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Whenuapai Wastewater Servicing Scheme Package 1 – Notice of Requirement

Assessment of Effects on the Environment

Prepared for Watercare Services Ltd
Prepared by Beca Limited

8 March 2024

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Revision History

Revision Nº	Prepared By	Description	Date
1	Rachael Clark	Draft for internal review	30 August 2022
2	Rachael Clark and Sarah MacCormick	Draft for Watercare review	20 September 2022
3	Rachael Clark and Sarah MacCormick	Final for lodgement	28 October 2022
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Document Acceptance

Action	Name	Signed	Date
Prepared by	Rachael Clark and Sarah MacCormick		8 March 2024
Reviewed by	Jenny Vince		8 March 2024
Approved by	Jenny Vince		8 March 2024
on behalf of	Beca Limited		

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Appendices

Glossary of Terms and Acronyms

Term	Description
AEP	Annual Exceedance Probability, which is the probability of an event occurring in any given year
Auckland Council Healthy Waters	Auckland Council department responsible for the management of stormwater across the Auckland Region, to reduce flooding and prevent pollution of Auckland's waterways
AUP:OP	Auckland Unitary Plan: Operative in Part
bgl	Below Ground Level
BPO	Best Practicable Option
CNVMP	Construction Noise and Vibration Management Plan
ECBF	East Coast Bays Formation
EcIA	Ecological Impact Assessment
L_{WA}	Sound power level
L/s	Litres per second
mRL	Metres Reduced Level, which is a calculated elevation in relation to a particular datum
NES CS	Resource Management (National Environmental Standard for Assessment and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
NoR	Notice of Requirement
NES:F	National Environmental Standard Freshwater
NPS:FM	National Policy Statement for Freshwater Management
Package 1 –	First stage of the Whenuapai Wastewater Servicing Scheme - involving the installation of a new Pump Station with gravity main and rising main.
Package 2 –	Second stage of the Whenuapai Wastewater Servicing Scheme - involving connecting the gravity sewer from Package 1.
Package 3 –	Three stage of the Whenuapai Wastewater Servicing Scheme - involving the installation of four gravity pipelines servicing the Southern Redhills area.
RMA	Resource Management Act 1991
SAP	Site Access Point
Watercare	Watercare Services Limited, a council controlled organisation responsible for providing water and wastewater services across the Auckland Region.
Whenuapai Wastewater Servicing Scheme	A staged programme of works to deliver the necessary wastewater infrastructure network in Whenuapai (and nearby Redhills) in response to growth and necessity as demand increases across the area.

Executive Summary

Whenuapai is expected to experience significant urban development over the next 30 years. However, the existing wastewater network has limited capacity available to service this growth. Increasing wastewater flows through the existing network without providing additional capacity risks adverse effects on the environment.

In response to this growth, Watercare Services Limited (Watercare) is proposing to construct a wastewater pipeline and pump station (Whenuapai Wastewater Servicing Scheme – Package 1 Project, the Project). The Project will deliver the necessary wastewater infrastructure network to unlock land within Whenuapai, and the wider area, for development, and is part of a wider scheme to convey wastewater from the Whenuapai Catchment to the Northern Interceptor.

The Project involves the installation of a gravity main pipeline from the existing pump station in Whenuapai village to 23A Brigham Creek Road; an underground pump station at 23A Brigham Creek Road (with aboveground ancillary structures); a rising main between 23A Brigham Creek Road and 32 Mamari Road; and a break pressure chamber at 32 Mamari Road. The works also require installation of a culvert at 31 Brigham Creek Road. Construction and laydown areas to support the works will be located at 20-22 Brigham Creek Road, 23-27 Brigham Creek Road, 32 Mamari Road, and 28 Brigham Creek Road.

Watercare is seeking to designate land for the construction, operation and maintenance of the proposed pipeline, pump station and associated infrastructure. This Notice of Requirement document and assessment of effects on the environment (AEE) has been prepared to support the designation process. Proposed conditions set out in the application includes details of the measures and management plans required to avoid, remedy or mitigate potential effects. Regional consents for the activity are also required and are being sought by Watercare concurrently under a separate application.

The project will be constructed by both trenched and trenchless methods. There is potential for temporary effects on the environment during construction, including ecology, erosion and sedimentation, noise and traffic disruption. Conditions have been proposed to manage potential effects, including the requirement for replacement planting, and to prepare an Erosion and Sediment Control Plan (ESCP), Construction Noise and Vibration Management Plan (CNVMP), and Traffic Management Plan (TMP). In addition, conditions have been proposed to assess whether bats and lizards are present within the works area, and a Bat Management Plan and Lizard Management Plan prepared and implemented if required.

An assessment of alternatives has been carried out throughout the design of the Project, which has demonstrated that the project is reasonably necessary to meet Watercare objectives, and in particular, is required to coordinate with known development currently planned within the area.

An assessment of the relevant objectives and policies of the relevant statutory and non-statutory documents has been undertaken, which demonstrates that the Project is generally consistent with the relevant objectives and policies, and the purposes and principles of the RMA.

Overall, there will be some permanent and temporary adverse effects during the construction of the Project. Conditions have been proposed to manage these effects. Once the Project is in place, it will have significant benefits associated with providing wastewater servicing capacity for the Whenuapai catchment, unlocking land for development.

1 Introduction

1.1 Purpose

This Notice of Requirement (NoR), and Outline Plan Waiver application is submitted by Watercare Services Limited (Watercare) in accordance with Section 168 and Section 176A of the Resource Management Act 1991 (RMA). This application seeks a designation for the construction, operation and maintenance of the proposed Whenuapai Wastewater Servicing Scheme – Package 1 Project (the Project), which includes a gravity main, pump station, rising main, and associated infrastructure.

1.2 Watercare

Watercare is a Requiring Authority pursuant to Section 166 of the RMA. Watercare is Council Controlled Organisation (CCO) wholly owned by Auckland Council. Watercare manages and has financial responsibility for all water and wastewater related infrastructure assets and asset development programmes within Auckland Council. In particular Watercare collects and treats about 410 million litres of wastewater around the Auckland region.

Watercare continually reviews its activities, identifying the need for infrastructure maintenance, replacement and upgrade, as well as initiating new infrastructure projects to ensure it meets its customer's needs, business objectives and statutory requirements, including due to future urban growth.

1.3 Project Background

Whenuapai is expected to experience significant growth over the next 20 years. By 2041 the number of dwellings within the Whenuapai catchment is expected to increase from approximately 2,400 to 10,200 (or 30,720 people), and peak wet weather wastewater flows projected to increase from 74 L/s to 320 L/s[1]. Wastewater flows from Whenuapai Village are currently delivered into the Riverhead rising main. However, the existing network has limited capacity available to service development within the catchment, and increased wastewater flows through the Riverhead rising main risk increasing the number of overflows at the Riverhead Pump Station. Further development of the catchment is therefore constrained, and additional wastewater infrastructure is needed to unlock the development potential of the land in the wider area and prevent adverse effects on the environment.

The Whenuapai-Redhills Wastewater Servicing Scheme (the Scheme) has been developed to deliver the necessary wastewater infrastructure network in Whenuapai (and nearby Redhills) using a staged approach. The Scheme will be delivered in three different packages, designed to respond to growth and necessity as demand increases across the area.

The first package, "Package 1" (referred to as 'the Project' which is the subject of this application), is sized to provide wastewater servicing capacity for approximately growth in the Whenuapai catchment. Package 2 and Package 3 will be delivered at a later stage (further information on Package 2 and Package 3 is available in Appendix I – Assessment of Alternatives)[2].

[1] Dwelling number projections were calculated in Housing Infrastructure Fund Wastewater Servicing Detailed Business Case, 2018, and include dwellings on septic tank in 2018.

[2] Package 2 extends from 32 Mamari Road to 2A Buckley Avenue, Hobsonville and will include the construction of the break pressure chamber. Package 3 includes local wastewater connections within Redhills.

The Project includes the following five key components (see Figure 1):

1. A **Pump Station** at a point where the Whenuapai and Redhills Catchments meet at 23A Brigham Creek Road, with an emergency overflow outfall to the Sinton Stream
2. A **Gravity Main Pipeline** (approximately 700m long and 375 – 475 mm in diameter) between the existing Whenuapai Village Pump Station on Tamiro Road and the Pump Station
3. A **Rising Main** (approximately 1.5km long and 500 mm in diameter) between the Pump Station and a proposed new break pressure chamber on Mamari Road.
4. A **Culvert** (approximately 63 m long including wing wall and rip rap) to provide access for the rising main across Sinton Stream.
5. A **Break Pressure Chamber** located on the corner of Mamari and Spedding Roads[3].

For the purposes of this AEE, the Project also includes construction activities including site access, construction yards/laydown areas and temporary access road(s) (described in more detail in Section 4.2). The physical footprint of the Project is represented by the designation boundary (shown on Figure 1).

The proposed works are described in detail in Section 3 of this AEE, and the design drawings are provided in Appendix A.

1.4 Notice of Requirement

Watercare has lodged a Notice of Requirement (NoR) which seeks to designate 90,180 m^2 of land for a public work; being the construction, operation, and maintenance of new wastewater infrastructure (including a new pump station, rising main, gravity main and auxiliary works) within Whenuapai, in the Auckland Unitary Plan: Operative in part (AUP:OP) and any subsequent proposed Unitary Plan applying to the land subject to this designation.

The proposed Designation drawings are in Appendix B.

1.5 Outline Plan Waiver

Watercare is seeking confirmation that an Outline Plan is not required for the Project works (except the break pressure chamber), under Section 176A(2)(b) for the proposed works, given that detailed information required has been provided within this application in accordance with the requirements of Section 176A(3).

The break pressure chamber, which is being designed and consented as part of Package 2 works, is excluded from the Outline Plan Waiver request. An Outline Plan will be provided as part of a future consenting package.

1.6 Approach to Assessment of Effects and Report structure

The assessment of effects on the environment in this report is limited to the matters which are authorised by the designation, being those matters which trigger a district plan consent requirement pursuant to section 9(3) of the RMA[4]. This report contains the following information in relation to those matters:

- A description of the existing environment;

[3] The location of the break pressure chamber has been influenced by the alignment of the rising main and is being designated as part of the Project. Detailed design for the break pressure chamber is being completed as part of 'Package 2' and therefore resource consents will be part of that consenting package.

[4] Section 176(1)(a) – If a designation is included in a district plan, then section ((3) does not apply to a public work or project or work undertaken by a requiring authority under the designation.

- A description of the proposed activities;
- An assessment of alternatives considered;
- An assessment of the potential and actual effects on the environment of the activity and the proposed mitigation measures;
- Engagement and consultation undertaken for the project;
- Notification assessment
- An assessment of the proposed activities against matters set out in Part 2 of the RMA; and
- The statutory framework relevant to the assessment of effects.

Matters which trigger a National Environmental Standard Freshwater (NES:F) or Regional consent requirement pursuant to section 9(2) of the RMA are not authorised by this designation and are therefore not considered within this report. All consents required for the project under the NES:F or the AUP for Regional matters are being sought under a separate application which is being processed in parallel to this NoR[5].

[5] Application number BUN60411512

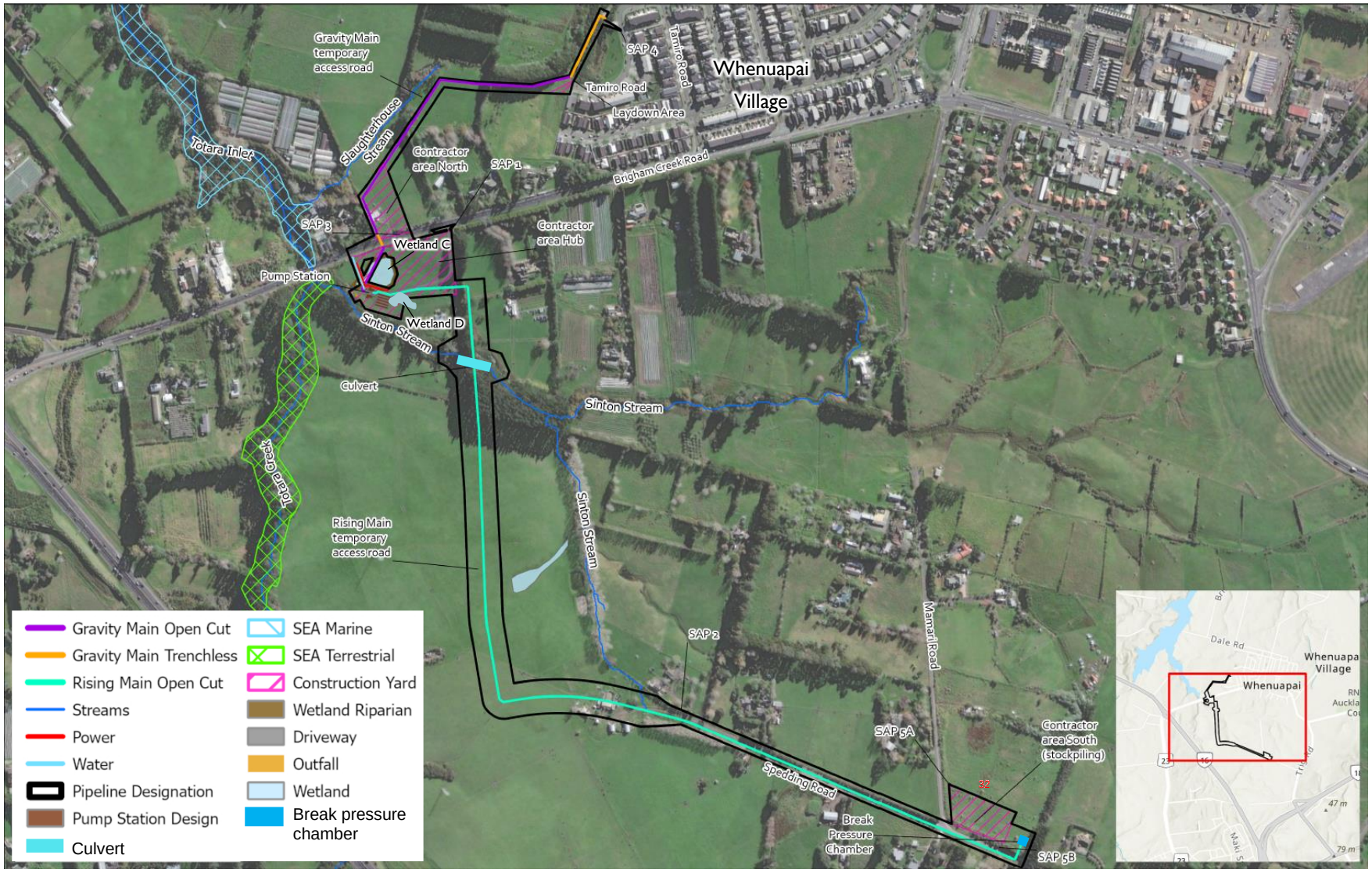

Figure 1. The Project – Location and Project overview

2 Existing environment

This section provides an overview of the existing environment, including the location and surrounding land use and, AUP: OP zoning and notations.

2.1 Location and surrounding land uses

Figure 1 above shows the location of the proposed works in Whenuapai, Auckland.

The following describes the location of the proposed works across the three key work areas, including the Gravity Main Project Area, the Pump Station Project Area, and the Rising Main, Culvert and Break Pressure Chamber Project Area.

2.1.1 Gravity Main Project Area

The gravity main works will be located at Roundel Crescent, Tamiro Road, and from 28 to 20 Brigham Creek Road, in Whenuapai, Auckland (refer to Table 1 and Figure 2). Records of Title for the sites are provided in Appendix C.

Table 1. Property information for the gravity main project area

Property Address	Legal Description	Area (ha)	Owner
Roundel Crescent (existing pump station)	LOT 809 DP 492005	.09	Watercare
Tamiro Road (stormwater embankment)	LOT 812 DP 508816	1.0	Auckland Council
28 Brigham Creek Road	LOT 3 DP 51941	4.0	Natural Harmony Company Ltd
26 Brigham Creek Road	LOT 2 DP 51941	4.6	24 Brigham Creek Road
20-22 Brigham Creek Road	LOT 1 DP 51941	5.3	N. Apsell
Brigham Creek Road	N/A – road reserve	N/A	Auckland Transport
23-27 Brigham Creek Road	SECT 2 SO 569103	4.6	Brigham Land Limited Partnership (Oyster Capital)

Sensitivity: General

Figure 2. Gravity main project area (designation extent outlined in black) (Source: Designation drawing GIS-4219201-1, Appendix B)

The eastern section of the gravity main project area includes the existing pump station at Tamiro Road, which is owned by Watercare. There is an existing vehicle crossing to Tamiro Road, and a stormwater pond embankment which is owned by Auckland Council. The remainder of the gravity main project area is grassed farm paddocks. The western section of the project area at 20-22 Brigham Creek Road contains a farm shed at the south western corner, and has an existing vehicle crossing to Brigham Creek Road along the southern boundary.

Freshwater features within the gravity main project area include Slaughterhouse Stream, a permanent stream which flows in a westerly direction along the northern edge of the project area, and a wetland (Wetland C) which is located at 23-27 Brigham Creek Road (refer to Figure 2, Figure 3 and Figure 5). Vegetation includes native landscape planting on the stormwater pond embankment, exotic trees located along the riparian margin of Slaughterhouse Stream, and shelterbelts along property boundaries.

The area to the east of the gravity main project area comprises the residential town of Whenuapai Village, whilst land use to the north, west and south is predominantly rural, including agricultural and horticultural uses. In addition, Brigham Creek Road, an arterial road which carries an average of 12,000 vehicles per day, runs through the project area in an east to west direction. Brigham Creek Road currently has a speed limit of 80 km per hour. Auckland Transport is proposing to lower the speed limit to 60 km per hour, which if approved, will be implemented in November / December 2022.

2.1.2 Pump Station Project Area

The pump station works will be located at 23A Brigham Creek Road, Whenuapai (refer to Table 2 and Figure 3).

The portion of the site to be used for the permanent pump station is owned by Watercare, whilst the remainder of the site is owned by Oyster Capital. The site is a farm paddock, which contains a vacant dwelling and ancillary buildings on the eastern boundary of the site. An existing vehicle access to Brigham Creek Road is located in the north eastern corner of the site.

Records of Title for the sites are provided in Appendix C. As the survey of the pump station location by Watercare has been recently completed, this is not yet reflected in the Record of Title.

Table 2. Property information for the pump station project area

Property Address	Legal Description	Area (ha)	Owner
23-27 Brigham Creek Road	SECT 2 SO 569103	4.6	Brigham Land Limited Partnership (Oyster Capital)
23A Brigham Creek Road	SECT 1 SO 569103	0.1	Watercare

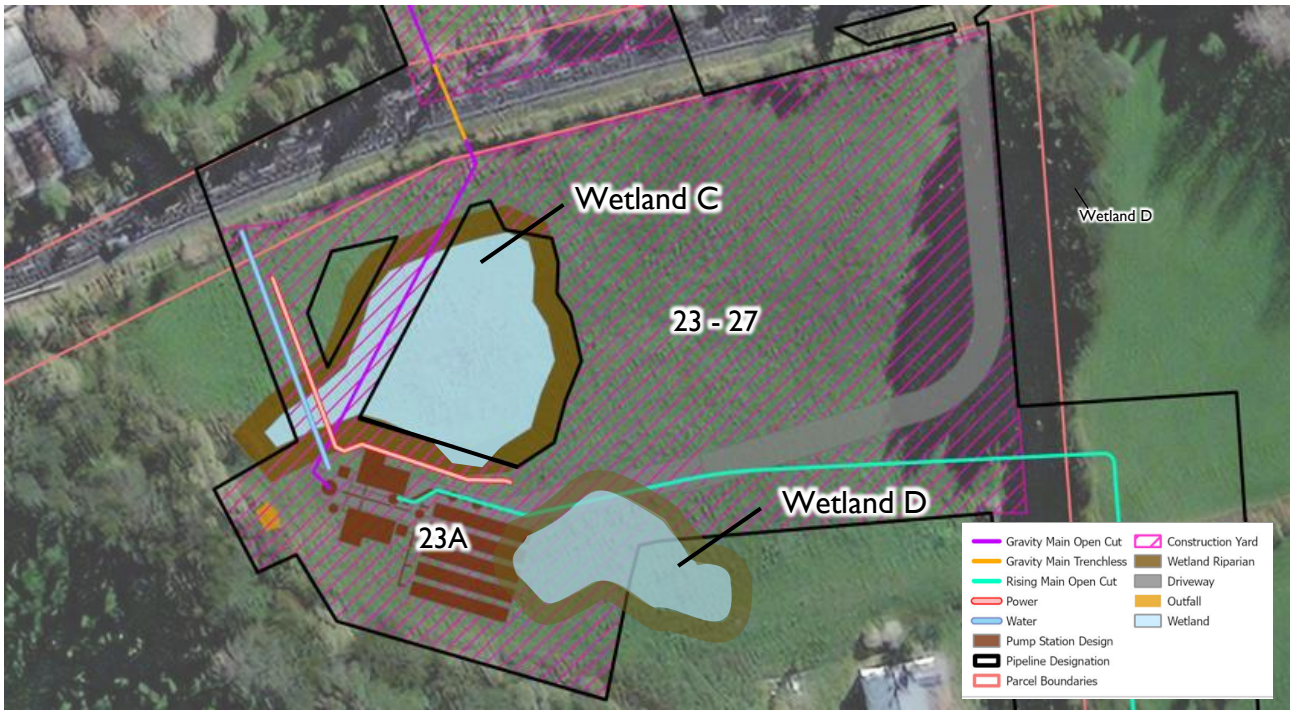

Figure 3. Pump Station area (designation boundary outlined in black) (Source: Designation drawing GIS-4219201-2, Appendix B)

Freshwater features within the Pump Station Project Area include Sinton Stream, a permanent stream which flows in a north west direction, Wetland C, and Wetland D (refer to Figure 3 and Figure 5). Vegetation surrounding the pump station site includes exotic trees planted along the eastern property boundary as a shelterbelt, and native and exotic trees (including a significant number of pest plants), lining the riparian margin of Sinton Stream.

2.1.3 Rising Main, Culvert, and Break Pressure Chamber Project Area

The rising main, culvert, and break pressure chamber works will be located at 23 to 31 Brigham Creek Road, 15 to 19 Spedding Road, the Spedding Road road reserve, and 32 Mamari Road, in Whenuapai, Auckland (refer to Table 3 and Figure 4). Records of Title for the sites are provided in Appendix C.

Table 3. Property information for the rising main project area

Property Address	Legal Description	Area (ha)	Owner
23-27 Brigham Creek Road	SECT 2 SO 569103	4.6	Brigham Land Limited Partnership (Oyster Capital)

Sensitivity: General

Property Address	Legal Description	Area (ha)	Owner
31 Brigham Creek Road	LOT 14 DP 53740	4.0	Private owner
15-19 Spedding Road	PT LOT 4 DP 24410, LOT 1 DP 24410, PT LOT 5 DP 24410	29	Clover Farms Whenuapai
Spedding Road	N/A – road reserve	N/A	Auckland Transport
32 Mamari Road	SECT 2 SO 582220	4.0	Private owner (partially leased by Watercare)
8 Spedding Road	SECT 1 SO 582220	0.15	Watercare

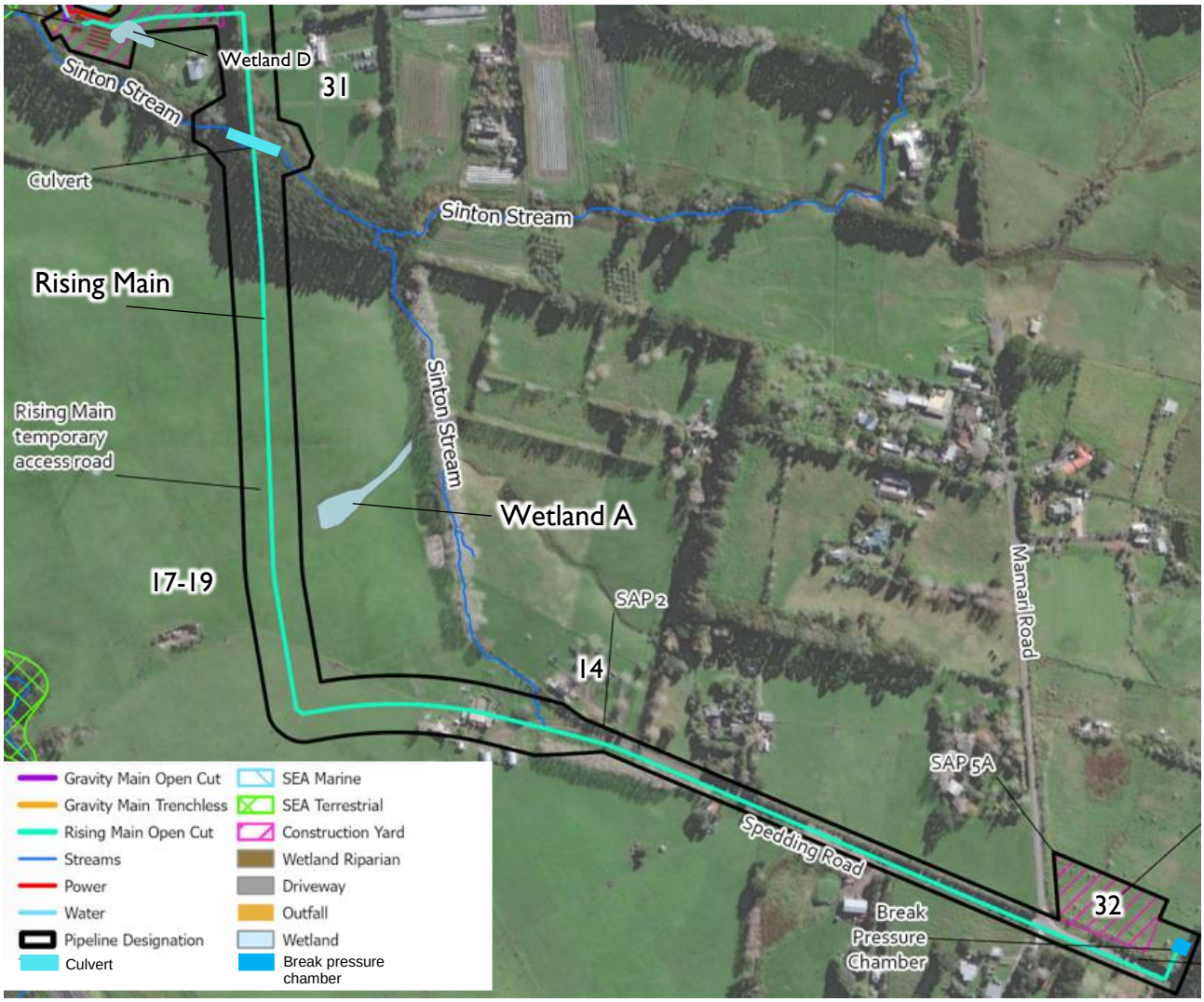

Figure 4. Rising main, culvert and break pressure chamber area

The northern end of the rising main project area, including 23 to 31 Brigham Creek Road, and 15-19 Spedding Road, is grassed farm paddocks. The central section of the project area is the Spedding Road road reserve which begins at the southern boundary of 15-19 Spedding Road and extends to the southern end of the project area at 32 Mamari Road. The road is unsealed for the majority of the project area but is

sealed from 32 Mamari Road (where the project terminates), to the subsequent intersection with Trig Road. The break pressure chamber will be located at 32 Mamari Road, a farm paddock.

Freshwater features in proximity to these components include Wetland C to the north and Wetland A 60m to the east of the rising main alignment. Vegetation in the rising main project area includes a crop of approximately 130 pine trees surrounding Sinton Stream at 31 Brigham Creek Road. In addition, several native and exotic trees line the Spedding Road road reserve and private property boundaries.

Landuse surrounding this Project Area is primarily rural, and used for agricultural, horticultural, and residential purposes.

2.2 AUP:OP zones and overlays

Table 4 and Figure 5 provide an overview of the relevant zoning, overlays, controls and across the project area.

Table 4. Relevant AUP zoning and overlays across the project area.

Location	Zone	Overlays, controls, designations
Roundel Crescent (existing pump station)	• Residential – Mixed Housing Urban Zone	• Nil
Tamiro Road (stormwater embankment)	• Open Space - Informal Recreation Zone	• Overland Flow path • 1% AEP Flood plain
28 Brigham Creek Road	• Future Urban Zone	• Stream • Overland Flow path • 1% AEP Flood plain
26 Brigham Creek Road		
20-22 Brigham Creek Road	• Future Urban Zone	• Stream • Overland Flow path • 1% AEP Flood plain • Notice of Requirements, Brigham Creek Road Upgrade - Auckland Transport • Notice of Requirements, Alternative State Highway – Waka Kotahi
Brigham Creek Road	• Road reserve	• Arterial Road Control • Notice of Requirements, Brigham Creek Road Upgrade - Auckland Transport • Notice of Requirements, Alternative State Highway – Waka Kotahi
23A Brigham Creek Road	• Future Urban Zone	• Nil
23-27 Brigham Creek Road	• Future Urban Zone • Business – Light Industry Zone	• Stream • Overland Flow path • 1% AEP Flood plain • Notice of Requirements, Brigham Creek Road Upgrade - Auckland Transport • Notice of Requirements, Alternative State Highway – Waka Kotahi
31 Brigham Creek Road		
15-19 Spedding Road	• Business – Light Industry Zone	• Stream • Overland Flow path • 1% AEP Flood plain

Sensitivity: General

Location	Zone	Overlays, controls, designations
		• Notice of Requirements, Spedding Road Upgrade - Auckland Transport
Spedding Road	• Road reserve	• Overland Flow path • Notice of Requirements, Spedding Road Upgrade - Auckland Transport • Notice of Requirements, Māmari Road Upgrade - Auckland Transport
32 Mamari Road	• Future Urban Zone	• Overland Flow path • Notice of Requirements, Spedding Road Upgrade - Auckland Transport • Notice of Requirements, Māmari Road Upgrade - Auckland Transport

Sensitivity: General

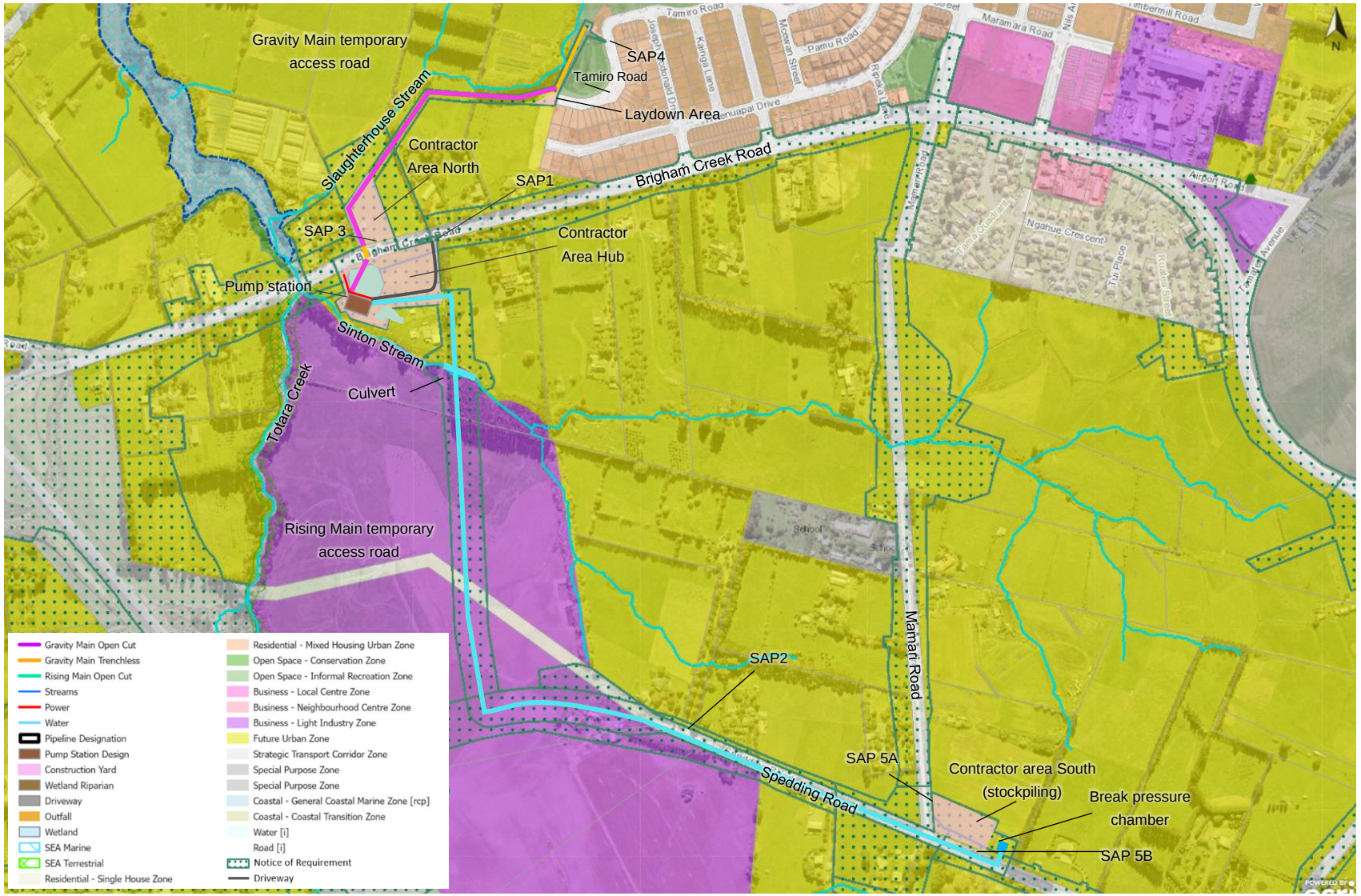

Figure 5. Indicative location of works, including relevant zones, controls and overlays applicable to the site under the AUP:OP (indicative works outlined in red, designation footprint outlined in black) (Source: Auckland Council planning maps)

2.3 Terrestrial Ecology

The Ecological Impact Assessment (EcIA) (Appendix D) provides a description of the terrestrial ecology habitats and species present at the site. These are summarised below.

The main terrestrial habitats across the area are the riparian margins of the streams and wetlands, including the mature exotic trees and common native species in the riparian margins of Slaughterhouse Stream and Sinton Stream, and wetlands A and C (refer to Section 2.1 for further details).

Trees within the Sinton Stream riparian margin, and particularly the pine stand, have the potential to be used intermittently as bat roost trees due to their size. No bat activity is known to be recorded within the Project area at Sinton Stream. However, bat activity has previously been recorded within the Tōtara Creek corridor, approximately 300 m from the Project.

In terms of lizards, neither records or field observations indicate native lizards are present within the site area.

Several common indigenous and exotic native birds species with the conservation status of either ‘introduced and naturalised’ or native ‘not threatened’ have been observed or have recorded observations within the vicinity of the works.

2.4 Landscape and visual characteristics

A Landscape and Visual Assessment has been prepared for the Project and is provided in Appendix E. This provides a description of the main landscape characteristics of the site, which is summarised below.

The predominant landscape attributes and values within the works areas include open pasture fields, with established exotic shelterbelts lining some property boundaries. Additional features contributing to landscape values include the two streams, with natural channel beds and riparian margins lined with predominantly exotic vegetation, the two wetlands which are highly modified and degraded, and the pine forest located either side of Sinton Stream.

The project area has moderate natural character value, with project area landform including gently rolling terrain which reduces in elevation towards the relatively intact streams and the Totara Inlet, and a natural depression where a wetland has formed at the pump station site. The values of the waterbodies within the project area range from very low to moderate-low as the streams are modified by existing culverts, the riparian margins of the streams have exotic or invasive species and/or are limited, and the wetlands have limited habitat and prominent exotic vegetation.

2.5 Underlying geology

A Geotechnical Interpretive Report has been undertaken for the project (refer Appendix F), which describes the underlying geology of the project area.

The gravity main and pump station are underlain by the Tauranga Group Alluvium and Tauranga Group Puketoka Formation, whilst the rising main is underlain by the Tauranga Group Puketoka Formation only. The Tauranga Group deposits were found to comprise predominantly silts and clays with varying amounts of sand. The basement geology for the area is East Coast Bays Formation (ECBF), which is described as alternating sandstone and mudstone deposits. Within the ECBF, layers of Albany Conglomerate have been identified, which are described as being a completely to highly weathered sandstone or conglomerate.

The depth at which the ECBF rock is found varies across the pump station site. Around the immediate vicinity of the pump station and wet wells, ECBF rock is encountered at approximately -3.5 metres Reduced Level (mRL) whilst at the north of the pump station and wet wells, ECBF rock is not encountered until approximately -9 mRL.

Peat layers are also identified to be present within soils at some locations, including deposits at the same depth as works underneath Brigham Creek Road, and underneath the stormwater pond embankment.

2.6 Contamination

A Detailed Site Investigation (DSI) has been prepared for the Project and is provided in Appendix G. The DSI includes the historic land use and potential for contamination in the area.

The DSI concludes it is 'more likely than not' that Hazardous Activities and Industries List (HAIL) activities occurred along the proposed alignment at six sites. The HAIL activities are associated with commercial/industrial wastewater treatment and disposal, storage and use of hazardous goods, and horticulture. Soil sampling results from these sites indicate that heavy metals (trace elements) are below the adopted National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (Resource Management Regulations 2011 (NES CS) health criteria and within naturally occurring background levels for volcanic and non-volcanic soils. Organic compounds were also found to be below the laboratory detection limit. Groundwater sampling results from the HAIL sites indicate the concentrations of dissolved heavy metals are below the laboratory detection limit and the adopted ANZECC5 80% and 95% freshwater criteria, and organic compounds are below the laboratory detection limit.

Soil sampling results from other (non-HAIL) sites along the alignment indicate that heavy metals at these locations are also within naturally occurring background levels for volcanic and non-volcanic soils and are below the adopted NES CS health criteria. Low concentrations of hydrocarbons and asbestos fibres were detected in shallow soils along the alignment. However, the concentrations of hydrocarbons were below permitted activity levels and are commensurate with concentrations identified in soils within road carriageways, whilst asbestos fibres were at levels below the adopted health criteria under BRANZ guidelines. Sampling results from groundwater at non-HAIL sites reported dissolved heavy metal concentrations below ANZECC 80% limits with the exception of three locations, including the samples taken at the pine stand at 15-19 Spedding Road, and the trenchless construction launch sites at 28 Brigham Creek Road and 23-27 Brigham Creek Road. At these locations concentrations of copper, nickel, and zinc in groundwater were reported above the adopted ANZECC 80% and 95% screening criteria for the protection of freshwater species.

2.7 Future environment

Oyster Capital Ltd has sought consent to extend the existing Spedding Road to meet Brigham Road between 23-27 and 31 Brigham Creek Road.

It is currently uncertain whether any Oyster Capital works will precede the works planned as part of this project. Therefore, project components have been designed to be constructed in either the existing or planned future environment. The effects of the project have been assessed against the existing environment.

Sensitivity: General

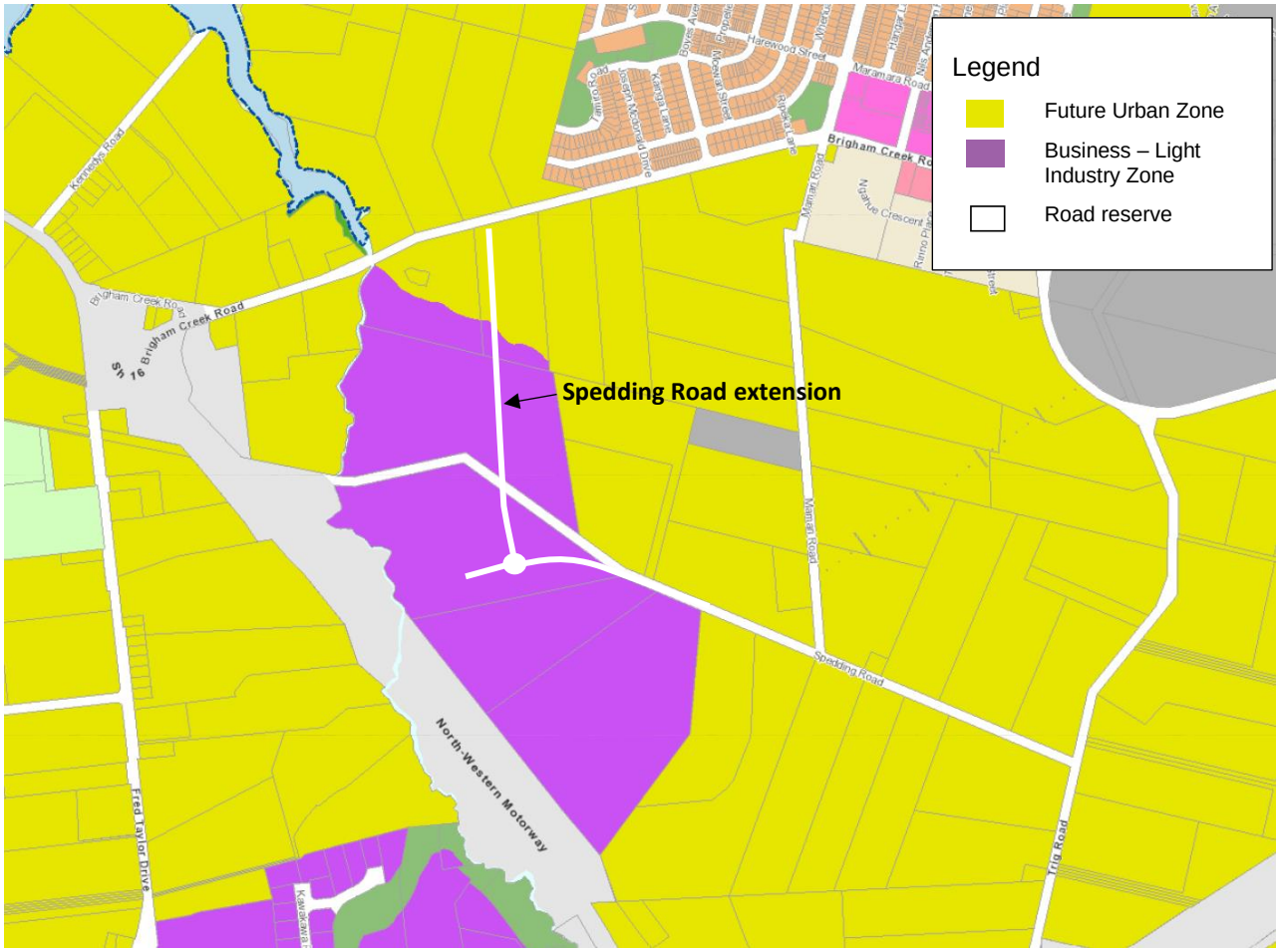

Figure 6. Oyster Capital Ltd Private Plan Change proposed zoning (private plan change area outlined in red).

3 Description of the Project

The following sections provide an outline of the proposed physical works and an indicative construction methodology for the Project. Design drawings are provided in Appendix A, and the indicative Erosion and Sediment Control Plan is provided in Appendix H.

3.1 Need for the Project and Project Objectives

As described in Section 1, the Project is part of a wider programme of work referred to as the Whenuapai-Redhills Wastewater Servicing Scheme (the Scheme), and is required to deliver the necessary wastewater infrastructure network in Whenuapai (and nearby Redhills) to respond to the significant growth anticipated over the next 20 years.

The Project is the first part of the Scheme (Package 1) which will be delivered in stages to respond to growth and necessity as demand increases across the area. The additional wastewater infrastructure will enable the development potential of the land in the wider area to be unlocked.

The following Project Objectives have been developed for the Project (discussed further in Section 5 and the alternatives assessment in Appendix I).

1. To provide additional capacity in the wastewater network for growth and development of the Whenuapai-Redhills catchment in a manner that:
    a. Protects public health;
    b. Optimises investment decisions, including being efficient, effective and financially responsible;
    c. Minimises private property development disruption
    d. Coordinates with existing and known planned development; and
    e. Integrates with the existing Watercare wastewater network.
2. To provide statutory protection for Package 1 of the Whenuapai-Redhills Wastewater Servicing Scheme to enable its construction, operation, and maintenance.

3.2 Physical works

The main components of the Project are:

1. A **Gravity Main Pipeline** (approximately 700m long and 375 – 475 mm in diameter) between the existing Whenuapai Village Pump Station on Tamiro Road and the Pump Station
2. A **Pump Station** at a point where the Whenuapai and Redhills Catchments meet at 23A Brigham Creek Road, with an emergency overflow outfall to the Sinton Stream.
3. A **Rising Main** (approximately 1.5km long and 500 mm in diameter) between the Pump Station and a proposed new break pressure chamber on Mamari Road.
4. A **Culvert** (approximately 63 m long including wing wall and rip rap) to provide access for the rising main across Sinton Stream.
5. A **Break Pressure Chamber** located on corner of Mamari and Spedding Roads.

More detail on each component is included below.

Sensitivity: General

3.2.1 Gravity main

The existing Whenuapai Village pump station on Tamiro Road will be decommissioned and flows from the Whenuapai Village catchment will be diverted to the new pump station (described below in Section 3.2.2) via a new gravity main (see Figure 7). The alignment of the new gravity main follows along the edge of the Slaughterhouse Stream floodplain then turns south, crossing underneath Brigham Creek Road and through Wetland C to connect to the proposed pump station.

The gravity main comprises:

- A new gravity main approximately 740 m in length from the Tamiro pump station to the proposed pump station at 23A Brigham Creek Road. The pipe will be 375mm nominal diameter between Tamiro Road and Brigham Creek Road, then 475mm nominal diameter from Brigham Creek Road to the pump station.
- Eleven new manholes will be located along the gravity main. In addition, the existing stormwater manhole adjacent to the Tamiro pump station with a larger manhole.

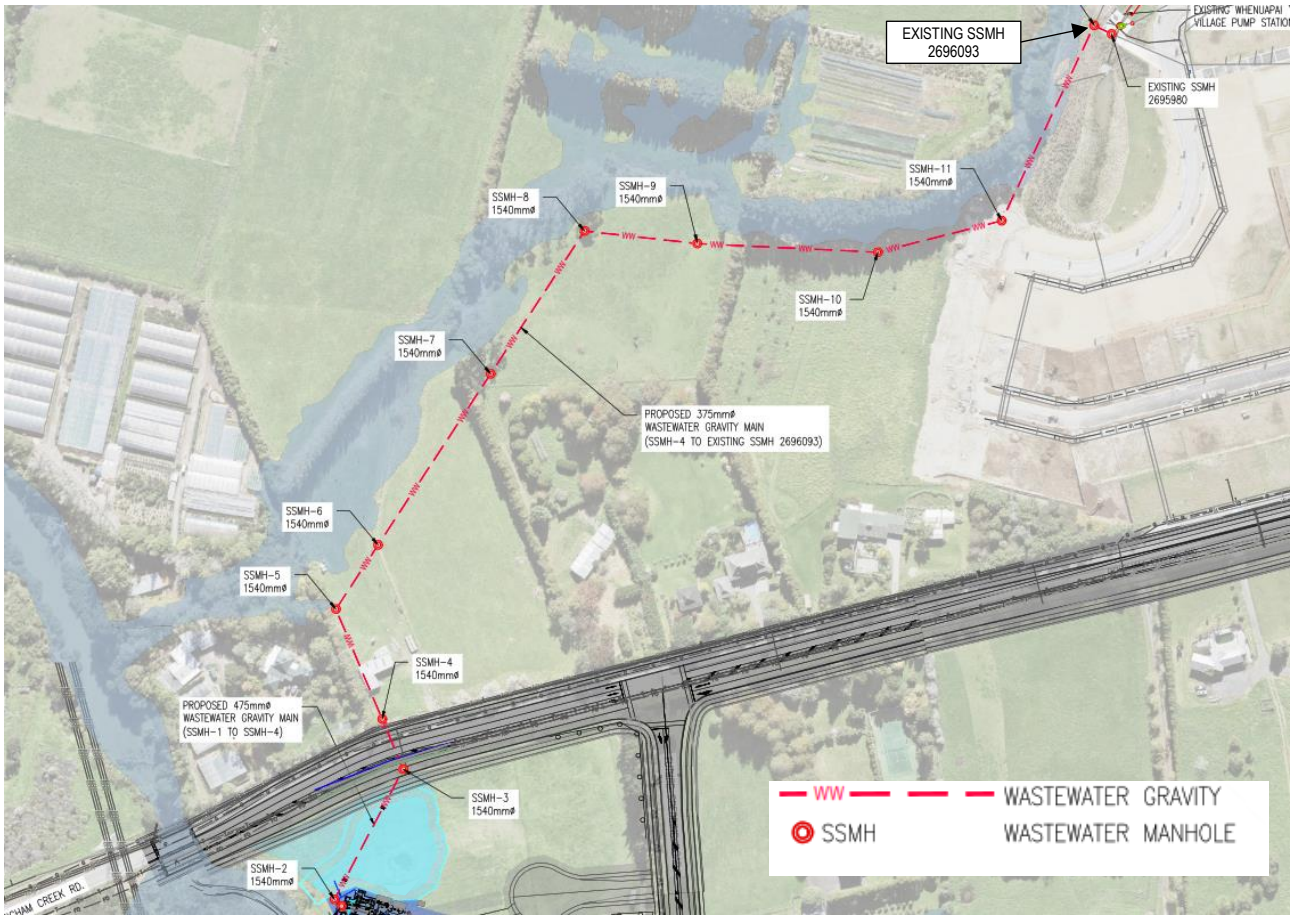

Figure 7. Gravity main works (snip from Drawing R0017910.004, WSP GHD, provided in Appendix A)

3.2.2 Pump station

A new pump station will be constructed at the 23A Brigham Creek Road property owned by Watercare (refer to Figure 8). The pump station will have a total capacity of 320L/s, and be predominantly located underground.

The pump station will comprise:

- A below ground structure approximately 25 m wide and 15 m long, which will have a below ground wet well structure to a depth of approximately 9.5 m bgl, and a storage tank structure to a depth of approximately 6 m.

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- An emergency outfall structure discharging to Sinton Stream, including a wingwall, and 3 m of rip rap (see Figure 9)
- An approximately 10 m long pipe (500 mm diameter) between the pump station and the outfall
- An approximately 40 m long section of gravity main (diameter to be confirmed), which will connect into a future Oyster Capital pipeline.
- Potable water pipes and power supply from Brigham Creek Road, to service the new pump station.
- Ancillary above ground structures, including a paved turning area, an electrical cabinet / container, an approximately 3.5 m high gantry, a flow meter chamber, and 2 x green dome carbon filters.
- A 7 m wide vehicle crossing between 23-27 Brigham Creek Road, and Brigham Creek Road.
- A 6 m wide permanent access road between the existing Brigham Creek Road vehicle crossing and the pump station to provide operational access to the pump station.

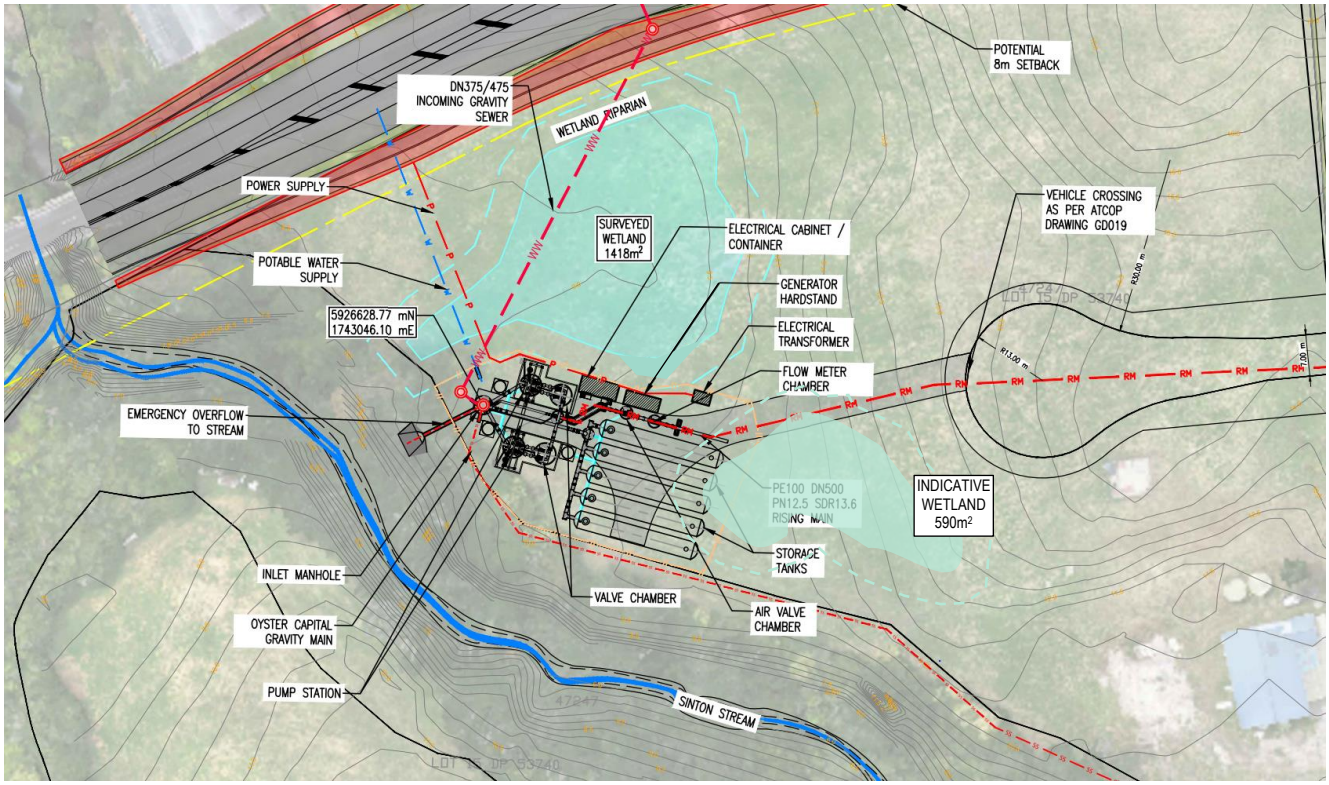

Figure 8. Pump station works (snip from Drawing 2013646.004, WSP GHD, provided in Appendix A)

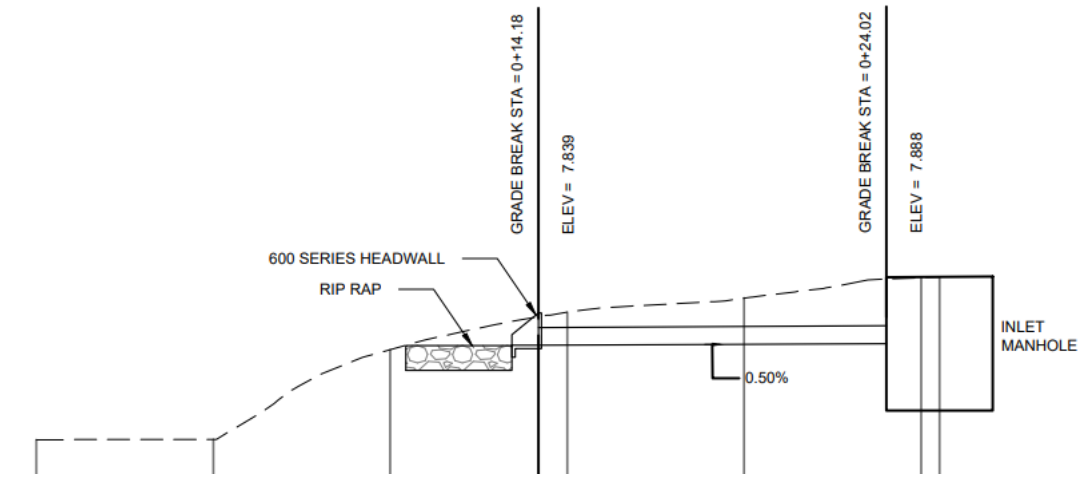

Figure 9. Emergency outfall structure discharging to Sinton Stream (snip from Drawing 2013646.012, WSP GHD, provided in Appendix A)

Following completion of the works at the pump station, the site will be landscaped in accordance with a finalised landscape plan (preliminary landscape plan shown in Figure 10 and provided in Appendix A).

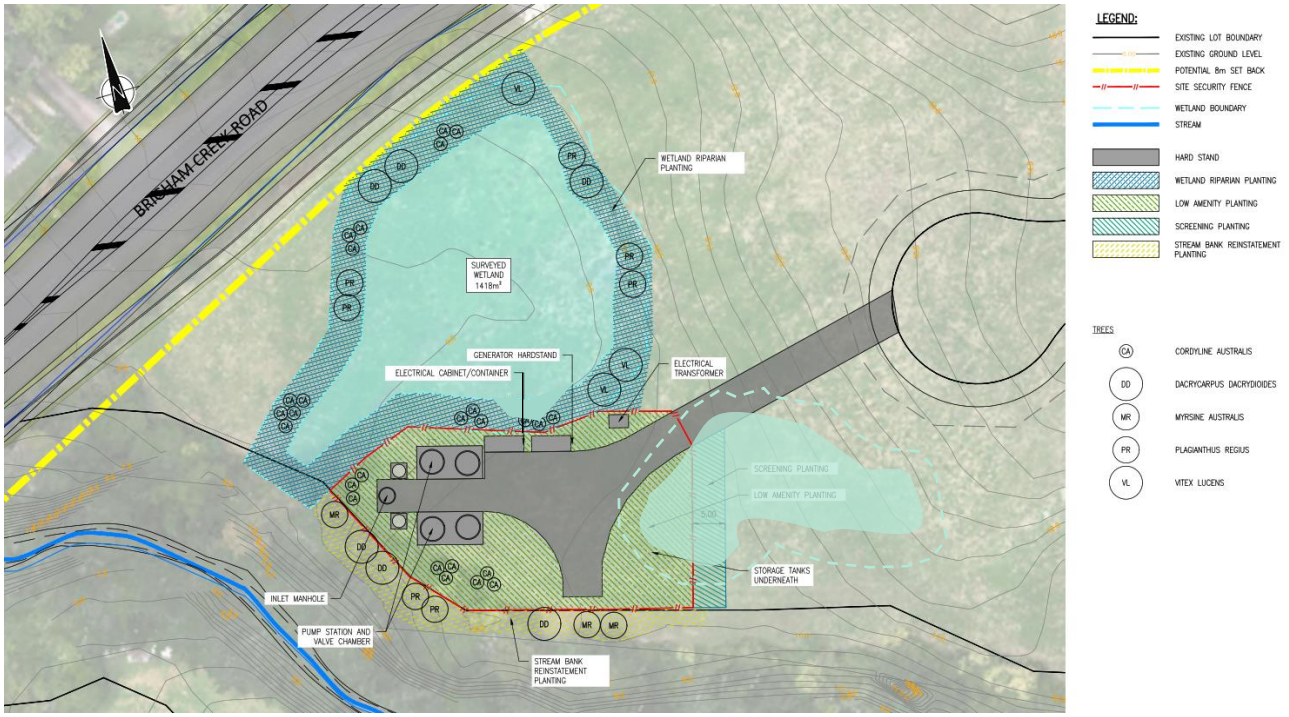

Figure 10. Pump station preliminary landscape plan (Source: Drawing 2013646.001, WSP GHD, provided in Appendix A)

3.2.3 Rising main

From the pump station, the new rising main will run east, then turn south at 31 Brigham Creek Road to follow the future Spedding Road extension corridor through the Whenuapai Development, proposed by Oyster Capital (refer to Figure 1). It is assumed that the pipeline will be constructed prior to the road being constructed. At the southern end of 31 Brigham Road, the rising main will cross Sinton Creek via a culvert, which will be constructed as part of the works (if not already constructed by Oyster Capital) (refer to Figure 11). The rising main will then run through 15-19 Spedding Road farmland to meet the existing Spedding Road, and follow the existing Spedding Road to the location of the break pressure chamber, which will be installed at 32 Mamari Road.

Sensitivity: General

The rising main works will include:

- A 560 mm nominal diameter pipe approximately 1.5 km in length, from the proposed pump station at 23A Brigham Creek Road to the proposed Break Pressure Chamber at 32 Mamari Road.
- Two air valves (approximately 1.2 m in height and 660 mm wide) and two underground scour valves along the pipeline alignment.
- A new culvert (an approximately 43 m long x 3.5 m high x 3.5 m wide box culvert), with a 5 m long wing wall and 5 m of rip rap either side of the culvert[6].
  - The culvert will have a low flow channel, and the invert will be placed so that 0.9 m / 25% of the height is below the level of the stream bed.
  - Gabion baskets will be placed above the wing walls to retain the embankment.
  - A maximum of 3m fill is required upon the culvert to obtain the design level of the future Spedding Road extension, with 3:1 batter slopes each side of the road alignment sloping down to the Stream.
- Removal of the existing culvert from within Sinton Stream.

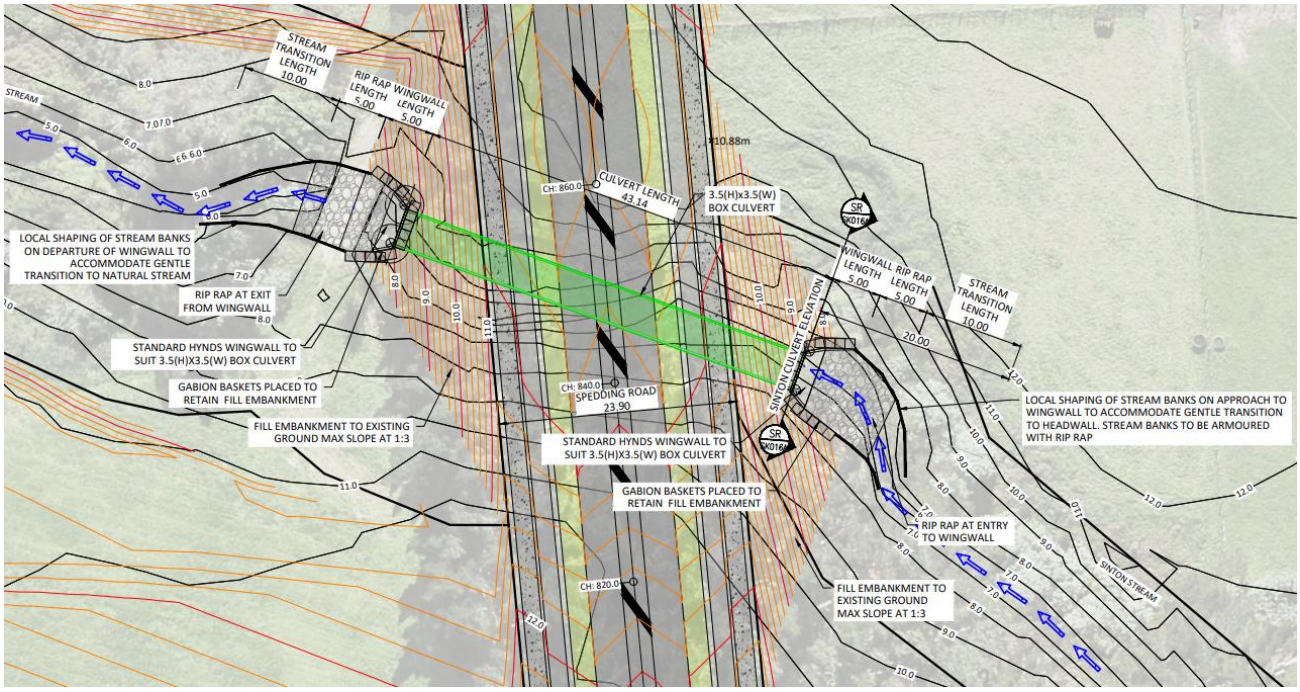

Figure 11. Sinton Stream Culvert (snip from Drawing SK016, Crang Civil Consulting Engineers, provided in Appendix A)

3.2.4 Break Pressure Chamber

The rising main will terminate at a break pressure chamber located at 32 Mamari Road (refer to Figure 11 and Figure 12).

The break pressure chamber will include:

- The dimensions of the break pressure chamber, which will be completely underground, are yet to be confirmed, but will be a minimum of 7.5 m in diameter, and 12 m deep.
- A ventilation stack which will be located approximately 10 m away from the break pressure chamber, which will be 200 mm in diameter, and greater than 3 m in height.
- A 4 m wide concrete access road around the perimeter of the break pressure chamber.

[6] Culvert is sized to underlay Spedding Road extension, proposed as part of Oyster Capital Private Plan Change 69.

Sensitivity: General

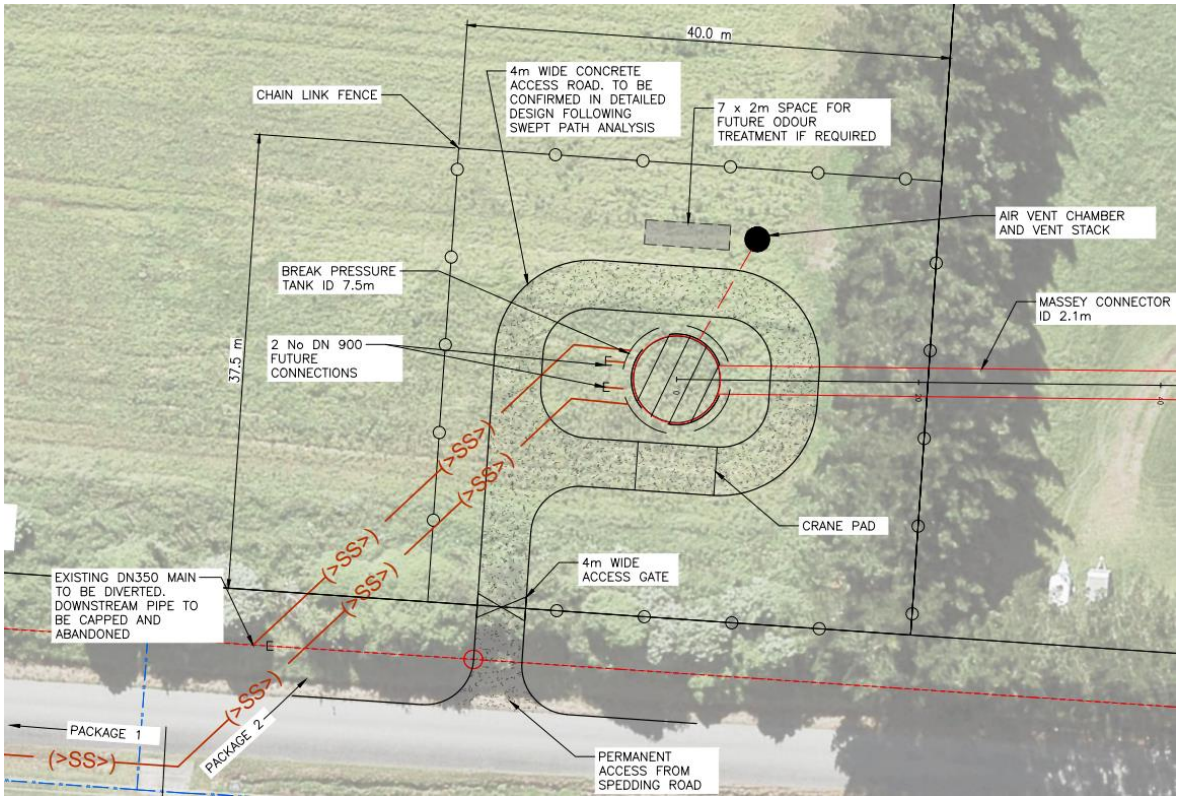

Figure 12. Plan view of the break pressure chamber (snip from Drawing 2013661.800, Mott MacDonald, provided in Appendix A)

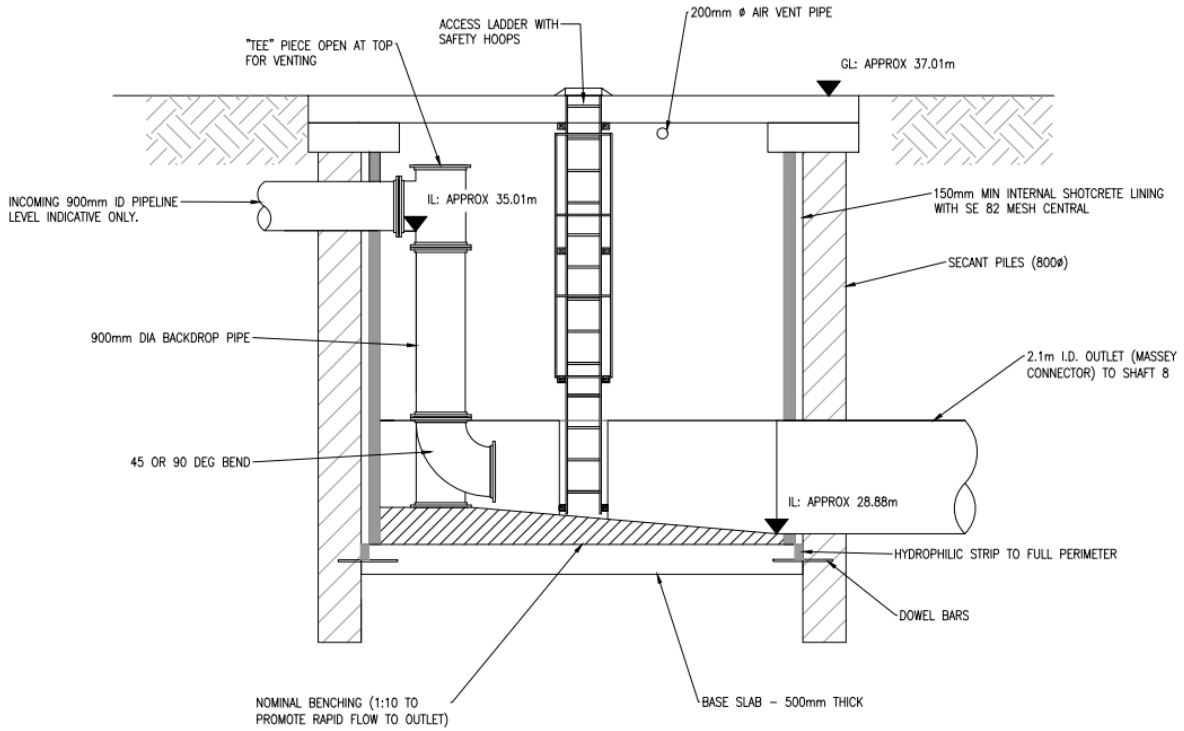

Figure 13. Cross section view of the break pressure chamber (snip from Drawing 2013661.801, Mott MacDonald, provided in Appendix A).

Sensitivity: General

3.3 Operation

3.3.1 Pump Station site access

Permanent site access to the new pump station at 23A Brigham Creek Road will be via the existing vehicle crossing at 23 – 27 Brigham Creek Road, which will be widened to be 7 m to provide access for large vehicles.

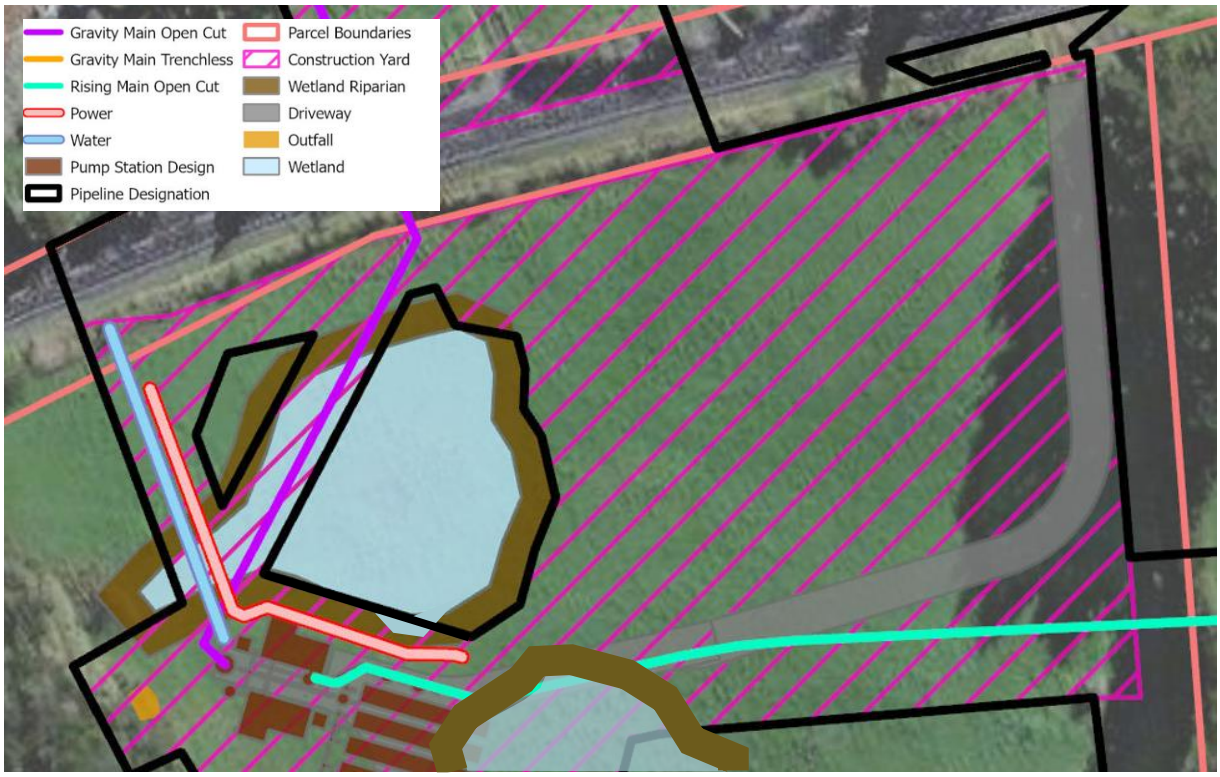

Figure 14. Permanent and temporary access to the pump station (shown in grey)

3.3.2 Pipeline and pump station operation

The proposed gravity pipeline has been sized to match future 100-year flows expected at the existing Whenuapai Village pump station (which will be decommissioned at a future date), and then further upsized by one pipe size to allow for unforeseen future catchments.

The proposed pump station has a total capacity of 320L/s and has been designed with 4 hours (700 m^3) of emergency storage. In the event of an overflow, flows will be discharged into Sinton Stream via the emergency overflow point.

The proposed pump station and rising main have been sized and designed to provide sufficient capacity for 30 years.

3.3.3 Maintenance

It is anticipated that one vehicle (likely a ute) will visit the site each week, with two additional visits per month to attend to alarms and faults. A larger vehicle such as a Hi-ab will visit the site 3 to 4 times per year to undertake maintenance activities.

3.3.4 Odour filters

Two air valves are proposed to be installed at localised high points along the rising main alignment. The provision for future connection for an odour control device is allowed for in the air valve design detail.

Sensitivity: General

4 Construction Methodology

The following sets out the anticipated construction methodology of the proposed works. Whilst this is indicative only, and those implemented on site may differ once a contractor is appointed, the construction methodology is broad enough that any changes to it are not expected to change the outcome of the assessment of effects on the environment set out in Section 5.

4.1 Construction duration

The Project is expected to take approximately 30 months to complete. The key components (the gravity main, pump station, and rising main) will likely be constructed in parallel, with all three work fronts operational from project commencement.

Principal construction hours would be 07:30 to 18:00 hours Monday to Saturday.

4.2 Site establishment

A 6 m wide stabilised access road will be constructed along the entire length of the gravity main and rising main to provide temporary access to the works areas[7]. The access road will be covered with a layer of 400 mm compacted hard fill over a geofabric membrane. The access road will be dis-established once works are complete, with the exception of the section between the vehicle crossing at 23 – 27 Brigham Creek Road to the pump station, which will remain in place to provide ongoing vehicle access to the pump station[8].

One laydown area and three contractor areas will be established to support the works (refer to Table 5):

- Laydown area to support the Tamiro Road Stormwater Embankment trenchless construction works (see Figure 15)
- Contractor Area North to support the gravity main works (see Figure 16)
- Contractor Area Hub to support the pump station works (see Figure 17)
- Contractor Area South to support the rising main works (see Figure 18)

Each contractor area will provide for stockpiling and materials storage area, light vehicle parking, amenities and smoko room, gates, and a gate house. The main project site office will be located within the Contractor Area Hub. The laydown area near Tamiro Road will be used to store equipment, a muck skip and a site container (see Figure 16).

Table 5. Contractor Areas and laydown areas

Area	Address	Area (m^2)	Site access
Contractor Area North	20-22 Brigham Creek Road	5,000	Existing vehicle crossing at 20-22 Brigham Creek Road (widened to 15 m to accommodate vehicle tracking)
Contractor Area Hub	23-27 Brigham Creek Road	10,000	Existing vehicle crossing at 23-27 Brigham Creek Road (widened to accommodate vehicle tracking)
Contractor Area South	32 Mamari Road	5,000	Two new vehicle crossings, including a crossing to Mamari Road (entrance only), and a crossing to Spedding Road (exit only).
Tamiro Road laydown	28 Brigham Creek Road	144	Internal access road

[7] If the Oyster Capital works precede construction, the Spedding Road extension constructed as part of those works will be used as an access road for rising main works.

[8] This will be disestablished if / when a permanent access is constructed as part of the Oyster Capital works.

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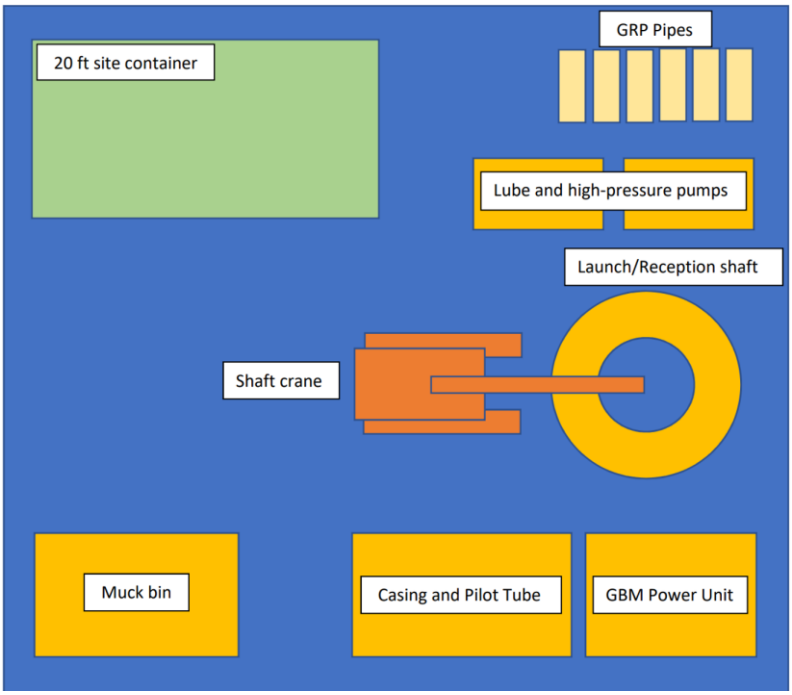

Figure 15. Approximate layout of the Tamiro Road stormwater embankment trenchless construction laydown area

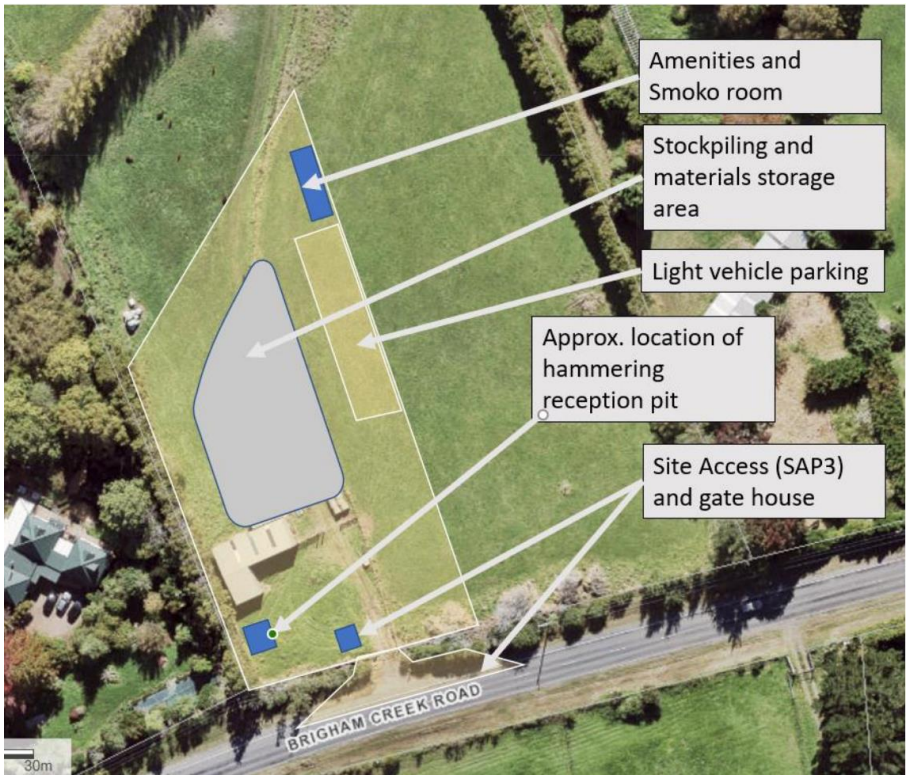

Figure 16. Contractor Area North – Approximate Layout

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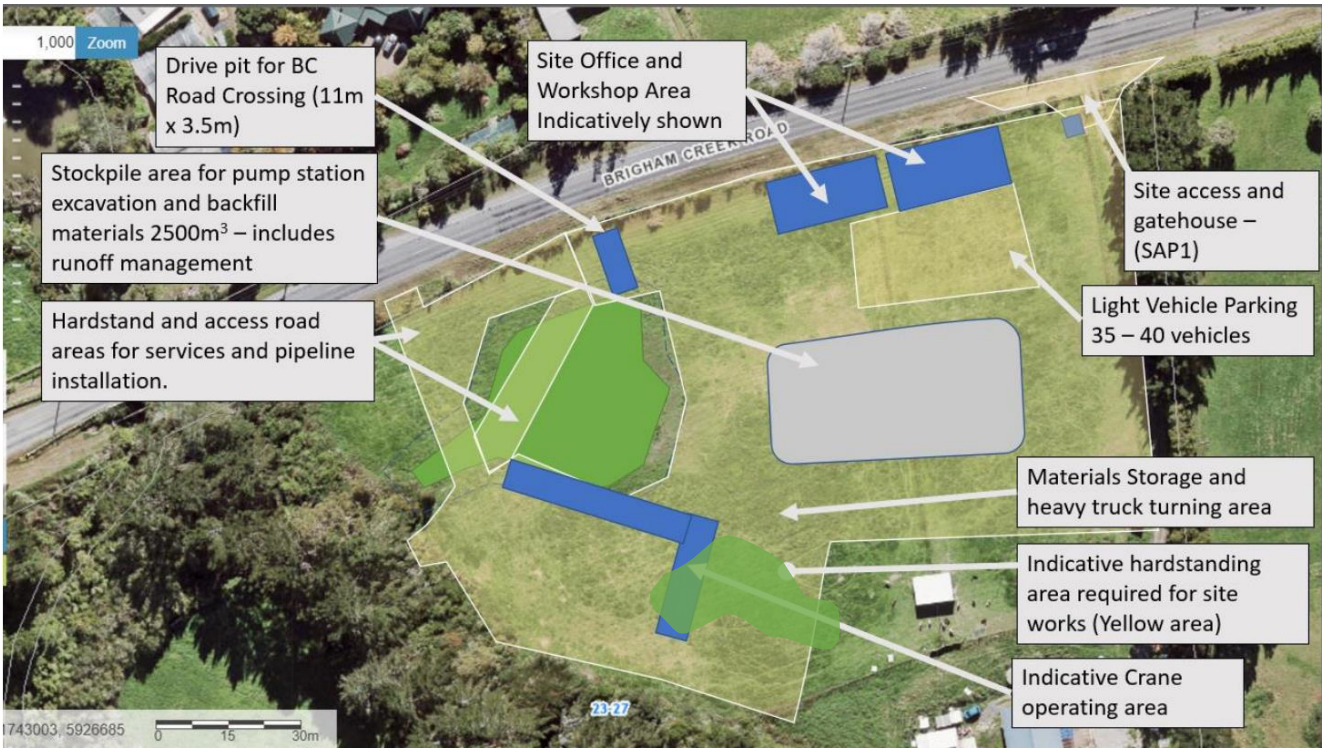

Figure 17. Contractor Area Hub Approximate Layout

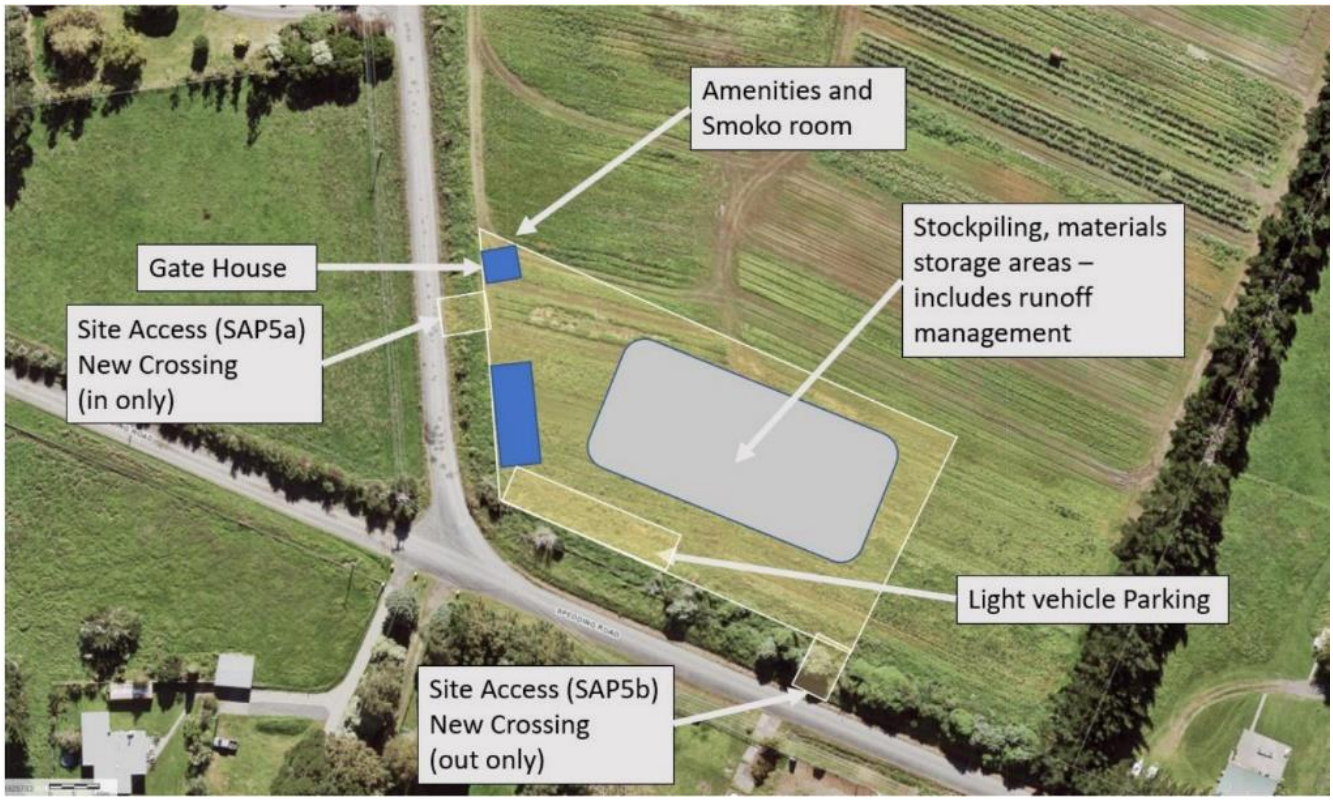

Figure 18. Contractor Area South – Approximate Layout

As part of the site establishment works, erosion and sediment controls will be installed around the extent of the works area in accordance with the Erosion and Sediment Control plan in Appendix H.

Sensitivity: General

4.3 Pump station construction

Construction of the pump station and auxiliary works will take approximately 30 months to complete.

4.3.1 Site establishment

Access will be from Brigham Creek Road, at the existing access point to the north west of the site. The vehicle crossing will be widened to 15 metres to accommodate construction vehicles. The temporary vehicle crossing for construction will become the permanent vehicle crossing for the pump station once works are complete but will be reduced to 7m in width.

Once access and erosion and sediment control measures are established, hardstand areas will constructed which will include:

- Implementing appropriate stormwater runoff treatment, prior to discharge into the environment
- Stripping of topsoil to 400 mm, placement of geofabric and GAP 65 compacted in place.
- Removed topsoil will be stockpiled locally.

4.3.2 Main pump station works

Prior to excavations beginning a temporary sheet pile wall consisting of approximately 5 m long sheet piles will be installed around the southern boundary of the wetland (refer to Figure 19 below). The purpose of the sheet pile wall is to minimise the flow of groundwater from the wetland into the pump station construction area to the extent practicable. The sheet piles will be driven through the existing clay material and into the existing sandstone layer by approximately 0.5 m to 1 m, depending on the existing ground conditions. The sheet piles will be clutched together where possible (noting that this may not be possible in all locations due to the curved shape of the wetland perimeter). A temporary access road will be constructed to the south of the sheet piled wall.

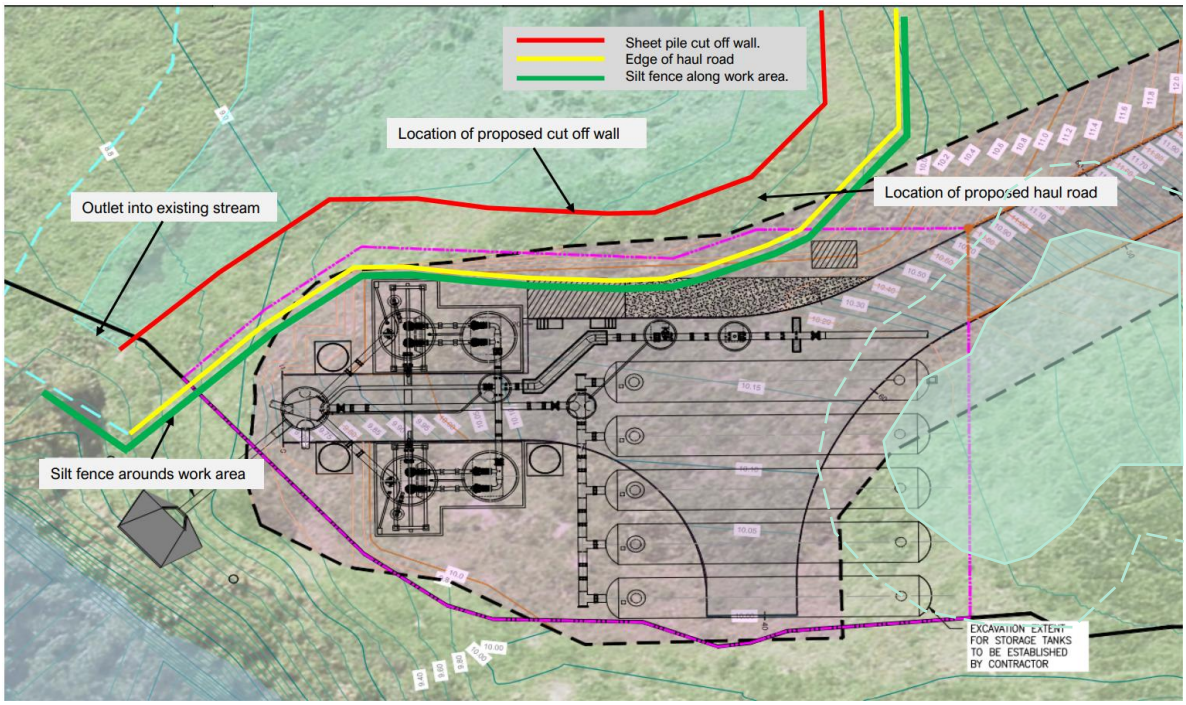

Figure 19. Sheet pile cut off wall.

Prior to excavations beginning, approximately 250 holes will be drilled into the underlying sandstone material over a period of approximately 28 days. This will enable the sandstone material to be more easily removed

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using a standard excavator. The holes will then be progressively backfilled with excavated material to minimise dewatering requirements.

Staged works will then commence to construct the inlet manhole and wet wells and connecting pipes. Excavation works for each component will proceed in two stages, including an outer excavation to a depth of approximately 3.5 m to remove the clay layer above the sandstone, followed by an inner excavation to excavate the sandstone layer to the design depth (including over excavation as required) (refer to Figure 20 and Figure 21 below).

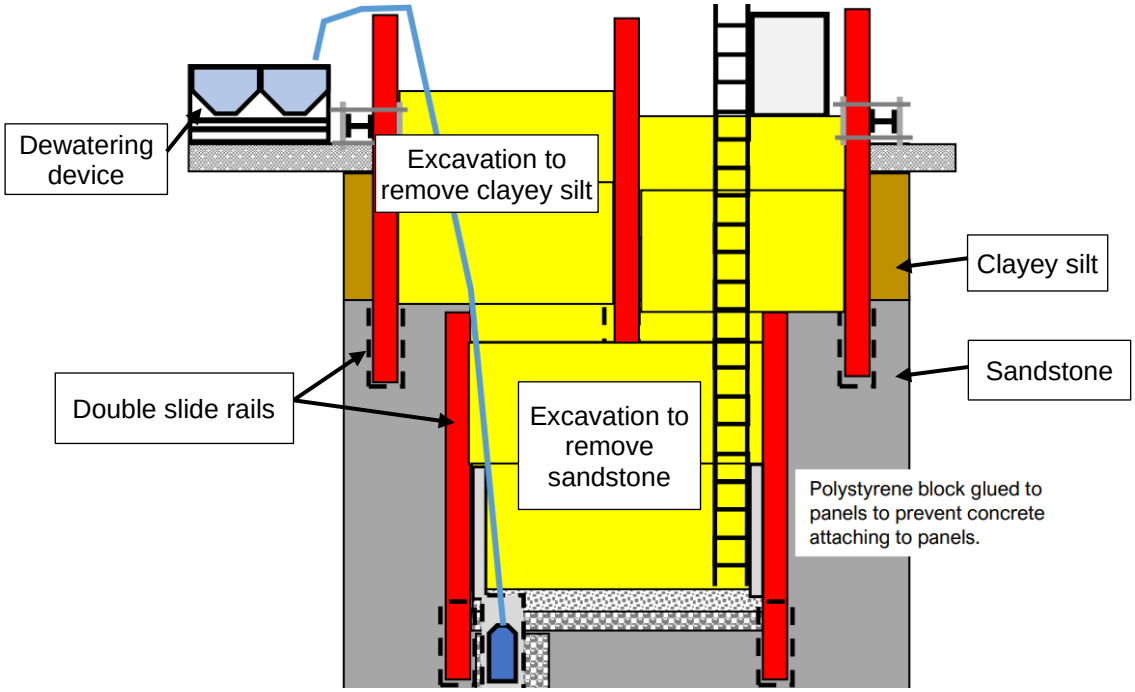

Figure 20. Staged excavations to install pump station inlet manhole and wet well components

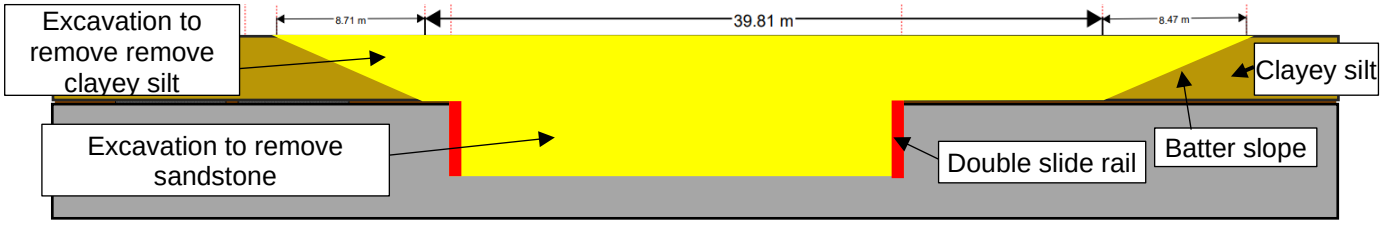

Figure 21. Staged excavations to install pump station storage tanks

For installation of the inlet and wet wells, both the outer and inner excavations will be supported by a dual double slide rail support system as illustrated in Figure 20 and Figure 22. For installation of the storage tanks, the outer excavation area will have a batter slope of generally 2:1, whilst the inner excavation area will be supported by double slide rails, as illustrated in Figure 20. An overall schematic of the earthworks is provided in Figure 23, and the stages of excavations and design depths for each component (with allowance for over excavation as required) are provided in Table 2. Each stage will be opened and excavated, the pump station element will be constructed, then the stage will be partially or fully backfilled prior to opening the next stage.

Sensitivity: General

Figure 22. Example of the double slide rail trench support system (Source: https://www.shorenz.co.nz/Double_Rail_Systems. php)

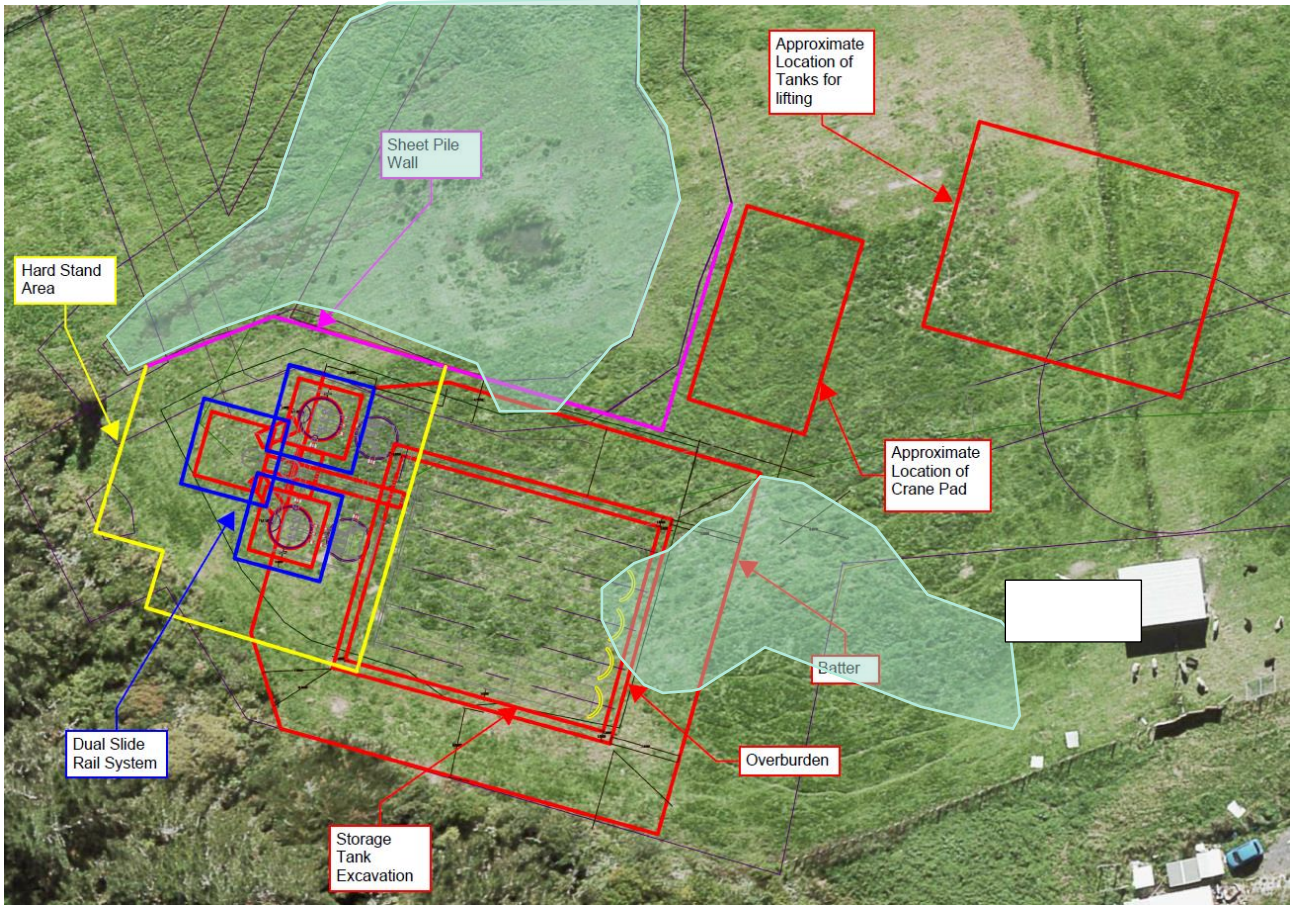

Figure 23. Overall schematic of earthworks

Table 2. Stages of excavation, construction, and backfilling for construction of the Pump Station site

Stage	Description	Days	Approx. Area (m^2)	Approx. Volume (m^3)	Approx. Depth (mbgl)	Comment
1	Drilling holes into sandstone	1-1.5 Months	N/A	N/A	N/A	Drill holes to design depth of each component to help in removal of sandstone material.
2	Inlet manhole	1.5 – 2 months	80	450	7.3	Inlet Manhole is completely backfilled before next excavation is commenced

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Stage	Description	Days	Approx. Area (m^2)	Approx. Volume (m^3)	Approx. Depth (mbgl)	Comment
3	Pump station 1	1 Month	80	500	9.5	PS1 is 100% backfilled before PS2 is commenced
5	Pump station 2	1 Month	80	500	9.5	PS2 is 100% backfilled before Storage Tank excavation is commenced.
6	Bulk excavation	15 days	2,000	5,200	3.5	Batter slopes will be stabilised with grass. Includes crane pad.
7	Storage tanks	119 days	550	2,000	7.2	Excavation for Storage Tanks.
8	Chambers	40 days	150	500	3.5	Individual excavations required for each of the chambers.
9	Backfill bulk excavation	10 days	2000	5,200	3.5	Reinstate to ground level
Total		30 months	3000	14,350	N/A	Total earthworks footprint does not increase, as earthworks area for excavations are within designation boundary.

Excavated material is proposed to be stockpiled locally to the pump station site within the Contractor Area Hub yard stockpiling area. Depending on the competence of the material, some material may be retained on site for backfilling, with the remainder of material carted off site for disposal at a clean fill site.

4.3.3 Power and water supply

Power and water supply will be connected to the pump station and constructed via open trenching. Electric ducting will be installed, and HV cabling installed into the ducts.

4.3.4 Emergency overflow

To enable construction of the emergency overflow outfall from the pump station, Vegetation will first be cleared out to 2 m beyond the footprint of the infrastructure shown on the drawings, including the rip-rap, headwall and pipeline. The outfall would be excavated with foundations and riprap installed, followed by the placement of the precast headwall and casting of an apron slab.

4.3.5 Final works

The construction access for the pump station will be formalised as a new concrete driveway. The kerb, channel, pavement and stormwater drainage works will take approximately 45 days. Once the structural works are completed the sheet piles will be removed and cleaned and excavations backfilled in accordance with the specification in compacted layers.

4.3.6 Completion

Following completion of works, the hardstand areas will be removed and replaced with the native topsoil, which would be stabilised and seeded. Pre-commissioning testing will also occur. Landscaping and planting work will be undertaken and a boundary fence constructed. This will take approximately 65 days.

4.4 Open trenching works

Approximately 2 km of pipe will be installed by conventional open trenching, between Existing SSMH 2695980 and existing SSMH 2696093 at the existing Whenuapai Village pump station (refer Figure 7), 28 Brigham Creek Road and 20-22 Brigham Creek Road, and between 23-27 Brigham Creek Road and 32

Mamari Road (refer to Figure 21). The section between the existing Whenaupai Village pump station and 28 Brigham Creek Road will also be trenched if trenchless construction methods fail (refer to Section 4.5 and Section 4.6 below). In general, the trench will be approximately 1.4 to 6 m wide, and between 2.4 m and 5.5 m deep depending on the location along the alignment, with the pipe laid, jointed and the trench backfilled. The trench will be benched with trench shields or slide rails used for support as required.

Pipes will be welded at the construction yard to a maximum of three pipes per pipe string, then transported to the work area.

Trenched construction will be progressively opened, closed and stabilised in 100 m lengths, where the part of the trench that is open at any given time is no longer than 10 days. Once the pipe has been installed the disturbed area will be backfilled and reinstated to its pre-construction condition.

Figure 24. Example of open trenching using trench shields (Photograph: Tingran Duan, 2 September 2022)

4.5 Pilot boring trenchless construction – Tamiro Road stormwater embankment

The first approximately 100 m of the gravity main beneath the Tamiro Road stormwater embankment will be installed by pilot boring trenchless construction at a depth of approximately 1 m to 1.5 m bgl.

- Manhole 11 will be constructed first and used as the drive shaft. The drive shaft will be 2.5 m in diameter and have a concrete slab base.
- The existing manhole adjacent to the Tamiro Road pumpstation (Manhole 2696093) will be replaced with a new manhole with a minimum diameter of 2 m and used as the reception shaft.
- Wastewater flows from the existing wastewater line will be temporarily diverted around Manhole 2696093 during construction.
- The rig will be installed within the drive shaft, and a series of rods will be pushed through to the reception shaft.
- The lead auger casing will then be attached to the rig and driven through to the reception shaft.
- Muck and drill fluid will be removed from the launch shaft.

The works under the stormwater embankment is expected to take approximately 8 to 10 weeks.

Following completion of the works, the manholes will be installed, and the construction areas will be reinstated.

If trenchless methods fail (due to, for example, an underground obstruction), the pipe will be open trenched using the method described in Section 4.4.

4.6 Pipe hammering trenchless construction – Brigham Creek Road

It is proposed to install approximately 30 m of the gravity main beneath Brigham Creek Road by pipe hammering trenchless construction at a depth of approximately 3 m to 5 m bgl (refer to Figure 22).

Figure 25. Photograph of indicative pipe hammering set up (Source: Brian Perry Civil)

The drive shaft will be located on the northern boundary of 23 - 27 Brigham Creek road at the location of future Manhole 3, and will be approximately 11 m long and 3 m wide (refer to Figure 23). The shaft will be excavated using sheet piles, have a concrete slab base and guide rail bed, with the pipe hammer installed on top of the guide rails.

The reception shaft will be located near the southern boundary of 20 - 22 Brigham Creek Road, at the location of future Manhole 4 (see Figure 21), with trench shields or a manhole box used to support the sides of the pit.

As the hammering progresses, casing pipe sections would be welded into the string as each length is hammered into place. Once the casing is in place the spoil will be removed from the casing pipe, and the sewer pipe installed and grouted into place. Following completion of the works, Manholes 3 and 4 will be installed, and construction areas will be reinstated.

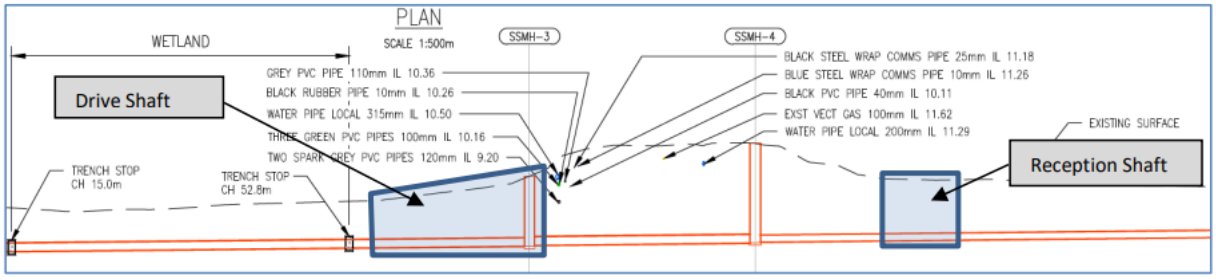

Figure 26. Indicative cross section of pipe hammering drive set up for the Brigham Creek Road works (Source: Brian Perry Civil)

The casing pipe will pass within 800 mm underneath the southern cross international fibre cable. The works have been designed in agreement with Chorus, such that potholing will be undertaken to enable the site team to see if the casing is approach the cable and take remedial action as required.

Construction of the shafts for this section of works is expected to take approximately 30 days, with dewatering required during this time. Pipe hammering is expected to take approximately two weeks.

4.7 Culvert

As set out in Section 3.2.3, a culvert is required to provide access for the rising main across Sinton Stream. To enable installation of the proposed culvert along the rising main alignment, the stream will be temporarily diverted around the works area via an approximately 100 m long sheet piled diversion channel (as shown in Figure 24). The existing culvert will then be removed, and new culvert elements will be installed, including a cast insitu slab, and precast headwalls and box culvert elements. The stream banks will be shaped over a length of approximately 10m both upstream and downstream of the culvert, to accommodate a gentle transition to and from the culvert. Once the culvert is in place, the ground will be reinstated, with gabion baskets placed at the edges of the wingwall to retain the embankment.

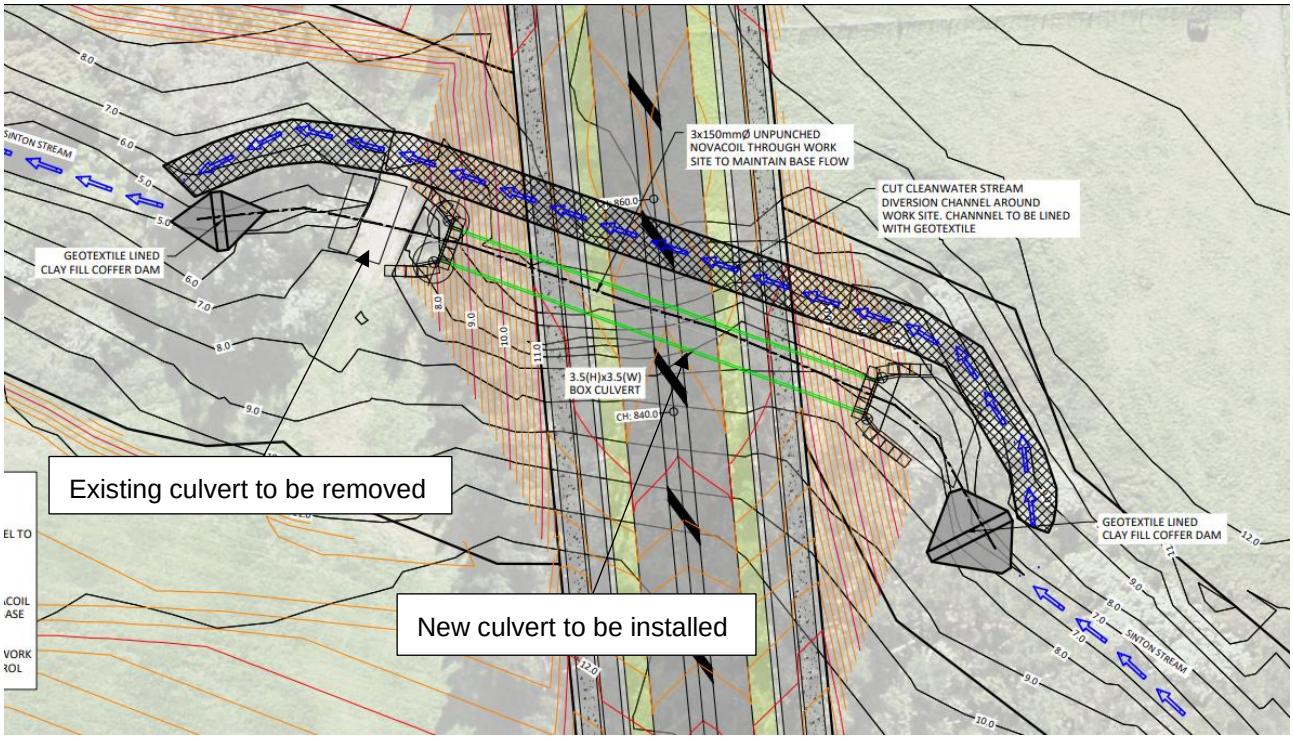

Figure 27. Temporary stream diversion plan for Sinton Stream culvert installation (snip from Drawing No. SK016B, Crang Civil Consulting Engineers, provided in Appendix A).

4.8 Break Pressure Chamber construction

Watercare have an indicative construction methodology for the break pressure chamber as detailed design is yet to be completed. Further details on construction will be provided at Outline Plan of Works stage. At this stage, for the purposes of seeking applicable regional consents, the following information is available:

- The chamber will be excavated using secant piles and have a concrete slab base.
- Once the gravity main is constructed, the break pressure chamber lining will be installed, piping connections completed, and precast lids placed.
- The site will then be reinstated to the existing condition.

Sensitivity: General

4.9 Vegetation alteration and removal

If trenchless construction underneath the Tamiro Road stormwater embankment fails, and open trenching is required, this will require removal of up to 50 protected trees from the Tamiro Road Stormwater Embankment.

A number of other trees which are protected under the Regional Plan, or are not protected are also required to be removed to enable the works.

4.10 Earthworks

Earthworks will be required to establish the laydown areas, complete pump station, gravity main and rising main works, and construct the break pressure chamber. Construction laydown areas will be closed and stabilised prior to other areas on site being opened. The approximate area and volume of earthworks, for each project component, are outlined in Table 7.

Table 7. Earthworks estimates for each construction site.

	Activity	Average depth (m)	Indicative earthworks area (m^2)	Indicative earthworks volume (m^3)
Gravity main	Access Road	1	4,300	1,700
	Construction Area North	1	5,000	2,000
	Tamiro Road stormwater embankment laydown area	1	150	60
	Trenched construction (undertaken progressively in 100 m lengths) (average).	~3	300	900
Pump station	Construction Area Hub (partially located within 50 m of stream and wetland)	1	10,000 (~4,000 m^2 within 50 m of stream / wetland)	4,000
	Pump station (located within the sediment control protection area)	Up to 9.5 m	3,000 m^2	14,350
Rising main	Access Road	1	17,000	10,000
	Construction Area South	1	5,000	2,000
	Trenched construction (undertaken progressively in 100 m lengths) (average).	~3	300	900
	Culvert (located within the sediment control protection area, riparian yard, and on land with a slope >10 degrees)	N/A	4,000	< 2,500
Break Pressure Chamber	Break pressure chamber	TBC	200	< 2,500
Overall approximate earthworks required*		N/A	47,000	38,000

** Works will be staged, with earthwork areas progressively opened and closed as required. Not all areas will be open at any one time.*

Sensitivity: General

5 Assessment of Alternatives

171(1)(b) of the RMA requires a territorial authority (in this case Auckland Council), when making a recommendation on a Notice of Requirement and any submissions received, to have particular regard to whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if either

i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or

ii) it is likely the work will have a significant adverse effect on the environment.

As outlined in Section 2 above, Watercare owns the underlying land for the existing Whenuapai Village pump station on Tamiro Road, proposed pump station at 23A Brigham Creek Road and break pressure chamber at 32 Mamari Road. Watercare also has an agreement in principle with Oyster Capital, and a lease agreement with the owner of 32 Mamari Road, to utilise 23-27 Brigham Creek Road and 32 Mamari Road respectively for construction areas for the duration of the Project works.

Watercare does not have an interest in other parts of the alignment sufficient for undertaking the work, which includes private properties at:

1. 20-22 Brigham Creek Road
2. 26 Brigham Creek Road
3. 28 Brigham Creek Road
4. 31 Brigham Creek Road,
5. 23-27 Brigham Creek Road; and
6. 15-19 Spedding Road

Therefore, a consideration of alternative sites, routes and methods of undertaking the work needs to be undertaken for the Project, as per s171(b) RMA.

This AEE and the specialist technical assessment reports, however, demonstrate that the proposed work will not result in significant adverse effect on the environment. Conditions are proposed to appropriately manage other actual and potential adverse effects on the environment.

The following section summarises the consideration of alternatives for the proposed works. The full Assessment of Alternatives report is in Appendix I.

5.1 Assessment of Alternatives Process Summary

As summary of the assessment of alternatives process for the Project is set out in Figure 25:

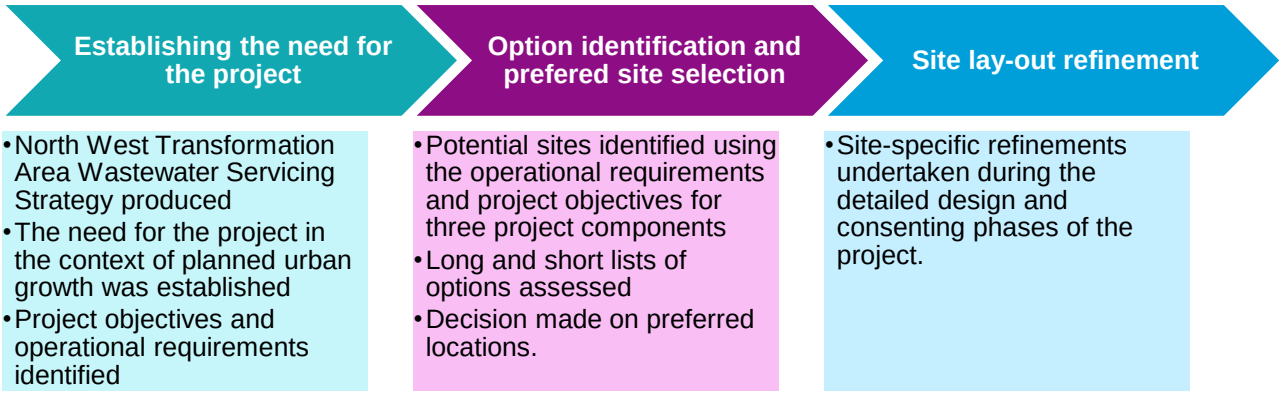

Figure 28. The Project Assessment of Alternatives process

5.2 Project Objectives

The Project Objectives are:

1. To provide additional capacity in the wastewater network for growth and development of the Whenuapai-Redhills catchment in a manner that:
    a. Protects public health;
    b. Optimises investment decisions, including being efficient, effective and financially responsible;
    c. Minimises private property development disruption;
    d. Coordinates with existing and known planned development; and
    e. Integrates with the existing Watercare wastewater network.
2. To provide statutory protection for Package 1 of the Whenuapai-Redhills Wastewater Servicing Scheme to enable its construction, operation, and maintenance.

5.3 Pump station

5.3.1 Site selection

It was fundamental for the decision on the pump station location to be made prior to the location of other connecting pipes and supporting infrastructure. The location needed to enable efficient movement of wastewater between catchments in proximity to Brigham Creek Road.

Watercare identified a long-list of six options for potential alternative sites for the pump station. These were identified from review of the Project Objectives, the overall network strategy, the requirement to locate the pump station at a point of catchment convergence, and topographical requirements for operating a gravity wastewater network. These are shown as Options A, B, C, D, E and F on Figure 26 below.

The ‘do nothing’ option was also considered and discounted. This option provides no additional wastewater conveyance for the Whenuapai catchment and therefore does not meet the Project Objectives and was not considered further.

The long-listed sites were analysed against key engineering, environmental and financial constraints. Three of the sites were ruled out due to ‘fatal flaws’ to create a short-list of three sites (sites with a dark purple outline on Figure 24):

1. Option A: 14-16 Brigham Creek Road, owned by Watercare
2. Option B: 23-27 Brigham Creek Road, owned by Oyster Capital Development
3. Option C: 20-22 Brigham Creek Road, owned by a private owner

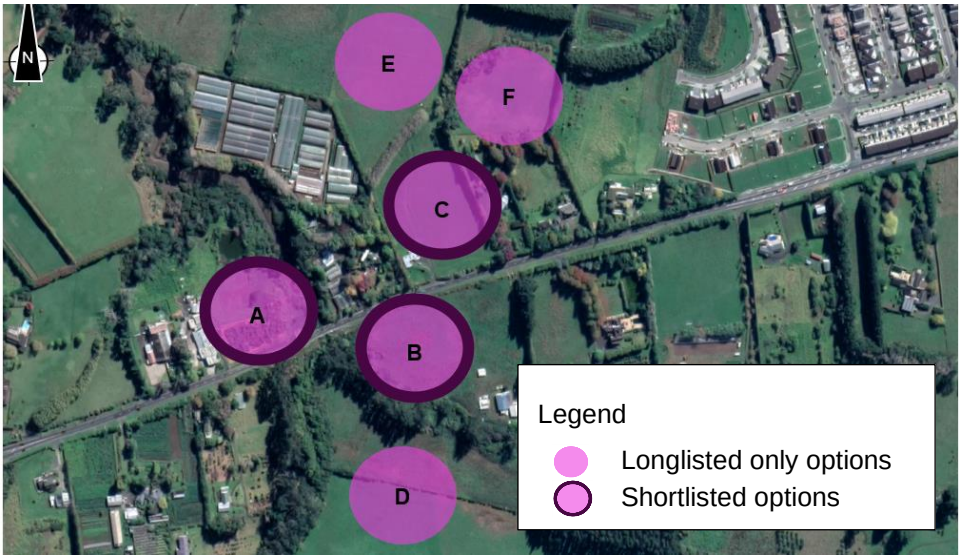

Figure 29. Pump station options considered

The short-listed sites were then qualitatively assessed against criteria related to the Project Objectives, including current and future network integration and function, environmental and social constraints, cost, and constructability.

Option B was selected as the preferred site for the pump station. This requires only one stream crossing, it is in a location that coordinates with planned development, avoids existing Transpower infrastructure, results in a shorter gravity main than Option A and shorter rising main than Option C, and is strategically placed to connect to other catchments if required in the future.

5.3.2 On-site layout options and refinements

In refining the final location of the pump station, the assessment considered the location of the wetland in the north-west of the site, the availability of suitable land for purchase, and operational requirements.

The preferred location of the pump station is shown in Figure 10. This location:

- Avoids permanent reclamation or dewatering of the wetland.
- Is adjacent to Sinton Stream to enable emergency overflow
- Enables Watercare to purchase only the minimum amount of land required for the pump station, without need to purchase other portions of land which would not otherwise be able to be utilised.
- Co-ordinate with known and planned development as part of the proposed Oyster Capital plan change

This site has subsequently been purchased by Watercare, who therefore now have a financial interest in the site, sufficient to undertaking the works.

5.4 Gravity main

The options for the gravity main were developed following the decision on the preferred location for the pump station. Watercare considered the location of the pump station the Project Objectives, operational requirements, environmental constraints, and the potential risks of trenching in the vicinity of the Southern Cross internet cable and Brigham Creek Road.

The option of locating the alignment along Brigham Creek Road was discounted at an early stage, due to the potential risk associated with trenched construction in the vicinity of the Southern Cross internet cable. Watercare then considered two potential alignment options at the northern end of the pipeline, and six potential alignment options at the southern end of the pipeline, which are shown in Figure 27.

Sensitivity: General

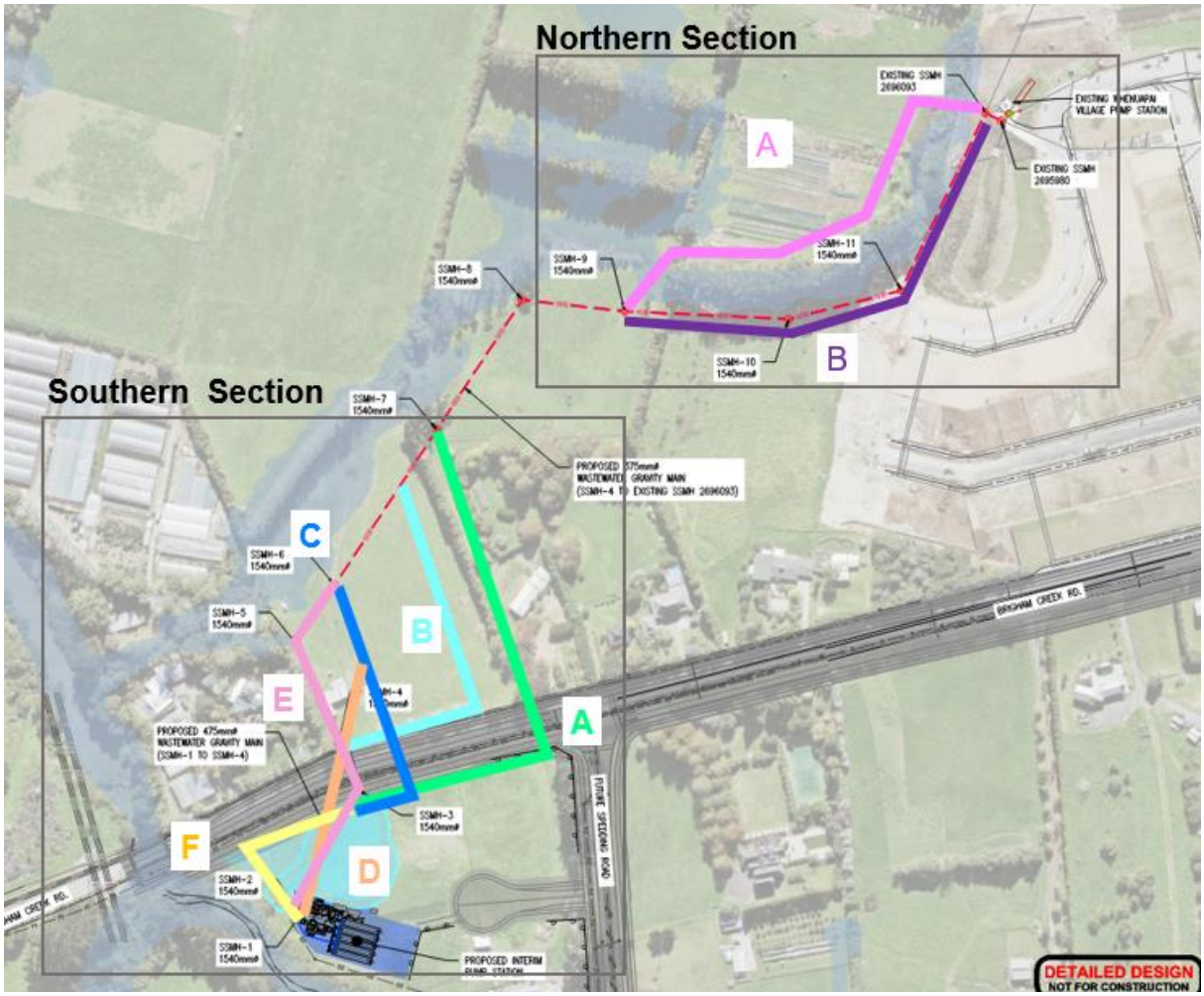

Figure 30. Alignment options (A-F) considered for gravity pipeline.

- **Option A** was selected for the northern section, as this option does not require stream crossings, and can be achieved through trenched or trenchless construction.
- **Option E** was selected for the southern section, as it can be achieved through trenched construction, minimises construction works along and underneath Brigham Creek Road, and avoids crossing through the middle of potentially developable land.

5.4.1 Design refinement of preferred gravity main option

The northern section of the alignment was then further refined to avoid the riparian yard of the stream, be located outside the flood plain, and minimise impacts on the stormwater embankment.

The southern section of the alignment was also refined to avoid the trees on the property boundary of 20-22 Brigham Creek Road, and to connect to the proposed pump station.

5.5 Rising main

Two potential options were considered at the northern and southern alignment of the rising main (see Figure 28)[9]. The options were assessed against the Project Objectives, including criteria related to coordination with existing and known planned development including the Oyster Capital Plan Change, and the ability to connect with future extensions to the wastewater network.

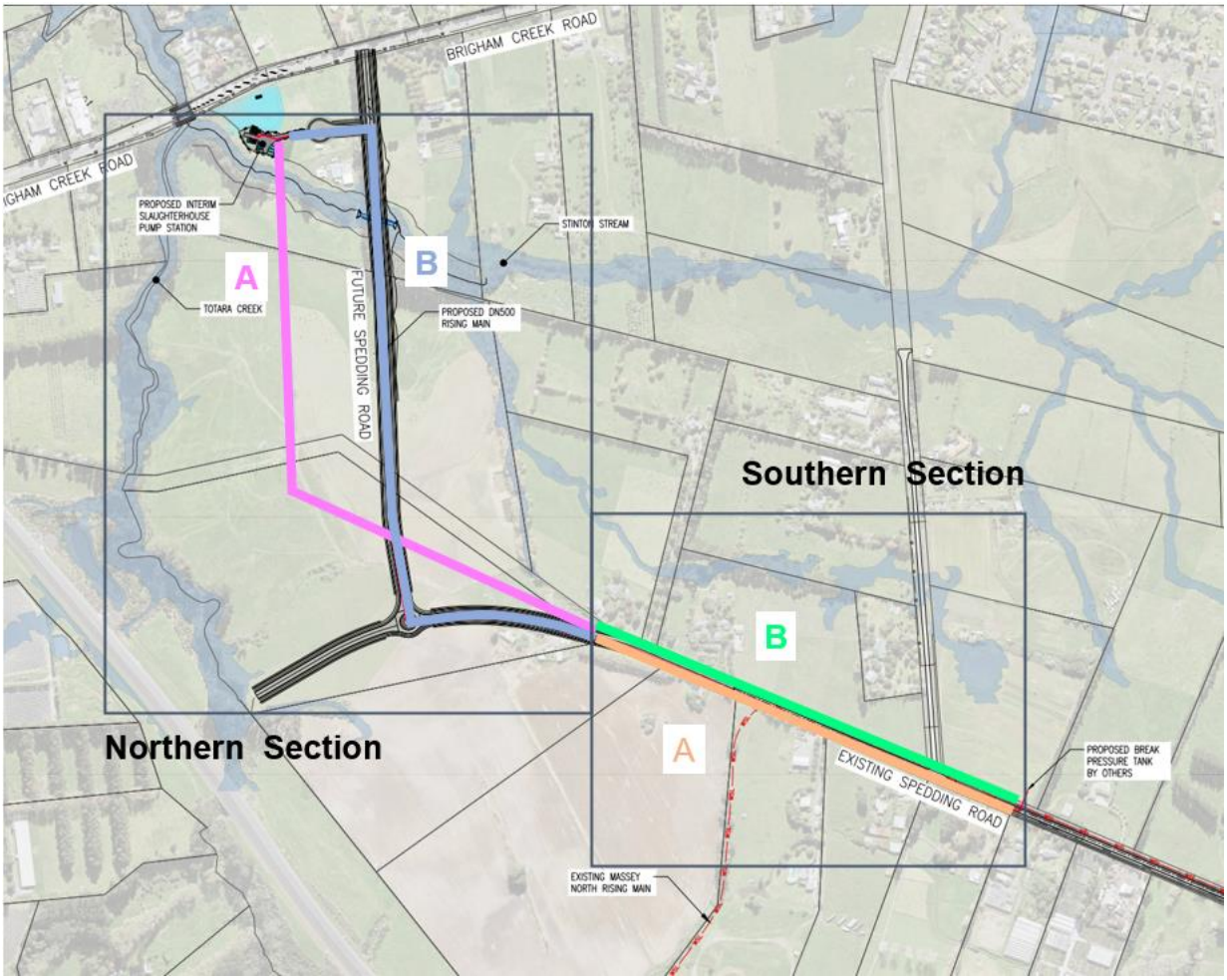

Figure 31. Alignment options considered for rising main pipeline.

Option B (blue line) at the northern section of the pipeline, and **Option A** (orange line), which is on the southern side of Spedding Road at the southern section of the pipeline, were confirmed as the preferred options for the alignment. Key reasons this alignment was selected is that it:

- Minimises the length of construction under overhead power lines which run along Spedding Road, which is a safety risk.
- Follows Oyster Capital's proposed future Spedding Road extension.
- Provides for future maintenance along the Spedding Road corridor.

5.6 Contractor and Laydown Areas

As discussed in Section 4.2, the Project requires three Contractor Areas and a laydown area, including:

[9] During the design and options assessment process the alignment of Spedding Road was extended southwards to incorporate a roundabout. As Option B was based around following the Future Spedding Road corridor, the amended alignment is considered to remain the same 'Option B'.

- Contractor Area North to support the gravity main works,
- Contractor Area Hub to support the pump station works,
- Contractor Area South to support the rising main works, and
- Laydown area to support the Tamiro Road Stormwater Embankment trenchless construction works.

One feasible option was considered for the Contractor Area Hub in the centre of the main construction work near the proposed pump station site with good access to the surrounding road network. This yard was sized to avoid temporary effects on the wetland as much as practical whilst providing sufficient space for a construction hub, truck ingress and ingress, equipment and laydown, and material stockpiling.

Two sites were considered for Contractor Area North and Contractor Area South (as well as alternative site access points). The options and preferred sites are shown on Figure 29 below.

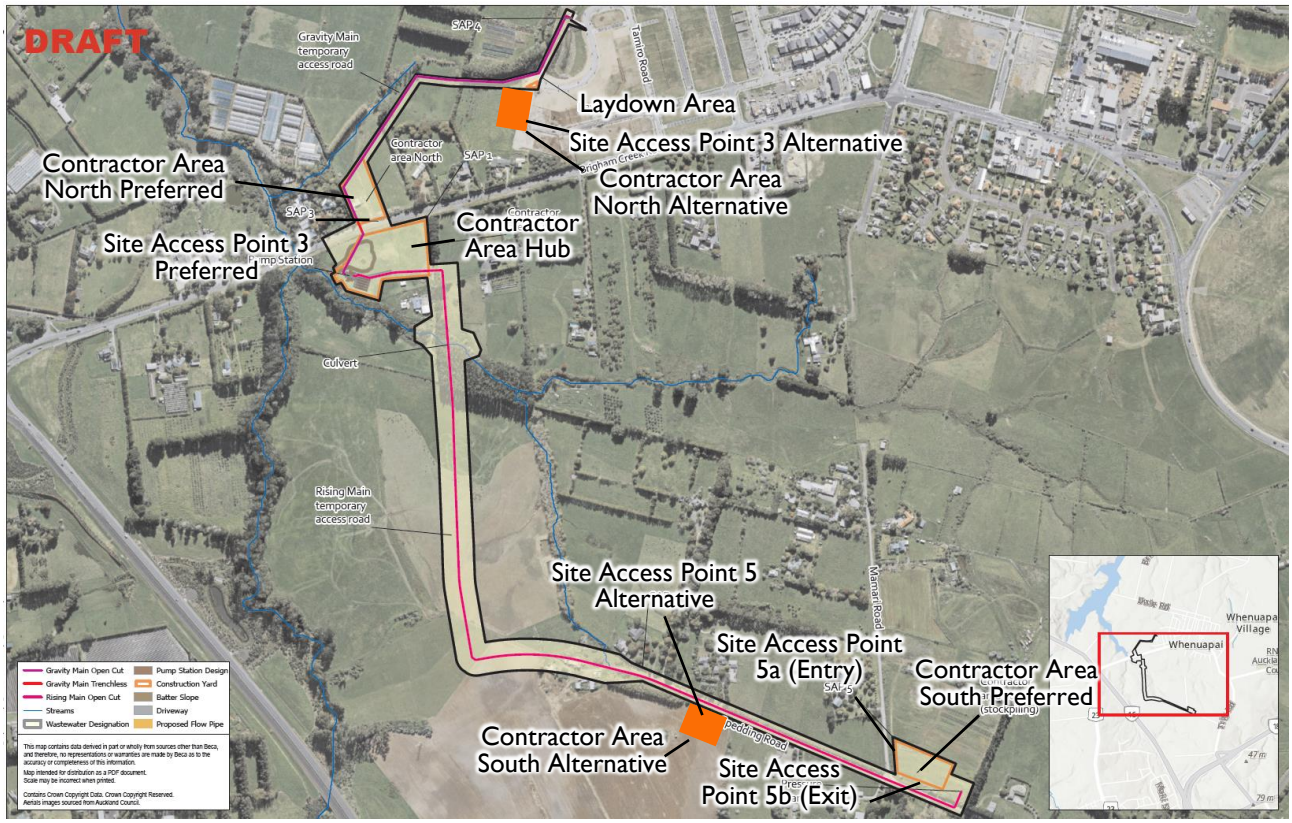

Figure 32. Proposed construction yards for the Project.

The preferred site for the Contractor Area North was selected because it enables heavy traffic to access the site from Brigham Creek Road, in close proximity to the gravity main work. The alternative site would require construction vehicles to access the site through smaller residential streets in Whenuapai Village, which would present a risk of complaints and safety risks.

The preferred site for the Contractor Area South was selected due to its location alongside the proposed break pressure chamber site, which enables the site to be used for both the Package 1 and 2 projects. The preferred site also provides two access crossing locations, which enable a one-way circuit to be set up on site and provides safer access for larger vehicles entering and exiting the site.

One feasible option was considered for the laydown area to support the trenchless construction works at Tamiro Road Stormwater Embankment, immediately adjacent to the works area. The laydown area is sized to provide sufficient space for the equipment necessary to undertake the works, a muck bin and materials storage area and a site container.

Sensitivity: General

6 Notice of Requirement

6.1 Notice of Requirement and Purpose of the Designation

This Notice of Requirement (NoR) seeks a designation for a public work; being the construction, operation, and maintenance of new wastewater infrastructure (including a new pump station, rising main, gravity main and auxiliary works). Form 18 outlining the notice of requirement is provided in Appendix J. The designation boundary to be sought is attached as Appendix B. A draft of the designation conditions proposed is provided in Appendix K. The designation boundary covers 90,180m^2 on properties listed in Table 8 below. Following construction, Watercare will pull back the designation in areas not required for ongoing maintenance, operation and upgrading of the wastewater infrastructure.

The matters which would otherwise trigger district consent under the AUP: OP pursuant to sections 9 (3), of the RMA, if a notice of requirement was not being sought, are summarised in Appendix L. These are included to assist Auckland Council in understanding the key matters that Watercare are seeking to be provided for by the designation.

Table 8. Legal descriptions of affected parcels, area, and landowner details of land covered by the designation

Address	Legal Description	Area (m^2)	Owner
Roundel Crescent (existing pump station)	LOT 809 DP 492005	135	Watercare
Tamiro Road (stormwater embankment)	LOT 812 DP 508816	1,142	Auckland Council
20-22 Brigham Creek Road	LOT 1 DP 51941	5,292	N. Apsell
23A Brigham Creek Road	SECT 1 SO 569103	1,264	Watercare
23-27 Brigham Creek Road	SECT 2 SO 569103	16,307	Brigham Land Limited Partnership (Oyster Capital)
26 Brigham Creek Road	LOT 2 DP 51941	2,147	24 Brigham Creek Road
28 Brigham Creek Road	LOT 3 DP 51941	2,210	Natural Harmony Company Ltd
31 Brigham Creek Road	LOT 14 DP 53740	7,505	Engkun Trustee Limited
15-19 Spedding Road	PT LOT 4 DP 24410, LOT 1 DP 24410, PT LOT 5 DP 24410	31,745	Clover Farms Whenuapai
32 Mamari Road	SECT 2 SO 582220*	4,894	A. Nguyen, Y. Nguyen, M. Nguyen, C. Kelibitaka, & I. Ulm.
	SECT 1 SO 582220*	1,500	Watercare

**The legal description of 32 Mamari Road was previously PT LOT 19 DP 6234432 Mamari Road was subdivided, and SECT 1 SO 582220 purchased by Watercare in August 2022. Updated Certificates of Title to reflect these changes are expected to be available in approximately December 2022.*

6.2 Outline Plan

Section 176A(2) states that an outline plan need not be submitted to the territorial authority if:

b) the details of the proposed public work, project, or work, as referred to in subsection (3), are incorporated into the designation;

The details required by section 176A(3) include:

a) the height, shape, and bulk of the public work, project, or work; and

b) the location on the site of the public work, project, or work; and

c) the likely finished contour of the site; and

d) the vehicular access, circulation, and the provision for parking; and

e) the landscaping proposed; and

f) any other matters to avoid, remedy, or mitigate any adverse effects on the environment.

The detailed information required under section 176A(3) (excluding the break pressure chamber) has been provided within this NoR application and, in accordance with section 176A(2)(b), an outline plan need not be submitted to Auckland Council prior to the works commencing.

As described in Section 1, Watercare propose to provide an Outline Plan (and seek any associated resource consents) specifically for the break pressure chamber once the information is available as part of the Package 2 project.

6.3 Other consents / permits required under legislation

The works trigger the requirement for consents under the NES:F and the Regional Plan. Consents for these matters are being sought under a separate application which is being processed in parallel to this NoR (BUN60411512).

6.4 National Code of Practice for Utility Operators' Access to Transport Corridors (September 2016)

Works will take place within the road corridor and in proximity to existing services, including the Southern Cross internet cable.

Watercare is required to adhere to the requirements in the National Code of Practice for Utility Operators' Access to Transport Corridors (September 2016) (the Code), a legislated requirement under the Utilities Access Act 2010. The Code applies to the activities of all transport corridor managers and utility operators throughout New Zealand. It provides a nationally consistent and cooperative framework for corridor managers and utility operators, to manage transport corridors while also providing for the access rights of utility operators.

Under the Code, Watercare must take measures to ensure all existing Utility Structures that may be affected by the site construction are not damaged during the course of the work. Before undertaking works, Watercare must record the existing condition of all surfaces and above ground Utility Structures in the immediate vicinity of the work site. If damage is caused to any road, property or utility asset, Watercare must notify the Corridor manager and the respective Utility Operator of any damage caused and repairs must be undertaken as soon as practicable.

Chapter E26 of the AUP: OP refers to the Code under Standard E26.1.2 (1) Other relevant regulatory requirements and includes E26.2.5.1 (1)(b), the site must be reinstated in accordance with conditions

specified in the National Code of Practice for Utility Operators' Access to Transport Corridors (2011), as a permitted activity standard for infrastructure activities within roads.

6.4.1 Corridor Access Request

Under the Code, Watercare (or its subcontractors) are required to apply for a Corridor Access Request (CAR) from Auckland Transport for all works undertaken with the road corridor. The CAR application is separate to the resource consent process and will be sought prior to commencement of construction works.

As part of the CAR process, each section of work will be required to have a traffic management plan (TMP) developed and submitted to Auckland Transport, to ensure that both traffic and contractors are able to operate safely and efficiently in the vicinity of the construction zone. The TMP includes traffic flows, detour routes, and signage; and is subject to approval by Auckland Transport. The TMP is prepared in consultation with public transport with regards to bus stop closures, temporary bus stops and bus detours, including school bus routes.

It should be noted that should Brigham Creek Road or Spedding Road be required to be closed, then this closure must be publicly advertised. This process is managed / coordinated by Auckland Transport to ensure consistency of advertising and that the required time frames are met.

7 Assessment of Effects on the Environment

7.1 Overview

This section considers the actual and potential effects associated with the construction and operation of the Project, and the proposed measures to avoid, remedy or mitigate any potential adverse effects on the environment. The assessment has been limited to matters that trigger a district plan consent requirement under the AUP:OP as these are the only activities authorised by the proposed designations. Where regional plan or National Environment Standard consenting requirements are triggered, these are not authorised by the designation. All consents required for the project under an NES or the Regional Plan are being sought under a separate application which is being processed in parallel to this NOR (BUN60411512).

Once in place, there will be a range of actual or potential permanent effects that will arise as a result of the project, which includes:

- Positive Effects
- Landscape and Visual Effects

In addition, there is a range of temporary effects that have the potential to arise during construction if not managed and mitigated appropriately, this includes:

- Terrestrial Ecology Effects
- Landscape and Visual Effects
- Arboriculture Effects
- Land Disturbance Effects
- Construction Traffic Effects
- Construction Noise Effects

7.2 Positive effects

The gravity main, pump station, rising main and break pressure chamber are key components of the Whenuapai wastewater infrastructure network, which will service up to 10,200 dwellings to 2041, providing for future housing provisions to enable Auckland to continue to grow. The scheme is required to accommodate the wastewater needs of anticipated and future growth (refer to Section 1 and Appendix I).

Enabling urban development opportunities has positive community and economic benefits and will contribute towards alleviating the existing housing shortage in Auckland.

7.3 Ecological Effects

An Ecological Impact Assessment has been undertaken for the project and is provided in Appendix D. It assesses the construction and operational impacts of the activities authorised by the proposed designation, including:

- The effects of vegetation removal from the open space zone on the loss of foraging habitat and mortality or injury to bats and birds;
- The effects of noise and dust from earthworks activities which are greater than 2,500 m^2 and 2,500 m^3 on terrestrial ecology; and
- The effects of night time security lighting at Contractor Areas on bats.

These effects are summarised in the following sections with the details set out in Appendix D. The effects of activities which trigger regional consents, including removal of riparian vegetation, installation of the culvert within Sinton Stream, and works within and adjacent to Wetland C, are considered within the regional consent application.

7.3.1 Construction effects

Vegetation removal

Vegetation clearance within the open space zone may result in the potential injury or mortality of roosting long-tailed bats and damage to bat roots if present. To mitigate the potential impact a preliminary survey will be undertaken prior to removal of mature trees in the open space zone to determine if the trees provide suitable habitat for roosting. If suitable roosting features are identified, a survey for bats will be undertaken at suitable roosting locations to confirm the presence/absence of native bats. If bats are identified to be present, a Bat Management Plan will be prepared in accordance with the Wildlife Act 1953. Conditions DC20-23 are proposed to addressing these measures in Appendix K. With the mitigation measures in place, the overall level of effect to bats is assessed as moderate.

Vegetation clearance within the open space zone may also result in disturbance of birds, particularly during the bird nesting season. Notwithstanding that only common species were observed, birds are protected under the Wildlife Act 1953. Therefore, where practicable, vegetation clearance will be undertaken outside of the bird nesting season. Where this is not practicable, areas planned for vegetation clearance will be surveyed for the presence of bird nests before clearance works begins by a suitably qualified ecologist. If indigenous birds are found nesting, clearance of the nesting tree shall be delayed until the residing chicks have fledged. Condition DC30 is proposed to address these measures in Appendix K. Trees are proposed to be replanted at a 1:1.5 ratio in coordination with Community Facilities. With the mitigation measures in place, the overall level of effect to birds is assessed to be negligible.

Removal of long grasses across the project area during earthworks has the potential to impact native lizard species. Again, whilst there are no recorded lizards in the area, lizards are protected under the Wildlife Act 1953. Therefore in order to mitigate any potential risk of lizards being present in the area, an initial risk assessment is proposed to be undertaken by a suitably qualified herpetologist to assess the risk and likelihood of lizard presence/absence within the area of construction prior to the commencement of works. If native lizards are found to be present at site, a Lizard Management Plan will be prepared and implemented. Conditions DC24-29 are proposed to addressing these measures in Appendix K. With the mitigation measures in place, the overall level of effect to lizards is assessed to be low.

Noise and dust during earthworks activities

Construction works are expected to result in periods of loud noise and dust, which may impact bats and birds if present in the area. In relation to potential impact on bats, elevated dust may impact on their ability to echolocate to navigate their environment and find prey. Nevertheless as long tailed bats are active at night, when earthworks are not expected to occur, the effects of this is limited as the noise will occur outside the hours of peak bat activity. In relation to potential impact of birds, elevated noise and dust from earthworks has the potential to cause disruption to birds. However, due to their highly mobile nature, adult birds disturbed by the noises are expected to disperse to nearby suitable environments during earthworks, with the overall level of effect to birds assessed to be low to very low.

Lighting

Security lighting at the Contractor Areas will be on movement based sensors, so the sites will not be permanently lit at night. Any effect on bats as a result of security lighting is assessed to be negligible.

7.3.2 Summary

The proposed works have the potential to impact on terrestrial fauna within the project area, including bats, birds and lizards. Mitigation and management measures have been proposed to minimise potential adverse impacts during construction. This includes the preparation and implementation of a Bat Management Plan and Lizard Management Plan in the event that the respective species are assessed to be present at site, and

undertaking vegetation clearance in a way which minimises the potential disturbances to nesting birds. Overall, considering the mitigation measures in place, the potential effects of the works on terrestrial ecology will be able to be mitigated and managed appropriately.

7.4 Landscape and Visual Effects

A Landscape and Visual Assessment Report has been prepared for the proposed works and is provided in Appendix E. The Landscape and Visual Assessment assesses the potential impacts of the works on the landscape attributes and values, visual amenity, and natural character of the project area for works authorised by the proposed designation, including:

- The effects of vegetation removal from the open space zone on amenity; and
- The effects of earthworks which exceed 5 m^2 and 5 m^3 in the riparian yard of Sinton Stream on the natural character and values of Sinton Stream;

7.4.1 Landscape attributes and values

Landscape effects will primarily be generated from reshaping of stream banks within Sinton Stream to install the Sinton Stream culvert. As described in Section 7.3 and 7.4, landscape effects from the removal of vegetation at the Tamiro Road stormwater embankment will be mitigated through replacement planting. In addition, the area surrounding the pump station will be planted with low amenity planting, which once established will have a beneficial effect on the landscape attributes and values. Overall, once the works are complete, the effects on landscape attributes and values for the project area will range from localised moderate adverse effects (from the installation of the culvert within Sinton Stream), to beneficial effects at the pump station.

7.4.2 Effects on visual amenity

The long-term visual effects of the project works will be minimal as the pipeline is underground. The above ground elements of the pump station will be painted in recessive colours and further mitigated by amenity planting, and the culvert and reshaped banks will not be particularly visible due to intervening vegetation and landform conditions. Overall, effects on visual amenity are considered to range from low adverse effects (from the views of the pump station and culvert), to very low beneficial effects (for views of the planted areas of the wetland).

7.4.3 Effects on natural character

A localised section of the natural character of Sinton Stream and Slaughterhouse Stream will be altered by the installation of the emergency overflow point and the reshaping of the stream banks to install the culvert. The effects of the emergency overflow point have been assessed to be low, as it is a relatively small structure on the upper embankment of the stream only. The new Sinton Stream culvert will have a clay substrate, which will provide a relationship to the existing natural clay channel bed, whilst the loss in value will be further mitigated by the removal of the existing culvert at 23-27 Brigham Creek Road. Overall, once works are complete, the adverse effects on the natural character of the localised portion of Sinton Stream are considered to range from moderate to very low.

7.4.4 Measures to avoid, remedy or mitigate potential adverse landscape effects

The following mitigation is proposed:

- The preparation of a site-wide planting plan prepared by a suitably qualified Landscape Architect and Ecologist, with input from relevant key stakeholders.
- Above ground structures of the pump station will be painted in recessive colours (i.e. dark greys and greens).

Conditions DC1 and DC18 are proposed to address these measures in Appendix K.

7.4.5 Conclusion

The works are located within the Future Urban Zone, and have been identified as suitable for urbanisation, including industrial uses. The land is currently the subject of a private plan change application by Oyster Capital to rezone the land for the intended light industrial use. The landscape and visual effects are localised to the works area and modification of the landscape and natural character values are considered an appropriate response in the context of a landscape which is planned to transition to an urban environment and will be appropriately managed and mitigated.

7.5 Arboricultural effects

An Arboricultural Assessment has been undertaken for the project and is provided in Appendix M. It assesses the potential impacts on trees of the activities authorised by the proposed designation, including the removal of 50 trees from the open space zone which may be required if trenchless construction at the Tamiro Road stormwater embankment fails due to encountering an underground construction. The effects of activities which trigger regional consents, including removal of riparian vegetation, are considered within the regional consent application.

The trees at the Tamiro Road stormwater embankment were planted relatively recently (approximately 2017) and are assessed as not having particular arboricultural values. Trees which are removed will be replaced with similar native species at a ratio of 1:1.5 once works are complete, with the location and timing of the replacement planting to be determined in conjunction with Community Facilities.

Appendix A of the Arborist Assessment provides a detailed set of appropriate works methods and tree protection measures that will be put in place to minimise potential adverse effects on protected trees during construction. This includes that the removal of the trees will be undertaken by qualified arborists implementing modern arboricultural techniques.

Condition DC1 and DC19 are proposed to address these measures in Appendix K. Overall, it is considered that with the proposed construction methodology and mitigation measures, including subsequent replacement planting, the potential effects of the works on trees in the open space zone will be able to be managed appropriately.

7.6 Land Disturbance effects

This section assesses the construction and operational impacts of the activities authorised by the proposed designation, including:

- The potential for mobilisation of dust from earthworks which exceed 2,500 m^2 and 2,500 m^3
- The potential for erosion and land stability from earthworks which exceed 5 m^2 and 5 m^3 within the riparian yard of the stream, and on land which may be subject to instability.

7.6.1 Measures to avoid, remedy or mitigate potential adverse land disturbance effects related to dust

A draft Erosion and Sediment Control Plan (ESCP) prepared for this project concludes that due to the linear nature of the works, and the use of imported hardfills, the works are unlikely to become a source of dust (refer to Appendix H for further details). This will be updated by the contractor prior to commencement of construction. The proposed measures are based on best practice erosion and sediment control in Auckland as set out in Auckland Council GD05: ‘Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region’ and include the following measures specifically related to dust and erosion:

- Whilst the contractor will endeavour to complete earthworks during the Auckland Council's earthwork season (1st October – 30th April), it is likely this project will also be undertaken over the winter months. Where works are required between 1st May – 30th September, the contractor will apply to Auckland Council for winter works approval.
- Stabilised entranceways will be installed at points where the site is accessed from public roads, with entrances built and maintained in accordance with GD05.
- Earthworks will be staged and works areas progressively stabilised and reinstated in order to minimise the amount of dust that may be generated. This will include conducting trenching in 100 m lengths.
- The Contractor Areas and laydown area will be stabilised with hardfill to minimise dust generation.
- Dust control will be managed through the use of water spray as required.
- Topsoil will be stockpiled for reuse on site where appropriate. Spoil will be stockpiled temporarily at laydown areas, then removed progressively offsite to an approved fill facility. Any longer duration stockpiled soils will be covered and/ or stabilised to prevent erosion and the generation of dust.

7.6.2 Measures to avoid, remedy or mitigate potential adverse land disturbance effects related to potential land instability

The stream banks of Sinton Stream meet the definition of land which may be subject to land instability (as defined in Chapter J of the AUP:OP), as the localised slope of the stream bank exceeds 1V:3H.

The emergency overflow point is located on the upper stream bank and includes a concrete wingwall structure and rip rap to dissipate any discharges. The riprap apron has been designed as per the requirements for outlets under Auckland Council TR2013/018: '*Hydraulic energy management: inlet and outlet design for treatment devices*'. No exacerbation of any land instability is anticipated as a result of these works. No scouring is anticipated to occur in an overflow event.

Works will also include open trenching in the vicinity of the Sinton Stream banks, and installation of a temporary stream diversion, and permanent culvert, within Sinton Stream. To manage the potential risk of trench collapse, trenches will be shored with trench shields or slide rails as required. The stream diversion will also be stabilised using sheet piles. Additional 'hold-back' piles will be used in higher sections as required. Gabion baskets will be placed around the edges of the wingwall to retain the fill embankment, and stream banks will be revegetated once works are complete, to stabilise the banks and reduce the risk of stream bank erosion. There will be no permanent and/or increased risk of land instability resulting from either the culvert installation or the proposed construction techniques, and no new hazards will be created as a result of the works.

7.6.3 Conclusion

Overall, with the above measures in place, the works can be managed appropriately. The works are unlikely to become a source of dust, and there will be no temporary or permanent increased risk of land instability resulting from the works.

7.7 Traffic effects

There is potential to disruption to the local transport network within the project area during construction and operation. This section considers the potential effects and identifies potential measures to mitigate these effects. The proposed measures have been developed following discussions with Auckland Transport. The full Traffic Impact Assessment is provided in Appendix O.

7.7.1 Potential construction effects

The Traffic Impact Assessment identifies that during the period of highest truck generation, the works will result in approximately 72 truck movements per day (1 way), or 12 trucks per hour. In addition, approximately

70 staff vehicles will access the site each day, including 45 vehicles travelling along Brigham Creek Road during the morning peak.

Overall, any potential impact from construction traffic on the surrounding network is considered to be negligible given the relatively low number of vehicles, and the high capacity of Brigham Creek Road, which is an arterial road. However, heavy vehicle movements entering and exiting the Contractor Area North and Contractor Area Hub have the potential to create disruption and safety issues on Brigham Creek Road, particularly during peak periods.

Visibility standards are met for the majority of construction site access points and route intersections, except at three sites:

1. The Trig Road / Spedding Road intersection;
2. Site Access Point 1 (SAP 1) which is the main access to the Contractor Area Hub; and
3. The Spedding Road / Mamari Road intersection.

The sight distance shortfalls at the Trig Road / Spedding Road intersection and SAP 1 are 10% and 4% of the required distances respectively and are therefore not considered significant[10].

Visibility at the Spedding Road /Mamari Road intersection (from Mamari Road, looking east onto Spedding Road) also does not meet requirements due to roadside vegetation.

Appropriate vehicle tracking is not achieved for trucks accessing 3 three locations in Whenuapai Village, including:

1. Site Access Point 4 (SAP 4);
2. The Tamiro Road / Joseph McDonald Drive intersection; and
3. Along Joseph McDonald Drive.

Trucks entering and exiting the SAP 4 may track over the centreline due to the tight corner turning radius required. Trucks turning left from Joseph McDonald Drive onto Tamiro Road, may swing wide and travel across the centre of the road. If vehicles are parked on the side of Joseph McDonald Drive, trucks traveling along this road will need to cross the centreline.

There are limited cycling and walking facilities in the areas around each site access point, excepting the access point at Whenuapai Village pump station, which has footpath facilities. However, there are significant volumes of pedestrian and cyclist movements along Brigham Creek Road toward Whenuapai School and Whenuapai Kindergarten, and also on the shared path between Tamatea Avenue and Kauri Road. Overall the impact on the residents adjacent to the Site Access Points, and businesses and users of the road network has been assessed as low.

7.7.2 Potential traffic effects from maintenance and operation

During the operational phase, any potential impact on the surrounding road capacities, operation, nearby residents, pedestrian and cyclists will be negligible due to the low trip generation of approximately one vehicle per week to the installed works, for maintenance and inspection. Therefore no mitigation is required.

7.7.3 Measures to avoid, remedy or mitigate potential adverse traffic effects

A Construction Traffic Management Plan (CTMP) will be prepared by the contractor prior to construction being undertaken. This will identify how disruption to road users and adjacent residential properties and local activities will be minimised during construction.

[10] Auckland Transport is proposing to reduce the Brigham Creek Road speed limit to 60 km/h. If approved and implemented in November / December 2022 as proposed, the SAP 1 will meet visibility standards.

The following outlines matters for particular consideration based on the assessed effects in 7.9.1 above:

General

- Local residents, businesses, schools, childcare centres and other stakeholders, will be kept informed of the construction times and progress via methods outlined in a communications and consultation plan.
- All construction vehicles and staff will be made aware of the surrounding environment and will be instructed to drive according to the conditions.

Contractor Areas

- Heavy vehicles will access Contractor Area North and Contractor Area Hub on a left in / left out basis
- Heavy vehicle movements on the Brigham Creek Road westbound lane will be avoided between 16:30 and 17:30 on weekdays
- Staff vehicles arriving to the Contractor Area Hub through SAP 1 during the morning peak will be monitored, and if any issues arise, then access for small vehicles will also be restricted to left in / left out.
  - If any near misses or potential safety issues are observed, then temporary speed limits will be introduced so that visibility requirements are met.
- Access to the Contractor Area South will include a 7 m wide entrance on Mamari Road, and a 6 m wide exit on Spedding Road
- Trucks will exit the Contractor Area South from SAP 5b on Spedding Road, and vegetation along Spedding Road will be trimmed to provide better visibility for general traffic.
- The Site Access Point to the Contractor Area North and Contractor Area will both be widened to 15 m to accommodate required vehicle tracking.
- Access to the Whenuapai Village pump station on Tamiro Road will be via the existing vehicle crossing, which may also be widened to facilitate access.
- All truck movements accessing SAP4 will be under strict speed settings of between 5-10 km / h and 30 km / h (depending on if turning or on the straight), with truck drivers briefed of the surrounding hazards.
- Truck drivers exiting the site at SAP 4 will be informed to initiate a right turn movement inside the site when performing a three point turn to exit, or to reverse out with the assistance of a spotter to check for oncoming vehicles.
- When truck movements are expected, parking will be restricted one side of a section of Joseph McDonald Drive between Tamiro Road and Whenuapai Drive.
- Truck movements accessing SAP4 will be initially monitored to inform of any additional operational requirements. In particular, movements along Tamiro Road will be monitored initially to check if a truck turning will impede on the planting and/or parking spaces. Parking along the northern side of Tamiro Road at the curves is to be restricted if this conflict is not avoidable.
- A spotter will be required to inform the truck driver if there are any oncoming vehicles that will obstruct the trucks travel path before proceeding with turning movements into and out of SAP 4, and for all truck reversing movements.
- Appropriate safety measures will be implemented for Tamiro Road and Joseph McDonald Drive in consideration of the higher likely pedestrian numbers, including children, at this location.

Further works, including deceleration lanes to access Contractor Area North and Contractor Area Hub, and widening of the Spedding Road / Mamari Road intersection are being investigated. If these temporary measures are required, approval will be sought from Auckland Transport as required through the Corridor Access Request process.

7.7.4 Conclusion

Overall, with the above measures in place, the works can be managed appropriately through the implementation of the CTMP.

7.8 Construction noise and vibration effects

During construction there is potential for noise and vibration to be generated at contractor areas and at trenched and trenchless construction sites. A Construction Noise and Vibration Assessment for the project, including a draft Construction Noise and Vibration Management Plan (CNVMP), is provided in Appendix N. As works in the Brigham Creek and Spedding Road road reserve are permitted under Standard E25.6.29 (3)(a) and (d) (as a final CNVMP will be provided to Auckland Council prior to works commencing), this assessment focuses the effects of works undertaken outside of the road reserve.

7.8.1 Construction noise

In relation to construction noise, the noise assessment has concluded that the works will be undertaken in a way that can meet permitted activity standards.

Contractor Areas

At all contractor areas the noisiest construction activities include:

- Levelling and compacting the site for a period of approximately 4 to 5 weeks as part of the site establishment activities, and
- Ongoing truck access to manage the spoil for a period of approximately 13 months at Contractor Area North, and up to 23 months at the Contractor Area Hub and Contractor Area South.

Noise levels are expected to range between 103-106 dB L_{Aeq}.

Contractor Area North is in close proximity to the dwelling at 18 Brigham Creek Road. Given the long-term nature of the noise generated at this location, a 2 m high acoustic screen will be installed along the western boundary of the works area. With this mitigation in place, the dwelling at 18 Brigham Creek Road is anticipated to experience noise levels below 70 dB L_{Aeq} from the activities within the contractor area.

Contractor Area Hub and Contractor Area South are not in close proximity to neighbouring dwellings; therefore no specific mitigation measures are required.

Trenched and trenchless construction

During open trenching, trenches will be benched with trench shields or slide rails will be used for support as required. The noise generated by open trenching will generally range from 88 – 108 dB L_{WA}[11]. In addition, concrete cutting breaking is required for a period of approximately 1 day or 2 half days to undertake the final section of open trenching between existing SSMH12 and existing SSMH 2695980 at the existing Whenuapai Village Pump Station on Tamiro Road (refer to Figure 7). The noise generated by the concrete breaker is expected to be 121 dB L_{WA}.

The noisiest activities associated with trenchless construction works include sheet piling[12] and pipe hammering at Brigham Creek Road, and pilot boring at Tamiro Road Stormwater Embankment. Noise levels are anticipated to range from 116 – 97 L_{WA} at Brigham Creek Road, and 108 – 97 dB L_{WA} at the Tamiro Road Stormwater Embankment.

The Noise and Vibration Assessment has assessed that due to the distance of the nearest receivers from the works, the noise generated by these works will not exceed permitted activity thresholds (refer to Appendix N for further details).

[11] L_{WA} is a measure of the sound power, or the amount of acoustic energy emitted by the machine.

[12] Required at the launch shaft at 23-27 Brigham Creek Road only.

7.8.2 Construction vibration

The assessment confirms that all construction vibration generated will comply with the permitted standards, and there is no risk to cosmetic damage of any building along the project works. Whilst vibration levels of the vibro sheet piling and roller may exceed the AUP amenity level, this would only occur for a short period (ie. less than 3 consecutive days) and notice will be given to any occupied buildings within 50 m of the activity through the implementation of the Construction Noise and Vibration Management Plan (CNVMP).

7.8.3 Measures to avoid, remedy or mitigate potential adverse construction noise and vibration effects

In order to manage construction noise and vibration, the draft Construction Noise and Vibration Management Plan (CNVMP) is provided as part of the Noise and Vibration Assessment (refer to Appendix N) and will be finalised and implemented throughout the Project for all sites (including within the road reserve) (refer to Proposed Condition NV1-NV4 in Appendix K).

The finalised CNVMP will set out:

- The performance standards that must, where practicable, be complied with.
- Predicted noise and vibration levels for relevant equipment and/or activities.
- General construction practices, management and mitigation that will be used for the Project;
- Noise management and mitigation measures specific to activities and receiving environments
- Noise and vibration monitoring and reporting requirements
- Communication, consultation, and complaints response protocols.
- Procedures for review of the CNVMP throughout the works.

7.8.4 Conclusion

Given the nature of the project and the proximity of residential receivers, there will be some temporary construction noise effects at times during construction. With the implementation of appropriate procedures, including the installation of a noise barrier adjacent to 18 Brigham Creek Road, noise levels have been assessed to remain within the permitted activity thresholds. The implementation of a CNVMP represents the Best Practicable Option (BPO) for managing any potential noise effects during construction.

Overall, it is considered that with these measures in place, potential construction noise and vibration effects will be appropriately managed.

7.9 Summary

Overall, the installation of the new gravity main, pump station and rising main will enable a significant positive benefit for the surrounding community through the provision of a wastewater system with sufficient capacity to support development in the Whenuapai catchment until 2041.

Mitigation and management measures are proposed to address potential adverse effects, these include various management plans, monitoring activities and re-planting of the project area following completion of work. Conditions are proposed addressing these measures in Appendix K.

With the implementation of the proposed conditions, any potential adverse effects associated with the project are able appropriately managed and mitigated.

8 Consultation and engagement

8.1 Mana Whenua

Watercare has an established process for engaging with mana whenua on projects and works within the Auckland region. This process includes early notification of works to be undertaken by Watercare which, do or are likely to, require resource consent.

Watercare provide a “Kaitiaki Managers Projects List” on a monthly basis to nominated representatives of all 19 Mana Whenua in the Auckland Council area being: Ngāi Tai Ki Tāmaki, Ngāti Maru, Ngāti Pāoa, Ngāti Rehua Ngātiwai ki Aotea, Ngāti Tamaoho, Ngāti Tamaterā Ngāti Te Ata, Ngāti Wai, Ngāti Whanaunga, Ngāti Whātua Ōrākei, Te Ahiwaru, Te Ākitai, Te Patukirikiri, Te Uri o Hau, Waikato Tainui, Te Kawerau ā Maki, Ngāti Whātua o Kaipara, Ngāti Manuhiri, Te Rūnanga o Ngāti Whātua.

A brief summary of each project is included in the list. Mana Whenua are invited to indicate which projects they have an interest in. Further information on the identified project or projects is then provided to those parties, followed by further engagement depending on the responses received.

The project was introduced on Watercare's Kaitiaki Managers Projects List in November 2019. Four Mana Whenua entities have registered their interests and sought further information on the project, being:

- Ngāti Whātua o Kaipara
- Te Kawerau ā Maki
- Ngāti Whanaunga
- Ngāti Te Ata.

Information on the proposed works was emailed to the above mana whenua following their expression of interest.

In addition to the Kaitiaki Managers Project List, the engagement process for the Project to date has included:

- A project presentation and site visit with kaitiaki from Ngāti Whātua o Kaipara and Te Kawerau ā Maki, the Project Manager and Resource Consent Planner in January 2020.
- Project updates as details changed from February 2020 onwards.
- Provision of the Ecological Impact Assessment to Ngā Maunga Whakahii o Kaipara.

The kaitiaki who attended the site visit have provided their support of the project. Whilst concerns were initially raised about the originally proposed pump station location at 14-16 Brigham Creek Road, due to the pump station emergency overflow point discharging to the CMA, and the requirement for the pipe bridge to cross Totara Creek twice, the pump station location has subsequently been moved to the proposed location at 23A Brigham Creek Road. Ngāti Whātua o Kaipara produced a Cultural Values Assessment for the Oyster Capital Plan Change, which is provided in Appendix P.

Watercare will continue to engage with mana whenua that have indicated an interest in the Project.

8.2 Auckland Transport

Watercare held a meeting with Auckland Transport on 26 January 2022 to discuss the project, and provided a copy of the draft Traffic Impact Assessment, including recommendations for the TMP on 6 May 2022. A copy of the meeting minutes, and correspondence with Auckland Transport, is provided in Appendix P. As the proposed works require works in the road reserve, formal approval will be sought from Auckland Transport through a Corridor Access Request prior to construction. Auckland Transport has notified notices of requirement for Brigham Creek Road, Spedding Road Upgrade, and Mamari Road. Should their

designation be confirmed prior to Watercare's proposed designation, Watercare will seek requiring authority approval in accordance with Section 177.

8.3 Waka Kotahi

Waka Kotahi has notified a notice of requirement for Alternative State Highway. Should their designation/s be confirmed prior to Watercare's proposed designation, Watercare will seek requiring authority approval in accordance with Section 177.

8.4 Healthy Waters

The proposed pump station at 23A Brigham Creek Road includes an emergency discharge overflow point (EOP) to Sinton Stream. Healthy Water was approached on the project and provided Asset Owner Approval for discharges into watercourses and other stormwater assets. In addition to the EOP approval, there were discussions in relation to the proposed works at the stormwater pond at Tamiro Road. Tony Cain and Danny Curtis from Healthy Waters were involved on the discussions and agreed with the proposal in principle. Further engagement was requested once the design and construction details are confirmed.

8.5 Auckland Council arborists

Arborlab Ltd (the project arborist) has provided the arboricultural assessment to Auckland Council's Urban Forestry Specialist outlining the proposed works to the trees and vegetation located within open space zones to seek Tree Owner Approval (ToA) for the proposed works. This approval will be provided to Auckland Council once it has been obtained.

8.6 Oyster Capital

A private plan change was lodged by Oyster Capital in 2020 to rezone approximately 52 ha of future urban zoned land south of Brigham Creek Road for light industrial use.

Watercare has worked closely with Oyster Capital throughout the plan change process to ensure the new infrastructure is well integrated with the plan change. In particular, the designated boundary for the rising main alignment is proposed to align with the future road corridor of Spedding Road. Watercare has shared the Design Package for the Project works with Oyster Capital under this same contractual arrangement, to ensure that the proposed works do not negatively affect the land use and/or development plans that they may have, avoid duplication of construction work being undertaken, and streamline the process.

Watercare have also entered into a contractual agreement with Oyster Capital that provides Watercare rights of entry and land use to undertake the construction works on the land that is owned by Oyster Capital.

8.7 Private landowners

The proposed infrastructure traverses several privately owned properties. Watercare have been engaged with the landowners affected by the works as outlined in Table 11.

Table 11. Watercare engagement with property owners affected by the works.

Address	Owner	Activity	Feedback received
18 Brigham Creek Road	Brigham Creek Estate Limited	Gravity main adjacent to property	Informed of project with reasonable support
20-22 Brigham Creek Road	Nujud Aspell	Gravity main through property and construction yard	Executed property access agreement in place with the landowner in support of the works.

26 Brigham Creek Road	24 Brigham Creek Limited	Gravity main through property	Executed property access agreement in place with the landowner in support of the works
28 Brigham Creek Road	Natural Harmony Company Ltd	Gravity main through property	Executed property access agreement in place with the landowner in support of the works.
31 Brigham Creek Road	Engkun Trustee Limited	Rising main through property	Support the project and provided written approval.
32 Mamari Road	A. Nguyen, Y. Nguyen, M. Nguyen, C. Kelibitaka, & I. Ulm.	Rising main adjacent to property and construction yard	Support the project with formal lease agreement in place

8.8 Transpower

Watercare has engaged Transpower to understand their future plans for the area. Transpower confirmed that they were investigating the possible decommissioning and removal of the Albany-Henderson transmission line.

Watercare will continue to engage with Transpower on the feasibility and possible timeline in decommissioning and removal of the Albany-Henderson transmission line.

8.9 New Zealand Defence Force

The break pressure chamber and associated construction laydown area at 8 Spedding Road and 32 Mamari Road are located within Designation 4311, held by Minister of Defence, with land use at the site subject to New Zealand Defence Force (NZDF) approval (refer to Drawing 9B-2-6 of Designation 4311).

The existing designation held by New Zealand Defence Force imposes restrictions in relation to the Obstacle limitation Surface. It is anticipated that a number of construction activities will temporarily breach the OLS level.

Watercare has consulted with NZDF regarding the land use of the site and agreed upon the following measures:

- No construction which exceeds the level of the designated OLS will be undertaken at 8 Spedding Road without the written approval of NZDF;
- At least 20 working days prior to any construction activity occurring at 8 Spedding Road or 32 Mamari Road, a Communications Plan will be prepared in draft and provided to NZDF for comment, acceptance, finalisation and implementation.

Communications with NZDF are provided in Appendix O, with proposed conditions agreed with NZDF for both Whenuapai Package 1 and 2 provided as DC33-35 in Appendix K. Requiring Authority approval under s176(b) of the RMA will be sought from the Minister of Defence prior to works being undertaken within the designation.

9 Notification Assessment

A territorial authority must decide whether to notify a NoR under s169, 149ZCB, 149ZCC, 149ZCE, and 149ZCF. The following section provides an assessment against these provisions.

9.1 Public notification - Section 169

In relation to Section 149ZCB the territorial authority may, at their discretion, decide whether to publicly notify a notice. Nevertheless, the application does not meet the criteria that would otherwise require mandatory public notification, specifically:

- The applicant does not request this notice be publicly notified (149ZCB(2)(b)).
- There are no relevant rules that require the notice to be publicly notified (149ZCB(2)(c).

In relation to Section 149ZCB(2)(a) the AEE concludes that the adverse effects on the environment will be no more than minor as follows:

- The construction works will be temporary in nature.
- Erosion and sediment control measures will be installed in general accordance with GD05 to minimise potential for erosion, land instability or dust.
- The effects of the works on the traffic network will be mitigated through restrictions on heavy vehicle movements, and the implementation of a CTMP (refer to Conditions DC8-11 in Appendix K).
- Any potential effects on terrestrial ecology will be mitigated through implementation of terrestrial fauna surveys, with management plans prepared and implemented as required (refer to Conditions DC20-30) in Appendix K).
- Potential adverse effects will be avoided, remedied or mitigated through the methods outlined in Section 5 of this AEE report.

In addition, there are no rules or national environmental standards which preclude notification (Section 149ZCB(3)) and there are not considered to be any special circumstances existing that warrant the application being publicly notified (Section 149ZCB(4)).

9.2 Limited notification - Section 149ZCC

In relation to limited notification, the application does not meet the following criteria:

- There are no protected customary rights or customary marine title groups affected by the work (Section 149ZCC(b)).
- Limited notification is not precluded pursuant to the criteria set out in Section 149ZCC(2).

For the purpose of giving limited notification of an application for a NoR, a person can be considered an affected person if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (Section 149ZCF(1)). As set out in Section 5 of this report, there are no parties upon which the potential effects are considered to be minor or more than minor.

10 Statutory assessment

This section provides an analysis of the proposed activity against the relevant legislative framework and concludes by providing an assessment against Part 2 of the RMA.

10.1 S171(1) Notice of Requirement

Section 171(1) of the RMA sets out the matters need to be covered by the NoR and supporting AEE:

> *When considering a requirement and any submissions received, a territorial authority must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to—*
>
> *a) any relevant provisions of—*
>
> *i) a national policy statement:*
>
> *ii) a New Zealand coastal policy statement:*
>
> *iii) a regional policy statement or proposed regional policy statement:*
>
> *iv) a plan or proposed plan; and*
>
> *b) whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if—*
>
> *i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or*
>
> *ii) it is likely that the work will have a significant adverse effect on the environment; and*
>
> *c) whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought; and*
>
> d) *any other matter the territorial authority considers reasonably necessary in order to make a decision on the requirement.*

10.2 Section 171(1)(a) – relevant planning documents

An assessment of the proposed works against the relevant rules, objectives and policies of the applicable plans and regional policy statement has been provided Section 1.1.1 below. The assessment concludes that the proposal is consistent with the objectives and policies of the NPS:FM, the regional policy statement, and applicable sections of the AUP, as well as the purpose of the RMA.

10.2.1 National Policy Statement for Urban Development (NPS-UD)

The NPS-UD seeks to ensure that New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic and cultural wellbeing, and for their health and safety, now and into the future. Policy 6 requires that when making planning decisions that affect urban environments, decision-makers have particular regard to the benefits of urban development that are consistent with well-functioning urban environments, and any relevant contribution that will be made to realising development capacity.

Comment:

Wastewater infrastructure is essential for providing for well-functioning urban environments. The Project is required to enable the development capacity of the Spedding Block, which was recently live zoned for industrial use through Plan Change 69, to be realised. More broadly, the project will provide the necessary wastewater infrastructure network to service up to 10,200 dwellings, thus unlocking land within the wider

Whenuapai catchment for development. The Project is therefore a relevant contribution to realising the urban development capacity of Whenuapai.

10.2.2 National Policy Statement for Freshwater Management 2020 (NPS:FM)

The overarching concept of the NPS:FM is Te Mana o te Wai, which refers to the fundamental importance of water, and recognises that protecting the health of freshwater protects the health and well-being of the environment. Te Mana o te Wai is about restoring and preserving the balance between the water, the wider environment, and the community. In line with Te Mana o te Wai, the NPS:FM has the objective of ensuring that natural and physical resources are managed in a way that prioritises the health of water bodies first, the health needs of people second and the ability of people and communities to provide for their well-being third.

Comment:

It is understood that Auckland Council consider the NPSFM is a relevant document to be considered in relation to the NoR, notwithstanding that consents under the NESF are being sought concurrently[13] . In particular, Auckland Council has sought confirmation that the application has functional need for the proposed pump station to be within proximity of a natural wetland.

The proposed works are required to increase capacity of the wastewater reticulation network in order to respond to growth and development that is signalled within the Whenuapai catchment. This is essential for managing wastewater flows, and particularly in reducing potential emergency overflows. The new wastewater reticulation is expected to reduce any potential emergency overflows to less than 2 per year, aligned with Watercare's network discharge consent and consistent with the policies of the NPS.

In relation to the functional need for the pump station, Appendix Q sets out the reasons for the location of the proposed pump station adjacent to the wetland. In summary, and as described in detail in Appendix Q, the Project has a functional need to be located and operate in this environment because:

- The location of the pump station is centrally located and at one of the lowest parts of the catchment.
- As a gravity pump station, it is required to be at the lowest part of the catchment so as to maximise wastewater gravity flows to the pump station. This enables wastewater flows from the catchment to flow through the gravity pipework to the pump station and reduces the amount of pumping and the length of rising main which is required to reach the main trunk. The reduction in rising main length reduces the potential for septicity of the wastewater.
- Being centrally located enables the pump station to accept some future gravity flows from future pipelines and further removes the need for additional pump stations and utility network complexity.
- Wetland and streams are naturally at the lowest part of the catchment therefore it is not unexpected that the pump station and gravity pipeline are located within proximity of these features.
- The pump station requires a suitable receiving environment nearby for an emergency overflow point. Therefore, it is necessary for it to be located within close proximity to a stream.

Overall, and as set out in Appendix Q, there is functional need for the project to be located and operated in this environment, and given the significant improvements to the reduction in wastewater overflows as a result of the new infrastructure, the project is considered consistent with the objectives and policies set out in the NPS:FM.

10.2.3 National Policy Statement for Indigenous Biodiversity (NPS:IB)

The NPS:IB applies to indigenous biodiversity in the terrestrial environment, and recognises that the health and wellbeing of people and communities are dependent of the health and wellbeing of indigenous biodiversity, and in return people have a responsibility to care for it and nurture it. The overall objective of the

[13] BUN60411512

NPS:IB is to maintain indigenous biodiversity so that there is at least no overall loss in indigenous biodiversity, including by protecting and restoring indigenous biodiversity as necessary to achieve the overall maintenance of indigenous biodiversity, whilst providing for the social, economic and cultural wellbeing of people and communities now and in the future. The policies which are considered most relevant to the application include:

- Policy 3: A precautionary approach is adopted when considering adverse effects on indigenous biodiversity;
- Policy 8: The importance of maintaining indigenous biodiversity outside SNAs is recognised and provided for;
- Policy 10: Activities that contribute to New Zealand's social, economic, cultural, and environmental wellbeing are recognised and provided for as set out in this National Policy Statement; and
- Policy 14: Increased indigenous vegetation cover is promoted in both urban and nonurban environments.
- Policy 15: Areas outside SNAs that support specified highly mobile fauna are identified and managed to maintain their populations across their natural range, and information and awareness of highly mobile fauna is improved.

Comment:

Initial lizard and bat surveys will be undertaken at works sites to identify whether lizards and / or bats may be present. Where lizards or bats are detected at the site, an LMP and / or BMP will be developed and implemented. Vegetation clearance will be undertaken outside of bird nesting season, or surveyed for the presence of bird nests prior clearance. Native planting which is removed for the works from the open space zone will be replaced on a 1:1.5 ratio, providing for an increase in indigenous vegetation cover in the medium to long term. As outlined in the Ecological Impact Assessment provided in Appendix D, there are no areas within the works locations which are considered to meet the criteria of Significant Natural Areas.

Totara Creek, including the confluence of Totara Creek with Sinton Stream, is subject to the Significant Ecological Area (SEA) overlay. As the nearest riparian vegetation removal required for the project to the SEA is approximately 30m away (at the emergency overflow outfall), the works are anticipated to have no effect on the ecological function and values of the SEA.

Overall, this approach provides a suitably precautionary approach to indigenous fauna management, and will provide for the maintenance of indigenous biodiversity values across the works areas.

10.2.4 Auckland Unitary Plan: Operative in Part

The relevant objectives and policies of the AUP: OP are assessed below.

Chapter B – Auckland Regional Policy Statement

Chapter B3 Ngā pūnaha hanganga, kawekawe me ngā pūngao - Infrastructure, transport and energy

Chapter B3 highlights that the quality of the environment and the well-being of people and communities are affected by choices about the management of, and investment in infrastructure. Objective B3.2.1(2) requires the benefits of infrastructure are recognised, including providing essential services for the functioning of communities, businesses, and industries, enabling economic growth, providing for public health, safety and well-being of people and communities, and protecting the quality of the natural environment. Objective B3.2.1(3), and Policies B3.2.2(1), (6) require development of infrastructure to be enabled, including in areas with natural resources, whilst avoiding where practicable, or otherwise remedying, mitigating, and managing adverse effects on the quality of the environment. Policy B3.2.2(3) provides for the locational requirements of infrastructure, in particular the functional need to be located in areas with natural and physical resources that have been scheduled in the AUP:OP.

Comment:

The project involves increasing the capacity of the wastewater network in the Whenuapai catchment, providing essential services for the functioning of communities, businesses and industries. The network will enable land zoned for future urban use to be rezoned for business purposes, enabling economic growth. Adverse effects from the project will be avoided, mitigated and managed through the measures outlined in Section 5 of this report and the conditions proposed.

Chapter B6 Mana Whenua

Chapter B6 recognises that development and expansion of Auckland has negatively affected Mana Whenua, and that Mana Whenua participation in resource management decision-making is required to ensure a sustainable future for Mana Whenua and for Auckland as a whole. Objectives B6.2.1(1) and (2) and Policy B6.2.2(1) require that the principles of the Treaty of Waitangi / Te Tiriti o Waitangi are recognised and provided for in the sustainable management of natural and physical resources, and through Mana Whenua participation in resource management processes.

Comment:

Watercare has engaged with Mana Whenua on the Project since November 2019, including undertaking a project presentation and site visit with kaitiaki from Ngāti Whātua o Kaipara and Te Kawerau ā Maki, providing project updates, and providing the Ecological Impact Assessment to Ngā Maunga Whakahii o Kaipara. Watercare will continue to engage with Mana Whenua that have indicated an interest in the Project.

Chapter B7 Toitū te whenua, toitū te taiao – Natural resources

Chapter B7 identifies that pressures on natural resources need to be managed for environmental, social, economic and cultural wellbeing. Objective B7.3.1(2) and Policy B7.3.2(4) seeks that the loss of freshwater systems are minimised, and avoided except where it is necessary to provide for the health and safety of communities, growth and development, or infrastructure, no practicable alternative exists, and mitigation measures including off-site works are implemented to address the adverse effects arising from the loss in freshwater system functions and values. Policy B7.4.2(5) seeks that establishment of structures within streams and wetlands is limited to those that have a functional need or operational requirement to be located there. Policy B7.4.2(8) requires use and development to minimise and manage the discharge of sediment into freshwater by requiring land disturbing activities to use industry best practice and standards appropriate to the nature and scale of the land disturbing activity, and the sensitivity of the receiving environment.

Comment:

The project design has sought to avoid the loss of wetland extent to the extent practicable by purposefully siting the pump station in the southwestern corner of 23-27 Brigham Creek Road (now 23A Brigham Creek Road) and minimising the extent of construction activities as far as practicable.

Where this has been unavoidable, Watercare has applied for regional resource consents, with the regional consent application demonstrating the functional and operational need for the proposed location (refer to Appendix Q of the AEE), describing in detail potential effects and identifying a range of mitigation measures and restoration activities so that there is no net loss of wetland extent or value.

In addition, the proposed works will result in the loss and modification of a small section of natural stream channel, which will be mitigated through restoration of the Sinton Stream and Sinton A Stream (as set out in the regional consent application).

Overall, the works will provide the wastewater infrastructure necessary for urban growth, protecting the health and safety of the community by providing sanitation services and reducing the risk of wastewater overflows into the environment. Whilst there will be some impact on wetlands and streams within the project area, there is an operational and functional need for the works in this location and, with the mitigation and restoration proposed, it is considered that the proposal aligns with the objectives and policies in Chapter B7.

Chapter B10 Ngā tūpono ki te taiao – Environmental Risk

Chapter B10 recognises that Auckland's growth will increase pressure to develop areas more susceptible to natural hazards. Objective B10.2.1(3) seeks that new subdivision, use and development avoids the creation of new risks to people, property and infrastructure. Policy B10.2.2(10) seeks to minimise the risks from natural hazards to new infrastructure which functions as a lifeline utility by assessing the risks from a range of natural hazard events, and utilising design, location and network diversification to minimise the adverse effects of natural hazards on infrastructure.

Chapter B10 also recognises that the use of chemicals and hazardous substances in a range of industries and activities has resulted in the contamination of sites within the region, and that contamination of soil and groundwater can affect people's health and safety. Objective B10.4.1(1) seeks that human health is protected by the identification, management and remediation of land that is contaminated. Policy B10.4.2(1) seeks that land that is of may be contaminated is identified, and where found, managed and remediated.

Comment:

The risks from natural hazards to the gravity main was minimised by locating the pipeline outside of the 1% AEP flood plain where practicable. The location of flood plains was also a factor in the selection of the pump station location as outlined in the Alternatives Assessment (provided in Appendix I). The risks of land instability to the emergency overflow outfall have been minimised by locating the outfall as far from the bank as is practicable, and through design features including a concrete wingwall structure and rip rap designed according to relevant engineering standards to dissipate any discharges.

A DSI has been provided for the project, which identifies that whilst land within the project area has previously supported activities on the Hazardous Activities and Industries List, the land and groundwater at these sites is not contaminated.

Chapter E12 – District earthworks

The objectives and policies for Chapter E26.5 Network utilities and electricity generation – Earthworks all zones and roads - district are contained within Chapter E12 Land disturbance – District.

Chapter 12 recognises that land disturbance is an essential prerequisite for the construction of infrastructure, and that the adverse effects of land disturbance can be reduced through the application of best practice land management techniques. Objective E12.2(1) seek that land disturbance is undertaken in a manner that avoids, remedies or mitigates adverse effects on the environment, and protects the safety of people. Policy E12.3(3) provide for land disturbance necessary for activities undertaken to provide for the needs of people and communities. Policy E12.3(2) seek to manage the amount of land being disturbed at any one time to avoid, remedy or mitigate adverse effects, including regarding noise, dust, lighting and traffic. Policy E12.3(6) requires that earthworks are designed and undertaken in a manner that ensures the stability and safety of surrounding land.

Comment:

Works will be progressively closed and stabilised to minimise the amount of earthworks open at any one time. Trenches will be supported with trench shields or double slide rails as required. Sinton Stream will be temporary diverted around the works area, with the diversion sheet piled and lined with geotextile to provide stability and support to the stream banks. Dust will be controlled by water spray as required. Given the linear nature of the works and the use of imported hardfills it is considered unlikely that the works will become a source of dust (refer to the Erosion and Sediment Control Plan in Appendix H). Appropriate measures will be undertaken to minimise the effects of earthworks on native fauna. This will undertaking suitable assessments to identify whether native lizards are present within the works area, and if identified to be present, preparing and implementing a Lizard Management Plan.

Construction traffic management measures will be in place to manage the potential impacts of the works on the transport network and people, including measures to mitigate the potential for disruption and safety concerns.

Chapter E16 – Trees in open space zones

Chapter E26 recognises trees in open space zones are an important public asset which need to be managed appropriately. Objective E16.2(1) and Policy E16.3(2) seeks that trees which contribute to cultural, amenity, landscape and ecological values are protected and managed. Policy E16.3(3) encourages the use of indigenous trees and vegetation for planting.

Comment:

The proposed design was refined to minimise vegetation removal in the open space zone through the use of trenchless construction methods under the Tamiro Road Stormwater Embankment. Nevertheless, if trenchless construction fails and open trenching is required, the vegetation which is removed will be replaced on a 1:1.5 basis with appropriate indigenous species. Appropriate measures will be undertaken to minimise the effects of vegetation removal on native fauna. This will include assessing whether trees to be removed may provide suitable bat roosts and preparing a Bat Management Plan if bats are identified to be present in the area, and undertaking vegetation clearance outside of the bird nesting season where this is practicable, or otherwise undertaking nest checks prior to clearance beginning.

Chapter E25 – Noise and Vibration

Chapter E25 seeks to manage the impacts of noise and vibration on sensitive receivers whilst allowing for construction activities to take place in a controlled and sensible manner. Objective E25.2(1) requires that people are protected from unreasonable levels of noise and vibration, whilst Objective E25.2(4) and Policies E25.3(2) and E25.3(10) seeks that construction activities that cannot meet noise standards are enabled, whilst avoiding, remedying or mitigating adverse effects where practicable.

Comment:

This proposal has sought to minimise any temporary adverse construction noise effects through mitigation measures and the implementation of a CNVMP. This is considered the best practicable option for the management of noise arising from construction activities. The construction activities will occur during general working hours, and mitigation measures such as noise barriers will be implemented wherever possible. Overall, the proposal is consistent with the objectives and policies of Chapter E25.

Chapter E26 – Infrastructure

Infrastructure is critical to the social, economic, and cultural well-being of people and communities and the quality of the environment. This section provides a framework for the upgrading of infrastructure. Objectives E26.2.1(3) - (5) and (9), and Policies E26.2.2(1) – (6) seek to enable development of infrastructure to provide for people and communities, public health and safety, the functioning of businesses, economic growth, and growth and development, whilst avoiding, remedying or mitigating adverse effects. When providing for development of infrastructure, Policy E26.2.2(2) directs decision makers to recognise the functional and operational needs, location, route and design needs and constraints, the complexity and interconnectedness of infrastructure services, and the role infrastructure plays in servicing existing, consented and planned development.

Comment:

As outlined above, the project involves development of the wastewater network between the existing Whenuapai Village pump station in on Tamiro Road, and the proposed break pressure chamber at 32 Mamari Road, within the Whenuapai catchment. The scheme will increase the capacity of the wastewater

network to provide for planned development within the catchment. Provision of additional wastewater capacity in the network will unlock land for development, including land for residential, business, and industrial use.

The route and locations of the project components have been determined given the engineering requirements, including site topography and catchment configuration, and the need to reduce construction risks, including risks associated with construction alongside a highly trafficked road, and risk of service strikes to critical infrastructure buried within the road corridor. The project routes and components have also been purposefully located and designed to integrate with other infrastructure planned within the catchment, including the future road network and associated culvert proposed as part of the private plan change lodged by Oyster Capital.

Chapter E27 – Transport

Chapter E27 seeks to manage the impacts of activities on the transport network. Objective E27.2(4), and Policies E27.3(20) and (21) require that vehicle crossings and associated access is safe and efficient, and minimises potential conflicts between vehicles, pedestrians, and cyclists on the adjacent road network.

Comment:

Vehicles will access the Contractor Area North and Contractor Area Hub via existing vehicle crossings, which will be widened to allow for vehicle tracking. In order to provide for safe and efficient access and minimise the potential for conflicts, heavy vehicles will access the Contractor Area North and Contractor Area Hub on a left in / left out basis and be restricted during the PM peak. As set out in the application, prior to works the Contractor will obtain Corridor Access Request from Auckland Transport for all works in the road corridor.

Chapter E36 – Natural Hazards

Chapter E36 recognises natural hazards, including land subject to instability, flood plains and flow paths, can affect people, property and the environment, and takes a risk management approach to addressing the risks associated with works within natural hazard areas. Objective E36.2(4) states that where infrastructure has a functional or operational need to locate in a natural hazard area, the risk of adverse effects to other people, property and the environment shall be assessed and significant adverse effects are sought first to be avoided or, if avoidance is not able to be totally achieved, the residual effects are otherwise mitigated to the extent practicable. Policy E36.3(3) requires use and development of land subject to natural hazards to assess the risk of proposals.

Comment:

The risks of the proposal have been assessed, with the results presented in Section 7.6. The location of the proposed overflow is not anticipated to result in any exacerbation of land instability. The temporary risks of land instability at the location of the culvert works will be mitigated to the extent practicable by using trench supports, sheet piles, gabion baskets, and revegetation of the area once the works are complete. No permanent and / or increased risk of land instability are anticipated to result from the works. The Project is therefore consistent with the objectives and policies of Chapter E36.

10.2.5The Auckland Plan

The Auckland Plan is a 30 year spatial plan which provides broad direction to guide Auckland's growth and development in a way that aims to achieve key social, economic, environmental and cultural objectives. The Auckland Plan's Development Strategy identifies that Auckland's urban footprint will include newly established communities in future urban areas, with Whenuapai specified as an area which is expected to undergo a significant amount of housing and business growth over the short, medium term and long term. The Plan also recognises that bulk infrastructure, including wastewater, is essential in order for urban growth to occur, especially in future urban areas.

Comment:

The Whenuapai Wastewater Servicing scheme will provide essential bulk wastewater services to the recently live zoned Whenuapai area, and the wider catchment. This will help to unlock the development potential of this land, and enable urban growth to occur in accordance with the sequencing which is outlined in the Auckland Plan.

10.3 Section 171(1)(b) – alternatives assessment

A consideration of alternative sites, routes, or methods for undertaking the proposed works has been undertaken and is summarised in the Assessment of Alternatives provided in Appendix I and in Section 5 of the AEE. This demonstrates that a robust process has been undertaken in relation to identifying the nature and location of the proposed works.

In addition, Watercare has purchased several properties along the route, including the permanent pump station site and the break pressure chamber site. Watercare therefore has interest in the land for these parts of the project, sufficient to undertake the work without the need to undertake an alternatives assessment for these sites.

10.4 Section 171(1)(c) – reasonably necessary to achieve project objectives

The proposed works and designation must be reasonably necessary for achieving the objectives for which the designation is sought. The Project Objectives of the Requiring Authority for which the designation is sought are:

1. *To provide additional capacity in the wastewater network for growth and development of the Whenuapai-Redhills catchment in a manner that:*
    a. *Protects public health;*
    b. *Optimises investment decisions, including being efficient, effective and financially responsible;*
    c. *Minimises private property development disruption*
    d. *Coordinates with existing and known planned development; and*
    e. *Integrates with the existing Watercare wastewater network.*
2. *To provide statutory protection for phase one of the Whenuapai and Redhills project to enable its construction, operation, and maintenance.*

10.4.1 Objective 1: Provision of additional capacity in the wastewater network for growth and development of the Whenuapai-Redhills catchment

As described in Section 4, significant development is occurring and planned to occur in the Whenuapai catchment, with the population of the catchment projected to increase from approximately 2,400 to 10,200, and concomitant wet weather wastewater flows projected to increase from 74 L/s to 320 L/s, by 2041.

The gravity main has been designed to deliver wastewater flows from Whenuapai Village to the proposed pump station at 23A Brigham Creek Road, alleviating capacity restrictions associated with the existing Riverhead rising main, and unlocking land for development. The pump station and rising main have been designed to provide sufficient capacity to receive and pump 320 L/s of wastewater flows into the Massey Connector and on to the Rosedale Wastewater Treatment Plant, which will provide sufficient capacity to service development within the Whenuapai Catchment to 2041.

Protect public health

Growth and development of the Whenuapai catchment requires a reticulated wastewater network with appropriate capacity, or otherwise there could be uncontrolled discharge of untreated wastewater into surface and coastal waterways which has the potential to result in adverse effects for public health.

The works have been sized for the population they are intended to service, and have backup generators to maintain system operation in the event of power failure. The scheme is therefore anticipated to result in zero or minimal overflows per year, in line with the regional network discharge consent requirements.

Overall, the works as proposed are considered reasonably necessary to achieve objective 1(a).

Optimise investment decisions, including being efficient, effective and financially responsible

As discussed in the Assessment of Alternatives report provided in Appendix I, the proposed alignment and pump station location have been designed and located to enable open trenching construction, minimise the depth of the pump station, and reduce the overall length of pipeline (in particular the rising main) to minimise capital and operational costs. The proposed alignment of the rising main avoids undulation, minimising the requirement for operational valves and chambers. By locating the stream crossing in a location which coordinates with planned Oyster Capital works, the proposed alignment avoids the expense of constructing an additional pipe bridge to provide access for the pipe across the stream. The works as proposed are therefore considered reasonably necessary to achieve objective 1(b).

Minimise private property development disruption

As discussed in the Assessment of Alternatives report provided in Appendix I, the proposed alignment has been located to avoid crossing through the middle of potentially developable land, thus minimising private property development disruption. The works as proposed are therefore considered reasonably necessary to achieve objective 1(c).

Coordinate with existing and known planned development

As outlined in Section 2.7 of this AEE, Oyster Capital has lodged a private plan change to rezone ~52 ha of future urban zoned land south of Brigham Creek Road for light industrial use. Watercare has designed the alignment of the gravity main, pump station and rising main to coordinate with the development proposed in the plan change. This includes locating the pipeline along the proposed route of the Spedding Road extension to provide for efficient maintenance of the infrastructure in future and selecting an alignment which avoids crossing through developable land. The pipeline provides access for the wastewater pipe across Sinton Stream via the culvert proposed to underlay the Spedding Road extension (or if this project precedes Oyster Capital development, constructing the culvert to a size which accommodates the planned Spedding Road extension). The works as proposed are therefore considered reasonably necessary to achieve objective 1(d).

Integrate with the existing Watercare wastewater network

The location of the pump station has been strategically placed to efficiently connect to other catchments if required in future. The rising main will connect with a future package of works (Package 2), the Northern Interceptor and the Rosedale Wastewater Treatment Plant. The works as proposed are therefore considered reasonably necessary to achieve objective 1(e).

Taking all this into account, overall it is considered that the works associated with the project are reasonably necessary to provide additional capacity in the wastewater network to accommodate growth and development in the Whenuapai catchment, and to achieve Objective 1.

10.4.2 Objective 2: To provide statutory protection for phase one of the Whenuapai and Redhills project to enable its construction, operation, and maintenance.

The designation provides a statutory mechanism to protect the proposed locations of project components. The use of the designation mechanism will provide certainty to the community of the proposed location of the works and provide route protection for the works to avoid any as yet unsignalled development along the route which may disrupt Watercare's ability to proceed with the works. In addition, the designation provides for operation and maintenance changes to the works in the future. As such, it is considered that the designation is reasonably necessary to achieve Objective 2.

10.5 Part 2 – Purpose and Principles

The Purpose of the RMA, set out in Section 5, is to promote the sustainable management of natural and physical resources, which includes enabling *"people and communities to provide for their social, economic, and cultural wellbeing."* This must be achieved in the context of Section 5(2), in particular the responsibility of (c) for *"avoiding, remedying, or mitigating any adverse effects of activities on the environment."*

The broader principles of the RMA are set out in Sections 6 – 8 of the RMA. Matters of particular relevance to this application include:

> *Section 6(a) – the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development,*
>
> *Section 7(f) – maintenance and enhancement of the quality of the environment.*
>
> *Section 8 – take into account the principles of the Treaty of Waitangi*

The project will achieve the sustainable management of natural and physical resources and is therefore consistent with Part 2 of the RMA for the following reasons:

- The project will enable the provision of appropriate wastewater services within the Whenuapai catchment, which will enable the community to continue to provide for their social, economic and cultural wellbeing.
- Adverse effects on the environment from the construction of the project have been carefully considered, will be avoided where possible (for example avoiding the loss of permanent wetland extent by locating the pump station in the south western corner of the site), with other adverse effects being remedied or mitigated so that adverse effects on the environment are appropriately managed.
- The provision of wastewater infrastructure which provides capacity to receive wastewater flows from planned development, and in this way reduce the risk of future network overflow of untreated wastewater into the environment
- Mana Whenua have been engaged on the project as outlined in Section 7 of this AEE report.

11 Conclusion

This AEE report has been prepared on behalf of Watercare to support the NoR for the installation of a new gravity main, pump station, culvert, rising main, and break pressure chamber between the existing Whenuapai Village pump station on Tamiro Road, and 32 Mamari Road, Whenuapai.

An assessment of effects on the environment has been undertaken for the project and this has concluded that any adverse effects from the project will be avoided, mitigated or remedied through the implementation of the proposed conditions.

During construction, there is potential for effects associated with terrestrial ecology, noise, tree removal, land disturbance, and traffic disruption. The construction methodology and design has been refined in the first instance to avoid potential effects, including where necessary the use of trenchless methodologies, and where this has not been possible mitigation and management measures will be implemented through a range of construction management plans required by the proposed conditions. This includes a CNVMP, TMP, and ESCP, and if required, a BMP and LMP.

The works have been specifically designed to coordinate with the future development proposed with Oyster Capital. In particular, the alignment of the rising main runs beneath the future Spedding Road extension. In doing this, the alignment of the pipeline will not restrict future development potential of the adjacent land and reduce potential construction/disruption effects (such as in the construction of the culvert).

Once completed the project will provide significant benefits, by providing sufficient wastewater capacity to enable growth and development within the Whenuapai catchment to 2041.

The proposed work is reasonably necessary to achieve Watercare's objectives for the Project, and an appropriate assessment of alternatives has been carried out. A statutory assessment has been undertaken that demonstrates that the proposal is consistent with the relevant provisions of the RMA and the AUP:OP and NPS:FM. In addition, Watercare has engaged with interested Mana Whenua groups and other stakeholders and potentially affected parties on the project and will continue to engage with these groups through detailed design and construction.

Overall, the works will have significant benefits for the Whenuapai area through the provision of safe and efficient wastewater services to the area and enabling further urban development in the area whilst minimising adverse environmental effects, with any potential adverse effects largely temporary and able to be appropriately mitigated or managed.

A

Appendix A – Design Drawings – GHD Limited and WSP Limited

B

Appendix B –Designation Boundary

C

Appendix C – Records of Title

D

Appendix D – Ecological Impact Assessment (Beca Ltd)

E

Appendix E – Landscape and Visual Assessment (Boffa Miskell Ltd)

F

Appendix F – Geotechnical Interpretive Report (GHD Ltd)

G

Appendix G – Detailed Site Investigation (GHD Ltd)

H

Appendix H – Erosion and Sediment Control Plan (Beca Ltd)

I

Appendix I – Assessment of Alternatives

J

Appendix J – Form 18

Form 18 Notice of Requirement by Watercare Services Limited under Section 181 of the Resource Management Act 1991

To: Auckland Council
135 Albert Street
Auckland Central
1010

From: Watercare Services Limited
73 Remuera Road
Remuera, Auckland
1050

Watercare Services Limited gives notice of its requirement for a new designation for a public work; being the construction, operation, and maintenance of new wastewater infrastructure (including a new pump station, rising main, gravity main and auxiliary works) in Whenuapai, Auckland.

The site to which the requirement applies is as follows:

The sites the NOR applies to are shown in the designation drawings, attached as Appendix B of the Assessment of Environmental Effects (AEE) (Drawings GIS-4219201-1, GIS-4219201-2, and GIS-4219201-3). The site and surrounding environment are described in Section 2 of the AEE.

The nature of the proposed public work is:

The proposed work relates to the construction, operation and maintenance of Package 1 of the Whenuapai Wastewater Servicing Scheme, including:

1. A **Gravity Main Pipeline** (approximately 700m long and 375 – 475 mm in diameter) between the existing Whenuapai Village Pump Station on Tamiro Road and the Pump Station
2. A **Pump Station** at a point where the Whenuapai and Redhills Catchments meet at 23A Brigham Creek Road, with an emergency overflow outfall to the Sinton Stream.
3. A **Rising Main** (approximately 1.5km long and 500 mm in diameter) between the Pump Station and a proposed new break pressure chamber on Mamari Road.
4. A **Culvert** (approximately 63 m long including wing wall and rip rap) to provide access for the rising main across Sinton Stream.
5. A **Break Pressure Chamber** located on corner of Mamari and Spedding Roads.

Details of the proposed work are provided in Section 3 of the attached AEE. Drawings showing the proposed works are provided as Appendix A of the AEE.

The nature of the proposed conditions that would apply are:

The proposed conditions that would apply to the works to be authorised by the designation are set out in Appendix K of the AEE. These draft conditions specify the process for reviewing the designation area, the detail that must be included in the management plans proposed, and the process for certification of the plans.

The effects that the public work will have on the environment, and the ways in which any adverse effects will be mitigated, are:

Potential permanent adverse effects including:

- Landscape and visual effects associated with the new above ground infrastructure.

Potential temporary adverse effects associated with construction including:

- Earthworks, noise and vibration, traffic and transport, vegetation removal, and general disruption.

There are a range of other potential effects which relate to regional planning matters, including stream works and effects on wetland. These effects, including proposed mitigation, are addressed in the regional consent applications set out below

Whilst there is anticipated to be some temporary effects during construction, the assessment of effects on the environment has concluded that these effects can be appropriately managed through the implementation of a range of construction management plans.

There are significant positive effects associated with the new infrastructure once in place, forming an important component of the Whenuapai Wastewater Servicing Scheme to provide for future urban growth in the area.

Details of the environmental effects of the proposed work and how these will be mitigated are provided in Section 6 of the attached AEE.

Alternative sites, routes, and methods have been considered to the following extent:

An alternatives assessment has been undertaken to determine both the need for the Project itself, and the location of the Project works. This is described in detail in Section 4 of the AEE.

The public work and alteration to designation are reasonably necessary for achieving the objectives of the requiring authority because:

The Whenuapai Wastewater Servicing Scheme (the Project) has the following specific objectives:

1. To provide additional capacity in the wastewater network for growth and development of the Whenuapai-Redhills catchment in a manner that:
    a. Protects public health;
    b. Optimises investment decisions, including being efficient, effective and financially responsible;
    c. Minimises private property development disruption
    d. Coordinates with existing and known planned development; and
    e. Integrates with the existing Watercare wastewater network.
2. To provide statutory protection for phase one of the Whenuapai and Redhills project to enable its construction, operation, and maintenance.

As set out in Section 8 of the attached AEE, the Project and the designation are reasonably necessary for achieving Watercare's objectives.

The following resource consents are needed for the proposed activity and have been applied for:

In addition, regional resource consents are being sought from Auckland Council concurrently to this application under the Auckland Unitary Plan (AUP), and National Environmental Standards for Freshwater (NESF). The consents sought relate to earthworks, vegetation alteration and removal, disturbance and new structures in a stream, disturbance and new structures within a natural wetland, and groundwater dewatering and diversion. The full list of resource consents is described in Section 6 of the attached AEE.

The following consultation has been undertaken with parties that are likely to be affected:

Consultation undertaken and the outcomes of that process are described in Section 7 of the attached AEE.

Watercare Services Limited attaches the following information required to be included in this notice by the district plan:

AEE report: Whenuapai Wastewater Servicing Scheme Phase 1 – Notice of Requirement and Application for Resource Consent

- Appendix A: Design Drawings
- Appendix B: Designation Boundary
- Appendix C: Records of Title
- Appendix D: Ecological Impact Assessment
- Appendix E: Landscape and Visual Assessment
- Appendix F: Geotechnical Interpretive Report
- Appendix G: Detailed Site Investigation
- Appendix H: Erosion and Sediment Control Plan
- Appendix I: Assessment of Alternatives
- Appendix J: Form 18
- Appendix K: NoR Conditions
- Appendix L: District Matters and Permitted Activities
- Appendix M: Arboricultural Assessment
- Appendix N: Noise and Vibration Assessment
- Appendix O: Traffic Impact Assessment
- Appendix P: Records of Engagement
- Appendix Q: Functional Need

Date: 28 October 2022

Address for service of applicant:

Beca Limited
21 Pitt Street
Auckland Central, Auckland, 1010

Attention: Rachael Clark
Telephone No.: 09 300 9283
Email: Rachael.Clark@beca.com

K

Appendix K – NoR Conditions

L

Appendix L – District Matters and Permitted Activities

District Matters and Permitted Activities

The matters which would otherwise trigger district consent under the AUP: OP pursuant to sections 9 (3), of the RMA, if a notice of requirement was not being sought, are summarised in Appendix L. These are included to assist Auckland Council in understanding the key matters that Watercare are seeking to be provided for by the designation.

Table P1. Activities which would otherwise trigger district consent under the AUP:OP.

Rule	Activity status	Comment
E26.2.3.1(A57) (C1.9(2)) Ventilation facilities greater than 2.5 m in height	Restricted Discretionary Activity	The break pressure chamber will include a vertical 200 mm diameter vent stack which will be at least 3 m in height. Ventilation facilities which are greater than 2.5 m in height do not meet standard E26.2.5.2(3)(a) and require resource consent for a Restricted Discretionary Activity under Rule C1.9(2).
E26.4.3.1(A92) Tree alteration or removal of any tree greater than 4m in height and / or greater than 400 mm in girth (open space zone)	Restricted Discretionary Activity	If trenchless methods fail, open trenching through the Tamiro Road Stormwater Embankment will require removal of vegetation over approximately 1,300 m^2. Whilst most vegetation removed will be 3 – 4 m in height, conservatively, up to 50 trees may be between 4 m and 6 m in height (as set out in the Arborist Assessment in Appendix M). Removal of trees greater than 4 m in height in the open space zone requires resource consent under E26.4.3.1(A92)
E26.5.3.1(A97) and (A97A) and C1.9(2) Earthworks greater than 2500 m^2 and 2500 m^3, including earthworks greater than 10 m^2 and 5 m^3 in the riparian yard	Restricted Discretionary Activity	The area of earthworks for the project will exceed 2,500 m^2 and 2,500 m^3 at any one time. The works to install the culvert, and emergency outfall, will require disturbance of greater than 10 m^2 and 5 m^3 in the riparian yard of Sinton Stream. Earthworks greater than 2,500 m^2 and 2500 m^3 require resource consent for a Restricted Discretionary Activity under Rule E26.5.3.1(A97) and (A97). Earthworks greater than 10 m^2 and 5 m^3 within the riparian yard of a stream require resource consent for a Restricted Discretionary Activity under Rule C1.9(2).
E27.4.1(A6) Use of an existing vehicle crossing where a Vehicle Access Restriction applies under E27.6.4.1(1) to service a change of activity type, and where a building is constructed.	Restricted Discretionary Activity	The existing vehicle crossing at 23-27 Brigham Creek Road will be used to provide maintenance access to the pump station from Brigham Creek Road (an arterial road). Use of an existing vehicle crossing where a vehicle access restriction applies to service a change of activity type requires resource consent under Rule E27.4.1(A6).
E36.4.1(A56) Infrastructure in the 1% AEP floodplain and on land which may be subject to instability	Restricted Discretionary Activity	Works include construction of a pipeline within the 1% AEP floodplain, and on land subject to instability adjacent to Sinton Stream. Infrastructure on land which is subject to instability and within the 1% AEP floodplain requires resource consent under Rule E36.4.1(A56).

Sensitivity: General

Rule	Activity status	Comment
E40.4.1(A24) Specific temporary activities that are not provided as a permitted activity in rules (A12) to (A23)	Restricted Discretionary Activity	The construction yards at 23-27 Brigham Creek Road, and 32 Mamari Road, will be established to support the works, and remain in place for approximately 30 months. To facilitate access to the works, the existing vehicle crossing at 23-27 Brigham Creek Road (an arterial road) will be widened, and new vehicle crossings will be established to Mamari Road and Spedding Road. Temporary activities associated with construction which are in place for greater than 24 months are not provided for as a permitted activity and require resource consent for a Restricted Discretionary Activity under Rule E26.5.3.1(A24).

A number of activities associated with the project can be undertaken as a permitted activity under the AUP:OP as detailed in Table P2.

Table P1. Permitted activities under the AUP: OP (district)

Rule	Comment
E25.4.1(A2) Activities which exceed permitted noise and activity standards	Noise and Vibration arising from construction activities is expected to meet permitted activity standards in Table E25.6.27.1 and Table E25.6.30.1 as assessed in the Construction Noise and Vibration Assessment provided in Appendix N.
E26.2.3.1(A49) Underground pipelines and ancillary structures for the conveyance of wastewater	Underground pipelines, and ancillary structures (such as scour valves) for the conveyance of wastewater are a permitted activity under Rule E26.2.3.1(A49).
E26.2.3.1(A52) Wastewater pump stations which do not comply with standards in the future urban zone	The pump station is predominantly underground. The above ground building area is approximately 50 m^2, including an electrical transformer, electrical switch room, 3 x dome carbon filters, and 2 x gantry cranes. The gantry cranes are 4 m high. Pump stations with an above ground building area of > 30 m^2, and structures which are > 2.5 m in height, in the future urban zone, are a permitted activity under Rule E26.2.3.1(A52).
E26.2.3.1(A56) Wastewater outfalls and ancillary structures	Wastewater outfalls and ancillary structures are a permitted activity under Rule E26.2.3.1(A56).
E26.2.3.1(A57) Ventilation facilities and manholes.	The pump station will contain an air valve. Ventilation facilities and manholes which comply with standards are a permitted activity under Rule E26.2.3.1(A57).
E26.4.3.1(A87) Works within the protected root zone by trenchless methods	Works to construction the gravity pipeline beneath the Tamiro Road Stormwater Embankment will be at a depth of at least 800 mm. Excavation undertaken by trenchless methods at a depth of at least 800 mm below ground level are a permitted activity under Rule E26.4.3.1(A87).
E26.4.3.1(A90) Tree trimming or removal on roads adjoining rural zones and on	Works require the removal of a number of trees from Brigham Creek Road and Spedding Road. The properties adjacent to the road are Future Urban Zone.

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roads adjoining the Future Urban Zone	Removal of trees on roads adjoining the Future Urban Zone is a permitted activity under Rule E26.4.3.1(A90).
E26.4.3.1(A91) Tree alteration or removal of any tree less than 4 m in height and / or less than 400 mm in girth (open space zone	If trenchless methods fail, open trenching through the Tamiro Road Stormwater Embankment will require removal of vegetation over approximately 1,300 m^2. Most vegetation removed will be less than 4 m in height. Removal of trees less than 4 m in height in the open space zone is a permitted activity under Rule E26.4.3.1(A91).
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.	A construction yard will be established to support construction of the gravity main at 20-22 Brigham Creek Road, and remain in place for approximately 16 months. A laydown area will be established to support the trenchless construction of the gravity main at 28 Brigham Creek Road, and remain in place for approximately 3 months. To facilitate access to the works, an existing vehicle crossings onto Brigham Creek Road (an arterial road) will be widened. Temporary activities associated with building or construction which are in place for up to 24 months are a permitted activity under Rule E40.4.1(A20).

M

Appendix M – Arboricultural Assessment (Arborlab)

N

Appendix N – Noise & Vibration Assessment (Marshall Day Acoustics Ltd)

Appendix O – Traffic Impact Assessment (Beca Ltd)

P

Appendix P – Records of Engagement