FAST TRACK INFRASTRUCTURE REPORT

TO SUPPORT A RESOURCE CONSENT APPLICATION

FOR A PROPOSED RETIREMENT VILLAGE

FOR QUEEN'S HOMES LTD

AT 82 HOBSONVILLE ROAD, WEST HARBOUR

Job No: 12825-01

Issue date : 20 February 2023

Airey Consultants Ltd | Takapuna Office
PO Box 33-103, Takapuna, 0740 | Level 8, 19-21 Como Street, Takapuna
T: +64 9 486 4542 E: takapuna@aireys.co.nz

Engineering *Ingenuity*

Document Control Record

Document Prepared By:
Airey Consultants Limited
Level 8, 19-21 Como Street, Takapuna
HARBOUR
P O Box 33 103, North Shore City

T: s 9(2)(a)
E: s 9(2)(a)
W: aireys.co.nz

Client:
QUEEN'S HOMES LTD
82 HOBSONVILLE ROAD, WEST

Revision	Description	Issue Date	Prepared by	Reviewed by
A	Issued for RC	20-Feb-23	CH	AW

Contents

Executive Summary

This report addresses the civil engineering aspects and requirements for the proposed development at 82 Hobsonville Road, West Harbour for a fast-track application. The proposed development will involve the construction of a retirement village. The existing dwelling and shed will be removed.

Bulk earthworks will be undertaken to flatten the site to facilitate construction of the buildings and accessways. Connections to existing stormwater, wastewater, water supply, power and telecommunications infrastructure in the vicinity of the site will be constructed to service the development.

It is concluded that the development can be serviced by the existing and proposed infrastructure detailed within this report.

1 INTRODUCTION

Airey Consultants Ltd has been engaged to carry out an engineering infrastructure assessment for the proposed development at 82 Hobsonville Road, West Harbour. The proposed development involves the construction of a retirement village. The existing dwelling and the shed will be removed for the construction of the development.

The purpose of this report is to provide a high-level engineering summary to address key engineering infrastructure issues in relation to a fast-track Resource Consent Application and provide an assessment of the serviceability of the proposed development.

In general, these include:

The following civil engineering issues have been considered:

- Flooding considerations & overland flow paths
- Earthworks, contamination and erosion and sediment control
- Access and vehicle crossing
- Stormwater disposal
- Wastewater disposal
- Water supply
- Utilities
    - Power
    - Gas
    - Telecommunications

2 SITE DESCRIPTION

The subject property sits on the northern side of Hobsonville Road, approximately 1.4km to the east of the intersection of Upper Harbour Motorway and North-Western Motorway. The site is bounded by residential properties to the north, west and east.

The approximately rectangular site has an area of 40,486m^2. The property is oriented in a north-northwest direction from Hobsonville Road. A dwelling is located near the south-western corner of the site and a small shed is shown on the Council's aerial photos in the northern part of the site. The main building occupies about 2,000m^2 of the site with the remaining area generally in pasture with some pocket of native bush across the property.

2.1 Titles/Zoning

The subject site is legally described as Lot 2 DP 116512. Auckland Unitary Plan maps have identified the site as being located within the Future Urban Zone.

Auckland Council notified Plan Change 5: Whenuapai Plan Change (PC5) on 21 September 2017. The subject site falls within the PC5 area and may be suited to Mixed Housing Urban Zone as per the Proposed Whenuapai Plan Change – Proposed Zoning Map included in Appendix A.

2.2 Topography

The property generally falls to the north-northeast with the high point of the property in the southwestern corner with a level of RL 66m and falling to its lowest point at approximate RL 43m. The property is bisected by the Rawiri Stream which runs in a north easterly direction on the central portion of the site. Auckland Council's GeoMaps indicates an approximately 20m wide strip of existing riparian planting on the northern side of the stream.

3 FLOOD RISK AND OVERLAND FLOW

3.1 Existing conditions

Auckland Council's GeoMaps classed the overland flow path running across the site in a north easterly direction as a permanent stream (Rawiri Stream), which arises within the site and has an upstream catchment of approximate 6.7 ha. The overland flow path merges with other tributaries into Rawiri Stream and flows towards Waiarohia Inlet.

A flood plain arising from the overland flow path is shown on the central portion of the site. The flood plain is contained to the incised gully within and downstream of the site. From the exit point of the site to the Upper Harbour Motorway, there are no habitable buildings at risk of flooding in the 1% AEP storm. The flood plain and the overland flow path is contained and running along a unlined channel showing on the Auckland Council GeoMaps. Then, the flow is likely throttled by the constructed stormwater channel under the motorway.

Figure 1-Flood Plain (from the Auckland Council GeoMaps)

3.2 Risks and Recommendations

Whenuapai 3 Precinct Stormwater Management Plan issued by Auckland Council in September 2017 states that the existing flood hazard in Whenuapai 3 Precinct is generally low. Additionally, flood modelling of future development indicated only a minor increase in risk. The Civil Infrastructure Report for the development of 86, 88 & 90 Hobsonville Road prepared by Harrison Grierson in June 2019

(Auckland Council reference – BUN60340051) confirms that the extent of the 1% AEP flood plain is restricted within the channel of the Rawiri Stream.

Furthermore, the riparian margins of a permanent or intermittent stream or a wetland must be planted to a minimum width of 10m measuring from the top of the stream bank. No diversion of the overland flow channel is proposed, and no buildings are proposed within the minimum width of 10m of riparian planting area on both sides of the stream. The existing vegetation on the northern side to a 10m width could remain, with an additional 10m width to be planted on the southern side of the stream. That allows at least 10m distance between the proposed buildings and the floodplain.

Some minor overland flow paths arising within site will be modified as part of the development. Generally, the private roads within the site will be designed to convey overland flow in 1% AEP storm event. Constructed channels may also be provided, which will be confirmed in the detailed design stage.

As such, we consider that there is no flood risk for the proposed development with the future retirement village building and associated impervious area in the 1% AEP storm.

Please refer to Appendix B for Whenuapai 3 Precinct: Stormwater Management Plan and Appendix C for Proposed Plan Change 5 - Whenuapai.

4 EARTHWORKS

The proposed bulk earthwork will generally be undertaken as a cut to fill operation, with a moderate amount of imported or exported material, to form the proposed building platforms and proposed accessway.

The proposed earthworks are anticipated to cover the entire site, except for the riparian planting area around Rawiri Stream. Hence, the site will be split into two earthworks catchments by the stream. The final earthworks design of both catchments will form a gradual slope towards the stream. The area of the northern and southern catchments is 1.5ha and 2.5ha, respectively.

Activity		Activity status				
		Residential zones, business zones, Business – City Centre Zone, Future Urban Zone, rural zones (excluding Rural – Rural Conservation Zone)	Open space zones (excluding Open Space – Conservation Zone)	Rural – Rural Conservation Zone and Open Space –Conservation Zone	Special Purpose – Quarry Zone	All other zones and roads
Fences, service connections, effluent disposal systems, swimming pools, garden amenities, gardening, planting of any vegetation, arenas for equestrian activities, burial of marine mammals, interments in a burial ground, cemetery or ūrupā, bridle paths,						
(A4)	Greater than 10,000m² up to 50,000m² where land has a slope less than 10 degrees outside the Sediment Control Protection Area[1]	C	C	C	Refer to H28 Special Purpose – Quarry Zone	C
(A9)	Greater than 2,500m² within the Sediment Control Protection Area[1]	RD	RD	RD	Refer to H28 Special Purpose – Quarry Zone	RD

According to the definition of the AUP,

Sediment Control Protection Area

(a) 100m either side of a foredune or 100m landward of the coastal marine area (whichever is the more landward of mean high water springs); or

(b) 50m landward of the edge of a lake, river or stream, or the edge of a wetland of 1,000m2 or greater.

For the propoesd earthwork outside the Sediment Control Protection Area, it is considered that the proposed earthwork will be identified as a Controlled Activity under AUP Rule E11.4.1(A4). As such, the relevant assessment criteria are addressed below.

Standard E11.7.2 Assessment Criteria states the following:

The Council will consider the relevant assessment criteria below for controlled activities:

(1) all controlled activities:

(a) whether applicable standards are complied with;

Erosion and sediment control measures in accordance with GD05 will be provided to the 1.5ha and 2.5 ha earthwork catchments. Also, the catchments slope down towards the stream on the east to the site with a gradient of generally less than 10 degrees. We consider the proposed earthwork activity complies with Activity A4 in Table E11.4.1.

(b) the proximity of the earthworks to any water body and the extent to which

erosion and sediment controls and the proposed construction

methodology will adequately avoid or minimize adverse effects on:

(i) water quality including of the coastal marine area; and

(ii) ecological health including of the coastal marine area.

Prior to earthworks commencing, the site sediment controls in accordance with the requirements of Auckland Council's GD05 (GD05) will be established. The proposed earthwork within the catchments will be in stages with progressive stabilization. Top soiling and grassing of the earthwork areas will occur as soon as possible after the completion of works to minimize the open area. Hence, the potential effects are considered to be avoided and minimized.

(c) adverse effects of land disturbance and sediment discharge on water bodies, particularly sensitive receiving environments;

The minimum 10m of riparian margins on both sides of the stream will be planted and maintained during/after the earthwork period. Planting on riparian areas can provide a natural barrier against potential chemical pollutants and soil particles getting into the stream. Therefore, riparian planting is considered to provide improvements and long-term protection to the water quality and the ecological health of the stream.

Also, outside the riparian margins, the erosion and sediment control design for the earthworks will be provided in accordance with GD05. Therefore, the potential effects are considered to be mitigated.

(d) the proportion of the catchment which is exposed;

The proposed earthworks are anticipated to cover the entire site, except for the riparian planting area around Rawiri Stream.

(e) staging of works and progressive stabilization;

The proposed earthwork within the catchments will be in stages with progressive stabilization. Top soiling and grassing of the earthwork areas will occur as soon as possible after the completion of works to minimize the open area.

(f) timing and duration of works;

The bulk earthworks works are in stages and anticipated to be undertaken within the earthworks construction season (from October to May).

(g) term of consent; and

A five-year consent is requested to match the resource consent approval period.

(h) potential effects on significant ecological and indigenous biodiversity values.

The proposed earthworks are outside the SEA overlay area. Therefore, we do not consider that there will be any effects on significant ecological and indigenous biodiversity values. Also, erosion and sediment control design for the earthworks will be provided in accordance with GD05 to protect the stream and the riparian areas. Therefore, the potential effects are considered to be minimal and be mitigated.

For the proposed earthwork on both sides of the stream within the Sediment Control Protection Area, it is considered that the proposed earthwork will be identified as a Restricted Discretionary activities Activity under AUP Rule E11.4.1(A9). As such, the relevant assessment criteria are addressed below.

Standard E11.8.2 Assessment Criteria states the following:

(1) All restricted discretionary activities:

(a) whether applicable standards are complied with;

The erosion and sediment control design has been prepared in accordance with GD05.

(b) the proximity of the earthworks to any water body and the extent to which erosion and sediment controls and the proposed construction methodology will adequately avoid or minimise adverse effects on:

(i) water quality including of the coastal marine area;

(ii) ecological health including of the coastal marine area;

(iii) riparian margins;

(iv) the mauri of water; and

(v) the quality of taiāpure or mahinga mātaitai.

We consider that the proposed erosion and sediment control measures will ensure that the effects to that above mentioned area will be less than minor.

(c) the extent to which the earthworks minimises soil compaction, other than where it benefits geotechnical or structural performance;

The use of noise generating equipment and vehicle movements to and from the site associated with earthworks activity will be controlled and kept to a minimum level. No operation of noise-generating

equipment and vehicles will take place on Sundays or public holidays. Construction works will not generate unreasonable vibration and disturbance beyond the boundaries of the subject site. Dust control in accordance with GD05 will be provided for the duration of the earthworks. Dust control will primarily be provided by watercart. No odours are anticipated to be generated by the earthworks.

(d) the proximity of the earthworks to areas of significant ecological value and the extent the design, location and execution of the works provide for the maintenance and protection of these areas;

The proposed earthworks are outside the SEA overlay area. Therefore, we do not consider that there will be any effects on significant ecological and indigenous biodiversity values. Also, erosion and sediment control design for the earthworks will be provided in accordance with GD05 to protect the stream and the riparian areas. Therefore, the potential effects are considered to be minimal and be mitigated.

(e) whether monitoring the volume and concentration of sediment that may be discharged by pthe activity is appropriate within the scale of the proposed land disturbance; and

The appropriate erosion and sediment controls will be provided for the scale of the proposed land disturbance. The erosion and sediment controls will be established, maintained, and upgraded if necessary, in accordance with Auckland Council GD05 Documentation.

(f) whether the extent or impacts of adverse effects from the land disturbance can be mitigated by managing the duration, season or staging of such works.

We consider that completing the earthworks in one season will mitigate the effects of the land disturbance. Earthworks will be stabilised by metalling the accessway areas and topsoiling & grassing of the adjacent areas as works progress.

(g) the extent to which appropriate methods are used to prevent the spread of total control pest plants or unwanted organisms (as listed under the Biosecurity Act 1993), such as kauri dieback disease.

We consider this as not applicable in this proposed development.

(2) Additional assessment criteria for land disturbance within the Significant Ecological Areas Overlay or Water Supply Management Areas Overlay.

We consider this as not applicable in this proposed development.

4.1 Erosion and Sediment Control

The area of earthworks is anticipated to be 1.5ha and 2.5ha in the corresponding catchment falling towards the Rawiri Stream. To protect the receiving downstream environment, the site sediment controls in accordance with the requirements of Auckland Council's GD05 (GD05) will be established prior to earthworks commencing. These controls may include the following:

- The riparian areas will be planted or maintained to establish a natural barrier against the sediment getting into the stream.
- Silt fences around the riparian planting areas.
- Clean water diversion lines will be constructed to divert and collect upstream catchment runoffs away from the earthwork sites.
- Construction of decanting earth bunds.
- A sediment retention pond will be provided for each catchment, these will be located near the stream on the eastern side of the site. PAC flocculating chemicals will be used to assist in the settling of particles.
- Stabilized construction entrance and single site access point.
- Use of water spray to control dust in dry weather.
- Top soiling and grassing of the earthwork areas will occur as soon as possible after the completion of works to minimize the open area.

All proposed sediment controls shall be maintained and monitored during the duration of the works. We consider the risks associated with the bulk earthworks construction phase of the project to be minor with the erosion and sediment controls constructed and maintained as above. The consent should be granted by Auckland Council, with the proposed controls, assessment of effects, and installation of appropriate controls.

4.2 Contamination

A soil investigation was undertaken for the development of 86, 88 & 90 Hobsonville Road. The Civil Infrastructure Report prepared by Harrison Grierson confirms that the investigation does identify the presence of certain compounds but concludes that concentrations are low and does not constitute any risk. No contaminated soil was required to be disposed of off-site for these sites. Additionally, a

Contamination Report prepared by Hazel Hewitt & Associates for 80 Hobsonville Road concluded that it was most unlikely that there would be any contamination issues within 80 Hobsonville Road. Therefore, we consider that there is a low contamination risk for the development at 82 Hobsonville Road.

5 ROADING AND ACCESS

It is proposed to create a new vehicle crossing to provide a site connection to Hobsonville Road at the southern boundary of the site. The access, off the site to Hobsonville Road, is likely to be towards the east of the site. The private vehicle crossing will be constructed in accordance with Auckland Transport standards.

Within site, all roads will be private and formed of concrete and asphalt. Also, separated pedestrian access is anticipated to be provided to allow for safe connectivity in the site. Specialist input from a Traffic Engineer will be provided for the detailed design stage.

5.1 Culvert Construction

A temporary culvert will be constructed in the stream to facilitate access to the northern part of the site until the bridge is constructed. A maximum 30m long culvert is expected to be constructed under the future access over the gully. **Auckland Unitary Plan Section E3. Lakes, rivers, streams and wetlands – Table E3.4.1. Activity Table** states the following:

Activities in, on, under or over the bed of lakes, rivers, streams (including intermittent stream) and wetlands		**Activity status- outside overlays**	**Activity status - within overlays**
New structures and the associated bed disturbance or depositing any substance, reclamation, diversion of water and incidental temporary damming of water			
(A32)	Culverts or fords less than 30m in length when measured parallel to the direction of water flow complying with the standards in E3.6.1.18	P	D

This work would be considered to be a *Permitted Activity* under Table E3.4.1 if it is less than 30m in length (when measured parallel to the direction of water flow). The construction would be designed and undertaken to meet all the requirements of the Auckland Unitary Plan E3.6.1.14 and E3.6.1.18.

6 STORMWATER

6.1 Stormwater Management

The site is not located within a Stormwater Management Area Flow 1 or 2 of AUP. However, as the site discharges to a permanent stream, a method of achieving equivalent hydrology to pre-development (grassed state) levels in accordance with the Auckland Regionwide Stormwater Network Discharge Consent Schedule 4 requirements is proposed as described below:

- Provide retention (volume reduction) of a minimum of 5mm runoff depth for all impervious areas.
- Provide detention (temporary storage) with a draindown period of 24 hours for the difference between the pre-development (grassed state) and post-development runoff volumes from the 95th percentile, 24 hour rainfall event minus the retention volume for all impervious areas.

The requirements above are equivalent to Stormwater Management Area Flow 1 of AUP (SMAF 1). As such, Each building in the development will be required to have raintanks to provide detention and retention volume in accordance with SMAF 1.

The private roads will be provided with raingardens to provide detention and possibly retention. The required retention volume of the raingardens will be confirmed at the detailed design stage. If the raingardens cannot provide retention, then the retention volume will be taken up as detention.

All the runoff from the impervious areas in the site will be drained into the private reticulated stormwater system and discharged to Rawiri Stream via outlets designed to minimize erosion, scour and temperature effects on the downstream receiving environment.

6.2 Stormwater Management -Quality

We consider stormwater treatment is not required for the proposed roof area as the development does not create any high contaminant yielding roofing, spouting, cladding material or architectural features.

The paved trafficable areas including car parking areas and private roads, will be provided with stormwater quality treatment devices in accordance with Auckland Council GD01. The raingardens and catchpits with filter inserts will be adopted to capture gross pollutants and provide treatment by

the collection of sediments and some heavy metals. Also, the half-syphon system in the catchpits will prevent hydrocarbons from entering the downstream stormwater system.

Detailed design and specification of treatment devices will be undertaken at the Building Consent stage for the private paved trafficable areas.

7 WASTEWATER

7.1 Existing Wastewater

The existing wastewater from the property discharges into a septic tank with an associated disposal area located to the northeast of the dwelling. Auckland Council's GeoMaps shows that current public wastewater infrastructure exists on the southern side of Hobsonville Road but has insufficient depth to serve the subject development. An alternative 150mm diameter wastewater line is located along Westpoint Drive, approximately 100m to the east of the subject property.

7.2 Proposed Wastewater

Watercare has confirmed capacity constraints in the wastewater network located south of the site. Please refer to the Appendix D. Therefore, a private low pressure wastewater system will be installed within the site to limit the additional flow to the existing downstream network. As a result, there will be no stormwater infiltration into the sealed LPS pipework or chambers and, eventually less flow will be discharged into the downstream public wastewater reticulation network.

All the on-site pump units, control system, storage and pipework will be owned, operated and maintained by the property owner. The LPS will be directed to a new receiving manhole located adjacent to site access at the south of the site. A new public gravity network with a length of

approximately 300m is to be constructed along Hobsonville Road and Westpoint Drive to connect to the existing manhole on Westpoint Drive.

We have undertaken a downstream wastewater capacity assessment which is attached in Appendix E, this demonstrates that the post-development pipe capacity ratio of the downstream pipe will be less than 75%. Hence, we consider that the additional wastewater flow is appropriately managed, and the existing public downstream network has sufficient capacity to cater for the development.

8 WATER SUPPLY

8.1 Existing Conditions

A 150mm diameter water main and a 200mm diameter water main are located on the northern side of Hobsonville. A 910mm diameter transmission main is also located in the centre of the road. A 20mm Diameter Nominal connection from the 150mm diameter water main is servicing the existing dwelling.

8.2 Proposed Water Supply and Firefighting Water Supply

Watercare has confirmed that there is a capacity in the local water supply network to serve the proposed development. A new connection would be made to the 150mm diameter water main on the northern side of Hobsonville Road. A private water supply network within site will be provided to ensure potable water and firefighting supply to the development. Private fire hydrants will be provided as required in accordance with SNZ PAS 4509. It is expected that sprinkler systems will be provided for future multistorey buildings, but this will be confirmed at Building Consent Stage for the buildings.

9 UTILITIES

9.1.1 Power

There are high voltage cables (6,600 – 11,000 volt) running underground along the northern side of Hobsonville Road and low voltage cables (400 volt) running across the subject site. Underground power service will be provided for the proposed development by connecting to the existing infrastructure located along Hobsonville Road. The design will be undertaken by relevant service contractor.

9.1.2 Gas

The Vector gas estimator indicates that there is no natural gas available directly outside the property. Vector is to be contacted if further information of the available gas network is required. However, we do not anticipate that gas reticulation will be required by the development.

9.1.3 Telecommunications

The site is serviced by existing underground telecommunications infrastructure, and the Chorus broadband availability map indicates that fibre is available to the property.

10 ENGINEERING RISK ASSESSMENT CONSIDERATION

The engineering risks pertaining to the proposed development have been categorized into low, medium, and high.

High – Required detailed engineering investigation and input from other engineering specialists

Medium – Standard engineering solutions will apply – may require staging of works/upgrades of some public infrastructure.

Low – General compliance with standards

A breakdown of each risk and how it relates to each engineering discipline can be found in table 1 below.

Engineering Discipline	Level of Complexity	Proposed Outcome/Solutions
Flooding and Overland Flow	Low	The site is in a low flood hazard area, and the flood plain is restricted within the channel of the Rawiri Stream.
Earthworks	Medium	The cut to fill earthwork is anticipated to cover the entire site in stages. The site sediment controls in accordance with the requirements of the Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region GD05 (legacy ARC TP90) will be established prior to earthworks commencing.
Roading and Assess	Low	The private vehicle crossing will be constructed in accordance with Auckland Transport standards. Private roads and separate pedestrian access will be provided for safe connectivity within site.
Stormwater Management	Medium	SMAF1 control and stormwater quality treatment devices in accordance with GD01 for the site will be provided to control the stormwater runoff discharge to the Rawiri stream.
Wastewater	Medium	Watercare has advised the existing networks have limited capacity for the potential retirement village. Airey considers the LPS reticulation system can allow the downstream network to cater for the wastewater flow of the development.
Water	Low	Watercare has advised there is sufficient capacity and suitable pressure on the existing network to service the development.
Utilities	Low	The design will be undertaken by the utility providers.

11 SUMMARY

This report concludes that the proposed development can be serviced by the provision of appropriate infrastructure as described. The engineering and infrastructure as proposed will enable the subject site to be serviced in accordance with Council's and Watercare's requirements. We consider that civil engineering infrastructure mitigations and managing measures are adequate to support the fast-track application process and comply with the policies & objectives of the Auckland Unitary Plan.

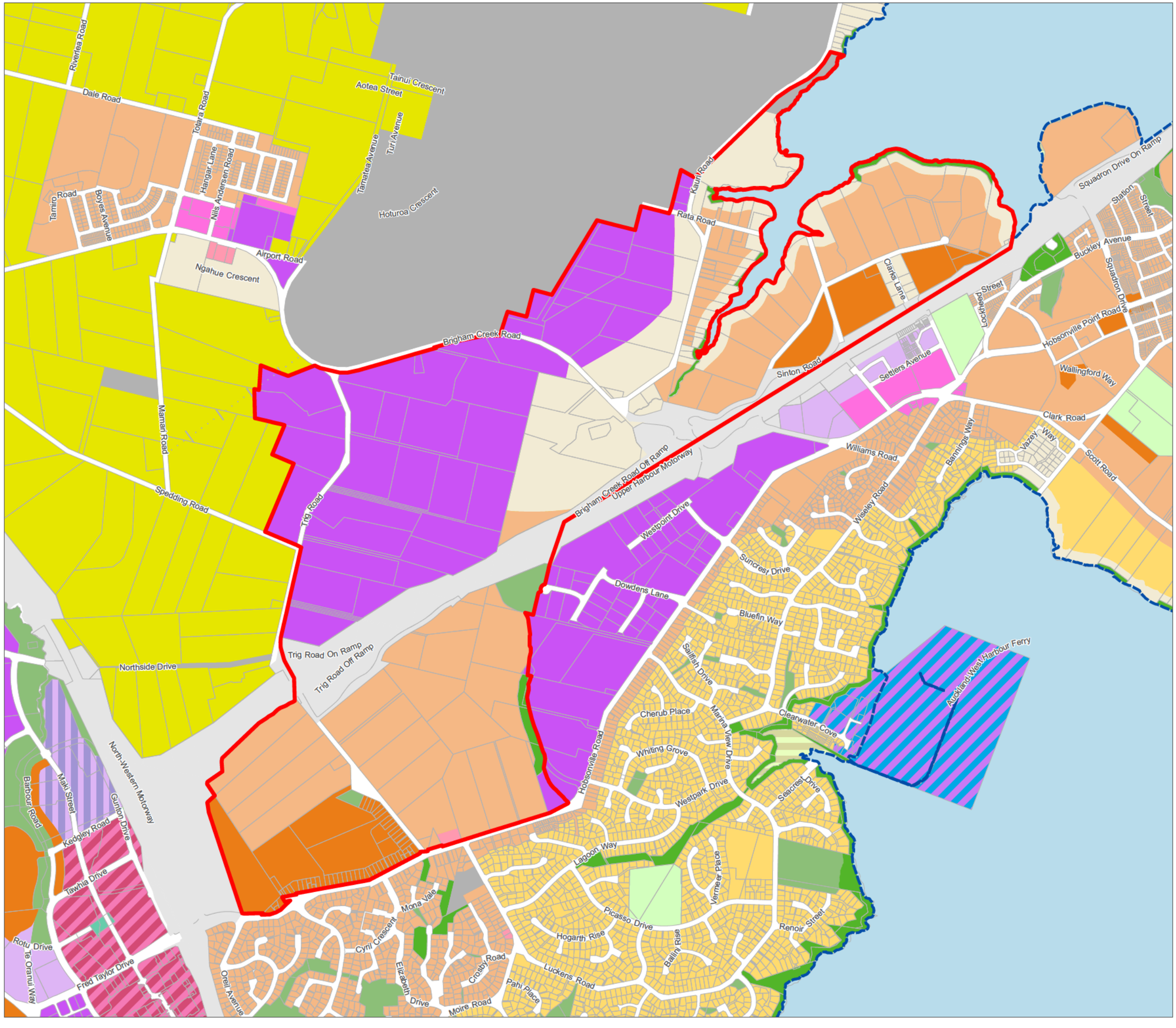
Appendix A

Proposed Whenuapai Plan Change - Proposed Zoning Map

Proposed Whenuapai Plan Change

Date: 6/09/2017

Proposed zoning map



Land Parcels

Whenuapai Zone change boundary

Indicative Coastline

Unitary Plan Zones

- Residential - Large Lot Zone
- Residential - Rural and Coastal Settlement Zone
- Residential - Single House Zone
- Residential - Mixed Housing Suburban Zone
- Residential - Mixed Housing Urban Zone
- Residential -Terrace Housing and Apartment Buildings
- Open Space - Conservation Zone
- Open Space - Informal Recreation Zone
- Open Space - Sport and Active Recreation Zone
- Open Space - Civic Spaces Zone
- Open Space - Community Zone
- Business - City Centre Zone
- Business - Metropolitan Centre Zone
- Business - Town Centre Zone
- Business - Local Centre Zone
- Business - Neighbourhood Centre Zone
- Business - Mixed Use Zone
- Business - General Business Zone
- Business - Business Park Zone
- Business - Heavy Industry Zone
- Business - Light Industry Zone
- Future Urban Zone
- Green Infrastructure Corridor (Operative in some SHAs)
- Rural - Rural Production Zone
- Rural - Mixed Rural Zone
- Rural - Rural Coastal Zone
- Rural - Rural Conservation Zone
- Rural - Countryside Living Zone
- Rural - Waitakere Foothills Zone
- Rural - Waitakere Ranges Zone
- Strategic Transport Corridor Zone
- Special Purpose Zone
- Coastal - General Coastal Marine Zone
- Coastal - Marina Zone
- Coastal - Mooring Zone
- Coastal - Minor Port Zone
- Coastal - Ferry Terminal Zone
- Coastal - Defence Zone
- Coastal - Coastal Transition Zone

N

0 150 300 600 Metres

Auckland Council

Appendix B

Whenuapai 3 Precinct - Stormwater Management Plan

Whenuapai 3 Precinct:

Stormwater Management Plan

September 2017

Healthy Waters

Infrastructure and Environmental Services

Auckland Council

Prepared for:	Healthy Waters Department Auckland Council

Author:	Simon Karl Senior Planning and Policy Consultant 4Sight Consulting	
Reviewer:	Ian Mayhew Principal Planning and Policy Consultant 4Sight Consulting	

Approved for Release:	Katja Huls Healthy Waters Resource Management Team Manager	

Document Name	Whenuapai 3 Precinct: SMP Final September 2017	
Version History:	V3.0	September 2017

Acknowledgement:

This Stormwater Management Plan has been prepared on behalf of Auckland Council, Healthy Waters Department by 4Sight Consulting for the Whenuapai 3 Precinct. The Stormwater Management Plan is based on information in the following report:

Whenuapai Stormwater Management Plan (SMP) Update – Final. Prepared for Healthy Waters by AECOM New Zealand Ltd (dated 10 July 2017)

Additional material relevant to the Whenuapai 3 Precinct area has also been utilised, as referenced in the summary.

4SIGHT
CONSULTING

Whenuapai 3 Precinct: Stormwater Management Plan

Table of Contents

List of Tables

List of Figures

1. Introduction

1.1 Context

This document summarises the Whenuapai Stormwater Management Plan (SMP) Update - Final[1] (Whenuapai SMP) and outlines stormwater management requirements as they relate to the '***Whenuapai 3 Precinct***' (W3P) sub-catchment (refer Figure 1).

W3P is located approximately 23 kilometres northwest of central Auckland on either side of the Upper Harbour Motorway. The Waiarohia Inlet is to the northeast.

Figure 1: Whenuapai 3 Precinct location

1.2 Purpose

The W3P SMP has been produced to promote and support best practice sustainable urban development at Whenuapai for the Auckland Council led Whenuapai Structure Plan process. This is in accordance with the direction provided by the statutory framework (refer Section 3.4) that includes national and regional policy instruments including the New Zealand Coastal Policy Statement(NZCPS), the National Policy Statement for Freshwater Management (NPSFM, Hauraki Gulf Marine Park Act 2000 (HGMPA) and Auckland Unitary Plan (Operative in Part) (AUP (OP)).

The W3P SMP gives effect to the Auckland Stormwater Network Discharge Consent (NDC) application. This application seeks to authorise stormwater diversion and discharges from Auckland's existing and future urban areas. Once granted, the Auckland Stormwater NDC will authorise the diversion and discharge of stormwater from future development areas, provided specified stormwater management requirements are met or alternatively that development is undertaken in accordance with the requirements of an approved SMP.

The purpose of this SMP is to direct the stormwater management response in the context of the W3P catchment's receiving environments, proposed development and existing stormwater management issues/ opportunities. While

[1] AECOM New Zealand Ltd (dated 10 July 2017)

the W3P SMP provides overarching guidance for stormwater management across the precinct, it is anticipated that delivery will be undertaken by developers. Accordingly, the W3P SMP outlines the outcomes sought, minimum requirements and other considerations (such as environmental enhancement potential). However, there is flexibility for developers to determine how the requirements are met and the extent to which these are achieved on-site or through communal infrastructure and devices within and across developments.

The W3P SMP is in turn given effect to by the Whenuapai 3 Precinct Plan change, which includes the objectives, policies and rules that apply to the subdivision and development of W3P.

2. Catchment and Receiving Environments

2.1 Topography & Geology

WP3 is comprised of mainly flat to rolling land, with localised areas of steeper terrain around incised channels and low-level escarpments at the coastal margins. There are a few areas with steeper slopes associated with ridgelines towards the south of W3P, but the catchment is predominantly low-lying.

The geological units in the Whenuapai catchment area are largely composed of the East Coast Bays Formation (Waitematā Group) which forms the area's steeper slopes, and Puketoka Formation which forms the gently sloping and low-lying areas. Undifferentiated alluvium occurs within narrow gullies and flood plains around stream margins throughout the catchment. The soil types in the catchment area generally follow the make-up of the underlying geology, and are mostly poorly draining clays.

Testing suggests that soils in the catchment area are of 'low permeability' and considered of low soakage potential generally, but with isolated pockets of high soakage potential. Hence, the soils have limited ability to absorb large runoff volumes, but are likely to be able to provide for infiltration and stream baseflow.

2.2 Hydrology

2.2.1 Streams/Wetlands

The W3P catchment hydrology is dominated by the Waiarohia Stream, which is fed by a number of named (Trig and Rawiri) and unnamed tributaries that merge then generally drain north-east towards the Waiarohia Inlet and Upper Waitematā Harbour (refer Figure 2). In addition, a small sub-catchment in the south-western corner of W3P drains land from west of Trig Rd in a general north-west direction to the headwaters of Totara Creek (which largely sits outside W3P). This in turn discharges to the Upper Waitematā, further to the north east, at Brigham Creek.

The watercourses within W3P have been modified as a consequence of rural land use, including un-fenced stock access to riparian margins and directly through lower-order streams, stream culverting, plus the creation of irrigation and ornamental on-line ponds. Many of these changes have restricted fish passage up the W3P catchment. Livestock movements have resulted in direct contamination, stream bank erosion and resultant sedimentation of the harbour. Whilst these changes have not included the formation of lined channels, culverts have been constructed beneath roads and reclamation is likely to have occurred (Morphum Environmental, 2016)[2].

Overland flow paths are typically linked to narrow intermittent watercourses that drain into the permanent stream network described above. A number of remnant wetlands and artificial ponds are situated on tributaries of the Waiarohia Stream, most notably the 8,000m^2 Koenen Pond. Further to these, eight natural ponds have been identified within the catchment, indicative locations of which are also illustrated in Figure 2.

[2] Watercourse Assessment Report: Whenuapai Structure Plan Area. Morphum Environmental Ltd, September 2016.

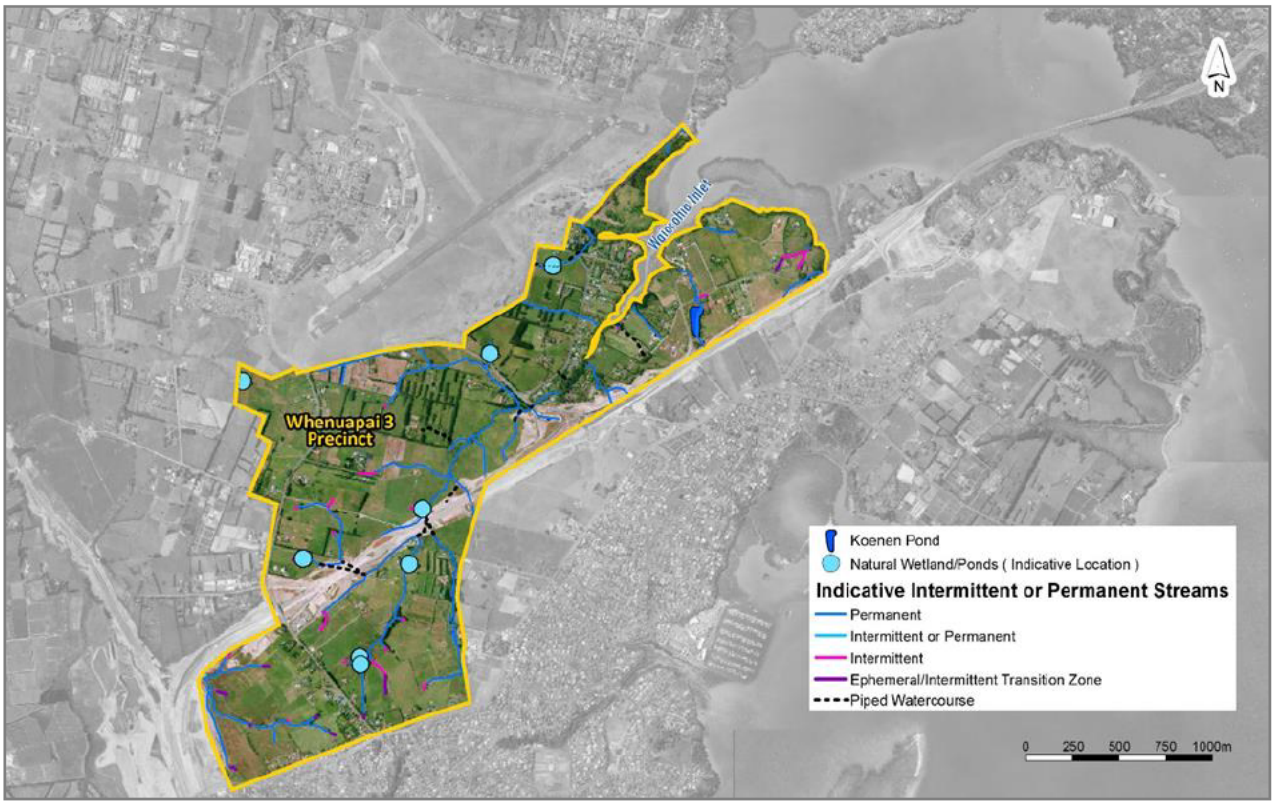


Figure 2: Whenuapai 3 Precinct Stream Network
(from Morphum Environmental, 2016)

A detailed description of the stream network is provided in Morphum Environmental (2016). Overall, sites within the Waiarohia Stream (and tributaries) are identified as being within the 'moderate' ecological value range (stream ecological valuation (SEV) score 0.3-0.7) for fish and macroinvertebrates. Existing water quality was also assessed as generally being 'poor'. Table 1 provides a summary of stream quality within the Waiarohia Stream catchment and tributaries.

Table 1: Summary of Existing Waiarohia Catchment Stream Quality
(from Morphum Environmental, 2016)

Stream Name	General Condition	Water Quality	Biological Quality	Native Fish	Reaches with widths 3m+
Waiarohia Stream	Modified with fine sediment loading Poor quality habitat	Low dissolved oxygen Elevated heavy metals	SEV Moderate	Observed	Yes – defined banks evident
Trig Stream	Slow flowing, intermittent in places	Poor	SEV Moderate	No information	Yes – heavily modified by pugging
Rawiri Stream	Slow flowing, intermittent in places	Poor	SEV Moderate	No information	No information

The Macroinvertebrate Community Index (MCI) is an index of stream health based on the type and number of macroinvertebrates (animals such as insects, crustaceans, snails and worms) that live in rivers. Macroinvertebrates have been used extensively for the assessment of river health and the MCI has been adopted in the AUP(OP) as a guideline for freshwater ecosystem health. Hence it is presented in more detail here.

Macroinvertebrate Community Index scores for the Waiarohia Stream Catchment, collected over a range of surveys, are presented in Table 2. They display variability, but generally range between 60 and 72. MCI values of less than 80 indicate 'poor' quality (Stark and Maxted, 2007[3]). Comparison with the AUP (OP) MCI guideline value for rural land use adopted for the Auckland region (MCI of 94), also indicates that the Waiarohia Stream and tributaries are degraded below that typically associated with rural land uses in Auckland. In the circumstance where the current stream condition is below guideline values, the AUP (OP) directs that water quality, flows, stream channels and their margins and other freshwater values should be enhanced.

Table 2: MCI Scores for the Waiarohia Stream Network
(from Morphum Environmental, 2016 - see this report for the source of the individual MCI values)

Stream	Year	MCI Score
Upper Waiarohia (W1)	1997	60
Upper Waiarohia (W2)	1997	100
Mid-Waiarohia (W3)	1997	72
Mid-Waiarohia (W4)	1997	60
Mid Waiarohia (SEV 4)	2009	64
Mid-Waiarohia	2000	69
Lower Waiarohia (W5)	1997	70
Lower Waiarohia (W6)	1997	65
Lower Rawiri Stream	2009	72
Upper Rawiri Stream	2009	110

In addition to poor water quality and stream health, barriers to fish passage have also been identified and these contribute to limiting the native aquafauna populations. Introduced/pest species of fish have been sighted within W3P.

Overall the Waiarohia Stream and its tributaries are degraded as a result of current land uses. However, Morphum Environmental Ltd (2016, pg 35) note that "*...due to the spatial scale of historical impacts from agricultural land use drainage within the catchment, Enhancement Opportunities are abundant. Particularly common potential Enhancement Opportunities within the catchment includes fencing and planting riparian margins; enhancement of wetland areas; removal of online farm ponds, and, daylighting piped sections of streams*". The existing wetlands at 23-25 Trig Road and 167 Brigham Creek Road are specifically identified as key improvement opportunities within W3P with respect to amenity, ecology, conveyance and water quality values.

2.2.2 Groundwater Aquifers

The Whenuapai catchment is located entirely upon the Kumeu-Waitematā Aquifer, with some evidence of an additional aquifer system potentially occurring within younger volcanic rock formations. The Kumeu-Waitematā Aquifer is identified as a "High Use Aquifer Management Area" under the AUP (OP), recognising its importance as a direct source of water supply for domestic, industrial and rural use. However, the Auckland Water Quantity

[3] Stark JD, Maxted JR 2007. A user guide for the Macroinvertebrate Community Index. Prepared for the Ministry for the Environment. Cawthron Report No.1166.

Statement (2012/2013) (Table 2 Page 10)[4], indicates that this aquifer is not fully allocated, with water allocation being approximately 55% of total availability.

Much of the groundwater within the catchment area is obtained from the Tauranga and Waitematā Group sandstones, with groundwater recharge and near surface flows generally resulting from surface infiltration. These flows mainly occur within more permeable layers and minor fractures. As a result, groundwater movement is generally relatively slow, with an estimated mean soakage rate of approximately 13.6mm per day, or 1% of mean annual rainfall. Groundwater levels range between 0.5m and 2.5m below ground level (during wet conditions), suggesting that a perched water table may exist in the area.

2.2.3 Existing Flood Risk

The extent of existing 1% AEP (100yr ARI) floodplains within the W3P catchment are primarily located around coastal inlets and streams. Generally speaking, the flood hazard in W3P is considered low, with only two buildings within the W3P catchment identified by flood hazard modelling as being susceptible to habitable floor flooding in the 100yr ARI event. These are located in the vicinity of Brigham Creek Road.

2.3 Terrestrial Ecology

The Whenuapai Structure Plan advises that historic rural activities have resulted in a poorly defined and poorly linked network of natural systems with little habitat or connective corridors for biota. The majority of W3P is composed of pasture and horticultural ground/planting, which has largely cleared natural vegetation.

Variable coverage of exotic and native vegetation is found mainly along riparian margins or as shelter belts, with the notable exception of extensive native plantings integrated along the State Highway that forms an important ecological corridor. Only one small pocket of land at the terminus of the Waiarohia Stream Inlet is recorded as a terrestrial Significant Ecological Area under the AUP (OP). However, the Northern Strategic Growth Area (NGSA) maps identify Environmentally Sensitive Areas centred around riparian margins throughout W3P.

2.4 Coastal Environment

2.4.1 Coastal Interface

W3P is amongst the upper-most reaches of the Waitematā Harbour. Its interface with the coastal marine area (CMA) primarily consists of the relatively narrow Waiarohia Inlet, which is a low-energy mangrove-dominated estuarine system surrounded by approximately 4.5km of cliffed coastline.

The Boffa Miskell 2010 Landscape Restoration Plan identifies that areas within the Upper Waitematā Harbour surrounding the wider Whenuapai catchment are considered of regional, national and international significance, largely due to the presence of salt marsh, mud flat systems and mangrove swamps that provide habitat and resources for a variety of plant and animal species.

Much of the W3P coastal margin is protected from direct wave erosion by the extensive mangrove swamps and shell banks, and because of the low wave energy environment experienced[5]. However, general slope instability at coastal margins remain.

2.4.2 Estuarine Environment

AECOM's 2017 Coastal Habitat Assessment[6] concluded that coastline vegetation comprised a mix of native and exotic species. There are small pockets of indigenous flora that remain and these provide relatively good diversity and structure considering the disturbed nature of the surrounding landscape. Patches of saltmarsh were also observed along the coast, particularly around Waiarohia Inlet and to a lesser extent, Brigham Creek.

[4] Stansfield, B and Holwerda, N (2015). State of the environment monitoring: Auckland water quantity statement 2012/2013. Prepared by EIA Ltd for Auckland Council. Auckland Council technical report, TR2015/005
[5] Tonkin + Taylor (2017). Coastal Hazard Assessment Whenuapai Plan Change Stage1. Prepared for Auckland Council
[6] AECOM (2017). Coastal Habitat Assessment, Whenuapai Structure Plan Area. Prepared for Auckland Council

The SMP notes that the intertidal mudflats are recognised for their ecological value as a habitat for wading birds, in particular the South Island pied oystercatcher, pied stilt, wrybill, lesser knot and reef heron. The mangrove and salt-marsh vegetation provides habitat for threatened species such as the banded rail. Shell banks are used by species such as the Northern New Zealand dotterel, variable oystercatchers, Caspian tern and banded dotterel.

2.4.3 Contamination

Heavy metal contamination of nearshore seabed sediments is associated with urban areas. Estuarine areas, such as the Waiarohia Inlet and Brigham Creek to the north, are particularly susceptible to the accumulation of metals and other contaminants due to their often narrow width and low tidal energy which encourages deposition rather than dispersion of contaminants carried in stormwater discharge. Auckland Council operates a marine sediment contamination monitoring programme across Auckland's harbours and estuaries.

Analysis of contaminant concentrations in coastal sediments across 16 sites within the Upper Waitematā Harbour are reported in "*The Upper Waitematā Harbour Reporting Area: 2014 Marine Report Card*" by Auckland Council. The Environmental Response Criteria (ERC) monitoring locations of relevance to W3P are the sediment quality site on the southern bank of the Waiarohia Inlet and the chemistry / ecology site further into the harbour just to the south of Herald Island. The saline water quality and chemistry water quality sites within the Brigham Creek Inlet are also of some relevance as a small portion of W3P drains to this receiving environment via Totara Creek.

Results indicate that contamination concentrations within the Upper Waitematā harbour are generally below the ERC amber (some contaminant elevation) threshold for heavy metals. Despite this, the contamination levels observed are higher than would be expected for a mostly rural catchment, particularly for copper, which indicate a potential for broad-scale impacts on benthic ecology.

Figure B7.4.2.1 of the AUP (OP) identifies areas of coastal water that have been degraded by human activities. It classifies the Upper Waitematā Harbour area as being Marine Degraded 1. Degraded 1 areas are those areas where monitoring data shows a high level of degradation (to marine water quality, sediment contamination and benthic health) and are likely to show significant adverse effects on ecosystems and natural habitats (Carbines, 2014[7]).

2.5 Land Contamination

Past application of horticultural pesticides and agricultural fertilisers presents potential for elevated levels of contamination in soils. In addition, an historic landfill site has been identified to the east of the Whenuapai Air base on the northern bank of the Waiarohia Inlet.

2.6 Heritage Sites

W3P contains several historic structures and recorded archaeological sites, as well as a historic heritage 'place'. As these features have little relevance to stormwater management, they have not been considered further.

2.7 Cultural

The Whenuapai Structure Plan reports that Te Kawerau ā Maki and Ngāti Whātua o Kaipara have indicated that they each have a spiritual and cultural connection to the area of Whenuapai and its surrounds. Both iwi are mana whenua of the area and, as such, have kaitiaki and other obligations and responsibilities to the land and its cultural and natural resources.

2.8 Existing Development

Existing development in the W3P catchment is predominantly rural (horticulture, agriculture and lifestyle blocks), with small pockets of low-intensity residential areas around the Waiarohia Inlet and the southern extent of Trig Road. The Upper Harbour Motorway dissects the western half of W3P. The New Zealand Defence Force (NZDF) Whenuapai Air Base is located to the immediate north of W3P. The catchment is currently zoned 'Future Urban' under the AUP (OP).

[7] Statement of Evidence of Megan Carbines on Behalf of Auckland Council to the Auckland Unitary Plan Independent Hearings Panel on Topic 008 – RPS Coastal, 9 October 2014

Very little existing public stormwater infrastructure has been built within W3P. Stormwater needs are mostly met by private systems of piped culverts, open drains and ponds/modified wetlands and road drainage.

3. Future development

3.1 Proposed Zones

The Whenuapai Structure Plan and the W3P Plan provide for the development of urban landuse in the W3P catchment, as illustrated in Figure 3 below. The Precinct Plan allows for establishment of light industry to the north west of the State Highway and a variety of residential intensities in the south and north-eastern areas of W3P.

Under the W3P Plan, it is proposed to comprehensively develop W3P in a sequential manner (named Staging 1A to 1E), which includes the creation of esplanade reserves and open space land amongst arterial and collector roads.

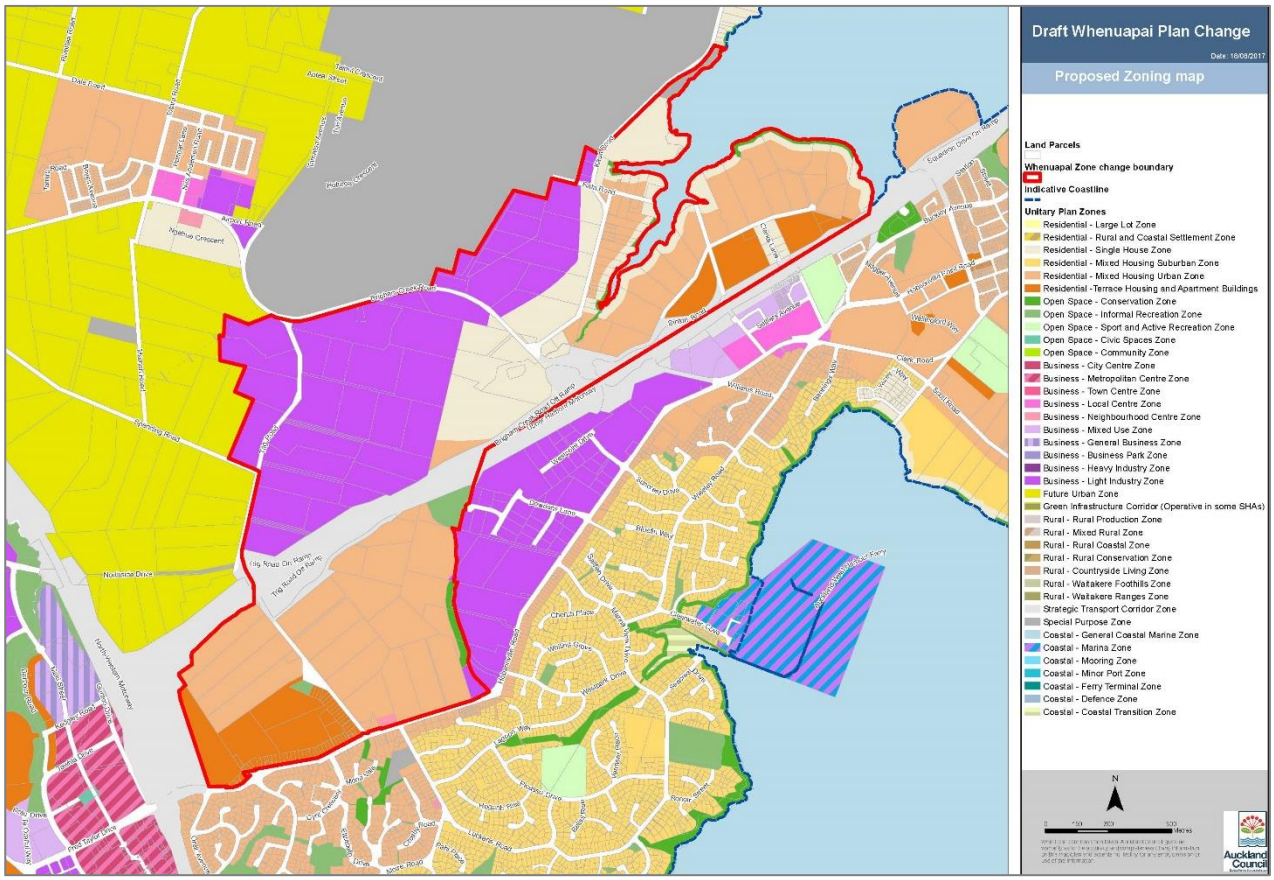


Figure 3: Map of Future Development of W3P (September 2017)

Under the AUP (OP), maximum impervious area is not limited for the Business - Light Industry Zone (although other requirements such as landscaping may apply), while the Residential - Mixed Housing Urban and Terrace Housing and Apartment Zones are limited to 60% and 70% respectively. Under the W3P Plan, light industry and higher density residential development have been located away from the main channel of the Waiarohia Stream and its tributaries. Residential development, which generally has more flexibility to work around existing hydrology and offers greater ability for (and ultimately amenity from) enhancement of streams, has been located in upper catchment areas and around the coastal margins. This zone layout is generally consistent with an integrated stormwater management approach/water sensitive design (WSD).

3.2 Key Stormwater Management Issues

As discussed above, W3P is a predominantly rural catchment where previous agricultural and horticultural activities have removed native vegetation and modified watercourses and hydrology. These activities have resulted in degraded streams and negatively impacted coastal marine environment quality.

Urbanisation has the potential to create and exacerbate flood risks and degradation of receiving environments. At the same time, well-designed urban development offers the opportunity to reduce existing adverse effects and enhance and revive degraded freshwater and marine environments.

3.2.1 Flood Hazard

The existing flood hazard in W3P is generally low. Only two buildings within the W3P catchment were identified by flood hazard modelling as being susceptible to habitable floor flooding in the 100yr ARI event. Additionally, flood modelling of future development indicated only a minor increase in risk and inundation of buildings.

Accordingly, flood hazard is not a key constraint in the catchment provided an appropriate approach to development and the management of flood plains and overland flow paths is implemented. This includes locating buildings and other activities that are vulnerable to flooding outside of flood plains, ensuring that the stormwater network (including the pipe network and overland flow paths) are of sufficient capacity and appropriately located to safely convey stormwater and to reduce existing flooding where possible. For development to the southwest of the State Highway, consideration should be given to the capacity of the culverts under the State Highway to ensure that flood flows do not affect the operation of the State Highway or cause ponding that affects new development.

3.2.2 Stream Environments

Stream quality issues currently facing W3P can be summarised as:

- **Morphology**: Modifications of streams have restricted fish passage up the catchment, and creation of wetlands or ponds to support agricultural activities affect stream ecological values through increased water temperatures and reduced oxygen levels.
- **Contamination**: Unrestricted stock access and removal of streamside vegetation has resulted in direct contamination, stream bank erosion and subsequent sedimentation of the harbour.
- **Biodiversity/habitat value**: The land has been largely deforested, and exhibits a very limited extent of native flora generally. Weed species often dominate. The lack of riparian vegetation has negative flow-on effects for terrestrial and aquatic ecological values.
- **Retention of stream base flows**: The creation of ponds to support agricultural activities have been observed to reduce the base flow of streams during summer months.
- **Controlling stream flood flows**: High-volume and high-speed flood flows have potential to create erosion and subsequent sedimentation effects.

If not appropriately managed or mitigated, urbanisation of W3P may lead to further stream degradation such as:

- **Changes to hydrology:** Urbanisation will significantly increase impermeable surface area, leading to greater stormwater runoff rates and volumes that in turn increase peak stream flows, flood risk, erosion potential and sediment discharge. The widespread establishment of impervious areas reduces infiltration, which may further reduce stream base flows (particularly in upper and mid catchment stream reaches) and reduce recharge to the underlying groundwater aquifer.
- **Further habitat loss/fragmentation**: This may result from the removal of remaining vegetation and piping/culverting of watercourses for creation of developable land.
- **Water quality**: A change to the source and composition of contaminants, with potential to result in the increase in urban-type contaminants (e.g. heavy metals and hydrocarbons) poses a threat to water (and sediment) quality in streams. This in turn may increase impacts on the ecosystem health of freshwater environments.

3.2.3 Coastal Environment

The primary issues currently facing the coastal environment at W3P are:

- **Water quality:** The Waiarohia Inlet and Brigham Creek, which will receive stormwater from the future development of W3P, and the wider Upper Waitematā Harbours are identified as being degraded in the AUP (OP). The narrow, low energy estuaries are valued marine environments that are susceptible and sensitive to contaminant accumulation.
- **Erosion:** General slope instability at coastal margins, and the amplification of coastal hazards stemming from sea-level rise.

Urbanisation of W3P has the potential to lead to further degradation of the coastal environment. While a potentially positive consequence of the establishment of impervious areas is a reduction in sediment runoff from rural land/stock access to streams, this is replaced by the introduction of urban development and the generation, discharge and accumulation of 'urban' contaminants such as gross stormwater pollutants (litter), heavy metals and hydrocarbons. Accumulation and an increasing concentration of metals is likely to occur in the narrow estuaries of the Waiarohia Inlet and Brigham Creek. While this can be mitigated to some extent, stormwater treatment is only partially effective[8] and consequently a comprehensive approach that reduces the generation of contaminants at source and applies treatment is required to effectively minimise contaminant increases in coastal waters and sediment.

Given the nature of the catchment hydrology, it is likely that the stormwater from most of the future development will be piped to the Waiarohia Stream and its tributaries. However, coastal stormwater discharges will likely occur in those areas where the natural topography falls to the coast. This will increase the risk of coastal erosion and a proliferation of costal discharge structures may impact on the natural character of, and public access to and around, the coast. However, this should be able to be adequately mitigated through appropriate design and location of outfalls.

3.2.4 Aquifer Systems

Potential impacts to the underlying Kumeu-Waitematā aquifer are related to the reduction in filtration, which is a component of aquifer recharge. As with preservation of stream base flows, maintaining a sustainable hydrology, including through infiltration, is required to avoid significant impacts on the supply of water to the aquifer system at W3P.

It is noted that the Kumeu-Waitematā aquifer is currently not fully allocated and urbanisation is likely to reduce water demand further with the change from agriculture/horticulture to urban land uses. However, consideration should be given to providing infiltration to sustain the aquifer system.

3.2.5 Mana Whenua Values

The environmental health issues discussed above are expected to mirror iwi cultural concerns. A Cultural Values Assessment (CVA) was completed by Ngāti Whātua o Kaipara in May 2017 to identify potential effects on their values at W3P. The CVA identified that development provides opportunities for the spiritual values of Mana Whenua to be recognised and enhanced. Te Kawerau ā Maki also hold mana whenua at Whenuapai, and provided input to the Whenuapai Structure Plan, with particular focus on the sustainable management of taonga such as waterbodies, native flora and indigenous fauna.

3.3 Enhancement Opportunities

While urbanisation of W3P has the potential to give rise to, or exacerbate, the adverse effects identified above, the change in land use also offers significant opportunities to enhance the currently degraded environments through appropriately designed and managed subdivision and development. The AUP (OP) recognises the opportunity that greenfield development planning presents to identify and implement enhancement opportunities, in addition to minimising new adverse effects. As discussed below, objectives and policies of the plan, particularly in E1, seek an

[8] A stormwater treatment device that is designed to remove 75% of suspended sediment typically removes 35% to 50% or metal contaminant

integrated stormwater management approach and the progressive reduction in existing adverse effects on/enhancement of degraded freshwater and coastal systems.

Opportunities include:

- **Hydrologic mitigation:** Maintaining sustainable hydrology, consistent with pre-development hydrology, is an essential component of the future development of W3P. Reducing stormwater runoff through retention (volume loss) and detention (temporary storage and slow release) mitigate the increased stormwater runoff from extensive impervious areas. This is essential to minimise further erosion of the Waiarohia Stream and its tributaries. Furthermore, retention that is achieved through infiltration assists in maintaining stream baseflow and aquifer recharge. When combined with the riparian enhancement measures, maintaining suitable hydrology will improve ecological, biodiversity and amenity values within stream environments.
- **Protection of streams**: Identification of permanent and intermittent streams at development design stages; creation of riparian margins through development setbacks (including vesting esplanade reserves to Council); and appropriate design or set back of outfall structures from the stream and the use of green infrastructure/soft engineering (where appropriate) can assist in mitigating the necessary establishment of structures such as culverts and outfalls. The establishment of stream riparian margins also plays an important role of protecting important flood plains from development.
- **Enhancement of streams**: The removal of existing fish passage barriers and artificial on-line ponds within the beds of permanent or intermittent streams, and reinstating stream beds will promote ecological and biodiversity values. Riparian planting and management will assist in providing bank stability and improving aquatic habitat, provide filtration of surface runoff to assist with the reduction of contaminants and sediment entering waterways and shading streams will also assist in both enhancing streams and mitigating the adverse effects of stormwater runoff from urban areas. Planting will also provide enhanced habitat quality for wildlife. Protection of potential inanga spawning habitat has been identified in the vicinity of stream mouths.

In addition to the environmental and stormwater management benefits, provision of esplanade reserves affords the opportunity to incorporate walking and cycle ways, which will promote connectivity whilst supporting alternative transport methods around the area. Riparian planting provides aesthetic and amenity benefits to neighbourhoods and communities.

3.4 Statutory Direction

Stormwater management in W3P is guided by a suite of statutory provisions. Key considerations in this regard are summarised below:

National Policy Statements: New Zealand Coastal Policy Statement 2010 (NZCPS), National Policy Statement for Freshwater Management 2014 (NPSFM), Hauraki Gulf Marine Park Act 2000 (HGMPA)

The relevant National Policy Statements (NPSFM, NZCPS and HGMPA[9]) provide a generally consistent approach to the management of natural resources that may be affected by stormwater that are summarised as follows:

- Maintain the quality of fresh and coastal waters where it is high or meets objectives (including those that relate to compulsory national values for freshwater);
- Enhance the quality of freshwater where it has been degraded;
- Maintain/sustain the life-supporting capacity of ecosystems and enhance life supporting capacity where appropriate; and
- Protect and enhance the natural, historic, cultural and physical resources of the Hauraki Gulf and its catchments.

In addition, the NZCPS explicitly addresses the issue of stormwater discharges to the CMA to avoid significant adverse effects on ecosystems through the integrated management of stormwater including reducing contaminant loads and stormwater flows at source through design and controls on land use activities.

[9] Section 7 and 8 of the HGMPA are to be treated as a New Zealand Coastal Policy Statement, pursuant to section 10 of the HGMPA.

AUP (OP) – Regional Policy Statement (RPS)

The AUP (OP) RPS includes numerous provisions relating to urban growth and development. A key aim of the RPS and the AUP (OP) in general is to provide sufficient land capacity to meet the demand for urban growth – both residential and business. The W3P precinct is identified in the AUP (OP) as a future urban area. Other provisions that guide the development and management of stormwater infrastructure include:

B3.2 Infrastructure: Objectives and policies generally seek to recognise the benefits and operational needs of infrastructure and its efficient development and operation/maintenance while minimising adverse effects associated with its development and use. Integration of growth and infrastructure provision is sought, together with the protection of infrastructure from reverse sensitivity effects and incompatible subdivision and use.

B7.3 Freshwater Systems: The AUP (OP) provides a broad definition of freshwater systems, defining them not only in terms of the freshwater body itself but also the elements that contribute to its values and functions, including riparian margins and floodplains. Objectives and policies seek to minimise the permanent loss and significant modification of freshwater systems and to enhance them where they are degraded. Of relevance to stormwater management are the aims of minimising erosion and modification of streams and the establishment of structures within stream beds enhancing freshwater systems, including riparian margins, and taking the opportunity provided by development/subdivision to restore and enhance freshwater systems.

B7.4 Coastal Water and Fresh Water: The RPS seeks to maintain water quality where it is good and progressively improve it where it is degraded, including to progressively reduce the existing adverse effects of stormwater (and wastewater). Objectives also set the expectation that the adverse of land use change or intensification will be avoided, remedied or mitigated and that Mana Whenua values associated with freshwater are recognised and provided for. In respect of achieving the objectives relevant to stormwater management, the RPS directs the management of subdivision, use and development to minimise the generation and discharge of contaminants and adverse effects on fresh and costal water and the capacity of the stormwater network; and to adopt the best practicable option (BPO) for stormwater diversions and discharges. The RPS identifies coastal areas that are considered degraded – with the Upper Waitematā Harbour being identified as Degraded 1.

B10.2 Natural Hazards and Climate Change: Objectives seek that communities are more resilient to natural hazards and climate change and that risks from natural hazards are not increased in existing areas and are avoided in new subdivision and development. Additionally, the functions of natural systems in flood management (such as overland flow paths and flood plains) are to be protected in new development and otherwise maintained. Achieving this requires up-to-date information of hazards, mitigating effects in areas of natural hazards and strengthening natural systems in preference to engineered systems.

AUP (OP)

There are a large number of provisions that are of relevance to the management of stormwater and its interaction with communities and the natural environment. Of specific relevance include:

E1: Water quality and integrated management

Key objectives in this section are to maintain freshwater and sediment quality where it is good and progressively improve it where it is degraded; maintain or progressively improve the mauri of freshwater; and to manage stormwater networks to protect public health and safety and prevent or minimise adverse effects on fresh and coastal water.

A focus for greenfield development is to avoid adverse effects as far as practicable or otherwise minimise or mitigate them. Key methods of achieving this include applying an integrated stormwater management approach, which replaced the concept of water sensitive design in the AUP(OP); minimising the generation and discharge of contaminants into sensitive receiving environments; minimising or mitigating changes in hydrology; and managing gross pollutants. Key considerations also include the nature, quality, volume and peak flow of the stormwater runoff; the current state and sensitivity of freshwater systems and coastal waters; the potential for the diversion and discharge to create or exacerbate flood risks; options to manage stormwater on-site or the use of communal stormwater management measures; and practical limitations.

E36: Natural hazards and flooding

Most of the flooding provisions are focused on avoiding new development within floodplains in greenfield areas and managing subdivision and development/redevelopment so as not to increase, and where possible reduces, flood risk. A particular focus is on the management of "vulnerable activities", which are determined on their permanence of occupation and their limited resilience to flood related effects. Of particular note is the adoption of the 1% AEP floodplain as the primary scale of flood event when managing development and risk to life and properties, and policies relating to the maintenance of the function and capacity of overland flow paths in conveying stormwater from sites.

E38 Subdivision

The AUP (OP) recognises that subdivision is an important process in giving effect to stormwater management outcomes. While subdivision itself does not create/generate stormwater, it provides a process by which land is laid out for development including the provision of infrastructure and implementation of water sensitive design and other methods of mitigating the stormwater related adverse effects of (future) development.

Objectives and policies seek an integrated approach to the provision of infrastructure supporting subdivision and that subdivision provides for communities while minimising future effects of development on the environment. Additionally, stormwater is to be managed in accordance with any granted network consent; be consistent with the policies for water quality and integrated management; apply an integrated stormwater management approach; protect natural streams and overland flow conveyance and maintain or progressively improve water quality. Subdivision is also to be manged to protect the operation and capacity of existing infrastructure.

F2.11 Coastal – General Coastal Marine Zone Discharges

Relevant objectives and policies are also located in the coastal discharges section. Consistent with the outcomes articulated in E1 Water Quality and Integrated Management, this section seeks to maintain coastal water and sediment quality where it is good and progressively improve it where it is degraded and to manage stormwater to prevent or minimise the adverse effects of contaminants. Key to this is the adoption of the BPO for the discharge of contaminants, encouraging source control of contaminants, and reducing litter discharges to the marine environment.

The above statutory direction is given effect to through a range of documents including the Whenuapai Structure Plan; the Auckland Stormwater NDC application, this W3P and the W3P Plan.

4. Stormwater Management Considerations and Requirements

In light of the above, the following stormwater management approach is adopted for the W3P area.

4.1 Integrated Stormwater Management Approach

An integrated stormwater management/water sensitive design approach is essential to enable high and moderate density development of greenfield sites while at the same time, enhancing degraded environments. This integrated approach is directed by Policies E1.3(8) and (10) of the AUP (OP) and guidance is provided by Auckland Council Guideline Document 2015/004 Water Sensitive Design for Stormwater (GD04).

It is important for subdivision and development to consider integrated stormwater management/water sensitive design principles from the outset, with an emphasis of avoiding the creation of new effects and taking opportunity to utilise and enhance natural systems. This overarching approach in a manner that is appropriate for the nature of the development and its location within W3P.

4.2 Flood Hazards

As discussed above, flood risk is not considered a significant issue in W3P. Hence the focus is managing subdivision and development to avoid creating new flood risks, while taking the opportunities to reduce existing flooding impacts. Key considerations and requirements include:

- Stormwater networks, floodplains an overland flow paths should be determined/designed on the basis of maximum probable development and climate change for the contributing catchment as set out in Auckland Council's Stormwater Code of Practice[10].
- The primary stormwater network should be designed to accommodate the 10% AEP flow, in accordance with Auckland Council's Stormwater Code of Practice.
- Overland flow paths should be provided to safely convey flows in excess of the 10% AEP so as not to pose a risk to property or people. Where these cannot be safely conveyed in the road corridor, dedicated overland flow paths will need to be provided.
- Creation of esplanade reserves and enhancements to riparian margins to enable the natural storage and conveyance function of the floodplains to provide flood resilience.
- Flood risk to existing properties should not be worsened, and opportunities to reduce flood risk to buildings and property should be taken where opportunity arises.
- Development within W3P should factor projected sea-level rise in to design calculations, requiring set-back of certain development from the coast, and requiring site-specific geotechnical investigation to inform developments within 100m of the coastal cliff toe[11] .

4.3 Streams

Holistic management is required to enable existing streams to receive and convey stormwater from urban development, while at the same time improve water quality, enhance stream systems and mitigate potential increases in stormwater volumes and flows. An integrated stormwater management approach, discussed above, is central to achieving these multiple outcomes. Other key considerations include:

- Retain intermittent and permanent streams as far as possible and minimise the establishment and proliferation of in-stream structures to those that are functionally required, in accordance with AUP (OP) 7.3.2(4). Daylight piped watercourses to restore hydrology where practicable.
- Utilise soft engineering/green infrastructure, including setting back discharge points from streams to promote diffuse stormwater flows and minimise erosion, where this feasible and suitable (recognising that hard engineering solutions will be preferred in some circumstances). The location of stormwater outlets should follow natural drainage paths flows where practical to reduce the risk of erosion and use of sheet flow will provide additional treatment and disconnect impervious surfaces from the receiving environment.
- Manage hydrology and reduce stormwater volumes and 'erosive' flows from impervious areas. The Stormwater Management Area – Flow (SMAF) 1 control has been applied to the W3P area to help maintain and enhance stream hydrology. Retention devices that promote infiltration (rather than re-use) should be utilised in upper and mid-catchment areas where possible to retain stream baseflow and recharge groundwater aquifers.
- Protect and restore waterways. Permanent and intermittent streams should be enhanced through riparian planting, development set-backs, remove/mitigate existing barriers to fish migration (and not creating new barriers), removing on-line dams and reinstating the stream bed.
- Establish a minimum planting width of 10m either side of the stream; however, 15m to 20m may be appropriate adjacent to the main reach of wider permanent streams.
- In combination with controls to restrict the generation of contaminants in the first instance, a high level of stormwater quality treatment is required to minimise contaminant discharges to the Waiarohia Stream and its tributaries. In line with the AUP (OP), the preferred stormwater management approach includes decentralised at-source control (or close-to-source treatment devices), particularly for high contaminant generating landuse activities.

[10] Auckland Council Code of Practice for Land Development and Subdivision, Chapter 4-Stormwater, Auckland Council, November 2015

[11] Coastal Hazard Assessment: Whenuapai Plan Change Stage 1. Prepared for Auckland Council by Tonkin & Taylor Ltd. August 2017

4.4 Coastal Environment

The Waiarohia Inlet and Brigham Creek and the wider Upper Waitematā Harbour are susceptible to the accumulation of contaminants derived from urban land uses and transported in stormwater and identified as being degraded. Key stormwater management considerations and requirements are:

- As for streams above, a high level of stormwater quality treatment is required to minimise the risk of contaminant accumulation and enhance degraded water and sediment quality.
- Effective management to reduce stream erosion, discussed for streams above, will also contribute to reducing sediment discharge into the marine environment. This will reduce potential smothering effects of sediment discharges, the rate of sedimentation of the estuaries and the acceleration of mangrove propagation.
- Stormwater outfalls within the coastal margin should be designed to prevent local and wider erosion. Where possible, outfalls should follow natural drain patterns.

4.5 Aquifer Recharge

Consideration should be given to the potential loss of aquifer infiltration as a result of the establishment of significant impervious areas. As indicated above, a SMAF 1 control has been applied to the W3P area. Retention required by the SMAF control should be achieved by infiltration where possible, particularly in upper and mid-catchment areas.

4.6 Stormwater Management Options

An integrated stormwater management/water sensitive design approach should be adopted to guide the design of subdivision and development. That is, it should guide the design, layout and form of development and its integration with the natural environment. Following that, stormwater management at a subdivision or development-level should consider both non-structural/green-infrastructure methods and structural (i.e. engineered management or devices). The combination of these two elements can effectively manage stormwater, promote the health of the receiving environment and facilitate opportunities for enhancement.

4.6.1 Non-Structural Methods

Non-structural or green infrastructure stormwater management options can be used to promote sustainable development and resilience within the urban area. Potential non-structural options include:

- Retention/relocation of overland flow paths and hydrology;
- Restriction/exclusion of development within 1% AEP floodplains;
- Minimising earthwork areas and compaction, and re-establishment of infiltration in pervious areas following earthworks where possible;
- Protection and enhancement of streams and wetlands;
- Protection of fish passage along streams and removal of existing migration barriers;
- Provision of esplanade reserves and riparian margins to support stream health, provide amenity and connectivity and provide for flood storage; and
- At source reduction/control of contaminant generation.

4.6.2 Structural Methods

Structural methods include provision of treatment, retention and detention devices, as well as outfalls or erosion mitigation measures (where natural systems or buffers are not practicable). These may also include green infrastructure. Examples include:

- Permeable paving;
- Bio-retention (raingardens, bio-swales, living roofs and tree pits);
- Stormwater re-use tanks (plumbed into the toilet as a minimum);
- Swales; and
- Detention basins / infiltration basins and trenches.

The suitability for adopting any of the above devices must consider landuse (e.g. high contaminant generating activities) and desired hydrological outcome. Stormwater management devices must be designed in accordance with Auckland Council's technical publications, guidance documents and Codes of Practice that are relevant at the time of the development design. Road corridors should be sized to accommodate stormwater management, where this is applied 'on-site'. Finalisation of road design will occur through the approvals process in consultation with Auckland Transport and Auckland Council Healthy Waters.

Stormwater infrastructure such as pipe networks, outfalls and management devices are an element of most development. Where stormwater infrastructure is to be vested to Auckland Council, it will be required to be designed and constructed in accordance with Auckland Council's Stormwater Code of Practice and agreed with the Auckland Council Healthy Waters Department as the ultimate infrastructure owners.

4.7 Summary of Stormwater Management Requirements and Guidance

The above stormwater management approach is summarised in Table 3 below. Matters identified as 'Minimum Requirements' are expected to be met or alternative options approved by Auckland Council in accordance with the Stormwater Code of Practice requirements for vesting and to meet the requirements of the Auckland Stormwater NDC. Items that are identified as 'Desirable' should be achieved where it is practicable to do so. These latter considerations will be part of the assessment under the W3P Plan rules.

Table 3: Stormwater Management Requirements for Subdivision and development

Whenuapai Precinct 3: Stormwater Management Requirements

Component	Principle/Approach	Minimum Requirements	Desirable	Guidance
Design Approach	All subdivisions and development must apply an integrated stormwater management/water sensitive design approach through all phases of development, from planning through to construction	WSD is implemented to the extent practicable across the development		AUP (OP) Policy E1.3 (8) and (10); Auckland Council Guideline Document 2015/004 Water Sensitive Design for Stormwater (GD04)
Piped stormwater network and other public stormwater assets	All public stormwater assets shall be designed and constructed in accordance with best industry practice and to accommodate Maximum probable development (MPD) for the contributing catchment	All public stormwater pipes must be designed to accommodate the 10% AEP event for MPD for the development and any upstream contributing catchment areas MPD is to be determined in accordance with Auckland Council's Stormwater Code of Practice (SWCoP) All assets to be vested must be designed and constructed in accordance with the SWCoP	Green infrastructure is considered and utilised where it suitable and feasible to do so	SWCoP
Flooding	New flood risk is not created; and existing flood risk is not increased and where possible, is reduced	Development shall not create, or exacerbate existing, flooding of any habitable floor The 1 % AEP (incorporating climate change) MPD flood plains New buildings shall be located outside the 1% AEP (incorporating climate change) MPD flood plain; and any overland flow path[3] Overland flow paths shall be retained/provided to convey the 1% AEP (incorporating climate change)	Infrastructure and overland flow paths are designed to reduce existing habitable floor flooding flooding where possible Riparian margins provided and protected to safely convey flood flows	[3] An overland flow path is one where the upstream contributing catchment exceeds 4,000m^2

		event from the contributing catchment (MPD) without creating flood risk All overland flow paths shall be mapped and provided to Council on GIS Overland flow paths on private property shall be protected from development		
Streams/natural wetlands	Intermittent and permanent streams and natural wetlands are retained, enhanced and protected from the adverse effects of development and stormwater runoff	The location of all intermittent and permanent streams and wetlands within a subdivision or development are to be mapped All intermittent and permanent streams are to be retained[1] Riparian planting is provided for all intermittent and permanent watercourses All outfalls into streams shall be protected against erosion and designed/constructed in accordance with the SWCoP	Existing barriers to fish migration are removed or mitigated in permanent watercourses Erosion protection incorporates green infrastructure where feasible Setback outfalls from edge of streams where appropriate and practicable	[1] It is recognised that this will not be possible in all circumstances. This requirement is waived where a resource consent to pipe/reclaim a watercourse is obtained under the AUP(OP)
Coastal Yards	The coastal environment is protected from erosion from stormwater discharges	All outfalls to the coast shall be designed/constructed to protect against erosion and in accordance with the SWCoP	Green infrastructure/soft engineering is used where it is feasible and practicable to do so	
Hydrology	Changes to natural hydrology are minimised in areas where developments discharge to permanent or intermittent streams Aquifer recharge and stream baseflows are retained	A SMAF control is applied to the W3P area	Stormwater retention is achieved by infiltration where it is feasible to do so	

Water quality	Water quality impacts on streams and the coastal environment are minimised and water quality is enhanced through development	All new impervious areas over 1,000m^2 shall be treated by a treatment device designed in accordance with TP10/GD01[2] Runoff from: • Commercial/industrial waste storage/handling or loading/unloading areas • Communal waste storage areas in apartments and multi-unit developments shall be treated by gross pollutant traps designed in accordance with GD01 unless otherwise treated by a stormwater device	The generation and discharge of contaminants is reduced at source as far as prcticable Low contaminant building products are utilised Water quality treatment shall be achieved on site unless there is a communal device, acceptable to Council	[2] Some hydrology mitigation devices may also achieve the required level of treatment. Devices that achieve both hydrology and treatment mitigation are acceptable, provided that the relevant performance requirements are met High contaminant generating land use activities are regulated by the AUP (OP)

Appendix C

Auckland Unitary Plan Operative in part - Proposed Plan Change 5

Auckland Unitary Plan Operative in part

PROPOSED PLAN CHANGE 5

Whenuapai

Public notification: 21 September 2017

Close of submissions: 19 October 2017

This is a council initiated plan change

In accordance with Section 86B (3) of the RMA the proposed plan change rules in chapter L have immediate legal effect.

Explanatory note – not part of proposed plan change

The proposed changes to the Auckland Unitary Plan seek to rezone approximately 360 hectares of mostly Future Urban zoned land to a mix of business and residential zones.

As well as the proposed zoning changes there are proposed text changes to the following sections of the Auckland Unitary Plan Operative in Part:

- Chapter I Precincts – inclusion of a new precinct I616 Whenuapai 3 Precinct
- Chapter L Schedule - 14.1 Table 1 Places, 14.1 Table 2 Areas, 14.2.13 Clarks Lane Historic Heritage Area.
- Chapter M Appendices - Appendix 17.

There are proposed additions to the Historic Heritage Overlay. These changes have immediate legal effect from notification date.

There are proposed changes to the control map, the Storm Water Management Area Flow Control -1 (SMAF-1) is added to the plan change area.

Plan change provisions

Note:

Amendments proposed by this proposed plan change to the Auckland Unitary Plan are shown on the Unitary Plan GIS Viewer - “Appeals and Plan Modification” layer and are symbolised with a black hatching.

Proposed Whenuapai Plan Change: Text Changes to the Auckland Unitary Plan (Operative in Part)

Addition to Chapter I Precincts West

I616. Whenuapai 3 Precinct

I616.1. Precinct Description

The Whenuapai 3 Precinct is located approximately 23 kilometres northwest of central Auckland. Development in the Whenuapai 3 Precinct will enable an increase in housing capacity and provide employment opportunities through the efficient use of land and infrastructure.

The purpose of the precinct is for the area to be developed as a liveable, compact and accessible community with a mix of high quality residential and employment opportunities, while taking into account the natural environment and the proximity of Whenuapai Airbase.

Development of this precinct is directed by Whenuapai 3 Precinct Plans 1, 2 and 3.

Whenuapai 3 Precinct Plan 1 shows:

- indicative open space, esplanade reserves and coastal esplanade reserves;
- the permanent and intermittent stream network, including streams wider than three metres; and
- the Whenuapai 3 coastal erosion setback yard.

Whenuapai 3 Precinct Plan 2 shows:

- indicative new roads and intersections;
- proposed upgrades to existing roads and intersections; and
- development areas for transport infrastructure.

Whenuapai 3 Precinct Plan 3 shows:

- aircraft engine testing noise boundaries from engine testing activity at Whenuapai Airbase.

Integration of Subdivision and Development with Infrastructure

The comprehensive and coordinated approach to subdivision, use and development outlined in the precinct reflects the size and significant amount of infrastructure required to enable subdivision and development. Funding of all required infrastructure is critical to achieving the integrated management of the precinct. The primary responsibility for funding of local infrastructure lies with the applicant for subdivision and/or development. The council may work with developers to agree development funding agreements for the provision of infrastructure, known as Infrastructure Funding Agreements. These agreements define funding accountabilities, who delivers the works, timings and securities, amongst other matters.

Transport

Whenuapai 3 Precinct is split into five areas, 1A-1E, based on the local transport infrastructure upgrades required to enable the transport network to support development in the areas. These upgrades are identified in Table I616.6.2.1 and are required be in

place prior to development going ahead. The cost of these transport infrastructure upgrades are to be proportionally shared across each area as development progresses. If these upgrades are not in place prior to development occurring developers are able to provide an alternative measure for the provision of the upgrade works. This may include an agreement with the council to ensure that the local share of the upgrade works attributable to the development is provided for. This could include an Infrastructure Funding Agreement or some alternative funding mechanism.

Where there is an Auckland Transport project to provide the new or upgraded roads, developers may be required to contribute to it in part. Where a development proceeds ahead of an Auckland Transport project, the developer is required to work with Auckland Transport to ensure that the Auckland Transport project(s) is not precluded by the development.

Neighbourhood Centre

A neighbourhood centre is proposed on the corner of Hobsonville Road and the proposed realigned Trig Road. Service access and staff parking are provided at the rear of the development to encourage the continuity of retail frontages. Pedestrian linkage to the centre is provided at the intersection of Hobsonville Road and the realigned Trig Road.

Stormwater Management

Stormwater management within the precinct is guided by the Whenuapai 3 Precinct Stormwater Management Plan (2017). This assessment has identified that the streams and coastal waters within the precinct are degraded and sensitive to changes in land use and stormwater flows. As part of the stormwater management approach, stormwater treatment requirements and the stormwater management area control – Flow 1 have been applied to the precinct.

Coastal Erosion Risk

The precinct area includes approximately 4.5 km of cliffed coastline. The precinct manages an identified local coastal erosion risk based on the area's geology and coastal characteristics. A coastal erosion setback yard is used to avoid locating new buildings in identified areas of risk.

Biodiversity

The North-West Wildlink aims to create safe, connected and healthy habitats for native wildlife to safety travel and breed in between the Waitakere Ranges and the Hauraki Gulf Islands. The precinct recognises that Whenuapai is a stepping stone in this link for native wildlife and provides an ability to enhance these connections through riparian planting.

Open Space

An indicative public open space network to support growth in the precinct is shown on Whenuapai 3 Precinct Plan 2. This will generally be acquired at the time of subdivision. A network of public open space, riparian margins and walking and cycling connections is

proposed to be created as development proceeds. Development is encouraged to positively respond and interact with the proposed network of open space areas.

Reverse Sensitivity Effects on Whenuapai Airbase

The Whenuapai Airbase is located at the northern edge of the Whenuapai 3 Precinct boundary. While the airbase is outside of the precinct boundary it contributes to the precinct's existing environment and character. The airbase is a defence facility of national and strategic importance. Operations at the airbase include maritime patrol, search and rescue, and transport of personnel and equipment within New Zealand and on overseas deployments. Most of the flying activity conducted from the airbase is for training purposes and includes night flying and repetitive activity.

The precinct manages lighting to ensure safety risks and reverse sensitivity effects on the operation and activities of the airbase are avoided, remedied or mitigated.

Any future subdivision, use and development within the precinct will need to occur in a way that does not adversely effect on the ongoing operation of the airbase.

Aircraft Engine Testing Noise

The aircraft that operate out of Whenuapai Airbase are maintained at the airbase. Engine testing is an essential part of aircraft maintenance. Testing is normally undertaken between 7am and 10pm but, in circumstances where an aircraft must be prepared on an urgent basis, it can be conducted at any time and for extended periods.

Whenuapai 3 Precinct Plan 3 shows 57 dB L_{dn} and 65 dB L_{dn} noise boundaries for aircraft engine testing noise. The noise boundaries recognise that engine testing is an essential part of operations at Whenuapai Airbase and require acoustic treatment for activities sensitive to noise to address the potential reverse sensitivity effects that development within the precinct could have on those operations.

Zoning

The zoning of the land within this precinct is Residential – Single House, Residential – Mixed Housing Urban, Residential – Terrace Housing and Apartment Buildings, Business – Light Industry, Business – Neighbourhood Centre, Open Space – Informal Recreation, Open Space – Conservation and Special Purpose – Airports and Airfields zones.

The relevant overlays, Auckland-wide and zone provisions apply in this precinct unless otherwise specified in this precinct.

I616.2. Objectives

(1) Subdivision, use and development in the Whenuapai 3 Precinct is undertaken in a comprehensive and integrated way to provide for a compatible mix of residential living and employment opportunities while recognising the strategic importance of Whenuapai Airbase.

(2) Subdivision, use and development achieves a well-connected, safe and healthy environment for living and working with an emphasis on the public realm including parks, roads, walkways and the natural environment.

Integration of Subdivision and Development with the Provision of Infrastructure

(3) Subdivision and development does not occur in advance of the availability of transport infrastructure, including regional and local transport infrastructure.

(4) The adverse effects, including cumulative effects, of subdivision and development on existing and future infrastructure are managed to meet the foreseeable needs of the Whenuapai 3 Precinct area.

(5) Subdivision and development does not occur in a way that compromises the ability to provide efficient and effective infrastructure networks for the wider Whenuapai 3 Precinct area.

Transport

(6) Subdivision and development implements the transport network connections and elements as shown on Whenuapai 3 Precinct Plan 2 and takes into account the regional and local transport network.

Development in the Neighbourhood Centre Zone

(7) Development in the Neighbourhood Centre Zone:

(a) is coordinated and comprehensive;

(b) has active frontages facing the street; and

(c) promotes pedestrian linkages.

Stormwater Management

(8) Through subdivision, use and development, implement a stormwater management approach that:

(a) is integrated across developments;

(b) avoids new flood risk;

(c) mitigates existing flood risk;

(d) protects the ecological values of the receiving environment;

(e) seeks to mimic and protect natural processes; and

(f) integrates with, but does not compromise the operation of, the public open space network.

Coastal Erosion Risk

(9) New development does not occur in areas identified as subject to coastal erosion, taking into account the likely long-term effects of climate change.

Biodiversity

(10) Subdivision, use and development enhance the coastal environment, biodiversity, water quality, and ecosystem services of the precinct, the Waiarohia and the Wallace Inlets, and their tributaries.

Open Space

(11) Subdivision, use and development enable the provision of a high quality and safe public open space network that integrates stormwater management, ecological, amenity, and recreation values.

Reverse Sensitivity Effects on Whenuapai Airbase

(12) The lighting effects of subdivision, use and development on the operation and activities of Whenuapai Airbase are avoided, remedied or mitigated.

Aircraft Engine Testing Noise

(13) The adverse effects of aircraft engine testing noise on activities sensitive to noise are avoided, remedied or mitigated at the receiving environment.

The overlay, Auckland-wide and zone objectives apply in this precinct in addition to those specified above.

I616.3. Policies

(1) Require subdivision, use and development to be integrated, coordinated and in general accordance with the Whenuapai 3 Precinct Plans 1 and 2.

(2) Encourage roads that provide for pedestrian and cycle connectivity alongside riparian margins and open spaces.

(3) Encourage high quality urban design outcomes by considering the location and orientation of buildings in relation to roads and public open space.

Integration of Subdivision and Development with the Provision of Infrastructure

(4) Require subdivision and development to be managed and designed to align with the coordinated provision and upgrading of the transport infrastructure network within the precinct, and with the wider transport network.

(5) Avoid, remedy or mitigate the adverse effects, including cumulative effects, of subdivision and development on the existing and future infrastructure required to support the Whenuapai 3 Precinct.

(6) Require the provision of infrastructure to be proportionally shared across the precinct.

(7) Require subdivision and development to provide the local transport network infrastructure necessary to support the development of the areas 1A-1E shown in Whenuapai 3 Precinct Plan 2.

Transport

(8) Require the provision of new roads and upgrades of existing roads as shown on Whenuapai 3 Precinct Plan 2 through subdivision and development, with amendments to the location and alignment of collector roads only allowed where the realigned road will provide an equivalent transport function.

Development in the Neighbourhood Centre Zone

(9) Ensure development in the neighbourhood centre zone maximises building frontage along Hobsonville Road and the realigned Trig Road by:

(a) avoiding blank walls facing the roads;

(b) providing easily accessible pedestrian entrances on the road frontages;

(c) maximising outlook onto streets and public places;

(d) providing weather protection for pedestrians along the road frontages;

(e) providing service access and staff parking away from the frontages; and

(f) providing car parking and service access behind buildings, with the exception of kerbside parking.

(10) Ensure all development in the Neighbourhood Centre Zone is consistent with the layout of the Trig Road realignment as shown on Whenuapai 3 Precinct Plan 2.

(11) Limit the number of vehicle access points from the Neighbourhood Centre Zone onto Hobsonville Road and the Trig Road realignment to ensure safe and efficient movement of vehicles and pedestrians.

Stormwater Management

(12) Require subdivision and development within the Whenuapai 3 Precinct to:

(a) apply an integrated stormwater management approach;

(b) manage stormwater diversions and discharges to enhance the quality of freshwater systems and coastal waters; and

(c) be consistent with the requirements of the Whenuapai 3 Precinct Stormwater Management Plan (2017) and any relevant stormwater discharge consent.

(13) Require development to:

(a) avoid locating new buildings in the 1 per cent annual exceedance probability (AEP) floodplain;

(b) avoid increasing flood risk; and

(c) mitigate existing flood risk where practicable.

(14) Ensure stormwater outfalls are appropriately designed, located and managed to avoid or mitigate adverse effects on the environment, including:

(a) coastal or stream bank erosion;

(b) constraints on public access;

(c) amenity values; and

(d) constraints on fish passage into and along river tributaries.

Coastal Erosion Risk

(15) Avoid locating new buildings on land within the Whenuapai 3 coastal erosion setback yard.

(16) Avoid the use of hard protection structures to manage coastal erosion risk in the Whenuapai 3 coastal erosion setback yard.

Biodiversity

(17) Recognise the role of riparian planting in the precinct to support the ecosystem functions of the North-West Wildlink.

(18) Avoid stream and wetland crossings where practicable, and if avoidance is not practicable, ensure crossings take the shortest route to minimise or mitigate freshwater habitat loss.

(19) Require, at the time of subdivision and development, riparian planting of appropriate native species along the edge of permanent and intermittent streams and wetlands to:

(a) provide for and encourage establishment and maintenance of ecological corridors through the Whenuapai area;

(b) maintain and enhance water quality and aquatic habitats;

(c) enhance existing native vegetation and wetland areas within the catchment; and

(d) reduce stream bank erosion.

Open Space

(20) Require the provision of open space as shown on Whenuapai 3 Precinct Plan 1 through subdivision and development, unless the council determines that the indicative open space is no longer required or fit for purpose.

(21) Only allow amendments to the location and alignment of the open space where the amended open space can be demonstrated to achieve the same size and the equivalent functionality.

Reverse Sensitivity Effects on Whenuapai Airbase

(22) Require subdivision, use and development within the Whenuapai 3 Precinct to avoid, remedy or mitigate any adverse effects, including reverse sensitivity effects and safety risks relating to lighting, glare and reflection, on the operation and activities of Whenuapai Airbase.

(23) Require the design of roads and associated lighting to be clearly differentiated from runway lights at Whenuapai Airbase to provide for the ongoing safe operation of the airbase.

Aircraft Engine Testing Noise

(24) Avoid the establishment of new activities sensitive to noise within the 65 dB L_{dn} aircraft engine testing noise boundary shown on Whenuapai 3 Precinct Plan 3.

(25) Avoid establishing residential and other activities sensitive to noise within the area between the 57 dB L_{dn} and 65 dB L_{dn} aircraft engine testing noise boundaries as shown on Whenuapai 3 Precinct Plan 3, unless the noise effects can be adequately remedied or mitigated at the receiving site through the acoustic treatment, including mechanical ventilation, of buildings containing activities sensitive to noise.

The overlay, Auckland-wide and zone policies apply in this precinct in addition to those specified above.

I616.4. Activity table

The activity tables in any relevant overlays, Auckland-wide and zones apply unless the activity is listed in Table I616.4.1 Activity table below.

Table I616.4.1 specifies the activity status of land use and subdivision activities in the Whenuapai 3 Precinct pursuant to sections 9(3) and section 11 of the Resource Management Act 1991.

Note: A blank cell in the activity status means the activity status of the activity in the relevant overlays, Auckland-wide or zones applies for that activity.

Table I616.4.1 Land use and subdivision activities in Whenuapai 3 Precinct

Activity		Activity status
Subdivision		
(A1)	Subdivision listed in Chapter E38 Subdivision – Urban	
(A2)	Subdivision that does not comply with Standard I616.6.2 Transport infrastructure requirements	NC
(A3)	Subdivision that complies with Standard I616.6.2 Transport infrastructure requirements, but not complying with any one or more of the other standards contained in Standards I616.6	D
Coastal protection structures		
(A4)	Hard protection structures	D
(A5)	Hard protection structures located within the Whenuapai 3 coastal erosion setback yard	NC
Stormwater outfalls		
(A6)	Stormwater outfalls and associated erosion and protection structures located within the Whenuapai 3 coastal erosion setback yard identified in Table I616.6.5.1	RD
Use and development		
(A7)	Activities listed as permitted or restricted discretionary activities in Table H3.4.1 Activity table in the Residential – Single House Zone	
(A8)	Activities listed as permitted or restricted discretionary activities in Table H5.4.1 Activity table in the Residential – Mixed Housing Urban Zone	
(A9)	Activities listed as permitted or restricted discretionary activities in Table H6.4.1 Activity table in the Residential – Terrace Housing and Apartment Buildings Zone	
(A10)	Activities listed as permitted or restricted discretionary activities in Table H12.4.1 Activity table in the Business – Neighbourhood Centre Zone	

(A11)	Activities listed as permitted or restricted discretionary activities in Table H17.4.1 Activity table in the Business – Light Industry Zone	
(A12)	Activities listed as permitted or restricted discretionary activities in Table H7.9.1 Activity table in the Open Space – Informal Recreation	
(A13)	Activities listed as permitted or restricted discretionary activities in Table H7.9.1 Activity table in the Open Space – Conservation	
(A14)	Any structure located on or abutting an indicative road identified in the Whenuapai 3 Precinct Plan 2, unless an alternative road alignment has been approved by a resource consent	RD
(A15)	Activities not otherwise provided for	D
(A16)	Activities that comply with: • Standard I616.6.2 Transport infrastructure requirements; • Standard I616.6.5 New buildings within the Whenuapai 3 coastal erosion setback yard; and • Standard I616.6.10 Development within the aircraft engine testing noise boundaries; but do not comply with any one or more of the other standards contained in Standards I616.6	D
(A17)	Activities that do not comply with: • Standard I616.6.2 Transport infrastructure requirements; • Standard I616.6.5 New buildings within the Whenuapai 3 coastal erosion setback yard; and • Standard I616.6.10 Development within the aircraft engine testing noise boundaries	NC
(A18)	New activities sensitive to noise within the 65 dB L_{dn} noise boundary shown on Whenuapai 3 Precinct Plan 3	Pr

I616.5. Notification

(1) Any application for resource consent for an activity listed in Table I616.4.1 Activity table above will be subject to the normal tests for notification under the relevant sections of the Resource Management Act 1991.

(2) When deciding who is an affected person in relation to any activity for the purposes of section 95E of the Resource Management Act 1991 the council will give specific consideration to those persons listed in Rule C1.13(4).

I616.6. Standards

(1) The standards in the overlays, Auckland-wide and zones apply to all activities listed in Table I616.4.1 Activity table in this precinct unless specified in Standard I616.6(2) below.

(2) The following overlay, Auckland-wide or zone standards do not apply to activity (A1) listed in Table I616.4.1 Activity table for land in the Whenuapai 3 coastal setback yard identified in Whenuapai 3 Precinct Plan 1:

(a) Standard E38.7.3.4 Subdivision of land in the coastal erosion hazard area.

(3) Activities listed in Table I616.4.1 Activity table must comply with the specified standards in I616.6.1 – I616.6.11.

I616.6.1. Compliance with Whenuapai 3 Precinct Plans

(1) Activities must comply with Whenuapai 3 Precinct Plan 1 and Whenuapai 3 Precinct Plan 2.

(2) Activities not meeting Standard I616.6.1(1) must provide an alternative measure that will generally align with, and not compromise, the outcomes sought in Whenuapai 3 Precinct Plans 1 and 2.

I616.6.2. Transport infrastructure requirements

(1) All subdivision and development must meet its proportional share of local infrastructure works as identified in Table I616.6.2.1 below unless otherwise provided for by (2) and (3) below.

(2) Where the applicant, in applying for resource consent, cannot achieve or provide the required local infrastructure work identified in Table I616.6.2.1 below, alternative measure(s) to achieve the outcome required must be provided.

(3) The applicant and the council must agree the alternative measure(s) to be provided as part of the application and provide evidence of this agreement in writing as part of the application for resource consent.

Table I616.6.2.1 Local transport infrastructure requirements

Areas	Local transport infrastructure required
1A	New collector roads extending west from Trig Road into the Stage 1A area as indicatively shown in Precinct Plan 2.
	New collector roads extending east from Trig Road into the Stage 1A area as indicatively shown in Precinct Plan 2.
	Signalisation at the new intersection of Trig Road, Luckens Road and Hobsonville Road.
	Formation and signalisation of the intersection at the location of the new collector road and Trig Road as indicatively shown on Precinct Plan 2.
	Upgrade of the intersection at Trig Road and the State Highway 18 off ramp.
1B	Upgrade and signalisation of the intersection of Brigham Creek Road and Kauri Road including: • dual right-turn lanes from Brigham Creek Road into Kauri Road; and • suitable bus and cycle priority provision.
	Formation and signalisation of the intersection at the location of the new collector road and Brigham Creek Road as indicatively shown on Precinct Plan 2.
1C	Addition of a fourth leg to the Brigham Creek Road and Kauri Road

Areas	Local transport infrastructure required
	intersection.
	New collector road from the Brigham Creek Road and Kauri Road intersection westwards to the boundary of the Stage 1C area as indicatively shown on Precinct Plan 2.
1D	Road stopping of Sinton Road to the west of 18 Sinton Road, and replacement with a new collector road from Sinton Road to Kauri Road as indicatively shown on Precinct Plan 2.
	New collector road crossing State Highway 18 connecting Sinton Road to Sinton Road East as indicatively shown on Precinct Plan 2.
	New collector roads as indicatively shown in Precinct Plan 2.
1E	New collector roads from Brigham Creek Road extending south into the Stage 1E area as indicatively shown in Precinct Plan 2.
	Formation and signalisation of the intersections of Brigham Creek Road with the new collector roads required as part of the Stage 1E area.
	Upgrade and signalisation of the intersection of Trig Road and Brigham Creek Road.
	New collector roads from Trig Road extending east into the Stage 1E area as indicatively shown in Precinct Plan 2.

I616.6.3. Stormwater management

(1) Stormwater runoff from new development must not cause the 1 per cent annual exceedance probability (AEP) floodplain to rise above the floor level of an existing habitable room or increase flooding of an existing habitable room on any property.

(2) All new buildings must be located outside of the 1 per cent AEP floodplain and overland flow path.

(3) Stormwater runoff from impervious areas totalling more than 1,000m^2 associated with any subdivision or development proposal must be:

(a) treated by a device or system that is sized and designed in accordance with Technical Publication 10: Design Guideline Manual for Stormwater Treatment Devices (2003); or

(b) where alternative devices are proposed, the device must demonstrate it is designed to achieve an equivalent level of contaminant or sediment removal performance.

(4) All stormwater runoff from:

(a) commercial and industrial waste storage areas including loading and unloading areas; and

(b) communal waste storage areas in apartments and multi-unit developments

must be directed to a device that removes gross stormwater pollutants prior to entry to the stormwater network or discharge to water.

I616.6.4. Riparian planting

(1) The riparian margins of a permanent or intermittent stream or a wetland must be planted to a minimum width of 10m measured from the top of the stream bank and/or the wetland's fullest extent.

(2) Riparian margins must be offered to the council for vesting.

(3) The riparian planting proposal must:

(a) include a plan identifying the location, species, planting bag size and density of the plants;

(b) use eco-sourced native vegetation where available;

(c) be consistent with local biodiversity;

(d) be planted at a density of 10,000 plants per hectare, unless a different density has been approved on the basis of plant requirements.

(4) Where pedestrian and/or cycle paths are proposed, they must be located adjacent to, and not within, the 10m planted riparian area.

(5) The riparian planting required in Standard I616.6.4(1) above must be incorporated into a landscape plan. This plan must be prepared by a suitably qualified and experienced person and be approved by the council.

(6) The riparian planting required by Standard I616.6.4(1) cannot form part of any environmental compensation or offset mitigation package where such mitigation is required in relation to works and/or structures within a stream.

I616.6.5. New buildings within the Whenuapai 3 coastal erosion setback yard

(1) New buildings must not be located within the Whenuapai 3 coastal erosion setback yard shown in Whenuapai 3 Precinct Plan 1. The widths of the yard are specified in Table I616.6.5.1 and is to be measured from mean high water springs. This is to be determined when the topographical survey of the site is completed.

(2) Alterations to existing buildings within the Whenuapai 3 coastal erosion setback yard must not increase the existing gross floor area.

Table I616.6.5.1 Whenuapai 3 coastal erosion setback yard

Area	Coastal erosion setback yard

A	41m
B	40m
C	26m
D	35m

I616.6.6. External alterations to buildings within the Whenuapai 3 coastal erosion setback yard

(1) External alterations to buildings within the Whenuapai 3 coastal erosion setback yard identified in Standard I616.6.5 and Whenuapai 3 Precinct Plan 1 must not increase the existing gross floor area.

I616.6.7. Subdivision of land in the Whenuapai 3 coastal erosion setback yard

(1) Each proposed site on land in the Whenuapai 3 coastal erosion setback yard must demonstrate that all of the relevant areas/features below are located outside of the Whenuapai 3 coastal erosion setback yard:

(a) in residential zones and business zones - a shape factor that meets the requirements of Standard E38.8.1.1 Site shape factor in residential zones or Standard E38.9.1.1 Site shape factor in business zones;

(b) access to all proposed building platforms or areas; and

(c) on-site private infrastructure required to service the intended use of the site.

I616.6.8. Roads

(1) Development and subdivision occurring adjacent to an existing road must upgrade the entire width of the road adjacent to the site where subdivision and development is to occur.

(2) Development and subdivision involving the establishment of new roads must:

(a) provide the internal road network within the site where subdivision and development is to occur; and

(b) be built through to the site boundaries to enable existing or future connections to be made with, and through, neighbouring sites.

I616.6.9. Development in the Neighbourhood Centre Zone

I616.6.9.1. Access

(1) Vehicle accesses must not be located on that part of a site boundary located within 30m of the intersection of Hobsonville Road and the realigned Trig Road.

(2) All development must provide pedestrian access that connects to the intersection of Hobsonville Road and the realigned Trig Road.

I616.6.9.2. Building frontage

(1) Any new building must:

(a) front onto Hobsonville Road or the realigned Trig Road identified in Precinct Plan 2; and

(b) have a building frontage along the entire length of the site excluding vehicle and pedestrian access.

I616.6.9.3. Verandas

(1) The ground floor of any building fronting Hobsonville Road and the realigned Trig Road must provide a veranda over the adjacent footpath along the full extent of the frontage, excluding vehicle access.

(2) The veranda must:

(a) be contiguous with any adjoining building;

(b) have a minimum height of 3m and a maximum height of 4.5m above the footpath;

(c) have a minimum width of 2.5m; and

(d) be set back at least 600mm from the kerb.

I616.6.10. Development within the aircraft engine testing noise boundaries

(1) Between the 57 dB L_{dn} and 65 dB L_{dn} noise boundaries as shown on Whenuapai 3 Precinct Plan 3, new activities sensitive to noise and alterations and additions to existing buildings accommodating activities sensitive to noise must provide sound attenuation and related ventilation and/or air conditioning measures:

(a) to ensure the internal environment of habitable rooms does not exceed a maximum noise level of 40 dB L_{dn}; and

(b) that are certified to the council's satisfaction as being able to meet Standard I616.6.10(2)(a) by a person suitably qualified and experienced in acoustics prior to its construction; and

(c) so that the related ventilation and/or air conditioning system(s) satisfies the requirements of New Zealand Building Code Rule G4, or any equivalent standard which replaces it, with all external doors of the building and all windows of the habitable rooms closed.

I616.6.11. Lighting

(1) No person may illuminate or display the following outdoor lighting between 11:00pm and 6:30am:

(a) searchlights; or

(b) outside illumination of any structure or feature by floodlight.

I616.7. Assessment – controlled activities

There are no controlled activities in this precinct.

I616.8. Assessment – restricted discretionary activities

I616.8.1. Matters of discretion

The council will restrict its discretion to all the following matters when assessing a restricted discretionary activity resource consent application, in addition to the matters specified for the relevant restricted discretionary activities in the overlay, Auckland-wide and zone provisions.

(1) Subdivision and development:

(a) safety, connectivity, walkability, public access to the coast and a sense of place;

(b) location of roads and connections with neighbouring sites;

(c) functional requirements of the transport network, roads and different transport modes;

(d) site and vehicle access, including roads, rights of way and vehicle crossings;

(e) location of buildings and structures;

(f) provision of open space; and

(g) provision of the required local transport infrastructure or an appropriate alternative measure.

(2) Use and development in the Neighbourhood Centre Zone:

(a) the design and location of onsite parking and loading bays; and

(b) building setbacks from Hobsonville Road and the realigned Trig Road.

(3) Subdivision of land in the Whenuapai 3 coastal erosion setback yard:

(a) the effects of the erosion on the intended use of the sites created by the subdivision and the vulnerability of these uses to coastal erosion.

(4) Stormwater outfalls and associated erosion and protection structures within the Whenuapai 3 coastal erosion setback yard:

(a) the effects on landscape values, ecosystem values, coastal processes, associated earthworks and landform modifications;

(b) the effects on land stability including any exacerbation of an existing natural hazard, or creation of a new natural hazard, as a result of the structure;

(c) the resilience of the structure to natural hazard events;

(d) the use of green infrastructure instead of hard engineering solutions;

(e) the effects on public access and amenity, including nuisance from odour;

(f) the ability to maintain or enhance fish passage; and

(g) risk to public health and safety.

(5) Lighting associated with development, structures, infrastructure and construction.

I616.8.2. Assessment criteria

The council will consider the relevant assessment criteria below for restricted discretionary activities, in addition to the assessment criteria specified for the relevant restricted discretionary activities in the overlay, Auckland-wide and zone provisions.

(1) Subdivision and development:

(a) the extent to which any subdivision or development layout is consistent with and provides for the upgraded roads and new indicative roads shown on the Whenuapai 3 Precinct Plan 2;

(b) the extent to which any subdivision or development provides for public access to the coast;

(c) the extent to which any subdivision or development layout achieves a safe, connected and walkable urban form with a sense of place;

(d) the extent to which any subdivision or development layout is consistent with and provides for the indicative open space shown within Whenuapai 3 Precinct Plan 1;

(e) the extent to which any subdivision or development layout complies with the Auckland Transport Code of Practice or any equivalent standard that replaces it;

(f) the extent to which any subdivision or development layout provides for the functional requirements of the existing or proposed transport network, roads and relevant transport modes;

(g) the extent to which access to an existing or planned arterial road, or road with bus or cycle lane, minimises vehicle crossings by providing access from a side road, rear lane, or slip lane;

(h) the extent to which subdivision and development provides for roads to the site boundaries to enable connections with neighbouring sites; and

(i) whether an appropriate public funding mechanism is in place to ensure the provision of all required infrastructure.

(2) Use and development in the Neighbourhood Centre Zone:

(a) the extent to which staff car parking, loading spaces and any parking associated with residential uses is:

(i) located to the rear of the building; and

(ii) maximises the opportunity for provision of communal parking areas.

(b) the extent to which building setbacks are minimised to ensure buildings relate to Hobsonville Road and the realigned Trig Road.

(3) Subdivision of land in the Whenuapai 3 coastal erosion setback yard:

(a) the effects of the hazard on the intended use of the sites created by the subdivision and the vulnerability of these uses to coastal erosion:

(i) whether public access to the coast is affected;

(ii) the extent to which the installation of hard protection structures to be utilised to protect the site or its uses from coastal erosion hazards over at least a 100 year timeframe are necessary; and

(iii) refer to Policy E38.3(2).

(4) Stormwater outfalls and associated erosion and protection structures within the Whenuapai 3 coastal erosion setback yard:

(a) the extent to which landscape values, ecological values and coastal processes are affected or enhanced by any works proposed in association with the structure(s);

(b) the extent to which site specific analysis, such as engineering, stability or flooding reports have been undertaken and any other information about the site, the surrounding land and the coastal marine area;

(c) the extent to which the structure(s) is located and designed to be resilient to natural hazards;

(d) the extent to which the proposal includes green infrastructure and solutions instead of hard engineering solutions;

(e) the extent to which public access and / or amenity values, including nuisance from odour, are affected by the proposed structure(s);

(f) the extent to which fish passage is maintained or enhanced by the proposed structure(s); and

(g) the extent to which adverse effects on people, property and the environment are avoided, remedied or mitigated by the proposal.

(5) Lighting associated with development, structures, infrastructure and construction:

(a) The effects of lighting on the safe and efficient operation of Whenuapai Airbase, to the extent that the lighting:

(i) avoids simulating approach and departure path runway lighting;

(ii) ensures that clear visibility of approach and departure path runway lighting is maintained; and

(iii) avoids glare or light spill that could affect aircraft operations.

I616.9. Special information requirements

(1) Riparian planting plan

An application for land modification, development and subdivision which adjoins a permanent or intermittent stream must be accompanied by a riparian planting plan identifying the location, species, planter bag size and density of the plants.

(2) Permanent and intermittent streams and wetlands

All applications for land modification, development and subdivision must include a plan identifying all permanent and intermittent streams and wetlands on the application site.

(3) Stormwater management

All applications for development and subdivision must include a plan demonstrating how stormwater management requirements will be met including:

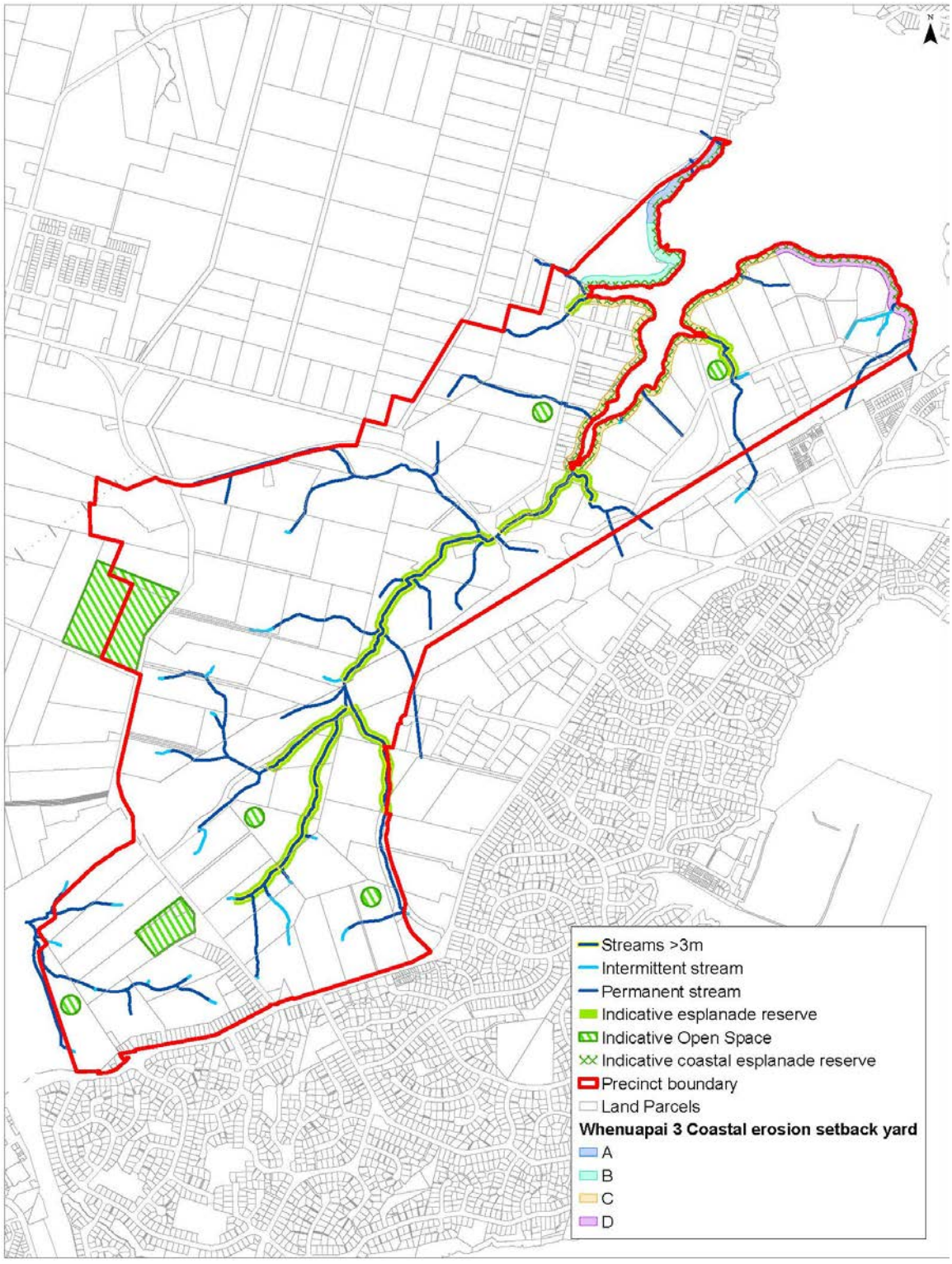
(a) areas where stormwater management requirements are to be met on-site and where they will be met through communal infrastructure;

(b) the type and location of all public stormwater network assets that are proposed to be vested in council;

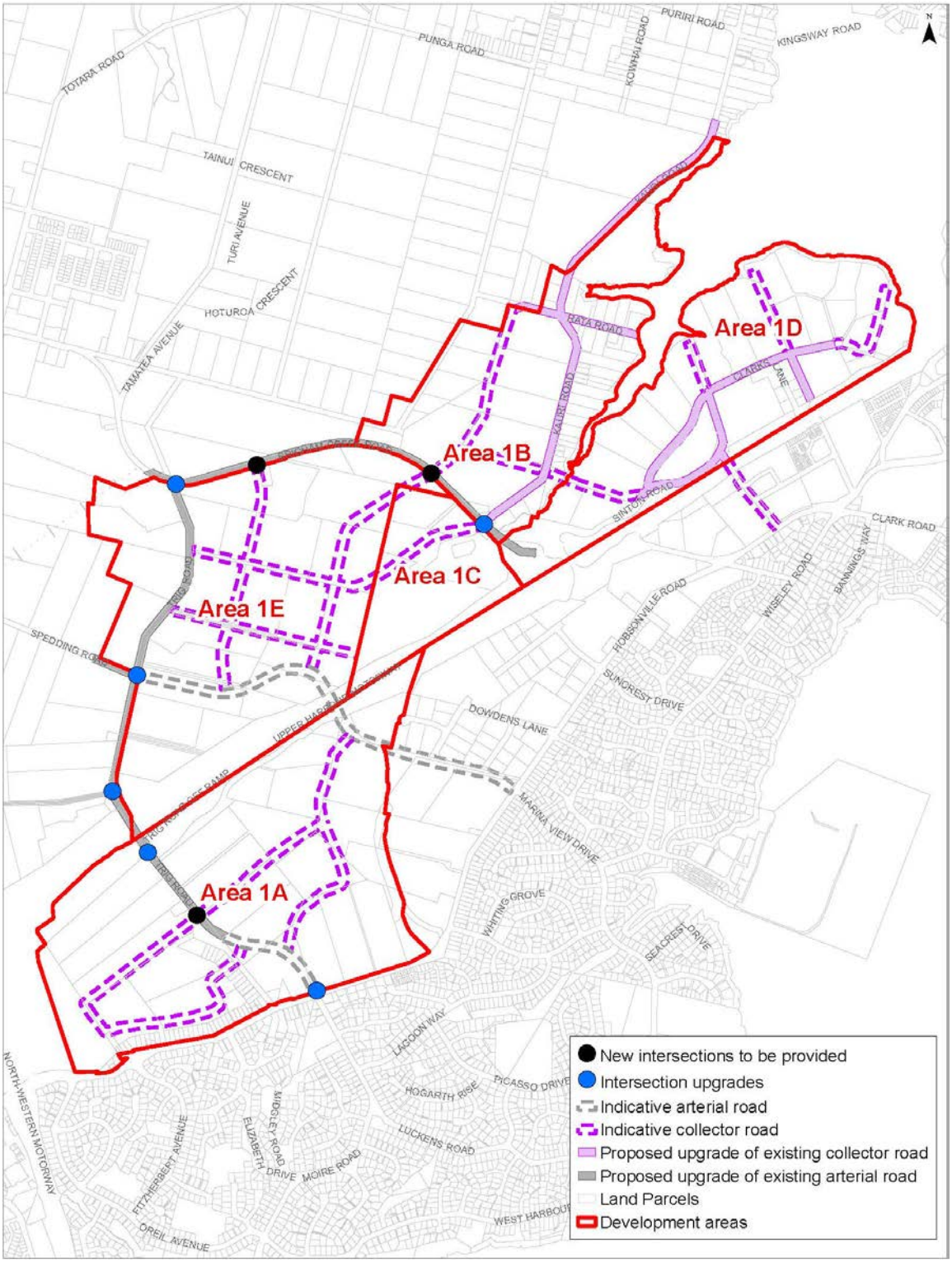
(c) consideration of the interface with, and cumulative effects of, stormwater infrastructure in the precinct.

I616.10. Precinct plans

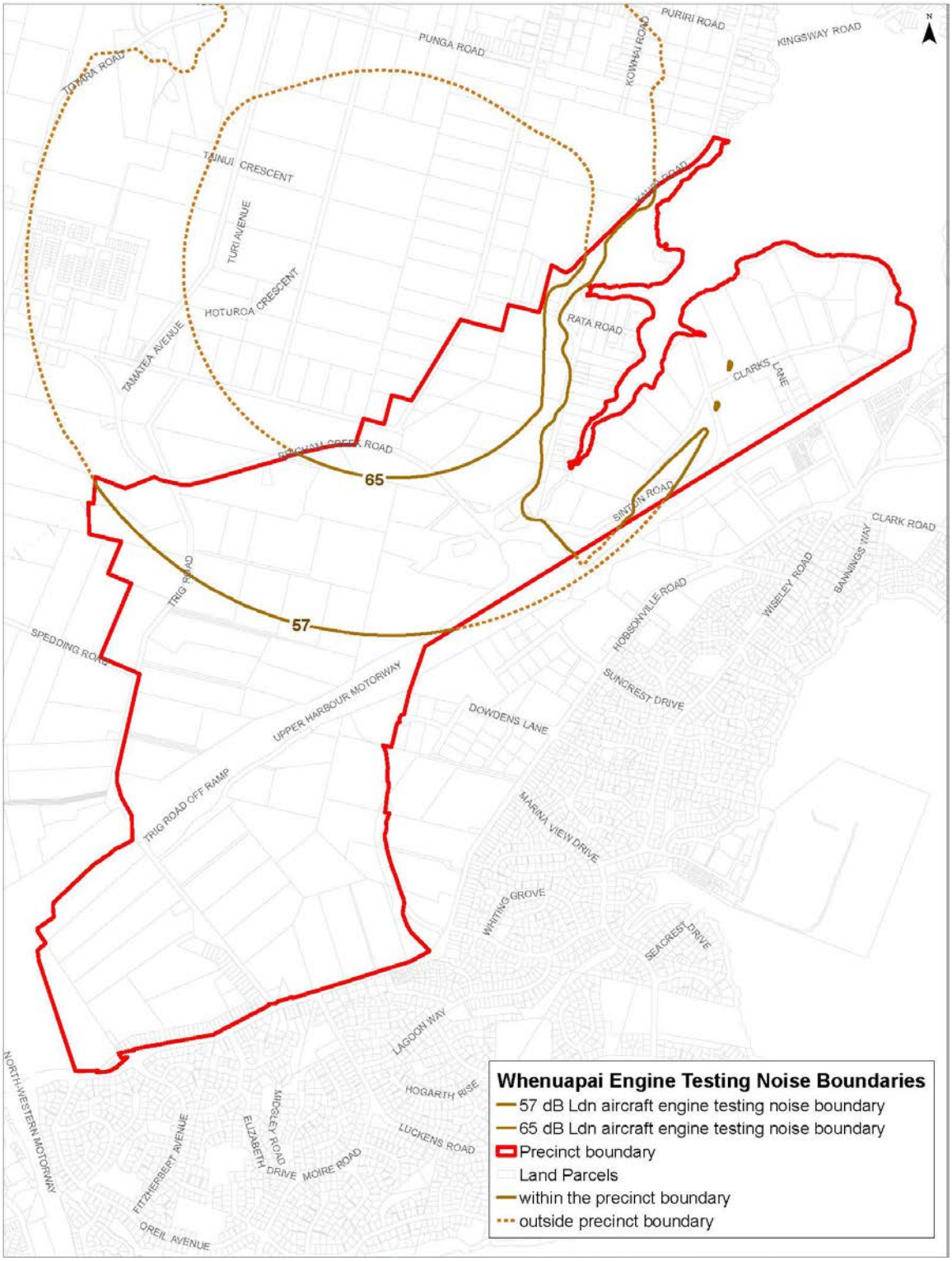
I616.10.1. Whenuapai 3 Precinct Pan 1



I616.10.2. Whenuapai 3 Precinct Plan 2



I616.10.3. Whenuapai 3 Precinct Plan 3



Addition to Schedule 14.1 Table 1 Places

ID	Place Name and/or Description	Verified Location	Verified Legal Description	Category	Primary Feature	Heritage Values	Extent of Place	Exclusions	Additional Rules for Archaeological Sites or Features	Place of Maori Interest or Significance
02784	Whenuapai heavy anti-aircraft battery	4 Spedding Road and 92 Trig Road Whenuapai	Lot 17 DP 62344; Lot 16 DP62344	B	Gun emplacements and command post	A,H	Refer to planning maps			

Deletion of existing schedule entries from 14.1 Table 1 Places

ID	Place Name and/or Description	Verified Location	Verified Legal Description	Category	Primary Feature	Heritage Values	Extent of Place	Exclusions	Additional Rules for Archaeological Sites or Features	Place of Maori Interest or Significance
~~00135~~	~~Worker's Dwelling~~	~~9 Clarks Lane, Hobsonville~~	~~LOT 1 DP 411781~~	~~B~~		~~A,F~~	~~Refer to planning maps~~	~~Interior of building(s)~~		
~~00246~~	~~Worker's Residence~~	~~5 Clarks Lane, Hobsonville~~		~~B~~		~~A,F~~	~~Refer to planning maps~~	~~Interior of building(s)~~		
~~00247~~	~~Worker's Residence~~	~~4 Clarks Lane, Hobsonville~~		~~B~~		~~A,F~~	~~Refer to planning maps~~	~~Interior of building(s)~~		
~~00248~~	~~Worker's Residence~~	~~6 Clarks Lane, Hobsonville~~		~~B~~		~~A,F~~	~~Refer to planning maps~~	~~Interior of building(s)~~		
~~00249~~	~~Worker's Residence~~	~~10 Clarks Lane, Hobsonville~~		~~B~~		~~A,B,F, H~~	~~Refer to planning maps~~	~~Interior of building(s)~~		

Addition to Schedule 14.1 Schedule of Historic Heritage – Table 2 Areas

ID	Area Name and/or Description	Verified Location	Known Heritage Values	Extent of Place	Exclusions	Additional Rules for Archaeological Sites or Features	Place of Maori Interest or Significance	Contributing Sites/ Features	Non-contributing Sites/ Features
02783	Clarks Lane Historic Heritage Area	Clarks Lane, Hobsonville	A,F,H	Refer to planning maps	Interiors of all buildings contained within the extent of place unless otherwise identified			Refer to Schedule 14.2.13	Stand-alone accessory buildings or garages built after 1940; former church 7

					in another scheduled historic heritage place				Clarks Lane (Lot 5 DP 411781)

Addition to Schedule 14.2

14.2.13 Clarks Lane Historic Heritage Area

Statement of significance

The dwellings at 3 to 10 Clarks Lane are located in Hobsonville, an area to the north-west of the Auckland Central Business District. Clarks Lane is situated on the north-western edge of the suburb, close to the adjacent district of Whenuapai and the Waiarohia Inlet. Clarks Lane runs in a north-south orientation and prior to 2008 had access southwards via Ockleston Road to connect with Hobsonville Road. Following the construction of State Highway 18 the lane became a cul-de-sac. The lane is narrow, with road markings only to denote the edge of the carriageway; it has a wide road reserve and no footpath, all of which contribute to its rural amenity and aesthetic. These physical attributes of the road are important to the understanding of its history as a rural lane servicing a small grouping of residences. The position of the cottages on either side of the road creates a balance of housing through the lane. The carriageway, road reserve and building positions are therefore contributing features of the Clarks Lane Historic Heritage Area and are important aspects of the Historic Heritage Area's context.

The group of workers' residences on Clarks Lane have considerable historical value as they reflect an important aspect of local and regional history, the private construction of accommodation for pottery and brickworks industry employees. The remaining cottages and foreman's villa represent some of the first privately established workers' accommodation still extant in the region. The cottages are also some of the earliest remaining examples of their type in the locality, representing an early period of development in the area. The Clarks Lane Historic Heritage Area has further significance for its association with the Clark family, specifically R.O. Clark II, R.O. Clark III and his brother, T.E. Clark. The Clark family were some of the first European settlers to the area and made a significant contribution to the history of the locality. The Clarks donated land for the erection of a number of community buildings including the first church and school in Hobsonville.

The dwellings play an important role in defining the distinctiveness of the Hobsonville community by representing the area's early history and as a legacy of the Clark family. The Historic Heritage Area is an important grouping of buildings that demonstrates a way of life that is now less common by representing the locality's reliance upon local employment and effort of a local company to provide affordable and convenient housing. As a group of dwellings of a similar design and style, they have considerable value as a remnant of the early settlement period and architectural development of Hobsonville. The type and style of the Clarks Lane cottages and villa are a good representative example of the pattern of development, street layout, building height, massing and scale that is demonstrative of purpose-built workers' housing. Based on those physical attributes visible from the public realm, the dwellings have considerable value for their existing physical qualities and as representative examples of their type and period within the locality.

The cottages and villa all exemplify a past aesthetic taste that is distinctive in the Hobsonville locality. The Clarks Lane dwellings have moderate aesthetic value for the widespread emotional response they evoke as a group for their picturesque qualities. Further aesthetic appeal is derived from the relationship of the places to their setting, which reinforces the quality of both.

The former Brighams Creek church at 7 Clarks Lane (relocated to the lane in circa 2009) does not detract from the overall aesthetic of the lane. It is attributable to a similar architectural and historical period as the cottages, and the original portion is an example of an attractive, modest structure evocative of the small late nineteenth/early twentieth century church buildings that express the vernacular style of New Zealand's ecclesiastical architecture. The former church has a limited contribution to, and association with, the values for which the Historic Heritage Area is significant. For this reason, it is identified as a non-contributor within the Historic Heritage Area and will remain individually scheduled.

The dwellings have considerable contextual value as a group of workers' residences along Clarks Lane, that when taken together, have coherence due to their history, age, street-fronting orientation and scale; forming part of the historical and cultural complex of the locality. The cottages at 3, 4, 5, 6 and 10 Clarks Lane are characterised by their compact size and single storey height. From a social lens, this is reflective of their original use as accommodation for workers. The roof form of the cottages at 3, 4, 5, 6 and 10 Clarks Lane is an asymmetrical side-gable with a subservient, lower pitched lean-to at the rear. The foreman's villa at 9 Clarks Lane is the largest of the workers' residences and is an example of the common villa typology prevalent at the beginning of the twentieth century. The villa's setback, size, square plan, hipped roof and central gutter differentiate it from the other workers' cottages. The larger size and distinct form of the villa reflects the higher professional standing of the pottery foreman.

The dwellings originally had corbelled brick chimneys, and open verandahs along the front (street-facing) elevation. Several dwellings retain either, or both of these attributes that are important physical and aesthetic features. The front elevations are also characterised by a central entrance door, framed on either side by four-pane sash windows. Paint-finished timber cladding and fenestration, and iron or steel roofing are key material characteristics that illustrate the traditional qualities of the dwellings. Some dwellings have replaced the original timber fenestration with aluminium joinery.

The immediate setting of the dwellings is an important aspect to the understanding of their context, demonstrated by the layout and amenity of the lane. The sites have large open sections with little front boundary fencing (i.e.: no more than 1.2 metres in height and visually permeable) and consistent (approximately 10 metres) setbacks which are intact key features of their rural setting. These are tangible reminders of the coherence of the workers' housing legibility.

Map 14.2.13.1: Clarks Lane Historic Heritage Area

Addition to Appendix 17

I616 Whenuapai 3 Precinct

Whenuapai 3 Precinct Stormwater Management Plan (2017)

Appendix D

Responding Letter from Watercare

Watercare
An Auckland Council Organisation

Watercare Services Limited
Private Bag 94010
Auckland 2241
www.watercare.co.nz
Customer service line
Mon to Fri 7.30 to 6pm
09 442 2222
info@water.co.nz

Fault line
24 hours
09 442 2222
Free text 3130
faults@water.co.nz

30/08/2022

Ashley Watson
Airey Consultants Ltd
Takapuna, Auckland

Dear Ashley,

Re: Your request for an assessment of water and wastewater capacity

Address: **82 Hobsonville Road, West Harbour**
Watercare application number **CON 150727**

This assessment is independent of the Auckland Council consenting process. This letter does not constitute a pre-approval from Watercare, and the assessment is valid for two years from the date of this letter.

Watercare has undertaken an initial high-level assessment of the proposal for this development, for potential retirement village with 60 care unit, 205-2 bed units & 135-1 bed units at 82 Hobsonville Road, West Harbour. Based on the information provided at this stage attached plans and assessment as appropriate, we confirm the following.

Water supply: There is capacity in the local water supply network.

Wastewater: There are capacity constraints in the wastewater network.

The development is within the Future Urban Zone area, and therefore we have no commitment to service it at this stage. The Whenuapai servicing plan identifies the catchment the property sites within as discharging to Northern Interceptor Stage 2, not the adjacent 150mm gravity network. The Northern Interceptor stage 2 is due for delivery in 2025.

Additionally, looking at the ground contours for this area, we do not believe the proposed connection location is feasible as the proposed pipeline appears to cross a low point that is below the invert of the proposed connection point.

The capacity constraints in the wastewater network will need to be mitigated by the developer through public network extensions or upgrades, depending on the agreed solution with Watercare as part of the resource consent process at that time.

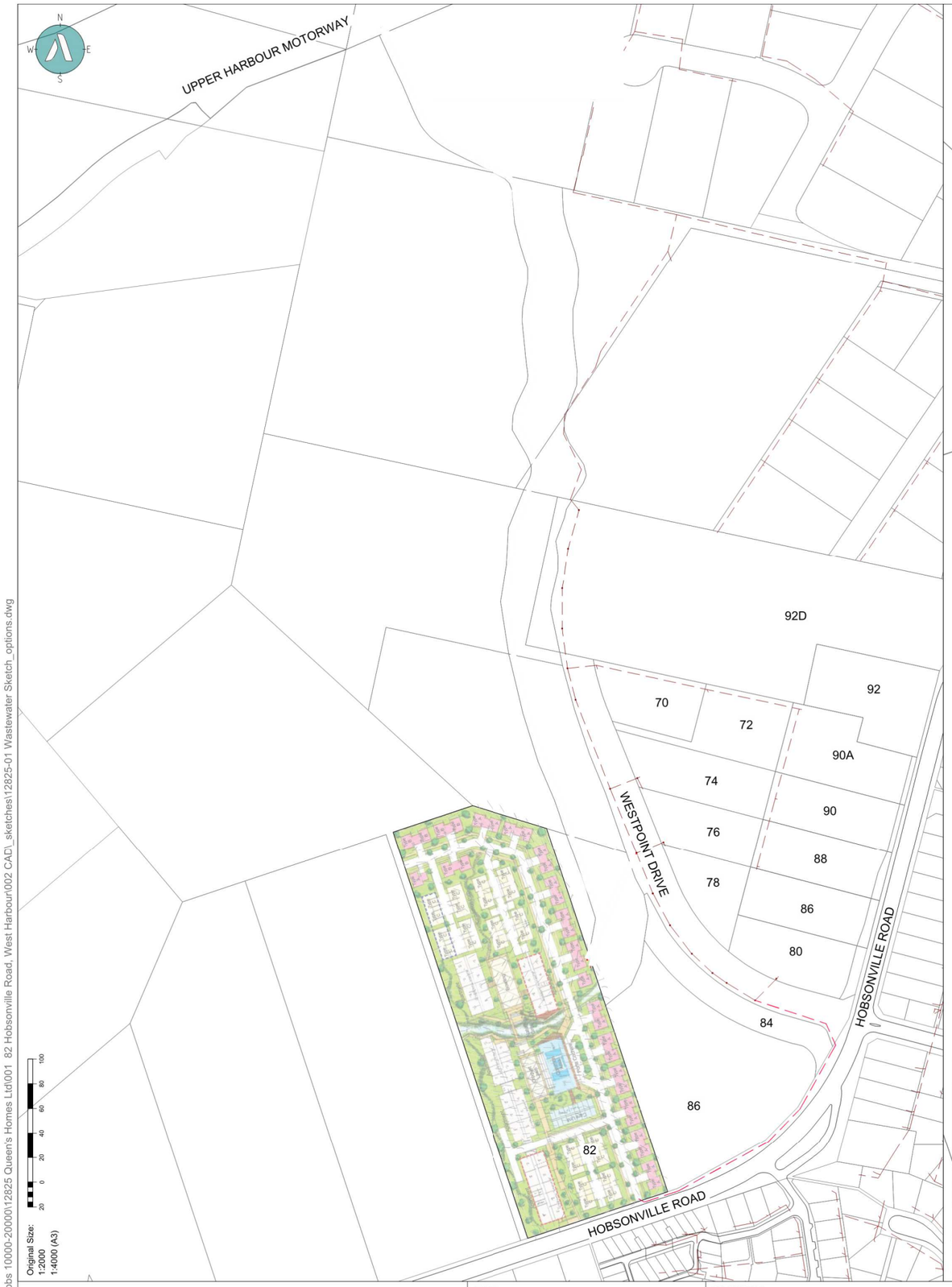
Yours Sincerely

Nita Dharmadhikari
Snr. Development Engineer | Developer Services

Watercare
An Auckland Council Organisation

Appendix E

Capacity Assessment for the Proposed LPS system



LPS System
INSTALL RECEIVING MANHOLE WITHIN SITE
AND DISCHARGE WASTEWATER ALONG
HOBSONVILLE ROAD AND WESTPOINT DRIVE
TO EXISTING MANHOLE VIA GRAVITY

\\Aireys-File\jobs\Jobs 10000-20000\12825 Queen's Homes Ltd\001 82 Hobsonville Road, West Harbour\002 CAD_sketches\12825-01 Wastewater Sketch_options.dwg

Airey
CIVIL, STRUCTURAL AND FIRE ENGINEERS

AIREY CONSULTANTS LTD
TEL: (09) 486 4542
www.aireys.co.nz

TAKAPUNA
BOTANY
QUEENSTOWN

CLIENT:
KINGS HEIGHTS GROUP LTD

PROJECT TITLE:
PROPOSED DEVELOPMENT AT
82 HOBSONVILLE ROAD
WEST HARBOUR
AUCKLAND

REV	AMENDMENT	DATE	BY

DRAWING STATUS:

ISSUE PURPOSE:
FOR INFORMATION

DESIGN:	AW
DRAWN:	SZ
CHECKED:	AW
DATE:	8/11/2022
SCALE:	AS SHOWN

DO NOT SCALE FROM DRAWINGS

DRAWING TITLE:
PROPOSED WASTEWATER LAYOUT OPTIONS

JOB No: 12825-01
SHEET No: SK300
REV: B

Airey Consulting Civil and Structural Engineers Takapuna Queenstown Botany	Client: Queen's Homes Ltd	Sheet No: 2
	Job: 82 Hobsonville Road West Harbour	Job No: 12825-01
	Calc's By: SZ Checked: AW	Phone: (09) 4864542
		Date: Nov-22

Watercare Code of Practice Wastewater Flow Calculations - Low Pressure Sewer

600 Units

Enter Values
Result Cells

1. Occupany Allowance

Number of 1 bedroom unit	=	202	
Watercare Design Occupancy (per single bedroom unit)	=	1.5	Table 5.1.2 Watercare CoP
Occupancy for design purposes	=	303	
Number of 2 bedroom unit	=	308	
Watercare Design Occupancy (per two-bedroom unit)	=	3	Table 5.1.2 Watercare CoP
Occupancy for design purposes	=	924	
Number of care unit	=	90	
Watercare Design Occupancy (per care unit)	=	1	
Occupancy for design purposes	=	90	
Total occupancy for design purposes	=	**1317**	

2. Residential Wastewater Flows

Average Dry Weather Flow (ADWF) (Litres/Person/Day)	=	180	Section 5.3.5 Watercare CoP
Safety Factor	=	1.2	Section 5.3.12.3.3 (a) Watercare CoP
Peak Residential Flow (Litres/person/day)	=	216.00	
Residential Wastewater Design Flow (Litres/sec)	=	3.29	

3. Commercial, Industrial or CBD Wastewater Design Flows

Design Flow (Litres/second/hectare)	=	0	
Commercial Floor Area (m²)	=	0	
Commercial Wastewater Design Flow (Litres/sec)	=	0.000	
Total Wastewater Design Flow (Litres/sec)	=	**3.29**	

Airey **Civil, Structural and Fire Engineers**

Takapuna Botany Queenstown

Client:	Kings Heights Group Ltd		**Sheet No:** 1
Job:	82 Hobsonville Road West Harbour		**Job No:** 12825/01
Calc's By:	CH	**Phone:**	**Date:**
Reviewed By:	AW	09 486 4542	20/02/2023

Existing Wastewater system

0.042

denotes unknown/incomplete information: gradient assumed based on GIS topography

PIPE CAPACITY FORMULA

Colebrook-White $V=-2\sqrt{(2gDS)}\log(ks/3.7D+2.51\upsilon/(D\sqrt{(2gDS)}))$

R= d/4 (circ. pipes) υ= 1.141 $x10^{6}$ kinematic viscosity of fluid

Q= VA (water at 15 degrees)

D= diameter k_s= 1.5 mm (effective roughness)

S= hydraulic gradient

Pipe (GIS ID or design nomenclature)	*Diameter*	*Length*	*Material*	*Upstream IL*	*Downstream IL*	*Slope %*	*Velocity*	*Pipe Capacity (L/s)*	*Proposed Peak Design Flow from Site (L/s)*	*Existing Peak Design Flow (L/s)*	*Proposed Peak Design Flow (L/s)*	*Pipe capacity ratio*
5641841	150	25.00	PVC-U	46.99	46.73	1.04	0.89	15.8		3.86	3.86	24%
5641842	150	27.00	PVC-U	46.68	46.37	1.15	0.94	16.6	3.29	3.86	7.15	43%
5641843	150	14.00	PVC-U	46.32	46.06	1.86	1.19	21.1		3.86	7.15	34%
5641844	150	22.60	PVC-U	46.01	45.75	1.15	0.94	16.6		3.86	7.15	43%
5641845	150	28.90	PVC-U	45.70	45.15	1.90	1.21	21.4		3.86	7.15	33%
5641846	150	29.10	PVC-U	45.10	44.12	3.37	1.61	28.5		3.86	7.15	25%
5641847	150	35.20	PVC-U	44.07	43.13	2.67	1.43	25.3		3.86	7.15	28%
5641848	150	56.60	PVC-U	43.08	40.71	4.19	1.80	31.8		5.72	9.01	28%
5641849	150	77.20	PVC-U	40.66	37.52	4.07	1.77	31.3		7.05	10.34	33%
5641851	150	26.40	PVC-U	37.47	36.40	4.05	1.77	31.2		7.05	10.34	33%
5641828	150	32.50	PVC-U	36.35	35.17	3.63	1.67	29.6		14.47	17.76	60%
5641829	150	32.70	PVC-U	35.12	33.64	4.53	1.87	33.0		20.23	23.52	71%
5641830	150	32.80	PVC-U	33.59	32.16	4.36	1.83	32.4		20.23	23.52	73%
5641831	150	32.90	PVC-U	32.11	30.71	4.26	1.81	32.0		20.23	23.52	73%
5641833	225	11.10	PVC-U	30.66	30.38	2.52	1.83	72.6		25.98	29.27	40%

MEMORANDUM

TO	Kings Heights Group Limited		
SUBJECT	**RE: 82 Hobsonville Road – Wastewater Disposal Option**	**DATE**	11/11/22
FROM	Airey Consultants Ltd	**FILE**	12825-01

Background

Airey Consultants have been engaged to investigate wastewater servicing options for the proposed retirement village at 82 Hobsonville Road. This memo has been prepared to give an overview of the wastewater disposal design considerations and options.

Design Occupancy

Table 1. Unit Number and Design Occupancy Assumption:

	Number of Unit	Design Occupancy Per Unit	Design Occupancy
One-bedroom Unit	202	1.5	303
Two-bedroom Unit	308	3	924
Care Unit	90	1	90
Total	**600**	-	**1317**

Wastewater Servicing Options

- **Option A – New public gravity network and connect to existing manhole**

A public gravity network is to be constructed to service all buildings within the site and connect to the existing manhole located on Westpoint Drive. A pipe bridge over the existing gully with length of approximately 50m is proposed to connect to the existing network via gravity. On-site private pumping system may be required for the northeastern portion of the site to discharge to the proposed public network due to topography.

Based on the design occupancy as above, a Peak Wet Weather Flow of 18.38 L/s generating from the site will lead to some downstream public pipes running above 100% of capacity. Please refer to attached sketch for preliminary design layout and calculation and note that no upstream property of the subject site has been included into the capacity check.

Initial liaison has been undertaken with Watercare regarding Option A and they have advised that there are capacity constraints in the local wastewater network and they do not have a commitment to service the site. Watercare have also noted that the capacity constraints in the network will need to be mitigated by the developer. The correspondence from Watercare is attached.

- **Option B – Low pressure sewer system (LPS)**

A private low pressure wastewater system will be installed within the site. All the on-site pump units, control system, storage and pipework will be owned, operated and maintained by the property owner. The LPS will be directed to a new receiving manhole located adjacent to site access. A new public gravity network with length of approximately 300m is to be constructed along Hobsonville Road and Westpoint Drive to connect to the existing manhole on Westpoint Drive as shown on the attached plan.

This option will introduce less additional flow to the existing downstream network compared with Option A and C as there will be no stormwater infiltration into the sealed LPS pipework or chambers. The peak flows for the LPS system will be based on average daily flow (ADWF) with an added capacity safety factor of 1.2, excluding peak wet weather flow from assessment. Based on the design occupancy above, the peak residential flow from the site will be 3.29 L/s, which is less than the Peak Wet Weather Flow of 18.38 L/s for Option A.

- **Option C – New public gravity network to connect to the Northern Interceptor Stage 2**

A public gravity network is proposed along the stream towards Upper Harbour Motorway to connect to the Northern Interceptor Stage 2, which is to be completed in 2025 as advised by Watercare. Same Peak Wet Weather Flow with Option A (18.38 L/s) is expected to be generated from the site based on design occupancy.

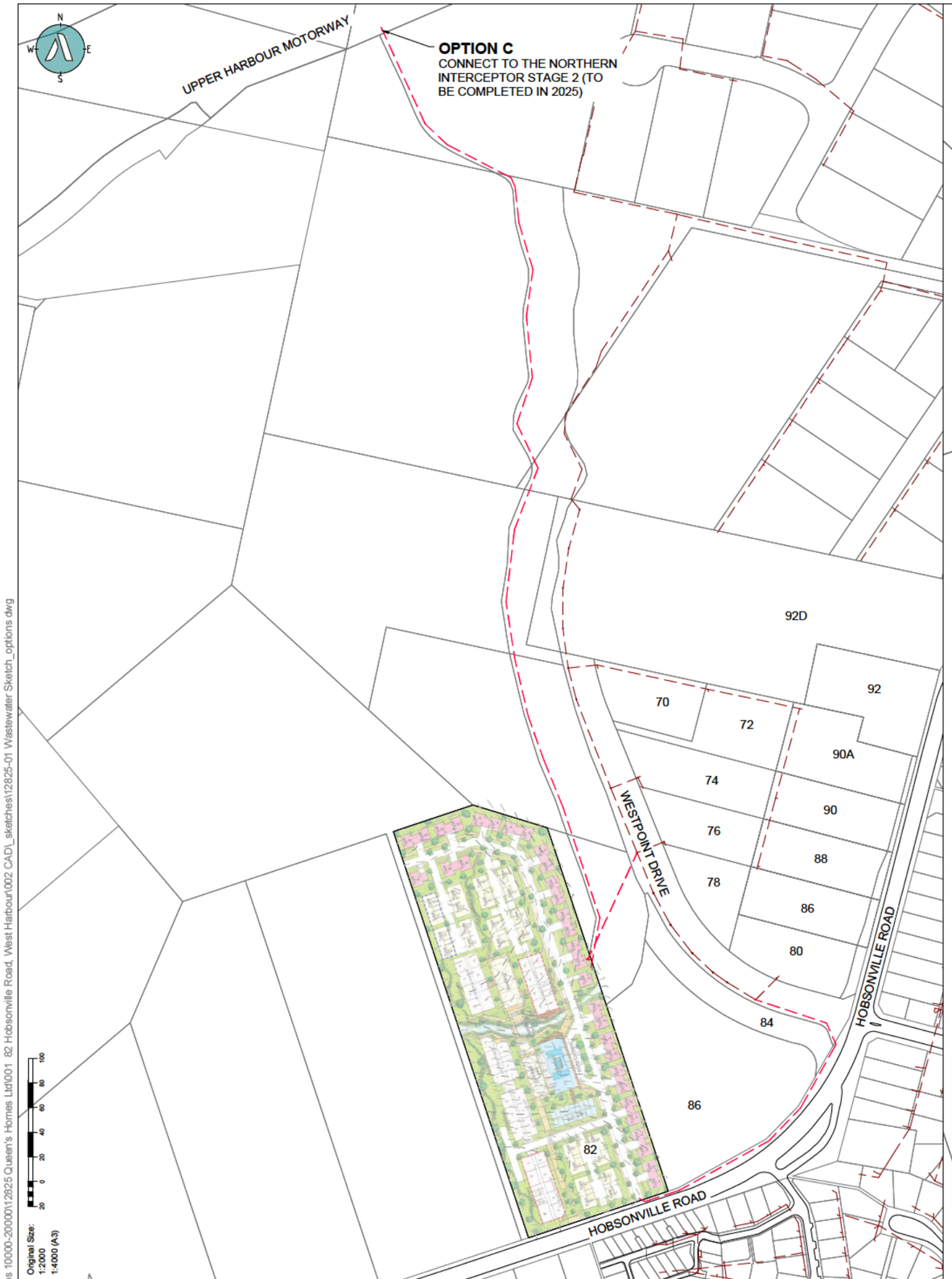
The new pipe network outside the site will be approximately 830m in length following topography. The new network will become public assets and be the responsibility of Watercare to operate and maintain the gravity reticulation network once is accepted and vested by Watercare. We note that although a gravity connection along this alignment is theoretically possible, we do not have details of the Northern Interceptor Stage 2 connection point so we are unable to completely confirm that this option is viable.

Conclusion

Airey Consultants' assessment of the options available to service this development is that the LPS system is a better fit for this development site. The LPS option is expected to achieve a satisfactory balance between construction and ongoing maintenance costs to service the site and provides the ability to manage flows into the existing network. The LPS system produces less peak flows due to being a fully sealed system which does not allow infiltration, and consequently reduces the impact on the downstream network.

Attachments

- Proposed wastewater layout options
- Downstream wastewater capacity check
- Watercare correspondence regarding water and wastewater capacity



\\Aireys-File\jobs\Jobs 10000-20000\12825 Queen's Homes Ltd\001 82 Hobsonville Road, West Harbour\002 CAD_sketches\12825-01 Wastewater Sketch_options.dwg

Airey
CIVIL, STRUCTURAL AND FIRE ENGINEERS

AIREY CONSULTANTS LTD
TEL: (09) 486 4542
www.aireys.co.nz

TAKAPUNA
BOTANY
QUEENSTOWN

CLIENT:
KINGS HEIGHTS GROUP LTD

PROJECT TITLE:
PROPOSED DEVELOPMENT AT
82 HOBSONVILLE ROAD
WEST HARBOUR
AUCKLAND

REV	AMENDMENT	DATE	BY

DRAWING STATUS:

ISSUE PURPOSE:
FOR INFORMATION

DESIGN:	AW
DRAWN:	SZ
CHECKED:	AW
DATE:	8/11/2022
SCALE:	AS SHOWN

DO NOT SCALE FROM DRAWINGS

DRAWING TITLE:
PROPOSED WASTEWATER LAYOUT OPTIONS

JOB No: 12825-01
SHEET No: SK300
REV: A

Airey **Civil, Structural and Fire Engineers**

Takapuna Botany Queenstown

Client:	Kings Heights Group Ltd		**Sheet No:** 1
Job:	82 Hobsonville Road West Harbour		**Job No:** 12825/01
Calc's By:	SZ	**Phone:**	**Date:**
Reviewed By:	AW	09 486 4542	11/11/2022

Existing Wastewater system

0.042

denotes unknown/incomplete information: gradient assumed based on GIS topography

PIPE CAPACITY FORMULA

Colebrook-White $V=-2\sqrt{(2gDS)}\log(ks/3.7D+2.51\upsilon/(D\sqrt{(2gDS)}))$

R= d/4 (circ. pipes) υ= 1.141 $x10^6$ kinematic viscosity of fluid

Q= VA (water at 15 degrees)

D= diameter k_s= 1.5 mm (effective roughness)

S= hydraulic gradient

Pipe (GIS ID or design nomenclature)	*Diameter*	*Length*	*Material*	*Upstream IL*	*Downstream IL*	*Slope %*	*Velocity*	*Pipe Capacity (L/s)*	*Proposed Peak Design Flow from Site (L/s)*	*Existing Peak Design Flow (L/s)*	*Proposed Peak Design Flow (L/s)*	*Pipe capacity ratio*
5641841	150	25.00	PVC-U	46.99	46.73	1.04	0.89	15.8		3.86	3.86	24%
5641842	150	27.00	PVC-U	46.68	46.37	1.15	0.94	16.6		3.86	3.86	23%
5641843	150	14.00	PVC-U	46.32	46.06	1.86	1.19	21.1		3.86	3.86	18%
5641844	150	22.60	PVC-U	46.01	45.75	1.15	0.94	16.6		3.86	3.86	23%
5641845	150	28.90	PVC-U	45.70	45.15	1.90	1.21	21.4		3.86	3.86	18%
5641846	150	29.10	PVC-U	45.10	44.12	3.37	1.61	28.5		3.86	3.86	14%
5641847	150	35.20	PVC-U	44.07	43.13	2.67	1.43	25.3		3.86	3.86	15%
5641848	150	56.60	PVC-U	43.08	40.71	4.19	1.80	31.8	18.38	5.72	24.10	76%
5641849	150	77.20	PVC-U	40.66	37.52	4.07	1.77	31.3		7.05	25.43	81%
5641851	150	26.40	PVC-U	37.47	36.40	4.05	1.77	31.2		7.05	25.43	81%
5641828	150	32.50	PVC-U	36.35	35.17	3.63	1.67	29.6		14.47	32.85	111%
5641829	150	32.70	PVC-U	35.12	33.64	4.53	1.87	33.0		20.23	38.61	117%
5641830	150	32.80	PVC-U	33.59	32.16	4.36	1.83	32.4		20.23	38.61	119%
5641831	150	32.90	PVC-U	32.11	30.71	4.26	1.81	32.0		20.23	38.61	121%
5641833	225	11.10	PVC-U	30.66	30.38	2.52	1.83	72.6		25.98	44.36	61%

Watercare
An Auckland Council Organisation

Watercare Services Limited
Private Bag 94010
Auckland 2241
www.watercare.co.nz
Customer service line
Mon to Fri 7.30 to 6pm
09 442 2222
info@water.co.nz

Fault line
24 hours
09 442 2222
Free text 3130
faults@water.co.nz

30/08/2022

Ashley Watson
Airey Consultants Ltd
Takapuna, Auckland

Dear Ashley,

Re: Your request for an assessment of water and wastewater capacity

Address: **82 Hobsonville Road, West Harbour**
Watercare application number **CON 150727**

This assessment is independent of the Auckland Council consenting process. This letter does not constitute a pre-approval from Watercare, and the assessment is valid for two years from the date of this letter.

Watercare has undertaken an initial high-level assessment of the proposal for this development, for potential retirement village with 60 care unit, 205-2 bed units & 135-1 bed units at 82 Hobsonville Road, West Harbour. Based on the information provided at this stage attached plans and assessment as appropriate, we confirm the following.

Water supply: There is capacity in the local water supply network.

Wastewater: There are capacity constraints in the wastewater network.

The development is within the Future Urban Zone area, and therefore we have no commitment to service it at this stage. The Whenuapai servicing plan identifies the catchment the property sites within as discharging to Northern Interceptor Stage 2, not the adjacent 150mm gravity network. The Northern Interceptor stage 2 is due for delivery in 2025.

Additionally, looking at the ground contours for this area, we do not believe the proposed connection location is feasible as the proposed pipeline appears to cross a low point that is below the invert of the proposed connection point.

The capacity constraints in the wastewater network will need to be mitigated by the developer through public network extensions or upgrades, depending on the agreed solution with Watercare as part of the resource consent process at that time.

Yours Sincerely

Nita Dharmadhikari
Snr. Development Engineer | Developer Services

Watercare
An Auckland Council Organisation