMA.

5.5.6 Prepare pipe assembly bed and pipe assembly

A works area adjacent to the construction staging will be prepared for pipe welding operations. Pipes are expected to be delivered in approximately 6-metre lengths. These pipes will be welded and positioned on rollers. Each welding joint will take approximately 4-5 days to complete and will be conducted within an enclosed welding tent. Upon completing the pipe assembly bed preparation, the coffer dams will be removed, and remediation of the ground will be undertaken around the new foundations.

5.5.7 Pipe installation, welding in-situ and chamber construction

The pipe will be installed in welded sections. The pipes will individually be launched (rolled) onto the staging platform and a tandem crane (likely two 280-tonne crawler cranes) lift will be undertaken to install each pipe section into place. The pipe joints will then be welded in-situ. The chamber end walls of the western and eastern connection chambers will then be completed, welded around the installed pipe.

5.5.8 Completion of pipe works, chamber, land reinstatement, and dismantling of access staging

The pipe will then be cut-over and the new pipe section will become operational. This cut over requires concrete cutting which will occur at night when wastewater flows are lowest. This will occur for one night at each chamber (two nights total). Contingency measures will be included in the CEMP to manage any risk of wastewater being discharged to the environment. Once operational and the existing pipe section is decommissioned, the excavation for the western and eastern connection chambers will be backfilled and reinstated. The access staging will then be dismantled and removed. However, some piles will likely remain in-situ, cut below the bed of the CMA.

5.5.9 Installation of pedestrian bridge

The pedestrian bridge will be installed after the tie in chamber has been completed. The pedestrian bridge frame including the handrail will be built in four sections in the reserve and lifted into position using the crawler crane. The flooring will be installed progressively across the bridge whilst the staging and /or gravel working platforms are being removed.

5.5.10 Removal of existing pipe, embankment, and structures and formation of stream channel

The existing, redundant pipe, and underlying embankment will then be removed. The existing pipe will be checked to confirm it is empty of wastewater, excavation of the pipe will then be undertaken. As above, contingency measures will be included in the CEMP to manage any risk of wastewater being discharged to the environment. Excavated material (approximately 3,000 m³) will be loaded into 6-wheel trucks in the western compound for off-site disposal, including at any appropriately licensed facilities is determined to be required. After removing the redundant pipe, the remaining embankment will be excavated. Stream flow and fish passage will be maintained through the existing culvert pipes until the embankment excavation is completed.



Following this, sandbags will be used to temporarily dam the upstream and downstream ends of the eastern culvert, diverting the stream flow entirely through the western culvert. This will allow the removal of the eastern culvert and construction on the eastern side of the proposed permanent channel while maintaining the stream flow through the western side. Once the eastern section is excavated and stabilised, the sandbags will be repositioned to dam the eastern side of the stream. A temporary PE pipe will be installed to divert the stream flow to the eastern side, enabling the removal of the western culvert and excavation of the western stream flow to the eastern side.

Rock rip rap will then be installed as detailed in the stream works plans in **Appendix A**. The area will be reinstated in accordance with the Planting Plan (**Appendix L**).

5.6 Earthworks

A total of approximately 3,050 m² and 4,600 m³ of earthworks will be required for the flood resilience works, including within the coastal yard and riparian yard and Sediment Control Protection Area³. This includes approximately 4,000m³ of cut and 600m³ of fill.

5.7 Vegetation removal and tree works

Approximately 1,820 m² of native vegetation, 65 m² of exotic shrubland and 181 m² of rank grassland, including within the coastal yard and riparian yard will require removal to enable the works as well as the removal of seven exotic specimen trees. Approximately 1000 m² of mangroves will be cleared from the works area.

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.

³ 100 metres landward of the coastal marine area and 50 metres landward of the edge of a watercourse.



6 Permitted Activities and Resource Consents Sought

This section sets out the resource consents being sought for the flood resilience works under the AC-OIC and the information requirements of Clause 11(2)(r) which requires:

(2) Instead of complying with section 88(2)(b) of the RMA, an application for a resource consent for flood resilience works must include the following information:

(a) if the applicant intends to undertake any permitted activity relating to the proposed flood resilience works in the works area, a description of the permitted activity that demonstrates that it complies with the requirements, conditions, and permissions for the permitted activity, if any, specified in the Auckland Unitary Plan (so that a resource consent is not required for that activity under section 87A(1) of the RMA).

6.1 **Permitted activities**

Clause 11(2)(r) of the AC-OIC requires that if permitted activities relating to the proposed flood resilience works are required in the works area, a description of the permitted activity that demonstrates that it complies with the requirements, conditions, and permissions for the permitted activity specified in the AUP:OP must be provided. Table 6-1 details the works to be undertaken as permitted activities under the AUP:OP and compliance with the relevant permitted activity standards.

Activity	Rule	Comment
Planting in the stream/wetland	E3.4.1(A2) Conservation planting complying with the standards in E3.6.1.2	 Planting is proposed within Harania Creek as detailed in the planting plan provided in Appendix L. Conservation planting in a stream or wetland is a Permitted Activity under Rule E3.4.1(A2). The proposed planting complies with the permitted standards in E3.6.1.2 as the planting is: Non-invasive species in aquatic conditions. Species native to the area Not pest species identified in a pest management strategy prepared under the Biosecurity Act 1993
Native planting in the CMA	F2.19.5 (A51) Planting of native vegetation	Planting is proposed within the CMA as detailed in the planting plan provided in Appendix L . Planting of native vegetation is a Permitted Activity under Rule F2.19.5(A51). The proposed native planting will be sourced from the same ecological district, therefore complies with standard F2.21.6.1(1).
Removal of existing wastewater pipeline from land.	E26.2.3.1(A6) Removal of network utilities and electricity generation facilities	Removal of network utilities (from land) is a Permitted Activity under Rule E26.2.3.1(A6). There are no relevant activity standards.
Pest plant removal on land	E26.3.3.1(A74) Pest plant removal	Pest plant removal is a Permitted Activity under Rule E26.3.3.1(A74). There are no relevant permitted activity standards.

Table 6-1: Permitted Activities under the AUP:OP



Activity	Rule	Comment
Construction compounds and works areas on land	E40.4.1 (A20) Temporary activities associated with building or construction, (including structures and buildings that are accessory activities), for the duration of the project, or up to 24 months, whichever is the lesser	The proposed site compounds and works areas will be in use for approximately 12 months. Construction compounds / laydowns that operate for less than 24 months in duration are a Permitted Activity under Rule E40.4.1(A20). There are no relevant permitted activity standards.

6.2 Resource consents sought

Under Clause 8 of the AC-OIC, any flood resilience works undertaken by, or on behalf of, Auckland Council is to be classified as a controlled activity for the purposes of section 87A(2) of the RMA.

This application seeks to authorise 'flood resilience works' associated with the removal of the existing Eastern Interceptor pipeline over Harania Creek and construction of a pipe bridge within the CMA. Table 6-2 outlines the resource consents required. Overall, resource consent is required as a **Controlled Activity**. Clause 13(2) of the AC-OIC states that a resource consent application for recovery work must not be publicly notified or given limited notification.

Table 6-2: Resource consent requirements and duration

Activity Section 9 Land

Flood resilience works on land that is not expressly allowed by a national environmental standard regional rule or district rule, or contravenes a national environmental standard, regional rule or district rule.

District land use activities include:

- Construction noise and vibration
- Above ground wastewater pipeline and chambers
- Tree works including removal and works in the protected root zone.
- Earthworks
- Infrastructure in natural hazard areas (land subject to instability, flood plain, coastal erosion and coastal inundation)

Regional land use activities include:

- Vegetation removal
- Earthworks

Section 12 Coastal marine area

Flood resilience works in the coastal marine area that is not expressly allowed by a national environmental standard or regional rule, or contravenes a national environmental standard or regional rule. Activities include:

- Mangrove removal
- Temporary deposition of material
- Temporary structures
- Permanent structures (pipe bridge and associated erosion control structures (riprap) and staging piles)
- Vehicle use of the foreshore and seabed
- Incidental diversion of coastal water, disturbance, and discharge of contaminants or water from the above activities.



Activity

Section 13 River and lake beds (including wetlands)

Flood resilience works in, on, under or over the beds of rivers or lakes that is not expressly allowed by a national environmental standard or regional rule, or contravenes a national environmental standard or regional rule. Activities include:

- Mangrove removal
- Demolition and removal of existing structures
- Temporary structures
- Realignment of stream channel
- Earthworks and vegetation clearance within a natural inland wetland.

Section 14 Water

Flood resilience works involving the taking, use, damming, or diversion of water that is not expressly allowed by a national environmental standard or regional rule, or contravenes a national environmental standard or regional rule. Activities include:

• Damming, or diversion of water within a natural inland wetland.

Section 15 Discharge permit

Flood resilience works involving the discharge of contaminants to land, water and air that is not expressly allowed by a national environmental standard or regional rule, or contravenes a national environmental standard or regional rule. Activities include:

 Potential discharges of contaminants into air, or into water, or onto or into land from disturbing soil that may be contaminated where no Detailed Site Investigation has been prepared.

7 Assessment of Effects on the Environment

This section sets out the information requirements of Clause 11(2)(j) which requires:

(2) Instead of complying with section 88(2)(b) of the RMA, an application for a resource consent for flood resilience works must include the following information:

(*j*) an assessment of all potential effects of the flood resilience works with input from appropriate experts, including consideration of—

(i) all information reasonably available to the applicant; and

(ii) the potential effects on any cultural values in the works area identified by a relevant Māori entity; and

(iii) the potential effects on any values identified in AUP overlays that apply in the works area or any area that adjoins the works area, or both:

This section provides an assessment of effects as they relate to the matters of control specified in Schedule 3 of the AC-OIC. **Appendix N** details the matters of control that are relevant to the flood resilience works and where these are addressed in the following sections.

7.1 Positive effects

The flood resilience works have been designed to address flood risk by reducing blockages and increasing conveyance potential as a direct response to the January 2023 flood events. As described in Section 4.2, the Harania catchment was one of the worst affected areas of Auckland following the January 2023 floods. Healthy Waters identified significant flooding, causing risk to life, and widespread flood damage to approximately 60 homes, which occurred due to poor flood conveyance at the locations of the current Tennessee Avenue and Blake Road embankment dams. The works will improve the resilience of surrounding land to flooding, improving public safety by reducing flooding and removing an intolerable risk to life from properties as detailed further in Section 7.7.3.

The works contribute to infrastructure that is more resilient to extreme flood events, mitigating the risk of a dam breach-induced structural failure of the Eastern Interceptor during flood conditions (i.e. high upstream water levels) which could result in immediate health and safety risks to people and the environment due to ground conditions and the discharge of raw wastewater.

Alongside the flood resilience outcomes, the works also provide for improved transport and parks infrastructure. The pedestrian bridge will formalise access between Lenore Foreshore Reserve and Blake Road Reserve, providing for walking and cycling access across the stream and improving the accessibility and amenity of the reserves.

The removal of the embankment and culverts and reversion to a more naturalised stream environment will improve fish passage in Harania Creek; the long-term effect of the project on native fish passage has been assessed to be positive.

7.2 Ecological Effects

An EcIA has been prepared by Tonkin & Taylor Ltd (**Appendix D**), which provides an assessment of the actual and potential ecological effects of the flood resilience works on the ecological values identified in Section 3.5. A draft Ecological Management Plan (**EMP**) has been prepared to detail effects management measures (**Appendix O**). The EMP includes a Fish Management Plan (**FMP**), Avifauna Management Plan (**AMP**), Mokomoko (skink) Management Plan (**MMP**) and Vegetation Management Plan (**VMP**). The intent is to finalise the EMP prior to construction and to provide this to the consent authority for certification. The EcIA and draft EMP have been prepared to address the following matters, of which a summary of potential effects and proposed management measures is provided in the sections below.

General

(b) Potential adverse effects on wildlife, habitats, and ecosystems.

(c) Potential adverse effects on biodiversity values (other than terrestrial indigenous biodiversity values).

(f) The management of construction works to avoid, remedy, or mitigate potential adverse effects on receiving environments, including adverse effects of hazardous substances, spills, and stormwater runoff.

Freshwater

- 1. Potential adverse effects on the ecological values of any river or wetland.
- 2. Provision for the passage of fish.
- 3. Application of the effects management hierarchy to flood resilience works affecting any river or wetland.
- 4. The use of structures and diversion to facilitate flood resilience works.
- 5. The management of flood resilience works to avoid, remedy, or mitigate potential sedimentation or contamination effects on any freshwater receiving environment.
- 6. Potential adverse effects of the flood resilience works on freshwater fisheries, and measures to avoid, remedy, or mitigate those effects.

Coastal

(d) Application of the effects management hierarchy to potential adverse ecological effects of flood resilience works affecting the CMA.

Soil, land and ecology

(c) Potential adverse effects on terrestrial ecology, and measures to avoid, remedy, or mitigate those effects.

(d) Potential adverse effects on terrestrial indigenous biodiversity values, and measures to avoid, remedy, or mitigate those effects.

(f) Potential adverse effects of land disturbance and sediment discharge on water bodies, particularly sensitive receiving environments.



7.2.1 Aquatic ecological values

Potential adverse effects of the flood resilience works on aquatic ecological values include (potential effects on fish are summarised in Section 7.2.3):

- Sedimentation and contaminant effects during construction; and
- Potential accidental release of wastewater during construction

7.2.1.1 Sedimentation and contaminants

Potential sedimentation and contaminant effects may arise during construction including from earthworks, pile driving, coffer dam installation, pipe excavation, and culvert removal. These works give rise to a potential increase of in-stream suspended solids and sedimentation discharge in the absence of suitable control measures. Sediment laden discharges can have negative effects on benthic habitats and fauna, including fish and macroinvertebrates. The magnitude of erosion and sedimentation effect before effects management is considered Moderate.

To manage the potential erosion and sedimentation effects, a Draft Erosion and Sediment Control Plan (ESCP) for the project has been prepared by Tonkin & Taylor Ltd and is provided in **Appendix P**. This document sets out measures to be implemented during construction that will minimise ecological impacts associated with the works. Further detail on the proposed measures are provided in Section 7.10.1. With the implementation of the above methods, the magnitude of effects to the stream and subtidal channel are Low, with an overall **Low** level of effect.

7.2.1.2 Potential accidental release of wastewater

The Eastern Interceptor is a live wastewater pipe. Whilst measures will be put in place to contain wastewater during the diversion and demolition, there is the potential for an uncontrolled discharge of sewage material to occur during construction which could have a suite of effects on ecosystem and fauna health.

Wastewater spills are not anticipated to occur during construction given that a comprehensive construction methodology and contingency measures will be included in the CEMP to manage any risk of wastewater being discharged to the environment. With the implementation of the CEMP, the magnitude of effect is assessed to be Negligible, resulting in an overall **Very Low** level of effect.

7.2.2 Flora and habitat

A summary of potential adverse effects on flora and habitat ecological values include:

- Temporary loss of native vegetation 1,820 m² of native vegetation.
- Loss of approximately seven exotic specimen trees.
- Loss of 65 m² of exotic shrubland (monkey apple hedgerow) and 181 m² of rank grassland.
- 1,000 m² of mangrove clearance.
- Disturbance to of benthic habitat during construction and permanent occupation of habitat.

7.2.2.1 Terrestrial ecosystems and vegetation

As detailed above, the flood resilience works will result in the loss of native vegetation, exotic specimen trees, exotic shrubland and rank grassland.

As detailed in the Planting Plan (**Appendix L**), remediation of approximately 1,100 m² of riparian vegetation and 900 m² of saltmarsh/meadow planting will occur following construction including planting native species, comprising native ecosystems that are either being lost or are representative of a natural estuarine ecosystem. Native revegetation will include eco-sourced native plantings, of a similar composition to the species removed. A VMP has been prepared which outlines measures to provide for vegetation management in a manner that minimises vegetation loss where possible.



With the proposed remediation and implementation of the VMP, the potential ecological effects are as follows:

- The temporary loss of a relatively small proportion of native vegetation is considered to have a **Moderate** magnitude and overall level of effect during the construction phase, reducing to a **Low** magnitude and overall level of effect in the medium term (5-15 years) following remediation.
- The loss of exotic specimen trees, rank kikuyu grassland and shrubland is considered to have a Low magnitude of effect (due to the loss of exotic vegetation that provide limited ecological benefit), resulting in an overall **Very Low** level of effect.
- Specific effects from the loss of kānuka, mānuka, taupata and ngaio will result in a Moderate magnitude of
 effect during the construction phase, however following remediation of native plantings including kānuka,
 mānuka, taupata and ngaio, the magnitude of effect reduces to Low in the medium term, resulting in an
 overall Low level of effect in the medium term.

7.2.2.2 Mangrove habitat

The removal of approximately 1,000 m² of mangroves upstream and downstream of the embankment will adversely affect mangrove forest within the works area. Due to the small amount of mangrove clearance occurring relative to the wider area (0.8%), the timescale within which mangroves are expected to recolonise the site (within five years), plus additional intertidal habitat created with the removal of the embankment, the magnitude of effect on mangrove habitat is Low, resulting in an overall **Low** level of effect.

Notwithstanding the Low overall level of effect, appropriate mangrove clearance techniques are proposed to be implemented (and are outlined in the EMP, **Appendix O**) to minimise adverse effects to aquatic ecology and marine benthic values, including:

- Mangrove removal will occur only during low tide and CMA access will be limited to one entry point at the Blake Road Reserve.
- All vegetation will be removed via excavator with a selector grab and transported to land for processing.
- Machinery will work only from the gravel platforms or the temporary staging.
- All mangrove material will be removed from the CMA and transported from the site to be disposed to green waste.

7.2.2.3 Marine benthic habitat

Benthic habitats within the area are low in diversity, degraded and considered to have a negligible value. Potential temporary adverse effects to benthic habitats and fauna as a result of construction activities within the CMA include:

- Disturbance of sediments and benthic fauna, including potential for sediment dispersal with ingoing and outgoing tides.
- Temporary occupation of benthic habitat including piling which may temporarily smother sediments and associated fauna.
- The potential for extreme wet weather events to overwhelm the site and increase sediment loads in the CMA during construction.

Measures to manage temporary potential effects to marine benthic habitats associated with the construction works include the mangrove management measures identified in Section 7.2.2.2 and the implementation of erosion and sediment controls in accordance with GD05 guidelines. Further details on these measures are set out in Section 7.10.1 and the ESCP (**Appendix P**).

Permanent adverse effects to benthic habitats and fauna includes the occupation of the bridge piers and piles equating to the loss of 120 m² of benthic habitat and associated benthic fauna, and the potential for some temporary staging piles to remain in the CMA post construction (cut below the bed). The permanent loss of benthic habitat within the project footprint represents a fraction of available benthic habitat within the



wider Harania Creek estuary. With the removal of the embankment, there is expected to be a localised gain in marine benthic habitat once the project is complete.

With the above management methods in place, the magnitude of effects to benthic habitat and fauna within the works area are Low, with an overall **Very Low** level of effect.

7.2.3 Fauna

A summary of potential adverse effects on fauna ecological values include:

- Injury or mortality to avifauna and lizards during vegetation clearance.
- Effects to coastal birds, some of which are Threatened Regionally Vulnerable, including disturbance of foraging, wading and nesting habitats.
- Potential for the establishment of construction compounds to become favourable habitat for prospective nest northern New Zealand dotterels. New Zealand dotterels are vulnerable to disturbance, injury or mortality when they establish on or near construction sites.
- Increase in suspended sediments within the subtidal channel and during high tide, impacting fish.
- Impacts on fish habitat as a result of mangrove removal and disturbance of soft sediment habitat.
- Injury or mortality to fish during works within the subtidal channel or any instream works.
- Impacts on fish passage during construction.

7.2.3.1 Avifauna

Potential effects on terrestrial avifauna include the temporary habitat loss of native vegetation (1820 m²), potential permanent loss of seven exotic specimen trees and shrubland (65 m²), and the potential disturbance, injury or mortality during habitat clearance. Habitat will be re-instated with native eco-sourced vegetation following the completion of works as detailed in Section 7.2.2.1. Avifauna management measures are proposed to manage the risk of disturbance, injury or mortality during habitat clearance as detailed in the AMP which forms part of the EMP (**Appendix O**). These measures include avoiding habitat clearance during peak forest bird breeding season (September to January inclusive), where practical and bird nest checks where clearance cannot be avoided. With the implementation of the AMP and reinstatement planting, the magnitude of effect on terrestrial birds is considered to be Low, with an overall **Low** to **Very Low** level of effect for terrestrial birds.

Potential adverse effects on coastal avifauna include:

- Impacts on foraging, roosting and nesting habitat as a result of mangrove removal (1000 m²) and disturbance of soft sediment habitat.
- Injury or mortality of birds present within the mangrove clearance zone.
- Disturbance effects on coastal birds during construction works including noise disturbance.
- Creation of potential dotterel nesting habitat during the construction period, resulting in disturbance, injury or mortality to nesting dotterels.
- Impacts on foraging, roosting and nesting habitat as a result of mangrove removal and disturbance of soft sediment habitat.
- Increase in suspended sediments within the subtidal channel and during high tide, impacting visual ability to forage in the water column.

Management of potential uncontrolled sediment discharges from the site is proposed through the implementation of erosion and sediment controls (as detailed in Section 7.10.1 and the ESCP (**Appendix P**)).

Potential adverse effects on coastal avifauna will be managed through the implementation of the AMP (**Appendix O**), including measures to avoid mangrove clearance during peak coastal bird breeding season (September to March inclusive) where practical, and bird nest checks where clearance in the coastal bird breeding season cannot be avoided. As well as dotterel deterrence measures including the establishment of silt fences at 10 m intervals if dotterels are observed prospecting at the site.



With the AMP and ESCP in place, the magnitude of effect on coastal birds is considered Negligible. With the value of coastal birds ranging from low to very high the overall level of effect on coastal birds is **Low to Very Low**.

7.2.3.2 Lizards

Potential adverse effects on native lizards (copper and ornate skinks) include temporary habitat loss of native vegetation (1,820 m²), rank grass (181 m²) and exotic shrubland (65 m²) and injury or mortality during habitat clearance. This constitutes a relatively small loss of habitat for native skinks (there is over 1.3 ha of similar habitat along the upstream Harania Creek riparian zone). The following measures will be implemented to reduce adverse effects.

- Lizard habitat in the footprint will be remediated following construction works. Habitat remediation will include the planting of native vegetation and lizard habitat reconstruction (such as placement of rock piles or log discs and planting of Muehlenbeckia) (as detailed in the Planting Plan in **Appendix L**). As a result, in the short term (0-5 years following completion of construction) there will be no overall loss in potential lizard habitat.
- A MMP has been prepared as part of the EMP (**Appendix O**) to manage potential lizard injury or death during habitat clearance, and provision of habitat at a relocation site.

As a result of habitat remediation measures and measures outlined in the MMP, the magnitude of effect on native lizards is reduced to low, resulting in an overall **Low** level of effect for copper and ornate skinks.

7.2.3.3 Fish

Potential adverse effects to fish within the works area associated with the flood resilience works include:

- Increase in suspended sediments within the subtidal channel and during high tide, impacting visual ability to forage in the water column as described above in Section 7.2.1.1.
- Impacts on fish habitat as a result of mangrove removal and disturbance of soft sediment habitat as described above in Section 7.2.1.1 above.
- Injury or mortality to fish during any piling works, specifically piling within the subtidal channel or any instream works.
- Impacts on fish passage during construction.

Construction works including driving and coffer dam installation and removal of the existing culverts within the subtidal channel have the potential to cause injury or mortality to native freshwater and estuarine fauna. To manage the potential adverse effects on fish, an FMP has been prepared for the project (**Appendix O**) and will be implemented by a suitably qualified and experienced ecologist with appropriate permits (Ministry of Primary Industries). The FMP details the measures proposed to be implemented to minimise the injury and mortality effects on aquatic fauna including isolation of works areas, fish salvage and relocation. The FMP will be updated prior to construction to reflect the final construction methodology for the works. With the successful implementation of the FMP the magnitude of effect of injury or mortality of aquatic fauna will be Low, with an overall **Very Low to Low** level of effect.

The existing culverts that connect the upper and lower reaches of Harania Creek are not currently acting as a significant barrier to fish passage. The culverts will remain in place for the majority of the construction works maintaining fish passage. Once the embankment excavation has been completed the culverts will be removed one at a time, to allow flows to continue through the remaining culvert. Each culvert removal will take place within a single tidal cycle, will be of short duration and could avoid peak migration time for key species. The magnitude of effect of the construction phase of the project on native fish passage has been assessed to be low, resulting in a **Very Low to Low** overall level of effect.

The removal of the embankment and culverts and reversion to a more naturalised stream environment will improve fish passage with a long-term effect assessed to be **positive**.



7.2.4 Summary of ecological effects and proposed management measures

A summary of the overall ecological effects and management measures proposed is provided in Table 7.

Ecological characteristic	Ecological value	Proposed effects management	Magnitude of effect after effects management	Overall level of effect
Aquatic Ecology				
Tennessee branch and shallow subtidal channel	Moderate	ESCP including use of silt fences, transportation of excavated material, dirty water diversions; CEMP	Negligible to Low	Very low to Low
Flora and habitat ty	vpes			
Native planted vegetation	Moderate	Remediation planting, VMP	Moderate (short term) Low (medium term)	Moderate (short term) Low (medium term)
Exotic specimen trees and shrubland	Negligible	Remediation planting, VMP	Low	Very Low
Rank grassland	Low	Remediation planting, VMP	Low	Very Low
Kānuka, mānuka, taupata, ngaio	Moderate	Remediation planting, VMP	Moderate (short term)	Moderate (short term)
				term)
Not Threatened native vegetation	Low	Remediation planting, VMP	Low	Very Low
Mangrove habitat	Moderate	Natural regeneration allowed to occur, VMP	Low	Low
Marine benthic habitat and fauna	Negligible	Erosion and sediment controls in accordance with GD05 guidelines, VMP	Low	Very Low
Fauna	•		1	
At Risk – Recovering/Relict terrestrial birds, tūī, kererū	Moderate	AMP: bird nest checks, habitat remediation	Low	Low
Not Threatened terrestrial birds	Low	AMP: bird nest checks, habitat remediation	Low	Very Low
Coastal avifauna	Low to Very High	AMP: bird nest checks, habitat remediation, dotterel deterrents and management	Negligible	Low to Very Low
Copper and ornate skink	High	MMP: salvage and relocation, habitat remediation, habitat enhancement measures including pest mammal	Low	Low

Table 7-1: Summary of ecological effects



Ecological characteristic	Ecological value	Proposed effects management	Magnitude of effect after effects management	Overall level of effect
		control if certain thresholds of lizards are salvaged.		
Fish	Low to High	FMP: Fish exclusion measures. Maintenance of fish passage throughout construction period	Low (construction phase) Positive (long term)	Low to Very Low (construction phase) Net gain (long
		Improved fish passage as a result of works.		term)

7.3 Cultural Values

This section addresses the following matters.

Cultural values

(a) Potential adverse effects on cultural values identified by Māori entities.

(b) Whether the flood resilience works will affect sites of significance to Māori entities, including wāhi tapu.

(c) Measures proposed to monitor adverse effects on cultural values throughout flood resilience works.

This section details the potential effects on cultural values in the works area identified by a relevant Māori entity. It is acknowledged that only Mana Whenua can speak to the impact that the flood resilience works may have on their cultural values, heritage and aspirations. Therefore in order to understand any potential effect on cultural values, Healthy Waters has established an engagement process (set out in Section 9.1) to provide the opportunity for Māori entity representatives to be part of the Project team and provide input on the potential impacts of the flood resilience works should they wish to do so. Engagement with Māori entities will be ongoing throughout the implementation of the flood resilience works in accordance with the proposed conditions and in accordance with the Communication & Engagement Plan supplied in **Appendix Q**.

As outlined in Consultation and Engagement section below (see Section 9.2), all 11 relevant Māori entities identified by Auckland Council were initially contacted through the Healthy Waters kaitiaki forum in 2023. Interest was initially received from Te Ākitai Waiohua and Te Ahiwaru to be involved in the flood resilience works. Interest was then received from Ngāti Tamaoho. In April 2024 a formal Mana Whenua kaitiaki forum was established for the flood resilience works with those interested invited to attend with opportunity to discuss the work, design, progress and identify key design meetings they would like to attend.

Cultural Value Assessments (**CVA**) have since been received from Te Ākitai Waiohua and Te Ahiwaru. Ngāti Tamaoho confirmed their involvement in design meetings was enough and did not need to provide a CVA. The Te Ākitai Waiohua CVA is confidential, therefore is not attached to this AEE. It can be provided to the consent authority on request. The Te Ahiwaru CVA can be provided to the consent authority on request. The VA is a set out in Section 3.9.3.1 and Section 3.9.3.2 respectively, with the outcomes and recommendations summarised below.

7.3.1 Te Ākitai Waiohua

The CVA recognises that Te Ākitai Waiohua are not opposed to the use of an Order in Council process to undertake urgent flood resilience measures if cultural conditions and requirements are included as safeguards so that adverse environmental and cultural effects are avoided, remedied or mitigated.

Recommendations set out in the CVA include in summary the following:

- Ongoing participation, consultation and involvement in all phases of the flood resilience works to support the traditional role of Te Ākitai Waiohua as kaitiaki.
- Providing for blessings (karakia) and cultural inductions before commencement of earthworks and future works.
- Acknowledging where possible, the history and status of Te Ākitai Waiohua as mana whenua and kaitiaki
 of the works area.
- Incorporation of cultural design and mahi toi (artwork) elements throughout the flood resilience works.
- Management and improvement of water quality.
- Permitting iwi monitoring of earthworks, erosion and sediment control, stream works and ecological works such as fish salvage and relocation.
- Use of native plants and specimen trees, utilising the Kāinga Ora Ngā Hau o Māngere Ngahere Planting guide to inform planting and developing a final landscaping plan.
- Utilise ecological assessments and management plans to account for Te Ākitai Waiohua cultural values in stream works.
- Taking a precautionary approach to works in the area by applying for Archaeological Authority.

The CVA is opposed to the proposed pipe bridge aspect of the flood resilience works. Given this, the Te Ākitai Waiohua Kaitiaki team sought further engagement on why a pipe bridge is required and to understand the engineering and design of the proposed pipe bridge. Further hui have been held to discuss the requirements and engineering for the pipe bridge. This hui was held on 17 September. An invitation was sent to participate in the multi criteria analysis of the options. Te Ākitai Waiohua also joined the community working group and design meetings. It is noted that the proposed pipe bridge is at a concept level of design, detailed design will be undertaken closer to construction.

Overall, the ongoing participation and involvement of Te Ākitai Waiohua is recognised as a critical way to addressing how the flood resilience works avoid, remedy and mitigate potential effects on cultural values. The engagement to date has demonstrated the commitment Auckland Council has to involving Te Ākitai Waiohua in the flood resilience works. This will continue in accordance with the proposed conditions which requires the consent holder to invite Māori entity representatives to comment on the proposed CEMP, which includes the EMP, Construction Traffic Management Plan (**CTMP**) (refer Section 7.9) and Construction Noise and Vibration Management Plan (**CNVMP**) (refer Section 7.8). It is also proposed the Landscaping Plan (see Section 7.5) be prepared in consultation with the Māori entity representatives.

7.3.2 Te Ahiwaru

The CVA prepared by Te Ahiwaru takes a cultural landscape approach to identify the specific sites and culturally important features surrounding the flood resilience works, and considers the relationship of Te Ahiwaru with these sites and features. The CVA prepared is confidential, therefore is not attached to this AEE. It can be provided to the consent authority on request.

The non-negotiables for Te Ahiwaru are to restore and enhance mauri within the surrounding environments including:

- Zero discharges directly into waterbodies, including Te Maanukanuka oo Hoturoa.
- The rejection of any new water takes.
- High quality stormwater solutions applied to existing and proposed developments.



- Restoring the native vegetation and dynamic systems along the coastline of the Manukau Harbour and margins of our ancestral waterbodies.
- Supporting the rejuvenating native biota and improve the ecological systems of waterbodies.
- Retain and protect riparian margins and avoid eroding these margins.

Te Ahiwaru have a few issues of concern regarding potential adverse effects on cultural values, including:

- Risks to sites of significance while there are no archaeological sites recorded within the works area, the
 proposed flood resilience works have the potential to uncover or damage unknown subsurface
 archaeological remains. Other impacts may include modification to hydrology of the site through
 increasing impervious surfaces. For Te Ahiwaru, it is of utmost importance to retain, and improve where
 possible, access to the tupuna awa and sites of significance.
- Environmental impacts the flood resilience works could have adverse effects on the local ecosystem and waterways including environmental degradation and the risk of temporary biodiversity loss and habitat fragmentation.
- Impeded Views intervention that alters the natural flow or appearance of the awa has the potential to affect the mauri or life force of the waterways. Potential interim noise, visual and traffic effects during construction may also impact biodiversity and intrinsic cultural values practices and experiences.
- Changes to hydrology, and discharge of contaminants to the environment the discharge of contaminants to the environment is a significant concern. Further modifications to the waterways could prevent any potential revitalisation of their cultural practices such as mahinga kai practices.
- Disconnection to cultural history narratives and practice.

The CVA states opposition to the use of pipe bridges which are seen as damaging to both the environment and cultural integrity. Following this, Te Ahiwaru attended the MCA meeting on the pipe bridge options and indicated support for the pipe bridge option as there is no suitable alternative. Further to this, the CVA states that Te Ahiwaru promotes the avoidance of any design that have high visual impacts on the natural and cultural landscape. Te Ahiwaru also support screen planting mitigation to aid in creating visual barriers, however this is only if sensitive visual design is followed. It is proposed the Landscaping Plan (see Section 7.5) be prepared in consultation with the Māori entity representatives.

It is noted that the proposed pipe bridge is at a concept level of design, detailed design will be undertaken closer to construction. In addition to this, the flood resilience works will naturalise Harania Creek and planting is proposed to screen to proposed pipe bridge as set out in **Appendix L**. This planting will reduce the visual impact of the pipe bridge as the vegetation matures.

Alongside the concerns, the CVA recognises potential beneficial effects on cultural values if the flood resilience works are carefully planned and executed. These benefits align with Te Ahiwaru aspirations for restoring the environment and protecting the mauri (life force) of the waterways.

As noted above, engagement with Te Ahiwaru will continue in accordance with the proposed conditions which requires the consent holder to invite Māori entity representatives to comment on the proposed CEMP, which includes the EMP, Construction Traffic Management Plan (**CTMP**) (refer Section 7.9) and Construction Noise and Vibration Management Plan (**CNVMP**) (refer Section 7.8).

7.4 Coastal and freshwater processes

A Coastal and Fluvial Geomorphic Effects Assessment has been prepared by Tonkin & Taylor Ltd (**Appendix E**) which provides an assessment of potential coastal and geomorphic effects. This assessment has been prepared to address the following matters, of which a summary of potential effects and proposed management measures is provided in the sections below.



Freshwater

(c) Application of the effects management hierarchy to works affecting any rivers or wetland.

(d) The use of structures and diversion to facilitate flood resilience works.

(e) The management of flood resilience works to avoid, remedy, or mitigate potential sedimentation or contamination effects on any freshwater receiving environment.

Coastal

(c) Potential adverse effects of the flood resilience works on coastal processes and coastal water quality, and measures to avoid, remedy, or mitigate those effects.

Soil, land, and terrestrial ecology

(a) Potential soil erosion and other adverse effects on soil stability and the safety of surrounding land, infrastructure, buildings, and other structures, and measures to avoid, remedy, or mitigate those effects.

7.4.1 Coastal processes

The potential coastal process effects as a result of the flood resilience works include (this section does not include the effects of fluvial flows, which are covered in Section 7.4.2):

- The change in water levels due to removal of the embankment and construction of the bridge is negligible, since tidal flow is not obstructed in the current situation under normal conditions.
- The change in wave climate due to removal of the embankment is negligible, as waves do not penetrate this far into the tidal channel, due to the inland location, the shallow water depths and established vegetation.
- The tidal flow velocities are not obstructed by the current presence of the embankment. Therefore, the change in tidal flow velocities following the proposed works is expected to be negligible.
- Following the proposed works, the position of the tidal channel is no longer fixed by the location of the culverts and the presence of mangrove trees. It is considered that natural realignment of the tidal channel is likely to occur. Localised erosion and sedimentation associated with this change could occur, however since the changes in tidal velocities are expected to be small, the local changes in sediment processes are expected to be small as well.

In summary, the proposed works will have a negligible impact on coastal processes and no management measures are required.

7.4.2 Geomorphic effects

The fluvial geomorphic assessment determined the potential effects of the works on geomorphic processes in the immediate vicinity of the flood resilience works. The assessment comprised the following stream reaches shown in Figure 7-1:

- Tenn-05 & Tenn-06 (the upstream portion running parallel to Archboyd Avenue)
- HS_US1 (from the embankment, upstream for approximately 200 m)
- HS_DS1 (downstream of the embankment to Pacific Steel Reserve).





Figure 7-1: Stream reach location plan showing existing erosion susceptibility (Source: Coastal and Fluvial Geomorphic Effects Assessment, Tonkin & Taylor Ltd **Appendix E**)

From reach Tenn-05 to the upstream portion of HS_DS1 (downstream of the embankment), the potential geomorphic effects are unlikely to result in noticeable changes to river form and function. Therefore, effects mitigation measures are not considered necessary.

There is potential for erosion scour at the bridge piers however, rock rip rap will be installed in these areas appropriately mitigating any risk of erosion and scour.



For the downstream end of reach HS_DS1 (Reclaimed Land) there is a high risk of bed and bank erosion, however given the small window of opportunity for the effects to occur (in larger flood events) they are considered to have a low probability, resulting in an overall low likelihood of geomorphic effects. Whilst the likelihood of geomorphic effects is low, measures are proposed to review and report to the consent authority on the potential geomorphic effects at this location following a flood event larger than a 50-year ARI. If, as a result of this assessment, a moderate or greater level of risk of bed and bank erosion effects are identified, mitigation will be implemented at that time. Resource consent conditions are proposed to reflect these recommendations as detailed in Section 8 and **Appendix B**.

With the proposed erosion scour at the bridge piers and implementation of the review requirements detailed above, potential geomorphic effects of the flood resilience works will be appropriately managed.

7.5 Landscape

A Landscape and Natural Character Effects Assessment (**LNCEA**) has been prepared by Boffa Miskell (**Appendix G**) which assesses the landscape and visual effects of the proposed pipe bridge and footbridge bridge during construction and operation on the immediate and surrounding environment character. The LNCEA has been prepared to address the following matters, of which a summary of potential effects and proposed management measures is provided in the sections below.

Coastal

(b) Potential adverse effects of the flood resilience works on landscape values of the coastal environment, and measures to avoid, remedy, or mitigate those effects.

Landscape and amenity

(a) Potential adverse effects on the characteristics and qualities that contribute to the area's natural character, or landscape values, or both.

(b) Potential adverse landscape, visual, and amenity effects.

(e) Potential adverse effects on the use of open spaces, including on public access.

(g) Measures to avoid, remedy, or mitigate the effects described in paragraphs (a) to (f).

Access and transport

(a) Potential adverse effects on access to and along or around watercourses and water bodies, and measures to avoid, remedy, or mitigate those effects.

A planting plan has been prepared (**Appendix L**) in collaboration with the Project Ecologist and Arborist which proposes the following replacement and mitigation planting:

- 12 x 45-L grade specimen trees
- Saltmarsh (616 m²)
- Salt meadow (286 m²)
- Native stream bank vegetation (1,106 m²)
- Low mixed vegetation for viewshafts (95.4 m²)
- Vegetation at chamber locations (64 m²)
- Mangrove reestablishment area.

It is proposed (through consent conditions) that a final Landscaping Plan be prepared within six months of the completion of the flood resilience works and provided to the consent authority for certification. Vegetation and trees will then be planted during the first planting season (1 May – 30 September) following certification. The objective of the landscaping plan is to avoid, remedy, or mitigate adverse effects of the flood resilience



works on natural character, landscape values, visual amenity, arboricultural and ecological values. The landscaping plan will be prepared in general accordance with the planting plan in **Appendix L**, and will detail the species, number, locations and maintenance requirements, including weed and pest control measures, and require that all planting shall be maintained for 5 years. The below assessment is provided on this basis.

7.5.1 Landscape Character

Landscape character effects are anticipated from alteration of the landform, removal of existing trees, riparian and marginal vegetation, temporary and permanent alteration of Harania Creek, the removal of the existing embankment, and the construction of the new pipeline and pedestrian bridge.

The highest valued physical aspects of the site are the mature trees within the adjacent reserves, the stream and indigenous riparian vegetation along the watercourse. The works involve the removal of seven mature standalone trees, 1,820 m² of native vegetation, 65 m² of exotic shrubland, 181 m² of rank grassland and the temporary use of amenity grassland. 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. In addition, the removal of riparian vegetation either side of Harania Creek will be extensive, severing the connectivity of the vegetation temporarily. 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.

The proposed planting plan includes the provision for planting 12 specimen trees at or near to the site (refer arboricultural recommendations in Section 7.6) and approximately 1,100 m² indigenous riparian species along the bank of Harania Creek to mitigate the temporary loss of vegetation. Amenity grass will also be reinstated.

Overall, the construction activities will result in **Moderate** temporary adverse effects. Immediately after the construction phase has finished and replacement planting has been planted, adverse landscape effects will be Low-Moderate, reducing to **Neutral** after approximately 5 years when the planting has established.

7.5.2 Natural Character

Natural character effects including impacts on abiotic and biotic values of the stream and coastal bed will be limited to the area located within the footprint and immediately surrounding area of the existing embankment.

The construction of the new bridge and the minor realignment of the stream channel will permanently alter the coastal marine bed and the stream. During construction removal of indigenous riparian vegetation and mangroves either side of the existing pipe embankment is proposed. Whilst this vegetation is highly valued, the total area of vegetation removed will be a relatively small amount within the context of the extensive vegetation present along Harania Creek. During construction adverse effects on the natural character attributes of the stream and coastal environment will be **Low – Moderate** adverse.

As detailed in the planting plan in **Appendix L**, following construction the proposed area of clearance will be replanted with indigenous riparian species that are found in the wider area. Within the CMA salt marsh vegetation will be planted and mangroves will be enabled to regenerate. Due to the influence of the new structure on the stream and coastal marine bed, operational effects on the natural character attributes of the stream will be **Low** in the first instance. Once the proposed planting has established (approximately after 5 years) it is anticipated the experiential values of Harania Creek will be broadly the same as existing, resulting in **neutral** effects on natural character.



7.5.3 Visual Effects

Construction activities, vegetation removal and physical works including removal of the embankment and construction of a new pipe and pedestrian bridge can introduce new elements into the views of the works area. An assessment of visual effects of the works has been undertaken with regard to four distinct viewing audiences to the north, south, east and west of the works. The below section summarises the potential temporary and permanent effects on these viewing audiences.

7.5.3.1 Temporary effects

Residential, road and pedestrian audiences (including those within / using available areas of Lenore Foreshore Reserve and Blake Road Reserve) 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 works during construction, therefore adverse effects will be temporary. The level of temporary effect for each viewing audience is identified in Table 7-2.

The introduction of construction activities within the reserves will reduce the amenity and tranquillity of the open space, however users of / people within the reserves, road users and pedestrians are likely to be transient in nature.

The level of visual effects experienced by residential audiences is influenced by the proximity to the works and the presence of any screening elements, with the highest level of effects relating to audiences with uninterrupted views. The views of the construction machinery and material storage from surrounding residential dwellings at some locations will be partially screened and filtered by riparian and marginal vegetation in the foreground. The prevalence of the construction activity will vary throughout the construction period based on the intensity of construction activity and machinery required at that time to facilitate the works.

The removal of vegetation will result in the temporary loss of screening vegetation for some residential audiences and notable elements of the existing view from within the reserve.

Viewing audience	Level of temporary effect
Group 1 to the North of the Site:	Moderate
 Users of the Lenore Foreshore Reserve and Blake Road Reserve 	
Group 2 to the South of the Site:	Low - Moderate to Low
 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 	
Group 3 to the East of the Site:	• Moderate - High to Low - Moderate for 80
Users of the Blake Road Reserve	and 91 Blake Road
 Residents of properties at 80, 838, 85, 87, 89 and 91 Blake Road 	 Low - Moderate to Very Low for the rest of the audience group.
Group 4 to the West of the Site:	• Low - Moderate to Low for the majority of the
 Residents of properties at 32 and 34 Bicknell Road and 46, 48, 52B, 58, 60 Abiru Crescent 	 audience group. Moderate to Moderate – High temporary effects for 32 and 34 Bicknell Road and 60 Abiru Crescent.

Table 7-2: Summary of temporary visual effects

7.5.3.2 Permanent effects

Permanent effects relate to the loss of vegetation and presence of new structures within views. As the proposed replacement planting detailed in the sections above matures and diffuses or screens the new structures, visual effects will reduce. The level of permanent effect for each viewing audience is identified in Table 7-3.

Initially, the bulk and form of the bridge and chambers will be broken up by the timber slatted façade / cladding / balustrade (or similar developed design), with views from residential properties varying with some having partial views through or above retained vegetation or proposed replanting as it matures. Views from within the reserve will be more extensive with direct views available of the footbridge and chambers.

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 replacement planting has matured (after approximately 10 years).

Viewing audience	Level of effect
 Group 1 to the North of the Site: Users of the Lenore Foreshore Reserve and Blake Road Reserve 	Low - Moderate to Low initially, reducing to Very Low (after approximately 5 years) and to neutral (after approximately 10 years).
 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 	Low to Very Low adverse initially, reducing to neutral (after approximately 5 years)
 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 	 Low to Very Low adverse for 80 and 91 Blake Road initially, reducing to neutral (after approximately 5 years) Neutral for the rest of the audience group.
 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 	 Very Low adverse for the majority of the audience group and will reduce to neutral as the mitigation planting establishes. Low adverse (short term), reducing to neutral (after approximately 5 years) for 32 and 34 Bicknell Road and 60 Abiru Crescent.

Table 7-3: Summary of permanent visual effects

7.5.4 Open space use

The construction laydown areas will occupy parts of Lenore Foreshore Reserve and Blake Road Reserve and works will be undertaken across Harania Creek. Construction areas will be fenced off to prevent public access and maintain safety and the informal access between the two reserves will be closed during construction. The loss of vegetation and trees as set out above can also change how audiences experience and view the existing open spaces.

While there may be some impacts on open space during construction, these are temporary. The open spaces will be reinstated following completion of the Project, including installation of the pedestrian bridge which will formalise the existing informal walkway across the embankment providing for walking and cycling access across the stream improving the accessibility and amenity of Lenore Foreshore Reserve and Blake Road Reserve. Planting will also be undertaken (as per **Appendix L**).



7.6 Arboriculture

An Arboricultural Assessment of Effects has been prepared by the Tree Consultancy Company (**Appendix F**). It has been prepared to address the following matters, of which a summary of potential effects and proposed management measures is provided in the sections below.

General

(d) Potential adverse effects on protected trees or amenity values associated with protected trees, and measures to avoid, remedy, or mitigate those effects.

7.6.1 Vegetation and tree removal

The works will result in the removal of seven individual trees taller than 4 m, and 1,870 m² of terrestrial (as shown in Figure 7-2) vegetation yielding a 2,529 m² canopy cover deficit by 2050. The canopy cover loss from the vegetation clearance, including the forecast canopy cover for individual trees, is approximately 2,529 m².

The works involve replanting of approximately 1,106 m² of new plants (ground area) which will achieve approximately 2,267 m² of canopy cover once established, which will take approximately 21 years. The outstanding canopy cover deficit is 262 m², therefore 12 additional new 45 L-grade trees are proposed to be planted at or near to (e.g. in local streets) the site to mitigate the tree and vegetation removal. The final species selection for specimen trees must include exotic and native trees at a ratio of 2:1 (e.g. 8 exotic trees and 4 native trees). This ratio takes into account that exotic trees have faster growth rates and will provide more ecosystem services than most native trees. The number, species, location, and maintenance requirements of the proposed trees will be confirmed in the landscaping plan (refer Section 7.5) to be provided to the consent authority for certification within 6 months of the completion of the construction works, and the trees will be planted during the first planting season (1 May to 30 September) that starts after the landscaping plan has been certified by the consent authority.

7.6.2 Works in the protected root zone

All construction projects carry an inherent risk of damage to nearby trees including works within the protected root zone of trees leading to unexpected damage to trees that could impede their health and stability and may result in the death of tree. It is proposed that a Project Arborist supervise the construction works and the Tree Protection Methodology (included Appendix A of **Appendix F** and shown in Figure 7-3) be implemented during construction works. With the implementation of the above, the potential arboricultural effects can be summarised as follows:

- Site works for a new access / haul road from Blake Road will likely result in some localised root severance for cypress trees (Trees 1 and 2) and gum trees (Trees 3 and 4) and render the underlying soil locally anaerobic but with negligible or nil consequences to the trees.
- Whilst not currently anticipated, if determined to be required, benching of the top soil in the tree
 protection zone of one redwood tree to enable pipe welding and installation (Tree 11) has the potential to
 initiate a period of chronic water stress with manifestations of reduced vitality becoming visible in the
 crown over the five to ten years following the project. A layer of cured wood chip mulch laid under the
 tree would help to alleviate some of the stress effects and promote new fine root growth.
- Cypress trees (Trees 16 to 18) may sustain some minor to moderate degree of root zone disturbance from construction traffic and piling. The impacts of such disturbance could result in some brief stress on the trees, but as the trees are in good vitality, none are expected to noticeably deteriorate.

With the proposed replacement planting and implementation of the Tree Protection Methodology, potential effects on the arboricultural values of the works area will be appropriately managed and mitigated.





Figure 7-2: Vegetation and tree removal plan (Source: The Tree Consultancy, Appendix F)





Figure 7-3: Tree Protection Plan (Source: The Tree Consultancy, Appendix F)



7.7 Natural Hazards

This section addresses the following matters as they relate to land subject to instability, coastal erosion, coastal inundation and flood hazard.

Natural hazards

(a) The risks from natural hazards to people, property, infrastructure, and the environment, and measures to avoid or mitigate those risks.

(b) The risk of flood resilience works increasing risks from existing natural hazards or creating new natural hazards, and measures to avoid or mitigate that risk.

Coastal

(a) The methods to be used to avoid, remedy, or mitigate the effects of the flood resilience works on any identified coastal hazard.

7.7.1 Land subject to instability

A Geotechnical Assessment Report has been prepared by Tonkin & Taylor Ltd (**Appendix J**). This report provides an assessment of geotechnical effects resulting from the proposed flood resilience works including consideration of land subject to instability hazards which is present on the existing stream banks and embankment.

Works on land subject to instability are limited to the chamber construction and the embankment removal. The completed slopes from the embankment removal will be formed to 2.5 (H) : 1 (V) from cut batters within natural soils, approximately 30 m long on each bank. The slopes will not be supporting any structure since the new chambers will be founded on piles. The assessment included a limit state equilibrium analysis which confirmed the proposed works meet the target factors of safety⁴, therefore it was concluded that there is no consequential risk to people, property or the environment from permanent works on land subject to instability.

With regard to temporary works on land subject to instability, excavations will be undertaken to install the chambers and to remove the embankment. Temporary excavation of this magnitude is common practice, and the contractor will undertake appropriate steps (which could include retention, benching or battering) to mitigate the risk of instability of temporary excavations. Measures to address the stability of proposed excavations will be included in the CEMP.

In summary, the report concludes that there will be no consequential risk to people, property or the environment from works on land subject to instability as a result of the flood resilience works.

7.7.2 Coastal hazards - erosion and coastal inundation

A Coastal and Fluvial Geomorphic Effects Assessment has been prepared by Tonkin & Taylor Ltd (**Appendix E**) which provides an assessment of coastal inundation and coastal erosion hazards. A summary is provided below.

With regard to coastal inundation, currently the tidal flows through the existing culverts caused by a 100-year ARI storm tide level in Manukau harbour are not obstructed. Therefore, the coastal flooding extent in the area

⁴ Outlined in Chapter 2 of the Auckland Code of Practice for Land Development and Subdivision



upstream of the two existing culverts is not influenced by the presence of the existing embankment. The effects on coastal flooding of the proposed works (removal of the embankment and culverts) are therefore expected to be negligible.

With regard to coastal erosion, a long-term erosion rate of 0.03 m/year is expected to occur at the project site in the future. The coastal erosion rate is dependent on local soil properties and future sea level rise. As these factors will not be affected by the proposed works, the effects of the proposed works on the local erosion rate are expected to be negligible.

7.7.3 Flood Hazard

A Flood Hazard and Risk Assessment has been prepared by Tonkin & Taylor Ltd for the flood resilience works and is provided in **Appendix R**. A summary of the potential effects as they relate to the matters identified above is provided below. It is noted that the overall purpose of the flood resilience works is to address flood risk by reducing blockages and increasing conveyance potential.

The assessment was undertaken using an updated hydraulic model which compared flood extents, levels and depths pre-development, i.e. for the current landform including the embankment dam and post development i.e. with the proposed pipe bridge (embankment dam removed). Given that the embankment acts as a dam, the assessment was broken down into considering effects on the proposed pipe bridge, upstream of the embankment, and then effects downstream.

Four scenarios were modelled using rainfall depths that are broadly representative of 24-hour 1% AEP rainfall depths. These are detailed in **Appendix R**.

7.7.3.1 Proposed Pipe Bridge

The model identified a clearance of approximately 400 mm between underside of the proposed pipe bridge and the peak water level based on the most extreme scenario. This confirms a clearance between modelled flood level and the underside of the proposed pipe bridge.

7.7.3.2 Upstream

The positive effects of the flood resilience works at a broad level are set out above in Section 7.1 and include the removal of flood risk on between 50 and 106 flood affected properties (depending on the scenario).

Post development, no increase in flood levels on properties upstream of the embankment has been modelled. Notwithstanding this, there are 10 properties that are likely to continue to be affected following completion of the flood resilience works. Flooding is reduced at six of these properties and there are four properties where flood levels are similar. This is due to their position within overland flowpaths draining to the main watercourse.

7.7.3.3 Downstream

Post development, an increase in water level of 300 mm to 400 mm in the area immediately downstream of the existing embankment has been modelled, this reduces as distance from the embankment increases. Further downstream in the tidal flats a uniform increase in water level of approximately 170 mm to 270 mm has been modelled as a result of the increased flows and volume passing downstream.

Potential adverse effects of the flood resilience works downstream of the embankment include:

- Predicted flood level increases within Lenore Foreshore Reserve. Due to the relatively steep topography, the increased flood levels generally do not result in increases to the floodplain extents;
- At 24 Parkstone Place, the flood model predicts approximately 10 m² of flooding along the south-east facing boundary. The flooding does not impact the residential dwelling or access to and from the dwelling;
- Between 3 and 9 Mary Place, the existing floodplain is predicted to encroach further onto these properties as a result of the flood resilience works.



The natural hazard risk to these properties at Parkstone Place and Mary Place is considered **low** for the following reasons:

- There is no habitable building flooding predicted for any of the scenarios considered;
- There is no flooding of non-habitable buildings predicted for any of the scenarios considered; and
- There is no adverse effect on safe access or egress for any of the scenarios.

7.8 Construction noise and vibration

A Construction Noise and Vibration Assessment (**CNVA**) has been prepared by Tonkin & Taylor Ltd (**Appendix S**) to assess the potential construction noise and vibration effects of the flood resilience works. A Draft Construction Noise and Vibration Assessment (**CNVMP**) has been prepared and is provided in **Appendix T**. The intent is to finalise the CNVMP prior to construction and to provide this to the consent authority for certification as part of the CEMP certification process.

The CNVA and draft CNVMP have been prepared to address the following matters, of which a summary of potential effects and proposed management measures is provided in the sections below.

Landscape and Amenity

(c) Construction noise, vibration, odour, and dust generation, including having regard to the sensitivity of the receiving environment.

(d) Potential adverse effects of the hours of operation of flood resilience works.

(f) Potential adverse effects on public health and safety during flood resilience works.

(g) Measures to avoid, remedy, or mitigate the effects described in paragraphs (a) to (f).

Adjoining land uses

(a) Potential adverse effects on the use of land on which flood resilience works are carried out and adjoining land, and measures to avoid, remedy, or mitigate those effects.

The potential adverse noise and vibration effects of the flood resilience works are limited to the construction phase, with the noisiest and/or most disruptive works likely to be associated with wood chipping, compaction, vibro piling and driving, impact driving, hammer piles, excavation and concrete cutting undertaken outside standard hours. The potential temporary adverse effects are summarised in the following sections.

7.8.1 Construction Noise

All surrounding receivers are residential dwellings which are noise sensitive activities. The degree of the noise effects will depend upon the magnitude, frequency of occurrence and duration of the noise exposure. If residents are home, they will experience noise inside and outside their dwellings. If dwellings are not occupied at the time of works, there will be no noise sensitivity. Works are expected to take place within normal daytime hours with the exception of the cut-over works which will take place at night within the connection chambers.

Exceedances of the permitted daytime construction noise levels, with noise levels up to 80 dB L_{Aeq} are predicted at nine dwellings adjacent to the site during various activities on site. These dwellings include 32 and 34 Bicknell Road, 52B, 58 and 60 Abiru Crescent, and 80, 87, 89 and 91 Blake Road. Compaction is required on the western compound close to 32 and 34 Bicknell Road. Screening is proposed along the eastern boundary of these properties; with this in place noise levels are not predicted to exceed 80 dB L_{Aeq}. During all other daytime activities, noise levels are not predicted to exceed 79 dB LAeq in the worst case.



Management measures proposed in the draft CNVMP will be implemented to appropriately manage these effects. For much of the works noise levels will be lower than this.

During the cut-over works which will occur for one night at each chamber (two nights total), concrete cutting will be required at night when wastewater flows are lowest. Relatively high noise levels are predicted, with several dwellings close to the works receiving noise levels above the 45 dB L_{Aeq} night-time permitted level. With proposed screening in place, one dwelling at each connection chamber is predicted to receive a noise level above 55 dB L_{Aeq} which is likely to result in sleep disturbance. These properties include 32 Bicknell Road and 91 Blake Road. Proposed noise management and mitigation including engagement is proposed and detailed in the draft CNVMP.

With mitigation (including adopting the best practicable option) and consultation as set out in the proposed draft CNVMP, the overall noise effects can be appropriately managed during construction works. The draft CNVMP includes the following key measures:

- General noise mitigation measures such as selection, location and orientation of equipment, utilising noise barriers and/or enclosures where appropriate and engagement with neighbours around work hours.
- Communication, consultation and complaints measures, including particular engagement with:
 - 32 and 34 Bicknell Road, 52B, 58 and 60 Abiru Crescent, and 80, 87, 89 and 91 Blake Road with regard to daytime noise.
 - All residents who are predicted to receive night-time noise levels above 45 dB L_{Aeq} from concrete cutting at night.
- Adoption of specific mitigation / alternative measures where practicable. Specific mitigation includes:
 - 2 m high acoustic barriers along the eastern property boundaries of 32 and 34 Bicknell Road and northern boundaries of 87, 89 and 91 Blake Road.
 - No vibratory compaction within 10 m of dwellings.
 - If woodchipping is required on site, the woodchipper should be located away from noise sensitive receivers, with the hopper oriented away from properties and screened if practicable.
- Measures for concrete cutting at night including screening, lining the connection chamber with absorptive material, and offering temporary accommodation for the worst-affected residents.

7.8.2 Construction Vibration

With the exception of impact piling, vibration levels are generally predicted to remain within the AUP:OP amenity level of 2 mm/s given that no vibratory compaction will be undertaken within 10 m of dwellings. During impact piling, if piles are driven to refusal, there is the potential for vibration to exceed the DIN 4150-3:2016 limits for cosmetic building damage at 17 dwellings within 85 m of the impact piling (as identified in Appendix B of the CNVA). To manage potential effects, including building damage, it is proposed to implement measures set out in the CNVMP including undertaking pre and post construction building surveys.

The amenity limit of 2 mm/s may be exceeded at up to 62 dwellings within 170 m of impact piling. Notification of these properties can be undertaken prior to construction works and can be managed via the CNVMP. If piles are not driven to refusal, the levels of vibration will be lower and fewer dwellings affected.

To manage potential construction vibration effects, mitigation detailed in the draft CNVMP focuses on effective communication with neighbours, and selection of appropriate equipment and methods. The draft CNVMP includes the following mitigation measures:

- Managing times of activities to avoid night works and other sensitive times where practicable.
- Specific mitigation measures including no vibratory compaction within 10 m of dwellings.
- Liaison and consultation with neighbours prior to commencing works for vibration generating activities, including particular engagement with the 17 dwellings identified in Appendix B of the CNVA prior to impact piling taking place.



- Equipment selection and methodology to minimise vibration.
- Monitoring of vibration during activities predicted to exceed the 5 mm/s PPV.
- Building condition surveys and associated protocols where vibration levels are predicted to exceed the applicable DIN 4150-3:2016 limit for cosmetic building damage (5 mm/s for residential).

7.9 Transport

An Integrated Transport Assessment (ITA) has been prepared by Tonkin & Taylor Ltd (Appendix H) which provides an assessment of potential transport effects associated with the flood resilience works. A Draft Construction Traffic Management Plan (CTMP) has been prepared by Tonkin & Taylor Ltd and is provided at Appendix U. The intent is to finalise the CTMP prior to construction and to provide this to the consent authority for certification. The ITA and CTMP has been prepared to address the following matters, of which a summary of potential effects and proposed management measures is provided in the section below.

General

(a) The timing and duration of flood resilience works.

Adjoining land uses

(a) Potential adverse effects on the use of land on which flood resilience works are carried out and adjoining land, and measures to avoid, remedy, or mitigate those effects.

Access and transport

(b) Potential adverse effects on the safe and efficient operation of the transport network, and measures to avoid, remedy, or mitigate those effects.

The potential adverse traffic and transport effects of the flood resilience works are limited to the construction phase, and include the following:

- **Negligible traffic impact** from the additional construction vehicles on the surrounding road network. Whilst the works result in a large increase of vehicle numbers on local roads, the traffic movements can be easily accommodated without a noticeable increase in congestion. The works will result in a negligible increase in daily traffic movements on the collectors and arterials.
- **Negligible impact** on road safety. The low number of temporary additional trips generated by the construction traffic will have a negligible impact on the safety of the surrounding road network and is not likely to exacerbate any existing crash patterns.
- Negligible impact on access to adjacent properties.
- **Negligible impact** on active modes including pedestrians and cyclists. The works will involve the temporary removal of the existing informal walkway across the existing pipe. However, this will be replaced by an improved shared facility upon completion of works.
- **Negligible impact** on buses and school buses as bus journey times and reliability will be unaffected provided the measures detailed in the CTMP are implemented (see below).
- **Minimal impact** on on-street parking. A limited amount of on street parking maybe temporarily removed, however nearby residential properties have off street parking available.
- Negligible impact on pavement condition as a result in temporary increases in traffic movements.

Whilst impacts are assessed to be minimal/negligible, measures are proposed in the draft CTMP to manage potential adverse effects associated with construction of the flood resilience works. With the implementation of the CTMP the potential adverse effects on the transport network will be negligible. This includes the following measures:



- Continuous communications and engagement including with impacted residents, schools, school bus operators and Auckland Transport (including AT Metro) as required. Measures to monitor school bus journey times and reliability and identify any temporary traffic management (TTM) measures that could assist school bus operations.
- Measures to manage the movement of construction traffic to and from the road network so that the safety of all road users is maintained and that the construction vehicles can safely negotiate access and egress and avoid any additional queueing on the adjacent road network in the peak periods. This could include carrying out of specific temporary works.
- Restriction of construction traffic movements during peak school drop-off and pick-up times.
- Pedestrian and vehicle access will be maintained to all private properties for residents and/or stakeholders at all times. Measures and protocols with regard to no unnecessary stopping and no idling outside private residences/ driveways.
- Measures to provide for the safety of pedestrians when construction traffic needs to enter the construction site and needs to cross a footpath such as warning signs, provision of traffic marshals at site entrances and construction driver education programmes.

A separate set of conditions are proposed to undertake a Pavement Condition Assessment (**PCA**) and remediate any damage to pavements on:

- Vine Street (between Massey Road and Blake Road).
- Blake Road (between Vine Street and the Blake Road Reserve access road).
- Wickham Way (between Buckland Road and Garus Avenue).
- Garus Avenue (between Wickham Way and Archboyd Avenue).
- Archboyd Avenue/Bicknell Road (between Garus Avenue and the site access opposite #41 Bicknell Road).

The full suite of recommendations including site specific measures are outlined in the ITA and draft CTMP.
7.10 Earthworks and construction activities

This section addresses the following matters:

General

(f) The management of construction works to avoid, remedy, or mitigate potential adverse effects on receiving environments, including adverse effects of hazardous substances, spills, and stormwater runoff.

Freshwater

(e) The management of flood resilience works to avoid, remedy, or mitigate potential sedimentation or contamination effects on any freshwater receiving environment.

Coastal

(c) Potential adverse effects of the flood resilience works on coastal processes and coastal water quality, and measures to avoid, remedy, or mitigate those effects.

Soil, land, and terrestrial ecology

(a) Potential soil erosion and other adverse effects on soil stability and the safety of surrounding land, infrastructure, buildings, and other structures, and measures to avoid, remedy, or mitigate those effects.

(b) Potential soil run-off and sedimentation, and measures to avoid, remedy, or mitigate those effects.

(e) The design and suitability of proposed erosion and sediment control measures.

(f) Potential adverse effects of land disturbance and sediment discharge on water bodies, particularly sensitive receiving environments.

(g) The proportion of the total area of the catchment that is exposed by flood resilience works.

(h) The staging of flood resilience works and the progressive stabilisation of earthworks.

Landscape and amenity

(c) Construction noise, vibration, odour, and dust generation, including having regard to the sensitivity of the receiving environment.

Adjoining land uses

(a) Potential adverse effects on the use of land on which flood resilience works are carried out and adjoining land, and measures to avoid, remedy, or mitigate those effects.

7.10.1 Erosion and Sedimentation

The proposed works involves earthwork generating activities, including works within, and within the riparian and coastal margins of Harania Creek. Where not appropriately managed, earthworks have the potential to cause erosion and generate sediment laden runoff being discharged to the Harania Creek and Mangere Inlet receiving environment.

To manage the potential for discharges of sediment during construction, erosion and sediment controls will be installed in accordance with Auckland Council's Technical Publication GD05, for the duration of land disturbance activities and until the land is returned to an erosion resistant state. A Draft ESCP for the project has been prepared by Tonkin & Taylor Ltd and is provided in **Appendix P**. Proposed erosion and sediment controls include:



- Runoff diversion channels and/ or bunds to prevent clean surface water and stormwater from the surrounding area entering the work site (clean water diversion), or to divert sediment-laden runoff to an appropriate sediment control device.
- Excavated material from within the coffer dams will be transported out of the CMA.
- Stabilisation of exposed areas.
- Stabilised construction access.
- Rock check dams to reduce flow velocity of a channel to reduce erosion and also help retain sediment.
- Use of secondary treatment devices and chemical flocculation including decanting earth bunds, settling tanks and chambers, silt busters and turkeys nest.
- Silt fences and super silt fences along the perimeter of the work area where 'dirty water' run-off from the work area will discharge.
- Undertaking earthworks to minimise the accumulation/ponding of surface water and managing any dewatering of such water.
- Dust control measures.
- Geotextile fabric placed down before gravel pads are put in place in the CMA.
- Excess material from the CMA will be taken out and moved to hard stand area.
- Mangrove removal and construction of the temporary access will occur at low tide.
- Monitoring and maintenance requirements.

The appointed Contractor will be responsible for preparing a site-specific, or final, ESCP (**SSESCP**) which will detail design specifications of all erosion and sediment control devices aligned with the finalised design and Contractor's earthworks methodology.

In summary, appropriate mitigation and management measures will be put in place in accordance with GD05 and the Draft ESCP, such that any potential adverse effects can be managed appropriately.

7.10.2 Stability and Settlement

A Geotechnical Assessment Report has been prepared by Tonkin & Taylor Ltd (**Appendix J**) to provide an assessment of geotechnical effects resulting from the proposed flood resilience works including consideration of soil stability and safety of earthworks.

7.10.2.1 Stability

As detailed in Section 7.7.1, temporary excavations will be undertaken to install the chambers, which are expected to be up to 3.4 m deep, approximately 1.2 m away from the nearest property boundary. Temporary excavation of this magnitude is common practice, and the contractor will undertake appropriate steps (which could include retention, benching or battering) to mitigate the risk of instability of temporary excavations. Measures to address the stability of proposed excavations will be included in the CEMP.

The completed slopes from the embankment removal will be formed to 2.5 (H) : 1 (V) from cut batters within natural soils, approximately 30 m long on each bank. The slopes will not be supporting any structure since the new chambers will be founded on piles. The current earthworks design includes the placement of buttress fill against the sides of the new chamber, at a slope of 1.5(H):1(V) which have been assessed to be at risk of instability; however, it is proposed to include a resource consent condition which requires this slope to be designed to meet minimum stability criteria to avoid potential stability effects.

With the implementation of the above recommendation, the assessment found the land and proposed earthworks to be sufficiently stable to meet normally accepted performance levels and that there is no consequential risk to people, property or the environment from proposed landform modifications as a result of the flood resilience works or associated temporary works.



7.10.2.2 Settlement

As the chambers are proposed to be founded on piled foundations, there will be no increase in load on the surrounding soils, therefore no consolidation settlement is assessed to occur as a result of the chamber construction. It is therefore assessed that there is no risk of adverse effects to the existing Eastern Interceptor as a result of ground settlement induced by the proposed works.

Excavations during construction can also cause mechanical settlement of adjacent ground. An assessment of potential settlement effects on nearby structures confirmed that with a horizontal distance at least that of the depth of excavation at both chambers, there is negligible risk of the proposed excavations affecting nearby private structures on residential land.

In summary, there is considered to be no consequential risk to people, property or the environment from proposed landform modifications as a result of the flood resilience works and there is no risk of adverse effects to the existing Eastern Interceptor pipeline as a result of potential ground settlement induced by the proposed works.

7.10.3 Other construction effects

The flood resilience works involve construction activities that will use a range of methodologies and equipment as set out in the Indicative Construction Methodology in Section 5 above. The works are proposed to be undertaken following best practice and in accordance with a finalised CEMP. A draft CEMP is provided in **Appendix M** setting out the proposed protocols, responsibilities and additional management plans required to manage and mitigate potential effects as far as practicable and in accordance with best practice. The various construction management plans identified throughout this report, including CNVMP, EMP and ESCP, form part of the CEMP.

7.11 Contaminated land

A PSI for the flood resilience works has been undertaken by Tonkin & Taylor Ltd (**Appendix I**) to identify the potential historic contaminating land activities and assess the likelihood and potential magnitude of ground contamination. The PSI has been prepared to address the following matters, of which a summary of potential effects and proposed management measures is provided in the sections below.

Contaminated land

- (a) Potential adverse effects on human health and the environment from disturbance or use of contaminated soil.
- (b) Measures to avoid, remedy, or mitigate the effects described in paragraph (a), including—
 - (i) remediation or management methods proposed to reduce risk posed by contaminants; and
 - (ii) timing of remediation; and
 - (iii) standard of remediation on completion of flood resilience works.

As detailed in Section 3.11, there is currently no evidence to suggest that elevated levels of contamination are present on the works area. However, given no testing has been undertaken there is potential that contamination may be encountered during testing for disposal purposes or during works. The uncontrolled disturbance of contaminated soils during construction works has the potential to pose risks to human health and the environment.



The following management measures are therefore proposed to identify and manage any potential disturbance of contaminated land. These measures will be included in the final CEMP prepared for the flood resilience works to be certified by the consent authority:

- Site establishment controls
- Sampling and contamination testing to assess fill soils prior to redevelopment. This is required to support disposal of fill to either a managed fill or cleanfill.
- Management procedures for unexpected contamination and contingency.
- Erosion and sediment control procedures (refer Section 7.10.1)
- Monitoring methods i.e. dust suppression.

With the above measures in place and certification of the management measures by the consent authority through the CEMP process, the potential risks to human health and the environment will be appropriately managed.

7.12 Archaeology

A Preliminary Archaeological Assessment for the flood resilience works has been undertaken by Origin Archaeology (**Appendix K**). The Archaeological Assessment has been prepared to address the following matters, of which a summary of potential effects and proposed management measures is provided in the sections below.

Heritage and archaeology

(b) Accidental discovery protocols to reduce risk to unidentified archeological sites.

The assessment concluded that there are no archaeological sites identified within, or close to the proposed works area. There is limited potential for previously unrecorded in-situ archaeological sites to be exposed during construction, for which if archaeological remains are encountered, the provisions of the Heritage NZ Pouhere Taonga Act 2014 and the AUP: OP Accidental Discovery Rule will be complied with. Any potential discoveries will also follow the requirements of the proposed Discovery of sensitive material condition. Further, Auckland Council have applied for a precautionary Archaeological Authority under the Heritage NZ Pouhere Taonga Act 2014.

7.13 Network utilities

This section addresses the following matters, of which a summary of potential effects and any proposed management measures is provided in the sections below.

Adjoining land uses

(b) Potential adverse effects on infrastructure assets and facilities (including those of network utility operators), and measures to avoid, remedy, or mitigate those effects.

The flood resilience works directly involve the Eastern Interceptor wastewater pipeline, relocating a portion of the pipeline onto a new pipe bridge. This is the only infrastructure asset affected by the proposed works. If works are not appropriately managed or designed there is potential to damage this asset or result in poor performing infrastructure which can have subsequent impacts on the wider network.

The Eastern Interceptor will be operational and in use throughout the construction period, with cut-ins and diversion to the new pipe to occur at times of low flow and with best practice construction methodology in



place. As detailed in Section 7.10.2.2, there is no risk of adverse effects to the existing Eastern Interceptor pipeline as a result of potential ground settlement induced by the proposed excavation works.

The concept for the proposed pipe bridge has been developed and confirmed in collaboration with Watercare. Construction works to the existing asset will be undertaken according to the requirements of Watercare as the asset owner, including works over approvals to be sought once a detailed design has been developed. Evidence that Watercare has consented to carrying out this activity is provided in **Appendix V**.

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8 Proposed Mitigation and Management Measures and Consent Conditions

This section sets out the information requirements of Clause 11(2)(k), (I) and (m) which requires:

(2) Instead of complying with section 88(2)(b) of the RMA, an application for a resource consent for flood resilience works must include the following information:

(*k*) proposals to avoid, remedy, or mitigate potential adverse effects identified by the assessment described in paragraph (*j*):

(I) any conditions that the applicant proposes for the resource consent that are-

- (i) set out in Schedule 2; or
- (ii) a variation of, or additional to, a condition set out in Schedule 2:

The proposal has been developed to avoid and mitigate adverse effects where this is practicable. In addition, a range of measures are proposed for the flood resilience works to avoid, remedy or mitigate the potential adverse effects identified in this AEE. Specific measures identified in Section 7 are summarised in Table 8-1 below. The measures will be implemented prior to, and during construction, and once the permanent works are completed.

The measures in Table 8-1 are proposed to be captured in resource consent conditions. Clauses 16(2)-(4) of the AC-OIC specifies that the consent authority may impose any of the conditions set out in Schedule 2 of the AC-OIC and may amend or impose additional conditions it considered necessary for the purposes of the authority's responsibility for a matter of control.

Clauses 11(2)(I) and (m) require the Applicant to provide detail of any conditions that the applicant proposes for the resource consent that are set out in, a variation of, or additional to Schedule 2; and the reasons for any variations to, or additional conditions.

Therefore, the table in **Appendix B** outlines the conditions within Schedule 2 that are relevant to the activity and are proposed as conditions of consent. The table also outlines proposed amendments to the Schedule 2 conditions and proposed additional consent conditions to better reflect the site context, proposal, technical assessment outcomes and information available at the time of preparing this application. Amendments to the Schedule 2 conditions are identified with strikethrough for deletion and <u>underline bold</u> for additions. A clean set of proposed conditions is provided in **Appendix B**.

Section	Торіс	Specific Measures
7.2	Ecology	 Planting plan EMP comprising FMP, AMP, MMP and VMP ESCP CEMP Ecology conditions Rivers and wetland conditions Landscaping Plan condition
7.3	Cultural Values	 Engagement and communications conditions including Māori entity conditions, EMP (and subplans) CEMP

Table 8-1: Summary of measures to avoid, remedy or mitigate potential adverse effects



Section	Торіс	Specific Measures	
		 ESCP Planting plan Landscaping Plan condition Tree Protection Methodology Archaeological authority (as a precaution) 	
7.4.1	Coastal processes	Not required.	
7.4.2	Geomorphic effects	 Proposed erosion and scour protection at bridge piers – condition 1 Erosion assessment condition 	
7.5	Landscape	Replanting to mitigate loss of vegetation and treesLandscaping Plan condition	
7.6	Arboriculture	 Arboriculture conditions including Tree Protection Methodology CEMP Planting Plan Landscaping Plan condition VMP 	
7.7.1	Land subject to instability	Not required.	
7.7.2	Coastal erosion and inundation	Not required.	
7.7.3	Flood hazard	Not required.	
7.8	Construction noise and vibration	 CNVMP CEMP Construction noise and vibration conditions 	
7.9	Transport	 CTMP CEMP Engagement and communications conditions PCA conditions 	
7.10	Earthworks	 CEMP ESCP Earthworks conditions Detailed design of slope of chambers condition 	
7.11	Contaminated land	CEMPESCPContaminated land conditions	
7.12	Archaeology	 Accidental discovery protocols / discovery of sensitive material condition Archaeological authority (as a precaution) 	
7.13	Network utilities	Engagement and communications conditions	

9 Consultation and Engagement

This section sets out the information requirements of Clause 11(2)(n) - (q)(iii) of the AC-OIC which requires:

(2) Instead of complying with section 88(2)(b) of the RMA, an application for a resource consent for flood resilience works must include the following information:

(*n*) a description of any consultation undertaken in relation to the flood resilience works (including with relevant Māori entities) and the names and contact details of all persons consulted:

(o) a list of all relevant Māori entities:

(p) a list of the names and contact details of all persons the consent authority is required to notify under clause 14(2)(a):

(q) if the proposed flood resilience works involve the carrying out of any activity that could affect infrastructure that is owned by a person other than the applicant,—

(iii) evidence that the owner of the infrastructure has consented to the carrying out of the activity:

Auckland Council commenced a comprehensive consultation and engagement process in 2023 on the wider Making Space for Water programme of work, and more specifically on the Harania flood resilience works from July 2024. The purpose of this engagement has been:

- To provide up-to-date information about the project and the outcomes it is aiming to achieve to those directly impacted and the wider community, and
- To provide project partners, key stakeholders, impacted parties and utility provides an opportunity to feed into the design of the project including the construction methodology so as to minimise as far as practicable any potential impacts during construction.

This section sets out the consultation and engagement undertaken to date, the various forums and groups that have been established, and the ongoing consultation and engagement that Healthy Waters are intending to continue to undertake throughout the development and construction of the project.

In accordance with Clause 11(2)(n) of the AC-OIC, this section provides a description of the consultation undertaken in relation to the works, including with relevant Māori entities. The names and contact details of all persons consulted (where available) are provided in **Appendix W**.

In accordance with Clause 11(2)(p) of the AC-OIC, a list of the names and contact details (where available) of all persons the consent authority is required to notify under Clause 14(2)(a) of the AC-OIC is provided in **Appendix X**.

9.1 Approach to communication and engagement

Auckland Council have prepared a Blue Green Communication & Engagement Plan for Harania Creek Flood Resilience which is provided at **Appendix Q**. This plan outlines the communication and engagement requirements set out by Auckland Council for the Harania flood resilience works. It describes communication and engagement objectives, identifies key stakeholders and audiences, methods, risks and provides a project specific action plan.



9.2 Relevant Māori entities

As required by Clause 11(2)(o) of the AC-OIC, the relevant Māori entities identified by Auckland Council are:

- Ngāi Tai ki Tāmaki
- Ngāti Maru
- Ngāti Tamaoho
- Ngāti Tamaterā
- Ngāti Te Ata
- Ngāti Whanaunga

- Ngāti Whātua Ōrākei
- Te Ahiwaru Waiohua
- Te Ākitai o Waiohua
- Te Kawerau ā Maki
- Waikato Tainui

These groups were initially contacted through the Auckland Council Healthy Waters kaitiaki forum in 2023. Following this initial engagement, Te Ākitai Waiohua and Te Ahiwaru indicated an interest to be involved in the project.

In April 2024 a formal mana whenua kaitaiki forum was established for the project and meetings have been held weekly with those interested in the project invited to attend. The weekly time is made available to meet with mana whenua representatives should they have any questions or need updating about the project, design and progress. In addition, this time is used to identify key design meetings that they would like to attend. Following initial engagement, Ngāti Tamaoho also expressed an interest in being involved in the project and was invited to the above meetings. Through this engagement Te Ākitai Waiohua and Te Ahiwaru have provided CVAs for the project. These are summarised in Sections 3.9 and 7.3 and copies are available to the consent authority on request.

In addition, regular hui are held by Healthy Waters for the wider blue green network programme of work (record of attendance and example of presentation is provided in **Appendix Y**).

Māori entity	Summary of engagement undertaken	
Ngāi Tai ki Tāmaki	Emails and kaitiaki presentations	
Ngāti Maru	Emails and kaitiaki presentations	
Ngāti Tamaoho	Emails and kaitiaki presentations, one on one presentations and request to join regular design meetings.	
Ngāti Tamaterā	Emails and kaitiaki presentations	
Ngāti Te Ata	Emails and kaitiaki presentations	
Ngāti Whanaunga	Emails and kaitiaki presentations	
Ngāti Whātua Ōrākei	Emails and kaitiaki presentations	
Te Ahiwaru	Emails and kaitiaki presentations, one on one presentations, design huis, design collaboration and feedback, site visits with specialists and establishing site monitoring and upskilling. Input into the design process and decision making (MCA options analysis). Engagement is ongoing and will continue throughout the project lifecycle. CVA provided and summarised in Sections 3.9 and 7.3. CVA available to the consent authority on request.	
Te Ākitai Waiohua	Emails and kaitiaki presentations, site visits, one on one presentations, design meetings and feedback into design process and decision making process. CVA provided and summarised in Sections 3.9 and 7.3 available to the consent authority on request	
Te Kawerau ā Maki	Emails and kaitiaki presentations	
Waikato - Tainui	Emails and kaitiaki presentations	

A summary of the engagement with these entities is detailed in the table below.

9.3 Mängere-Ötähuhu Local Board

Auckland Council and the Recovery Office have been in regular contact with the Māngere-Ōtāhuhu Local Board since the flooding events of early 2023. They have continued to advocate for rapid action to reduce flood risk to properties, especially for those that cannot be purchased through the Voluntary Buy-out process. The Māngere-Ōtāhuhu Local Board provided formal support for the project at its business meeting on 19 June 2024. The local board is kept up to date on project progress via regular local board updates. The next local board meeting will be held on the 6 November 2024. Project updates are sent to the local board every month.

9.4 Community Working Group

A Community Working Group was established in July 2024. The group is made up of representatives of the local community from social, environmental and faith based groups which is coordinated by the Project Team with assistance from the I am Mangere community group as a project partner.

The objectives of the community working group for the blue green projects are:

- To identify and select community, cultural, social and environmental outcomes which
- could be achieved, beyond the primary flood resilience of the scheme.
- To work with Auckland Council to include the identified outcomes in the design of the
- Blue-green Network project.
- To support the communication of the Blue-green Network project to the broader
- community in ways that are engaging and relevant to those groups.
- To contribute local knowledge relevant to the projects.

The group meets on a monthly basis, providing a conduit between the wider community and Project Team. Terms of reference for the group have been established. The first hui was held on 13 August 2024. Subsequent hui have been held on the 3 September 2024, 10 August 2024 and 1 October 2024.

Community groups who have been invited to be part of the Community Working Group include:

- Mangere Town Centre
- I am Mangere
- Neighbourhood support
- Affirming works
- Mangere East Family Services
- 257 Times
- Te Ararata Stream
- Te Ahi Taiao
- Mangere Library
- Local board representatives
- Iwi representatives.

9.5 Watercare

The concept for the proposed pipe bridge has been developed and confirmed in collaboration with Watercare. Construction works to the existing asset will be undertaken according to the requirements of Watercare as the asset owner, including works over approvals to be sought once a detailed design has been developed. Evidence that Watercare has consented to carrying out this activity is provided in **Appendix V**.



9.6 Auckland Council Parks and Community Facilities

Regular hui have been held with Auckland Council Parks and Community Facilities regarding the reserves, future plans, proposed designs and outcomes sought for the reserves. They have also attended design meetings. Auckland Council Parks and Community Facilities are supportive of the flood resilience works and have been invited to join the stakeholder working group. They attend design meetings as required.

9.7 Schools

Several schools are located within the vicinity of the works area and within the wider Mangere area. This includes:

- Favona School
- Sutton Park School
- Mangere East Primary School
- St Mary McKillop Catholic School
- King's College

As part of consultation and engagement approach, Healthy Waters invited all schools the opportunity to meet to discuss the flood resilience works and the potential changes to traffic as a result of the construction disruption. Emails were initially sent to all schools on the 27 September 2024. Meetings have been since held with Favona School and Kings College. In general, the schools have not indicated any issues with the works and confirmed impacts are unlikely.

9.8 Adjoining residents

Healthy Waters commenced engagement with those property owners directly adjoining to the works area.

Letters with an invitation to meet onsite along with a project flyer and Community meeting invitation were hand delivered in early August 2024 (see **Appendix Y**). An initial meeting was then held on 10 August 2024 with directly adjacent property owners and occupiers to discuss the project and potential construction effects. A second meeting with potentially impacted residents was further held on Tuesday 1 October 2024.

Those who registered interest at the Community meeting were emailed an invitation, and all other potentially impacted residents had their invitations hand delivered by 24 September 2024.

A further meeting is proposed to be undertaken in mid-November with those specifically impacted residents/ adjoining residents once the resource consent is lodged.

A register of owners and occupiers of land whose boundary adjoins the land on which the flood resilience works are to be carried out is provided in **Appendix X**.

9.9 Wider community

Healthy Waters has undertaken a comprehensive consultation process with the wider community.

There are a high number of Kāinga Ora properties in the wider area and while they have their own communications and engagement team, residents also want to hear directly from council about the causes and solutions to flood risk. With this in mind Auckland Council (including the Recovery Office, Healthy Waters, Auckland Emergency Management and Watercare) have collaborated with Kāinga Ora, Māngere-Ōtāhuhu Local Board and I Am Māngere to host several community meetings to inform and support the community.

A Mangere Faith & Community Leaders Hui was held on 29th July 2024 with approximately 40 faith and community leaders in the Mangere community. The Blue Green Network was one of several topics presented and discussed at the hui. A list of invitees is provided in **Appendix W**.



A project webpage for the Harania flood resilience works was established in July 2024 which provides information about the works. A project flyer drop which included an invitation to a community meeting was undertaken on 8 August 2024. In recognition of the diversity of the community within the wider area, simplified versions of the project flyers in Cook Island Māori, Māori, Samoan, Tongan, Traditional Chinese and Simplified Chinese were made available at the community meetings.

The community event was then held on 22 August 2024. The event provided information on:

- Māngere flood recovery update.
- Property categorisation update.
- Causes of flooding.
- What Auckland Council Healthy Waters has been doing in Mangere.
- The Harania Flood Resilience Project (including impacts and effects of physical works).
- The Order in Council process.
- How the community will be kept informed.
- Storm Recovery Navigators.

Following the community event, a follow up frequently asked questions (FAQ) flyer was developed and provided to project and community partners to share with the community in early September 2024. A copy of the two flyers is provided in **Appendix Y**.

9.10 Stakeholder Working Group

A stakeholder working group has been established for the project in June 2024. The group currently comprises the main utility and infrastructure providers impacted by the project being Watercare, Auckland Council Parks and Community Facilities, Auckland Transport, Kāinga Ora and Auckland Council representatives. Meetings are held fortnightly with a more formal hui held on a monthly basis. The purpose of the meeting is to discuss the project, including developing the design and construction requirements for the flood resilience works.

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10 Conclusion

This report has been prepared on behalf of Auckland Council to support a resource consent application under the AC-OIC to authorise flood resilience works at the Tennessee Avenue embankment dam within the Harania Catchment, Mangere, Auckland.

The Harania catchment was one of the worst affected areas of Auckland following the January 2023 flood events with significant flooding, causing risk to life, and widespread flood damage to approximately 60 homes. The proposed flood resilience works at the Tennessee Avenue embankment dam have been designed to address flood risk by reducing blockages and increasing conveyance potential at this location to improve the resilience of surrounding land to flooding, improving public safety by reducing flooding and removing an intolerable risk to life. Furthermore, the works will reduce the risk of a potential for a dam breach-induced structural failure of the Eastern Interceptor during flood conditions (i.e. high upstream water levels), improving the resilience of infrastructure to flooding.

An assessment of effects on the environment as they relate to the matters of control has been undertaken for the project and this has concluded that the flood resilience works will have positive effects as identified in Section 7.1, whilst potential adverse effects will be avoided, remedied or mitigated.

Under Clause 8 of the AC-OIC, any work done by, or on behalf of, Auckland Council is to be classified as a controlled activity for the purposes of section 87A(2) of the RMA, therefore the consent authority must grant this application for flood resilience works.























Appendix K – Preliminary Archaeological Assessment







Appendix N – Relevant Matters of Control and Location of Assessment

Table N-1 identified the relevant matters of control specified in Schedule 3 of the AC-OIC and the location of the assessment of each matter within the AEE.

Table N-1: Relevant matters of control and location of assessment

Matter of control	Relevant	Section/s of assessment within AEE
General		
(a) The timing and duration of flood resilience works.	Yes	7.9
(b) Potential adverse effects on wildlife, habitats, and ecosystems.	Yes	7.2
(c) Potential adverse effects on biodiversity values (other than terrestrial indigenous biodiversity values).	Yes	7.2
(d) Potential adverse effects on protected trees or amenity values associated with protected trees, and measures to avoid, remedy, or mitigate those effects.	Yes	7.6
(e) Potential adverse effects on aquifer availability, surface water flows, terrestrial and freshwater ecosystem habitats, saltwater intrusion, neighbouring bores, and ground settlement, and measures to avoid, remedy, or mitigate those effects.	No – groundwater not being encountered, diverted or dewatered during excavations.	N/A
(f) The management of construction works to avoid, remedy, or mitigate potential adverse effects on receiving environments, including adverse effects of hazardous substances, spills, and stormwater run-off.	Yes	7.2, 7.10
Natural hazards		
(a) The risks from natural hazards to people, property, infrastructure, and the environment, and measures to avoid or mitigate those risks.	Yes	7.7



Matter of control	Relevant	Section/s of assessment within AEE
(b) The risk of flood resilience works increasing risks from existing natural hazards or creating new natural hazards, and measures to avoid or mitigate that risk.	Yes	7.7
Cultural values		
(a) Potential adverse effects on cultural values identified by Māori entities.	Yes	7.3
(b) Whether the flood resilience works will affect sites of significance to Māori entities, including wāhi tapu.	Yes	7.3
(c) Measures proposed to monitor adverse effects on cultural values throughout flood resilience works.	Yes	7.3
Freshwater		
(a) Potential adverse effects on the ecological values of any river or wetland.	Yes	7.2
(b) Provision for the passage of fish.	Yes	7.2
(c) Application of the effects management hierarchy to flood resilience works affecting any river or wetland.	Yes	7.2, 7.4
(d) The use of structures and diversion to facilitate flood resilience works.	Yes	7.2, 7.4
(e) The management of flood resilience works to avoid, remedy, or mitigate potential sedimentation or contamination effects on any freshwater receiving environment.	Yes	7.2, 7.4, 7.10
(f) Potential adverse effects of the flood resilience works on freshwater fisheries, and measures to avoid, remedy, or mitigate those effects.	Yes	7.2
Coastal environment		
(a) The methods to be used to avoid, remedy, or mitigate the effects of the flood resilience works on any identified coastal hazard.	Yes	7.7



Matter of control	Relevant	Section/s of assessment within AEE
(b) Potential adverse effects of the flood resilience works on landscape values of the coastal environment, and measures to avoid, remedy, or mitigate those effects.	Yes	7.5
(c) Potential adverse effects of the flood resilience works on coastal processes and coastal water quality, and measures to avoid, remedy, or mitigate those effects.	Yes	7.4, 7.10
(d) Application of the effects management hierarchy to potential adverse ecological effects of flood resilience works affecting the CMA.	Yes	7.2
Soil, land, and terrestrial ecology		
(a) Potential soil erosion and other adverse effects on soil stability and the safety of surrounding land, infrastructure, buildings, and other structures, and measures to avoid, remedy, or mitigate those effects.	Yes	7.4, 7.10
(b) Potential soil run-off and sedimentation, and measures to avoid, remedy, or mitigate those effects.	Yes	7.10
(c) Potential adverse effects on terrestrial ecology, and measures to avoid, remedy, or mitigate those effects.	Yes	7.2
(d) Potential adverse effects on terrestrial indigenous biodiversity values, and measures to avoid, remedy, or mitigate those effects.	Yes	7.2
(e) The design and suitability of proposed erosion and sediment control measures.	Yes	7.10
(f) Potential adverse effects of land disturbance and sediment discharge on water bodies, particularly sensitive receiving environments.	Yes	7.2, 7.10
(g) The proportion of the total area of the catchment that is exposed by flood resilience works.	Yes	7.10



Matter of control	Relevant	Section/s of assessment within AEE
(h) The staging of flood resilience works and the progressive stabilisation of earthworks.	Yes	7.10
Landscape and amenity		
(a) Potential adverse effects on the characteristics and qualities that contribute to the area's natural character, or landscape values, or both.	Yes	7.5
(b) Potential adverse landscape, visual, and amenity effects.	Yes	7.5
(c) Construction noise, vibration, odour, and dust generation, including having regard to the sensitivity of the receiving environment.	Yes	7.8, 7.10
(d) Potential adverse effects of the hours of operation of flood resilience works.	Yes	7.8
(e) Potential adverse effects on the use of open spaces, including on public access.	Yes	7.5
(f) Potential adverse effects on public health and safety during flood resilience works.	Yes	7.8
(g) Measures to avoid, remedy, or mitigate the effects described in paragraphs (a) to (f).	Yes	7.5, 7.8
Volcanic viewshafts		
(a) Potential adverse effects on the visual integrity of the view of any 1 or more of the maunga listed in section 10 of the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Act 2014 from any viewing point or line identified in the Auckland Unitary Plan.	N/A – no volcanic viewshafts in the project area.	N/A
(b) Potential adverse effects on values associated with any 1 or more of the maunga listed in section 10 of the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Act 2014 by a relevant Māori entity.	N/A – no volcanic viewshafts in the project area.	N/A



Matter of control	Relevant	Section/s of assessment within AEE		
(c) The location, nature, form, and extent of the proposed flood resilience works in relation to any 1 or more of the maunga listed in section 10 of the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Act 2014.	N/A – no volcanic viewshafts in the project area.	N/A		
(d) The functional or operational need for the proposed flood resilience works, and consideration of alternatives to fulfil that need without —	N/A – no volcanic viewshafts in the project area.	N/A		
a) intruding into any viewshaft listed in the Auckland Unitary Plan; or				
b) exceeding the maximum height limit of any height- sensitive area under the Auckland Unitary Plan.				
Adjoining land uses				
(a) Potential adverse effects on the use of land on which flood resilience works are carried out and adjoining land, and measures to avoid, remedy, or mitigate those effects.	Yes	7.8, 7.9, 7.10		
(b) Potential adverse effects on infrastructure assets and facilities (including those of network utility operators), and measures to avoid, remedy, or mitigate those effects.	Yes	7.13		
Heritage and archaeology				
(a) Potential adverse effects on identified heritage values, and measures to avoid, remedy, or mitigate those effects.	N/A – no identified heritage values in the project area	N/A		
(b) Accidental discovery protocols to reduce risk to unidentified archaeological sites.	Yes	7.12		
Access and transport				
(a) Potential adverse effects on access to and along or around watercourses and water bodies, and measures to avoid, remedy, or mitigate those effects.	Yes	7.5		

Matter of control	Relevant	Section/s of assessment within AEE
(b) Potential adverse effects on the safe and efficient operation of the transport network, and measures to avoid, remedy, or mitigate those effects.	Yes	7.9
Contaminated land		
(a) Potential adverse effects on human health and the environment from disturbance or use of contaminated soil.	Yes	7.11
(b) Measures to avoid, remedy, or mitigate the effects described in paragraph (a), including —	Yes	7.11
(i) remediation or management methods proposed to reduce risk posed by contaminants; and		
(ii) timing of remediation; and		
(iii) standard of remediation on completion of flood resilience works.		


















Appendix W – Clause 11(2)(n)

This appendix sets out the information required by Clause 11(2)(n) of the OiC, which *requires "the names and contact details of all persons consulted:"* This document sets out the names and contact details known and available to Auckland Council Healthy Waters. Wider community engagement through flyer drops and community sessions is not included in this list of people consulted with.

Group/Organisation	Name	Contact details		
Maori Entities				
Ngāi Tai ki Tāmaki	Zaelene Maxwell-Butler	zaelene@ngaitaitamaki.iwi.nz		
Ngāti Maru	Geoff Cook	geoff@ngatimaru.iwi.nz		
Ngāti Tamaoho	Lucie Rutherford	lucierutherfurd@gmail.com		
Ngāti Tamaterā	Eddie Manukau	eddie.manukau@tamatera.iwi.nz		
Ngāti Te Ata	Paora Puru	paora.puru@ngatiteata.iwi.nz		
Ngāti Whanaunga	Gavin Anderson gavinanderson065@gmail.com			
Naāti Whātua Ōrākai	Mervyn Kerehoma	tmervyn@nwo.iwi.nz		
	Rana Kipa	ranak@nwo.iwi.nz		
Te Ahiwaru – Waiohua	Kowhai Olsen	kowhai.olsen@teahiwaru.co.nz		
	Adrian Pettit	adrianleepettit@gmail.com		
Te Ākitai Waiohua	Kathleen Wilson	kathwils2010@gmail.com		
	Nigel Denny	kaitiaki@teakitai.com		
Te Kawerau ā Maki	Edward Ashby	Edward.Ashby@tekawerau.iwi.nz		
Waikato – Tainui	Lorraine Dixon	lorraine.dixon@tainui.co.nz		
Network Utility Operators	and Stakeholders			
Watercare	Joel Jeffries, Operations	Joel.Jeffries@water.co.nz		
	Manager – Transmission	021 302 401		
Kainga Ora	Vittal Avvari	Vittal.Avvari@kaingaora.govt.nz		
	Marisol Vega	Marisol.Vega@kaingaora.govt.nz		
	Bidara Pathirage	bidara.pathirage@LEADAlliance.nz		
	Stephen Scard	Stephen.Scard@kaingaora.govt.nz		
	Andre Stuart	Andre.Stuart@kaingaora.govt.nz		
	Jay Moyo	Jay.Moyo@kaingaora.govt.nz		
	Ritashna Maharaj-Chand	Ritashna.Maharaj-		
		Chand@kaingaora.govt.nz		
Auckland Transport	Nisha Veerakesavan	Nisha.Veerakesavan@at.govt.nz		
	Mylealind	Myles.Lind@at.govt.nz		
	Myles Lind	Chris.Beasley@at.govt.nz		
	Chris Beasley	Tracey.Berkahn@at.govt.nz		
	Tressy Derkehn	Alan.Wallace@at.govt.nz		
	Гасеу Вегкапп	Simon.Buxton@at.govt.nz		
	Alan Wallace	Jeremy.Pellow@at.govt.nz		
	Simon Buxton	Muhanned.Khiro@at.govt.nz		
	Jeremy Pellow	Biserka.Stetic@at.govt.nz		
	Muhanned Khiro	Adrian.Lord@at.govt.nz		
	Biserka Stetic	Laurence.Jones@at.govt.nz		
	Adrian Lord	m.alsakini@teman.co.nz		



Group/Organisation	Name	Contact details
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	Mohammed Alsakini	Daniel.Simons@at.govt.nz
	Isha Sibal	Jacki.Dawson@at.govt.nz
	Daniel Simons	Gavin.Aranky@at.govt.nz
	Jacki Dawson	Siva.Edupuganti@at.govt.nz
	Gavin Aranky	Dominica.Au@at.govt.nz
	Siva Edupuganti	Ashu.Mittal@at.govt.nz
	Dominica Au	Warren.Nagel@at.govt.nz
	Ashu Mittal	
	Warren Nagel	
Auckland Council Parks	Emily Wagon	emily.wagon@aucklandcouncil.govt.nz
and Community	Bill Teakura	Bill.Teaukura@aucklandcouncil.govt.nz
Facilities	Oscar Vaaga	oscar.vaaga@aucklandcouncil.govt.nz
	Kim Oneill	kim.oneill@aucklandcouncil.govt.nz
Local Board		
Māngere-Ōtāhuhu Local	Togiatolu Walter Togiamua	walter.togiamua@aucklandcouncil.govt.nz
Board	Tauanu'u Nanai Nick Bakulich	
Schools		
Favona School	Diane Wiechern	dianew@favona.school.nz
		iesea@favona.school.nz
Sutton Park School	Diana Tuaopepe	dtuaopepe@suttonpark.school.nz
	Vaitimu Togi Lemanu	principal@suttonpark.school.nz
	-	tlemanu@suttonpark.school.nz
Mangere East Primary	Stephanie Anich	office@meps.school.nz
St Mary McKillop	Mike Piper	mikep@marymackillop.school.nz
	Jana Bushy	i hushv@kingaaallaga aahaal ng
King's College	Jane Busby	J.busby@kingscollege.school.nz
Community Groups		
Mangere Town Centre	Vicky Hau	vicky.hau@mangeretowncentre.nz
I Am Mangere	Toni Helluer	toni@iamhapori.co.nz
Affirming Works	Ken Vaege	ken@affirmingworks.org.nz
Mangere East Family	Vijay Rajan	vijay@mefsc.org.nz
Services	Colleen Smith	colleen@mefsc.org.nz
275 Times	Joanne Latif	latifjoanne@gmail.com
Te Ararata Stream	Pragna Patel / Julia Tuineau	teararata.stream@gmail.com
Te Ahi Taiao		taiao@teahiwaru.co.nz
Mangere Library	Farasat Ullah	farasat.ullah@aucklandcouncil.govt.nz
Faith and Community Lea	ders	

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Group/Organisation	Name	Contact details		
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tim.hart@mangerebridgebaptist.com john@mangerebaptist.org.nz mlmalafu@gmail.com mark@st-james-				
nz.org President.sama@xt	ra.co.nz firasfaizan26@hotmail.com	sela@tetaitokerau.anglican.org.nz		
miccauckland@gmail.com	<u>i juliatuineau@gmail.com ansuyap69</u>	@gmail.com carole@mefsc.org.nz		
tbkuchel@thc.org.nz percival@affirmingworks.org.nz tpwiniata@thc.org.nz sisi.f@strive.org.nz				
colleen@mefsc.org.nz bro	okedotstanley@gmail.com toni@ian	nhapori.co.nz iammangere@gmail.com		
ceo@mbst.org.nz connect	t@twosevenfive.co.nz 275times@gn	nail.com jguo52@gmail.com		
olsen_palaamo@hotmail.c	<u>com</u>			

Property Address	Owner/oc cupier	Name	Contact details (where available)	Postal Address
Land on which the flood resil	ience works a	are to be carried out		
57R Blake Road	Owner	Auckland Council	-	Private Bag 92300
81R Blake Road Mangere East Auckland 2024	occupier			Victoria Street West Auckland 1142
81R Archboyd Avenue Mangere East Auckland 2024				
Land whose boundary adjoin below (works area shown in r	s the land on ed, land iden	which the flood resilie tified shown in yellow)	nce works are to be c :	arried out – see figure
32 Bicknell Road Favona Auckland 2024	Owner occupier	JA Baldomero & JAT Lim- Baldomero	-	32 Bicknell Road Favona Auckland 2024
34 Bicknell Road Favona Auckland 2024	Owner occupier	F Bano & SR Ali	-	34 Bicknell Road Favona Auckland 2024
46 Abiru Crescent Favona Auckland 2024	Owner	Kainga Ora	0800 801 601	PO Box 74598, Greenlane, Auckland 1546
	Occupier	Occupier	-	46 Abiru Crescent Favona Auckland 2024
48 Abiru Crescent Favona Auckland 2024	Owner	Kainga Ora	0800 801 601	PO Box 74598, Greenlane, Auckland 1546
	Occupier	Occupier	-	48 Abiru Crescent Favona Auckland 2024
52B Abiru Crescent Favona Auckland 2024	Owner	DJ Young & BL Young & CM Cheung	-	Harcourts Flat Bush, PO Box 230022, Botany 2163
	Occupier	Occupier	-	52B Abiru Crescent Favona Auckland 2024
58 Abiru Crescent Favona Auckland 2024	Owner occupier	Natalie and Tulip Schaumkel	natalieschaumkel 3@gmail.com, 02108517434 <u>tulipschaumkel@</u> <u>gmail.com</u> , 021 110 7965	58 Abiru Crescent Favona Auckland 2024

Property Address	Owner/oc cupier	Name	Contact details (where available)	Postal Address
60 Abiru Crescent Favona Auckland 2024	Owner	SS Lee & YS Yang	-	70 Parau Street, Mount Eden, 1041
	Occupier	Occupier	-	60 Abiru Crescent Favona Auckland 2024
78 Blake Road Mangere East Auckland 2024	Owner occupier	Charmaine Tuala	charmainetuala@ gmail.com 0212857179	78 Blake Road Mangere East Auckland 2024
80 Blake Road Mangere East Auckland 2024	Owner occupier	Bob Reddy	bobreddy67@gm ail.com 021722721	80 Blake Road Mangere East Auckland 2024
81 Blake Road Mangere East Auckland 2024	Owner	Kainga Ora	0800 801 601	PO Box 74598, Greenlane, Auckland 1546
	Occupier	Occupier	-	81 Blake Road Mangere East Auckland 2024
83 Blake Road Mangere East Auckland 2024	Owner	ST Nguyen & VD Nguyen	-	53 Madison Terrace, Silverdale 0932
	Occupier	Occupier	-	83 Blake Road Mangere East Auckland 2024
85 Blake Road Mangere East Auckland 2024	Owner	JVT Rolleston & G Hewitt-Biggs	-	PO Box 12767, Penrose, Auckland, 1624
	Occupier	Occupier	-	85 Blake Road Mangere East Auckland 2024
87 Blake Road Mangere East Auckland 2024	Owner occupier	SP Kumitau & LSD Kumitau	-	87 Blake Road Mangere East Auckland 2024
89 Blake Road Mangere East Auckland 2024	Owner occupier	A Feomaia & L Penani	-	89 Blake Road Mangere East Auckland 2024
91 Blake Road Mangere East Auckland 2024	Owner occupier	F Tava & N Tava & LP Tava & MFIF Tava	-	91 Blake Road Mangere East Auckland 2024



Appendix X – Clause 11(2)(p) and 14(2)(a)

This appendix sets out the information required by Clause 11(2)(p) of the OiC, which requires "a list of the names and contact details of all persons the consent authority is required to notify under clause 14(2)(a)"

For clarity, clause 14(2)(a) states:

"The consent authority must, within 5 working days,—

(a) notify the following persons that an application has been lodged and advise them where they can find a copy of the application:

(i) all relevant Māori entities:

(ii) the Minister for the Environment and every other Minister of the Crown responsible for a portfolio to which the flood resilience works relate:

(iii) the Director-General of Conservation:

(iv) any network utility operator that undertakes a network utility operation in, on, or under the land where the flood resilience works are to be carried out:

(v) the owners and occupiers of land on which the flood resilience works are to be carried out or of land whose boundary adjoins the land on which the flood resilience works are to be carried out:

(vi) any requiring authority that holds a designation over the land on which the flood resilience works are to be carried out:

(vii) if the flood resilience works are to be carried out within the CMA, Maritime New Zealand and any holder of, and any applicant for, customary marine title of any area of the CMA:

(viii) any other person the consent authority considers appropriate, if the consent authority is satisfied that the person has an interest in the application that is greater than the interest of the general public;"

Maori Entitiy	Name	Contact Details	
Ngāi Tai ki Tāmaki	Zaelene Maxwell-Butler	zaelene@ngaitaitamaki.iwi.nz	
Ngāti Maru	Geoff Cook	geoff@ngatimaru.iwi.nz	
Ngāti Tamaoho	Lucie Rutherford	lucierutherfurd@gmail.com	
Ngāti Tamaterā	Eddie Manukau	eddie.manukau@tamatera.iwi.nz	
Ngāti Te Ata	Paora Puru	paora.puru@ngatiteata.iwi.nz	
Ngāti Whanaunga	Gavin Anderson	gavinanderson065@gmail.com	
	Mervyn Kerehoma	tmervyn@nwo.iwi.nz	
Nyali whalua Orakei	Rana Kipa	ranak@nwo.iwi.nz	
Te Ahiwaru –			
Waiohua	Kowhai Olsen	kowhai.olsen@teahiwaru.co.nz	
To Ākitoj Wojobuo	Adrian Pettit	adrianleepettit@gmail.com	
TE AKITAI WAIOITUA	Kathleen Wilson	kathwils2010@gmail.com	

10.1 14(2)(a)(i) all relevant Māori entities:



Maori Entitiy	Name	Contact Details
	Nigel Denny	kaitiaki@teakitai.com
Te Kawerau ā Maki	Edward Ashby	Edward.Ashby@tekawerau.iwi.nz
Waikato – Tainui	Lorraine Dixon	lorraine.dixon@tainui.co.nz

10.2 14(2)(a)(ii) the Minister for the Environment and every other Minister of the Crown responsible for a portfolio to which the flood resilience works relate:

Minister	Name	Contact Details
Minister for the Environment	Hon Penny Simmonds	P.Simmonds@ministers.govt.nz
Minister of Infrastructure	Sir Chris Bishop	C.Bishop@ministers.govt.nz
Minister of Auckland, Minister of Local Government, Minister of Transport	Hon Simeon Brown	S.Brown@ministers.govt.nz

10.3 14(2)(a)(iii) the Director-General of Conservation:

	Name	Contact Details
Director-General of the Department of Conservation	Penny Nelson	info@doc.govt.nz +64 4 471 0726 Conservation House - Whare Kaupapa Atawhai 18-32 Manners Street Wellington 6011 New Zealand PO Box 10420 Wellington 6143

10.4 14(2)(a)(iv) any network utility operator that undertakes a network utility operation in, on, or under the land where the flood resilience works are to be carried out:

Network Utility Operator	Name	Contact details
Watercare	Joel Jeffries, Operations Manager	Joel.Jeffries@water.co.nz
	- Transmission	021 302 401

10.5 14(2)(a)(v) the owners and occupiers of land on which the flood resilience works are to be carried out or of land whose boundary adjoins the land on which the flood resilience works are to be carried out:

Property Address	Owner/occupier	Name	Contact details (where available)	Postal Address	
Land on which the flood resilience works are to be carried out					
57R Blake Road	Owner occupier	Auckland Council	-	Private Bag 92300	
81R Blake Road Mangere East Auckland 2024				Victoria Street West	
81R Archboyd Avenue Mangere East Auckland 2024				Auckland 1142	

Land whose boundary adjoins the land on which the flood resilience works are to be carried out – see figure below (works area shown in red, land identified shown in yellow):



Property Address	Owner/occupier	Name	Contact details (where available)	Postal Address
32 Bicknell Road Favona Auckland 2024	Owner occupier	JA Baldomero & JAT Lim-Baldomero	-	32 Bicknell Road Favona Auckland 2024
34 Bicknell Road Favona Auckland 2024	Owner occupier	F Bano & SR Ali	-	34 Bicknell Road Favona Auckland 2024
46 Abiru Crescent Favona Auckland 2024	Owner	Kainga Ora	0800 801 601	PO Box 74598, Greenlane, Auckland 1546
	Occupier	Occupier	-	46 Abiru Crescent Favona Auckland 2024
48 Abiru Crescent Favona Auckland 2024	Owner	Kainga Ora	0800 801 601	PO Box 74598, Greenlane, Auckland 1546
	Occupier	Occupier	-	48 Abiru Crescent Favona Auckland 2024
52B Abiru Crescent Favona Auckland 2024	Owner	DJ Young & BL Young & CM Cheung	-	Harcourts Flat Bush, PO Box 230022, Botany 2163
	Occupier	Occupier	-	52B Abiru Crescent Favona Auckland 2024
58 Abiru Crescent Favona Auckland 2024	Owner occupier	Natalie and Tulip Schaumkel	natalieschaumkel3@gm ail.com, 02108517434 <u>tulipschaumkel@gmail.c</u> <u>om</u> , 021 110 7965	58 Abiru Crescent Favona Auckland 2024
60 Abiru Crescent Favona Auckland 2024	Owner	SS Lee & YS Yang	-	70 Parau Street, Mount Eden, 1041
	Occupier	Occupier	-	60 Abiru Crescent Favona Auckland 2024
78 Blake Road Mangere East Auckland 2024	Owner occupier	Charmaine Tuala	charmainetuala@gmail. com 0212857179	78 Blake Road Mangere East Auckland 2024
80 Blake Road Mangere East Auckland 2024	Owner occupier	Bob Reddy	bobreddy67@gmail.com 021722721	80 Blake Road Mangere East Auckland 2024

Property Address	Owner/occupier	Name	Contact details (where available)	Postal Address
81 Blake Road Mangere East Auckland 2024	Owner	Kainga Ora	0800 801 601	PO Box 74598, Greenlane, Auckland 1546
	Occupier	Occupier	-	81 Blake Road Mangere East Auckland 2024
83 Blake Road Mangere East Auckland 2024	Owner	ST Nguyen & VD Nguyen	-	53 Madison Terrace, Silverdale 0932
	Occupier	Occupier	-	83 Blake Road Mangere East Auckland 2024
85 Blake Road Mangere East Auckland 2024	Owner	JVT Rolleston & G Hewitt-Biggs	-	PO Box 12767, Penrose, Auckland, 1624
	Occupier	Occupier	-	85 Blake Road Mangere East Auckland 2024
87 Blake Road Mangere East Auckland 2024	Owner occupier	SP Kumitau & LSD Kumitau	-	87 Blake Road Mangere East Auckland 2024
89 Blake Road Mangere East Auckland 2024	Owner occupier	A Feomaia & L Penani	-	89 Blake Road Mangere East Auckland 2024
91 Blake Road Mangere East Auckland 2024	Owner occupier	F Tava & N Tava & LP Tava & MFIF Tava	-	91 Blake Road Mangere East Auckland 2024



10.6 14(2)(a)(vi) any requiring authority that holds a designation over the land on which the flood resilience works are to be carried out:

There are no designations over the land on which the flood resilience works are to be carried out.

10.7 14(2)(a)(vii) if the flood resilience works are to be carried out within the CMA, Maritime New Zealand and any holder of, and any applicant for, customary marine title of any area of the CMA:

Name	Contact Details	Address
Maritime New	enquiries@maritimenz.govt.nz	Level 11, 1 Grey Street
Zealand	0508 225 522	Wellington 6011
		New Zealand
		PO Box 25620,
		Wellington, 6140
		New Zealand

The proposed flood resilience works are located within the CMA, however are not located in an area subject to an application by any customary marine title groups under the Marine and Coastal Area (Takutai Moana) Act 2011 (MACA) as shown in the figure below.



Figure: High Court Application Areas under the MACA in relation to the works site (Source: Te Arawhiti)

10.8 14(2)(a)(viii) any other person the consent authority considers appropriate, if the consent authority is satisfied that the person has an interest in the application that is greater than the interest of the general public;

Non identified by Auckland Council (consent authority) to Healthy Waters at this stage.



