

Neil Construction Limited 141 Whenuapai Business Park Private Plan Change Whenuapai, Auckland

Infrastructure Report

PLANNERS | SURVEYORS | ENGINEERS | ARCHITECTS | ENVIRONMENTAL

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Document Record

| Client | Neil Construction Limited |
|--------------|---|
| Site Address | Whenuapai Business Park Private Plan Change |
| | Whenuapai, Auckland |
| Job Number | 47712 |
| Document | Infrastructure Report |
| Document No | 47712-RP-C-EG02 -C Infrastructure Report |

Issue and Status

Date of Issue Status

22/10/2024 For Notification

Author

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Reviewer

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Originating Office

Approved for Issue

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1.0 Introduction

Cato Bolam has been engaged by Neil Construction Limited to prepare an engineering report to support the Whenuapai Business Park Private Plan Change application. The plan change is proposed to rezone an area of approximate 47.57ha in Whenuapai Auckland from Future Urban to Business-Light Industry, which includes the following properties:

- 94 Trig Road,
- 96 & 96A Trig Road,
- 69 Trig Road,
- 71 Trig Road,
- 73 Trig Road,
- 141 Brigham Creek Road,
- 145 Brigham Creek Road,
- 151 Brigham Creek Road,
- 153 Brigham Creek Road,
- 155-157 Brigham Creek Road,
- 159 Brigham Creek Road

The purpose of this report is to summarise the assessment for the existing and required infrastructure for the proposed Plan Change Area (PCA). Details about the PCA's proposed development are currently focused on proposed road layouts and upgrades to existing roads. Finalised versions of conceptual lot arrangements and earthwork designs have yet to be established and are anticipated to undergo substantial changes. Consequently, these plans are not included in this report.

2.0 Site Description

Trig Road splits the site into two distinct areas hereinafter referred to as PCA1 (east of Trig Road) and PCA2 (west of Trig Road). PCA1 comprises 69-73 Trig Road and 141-159 Brigham Creek Road with a combined area of approximate 36.23ha. PCA2 consists of 94 Trig Road, 96 and 96A Trig Road having a combined area of approximate 11.34ha.

PCA1 has a moderate slope with the land falling from RL42m at the south-western boundary to RL13m at the north-eastern corner, and to RL15m at the south-eastern corner. The ground slope varies between 2%-6% across the site. An unnamed stream within the site, flows from the west to the north-east and discharges to Waiarohia Stream. A gully at the south-eastern corner of the site leads to Waiarohia Stream. Two natural wetlands are identified at the northern part of the site, located in 155-157 Brigham Road, and eastern part of 153 Brigham Creek Road respectively, located within the unnamed streams.

PCA2 has a moderate fall from RL41m at the south-eastern corner to RL27m at the south-western corner of 96 Trig Road. Several overland flow paths within the site discharge to the unnamed streams outside the western boundary of the site, eventually discharge to Sinton Stream which originates in 96 Trig Road. A few wetlands are identified in 96 Trig Road, one is at the western side of Trig Road, the rest are connected along with the unnamed stream.

There is no public stormwater network in the area. The site drains naturally to the gullies and streams.

The site location is shown in Figure 1.



Figure 1: Site Location

3.0 Earthworks

The construction of bulk earthworks has been progressed at 69 Trig Road, 151 Brigham Creek Road and 71 Trig Road under the resource consent LUC60350837 and LUC60376543 respectively. Bulk earthworks are also progressing at 94 Trig Road under resource consent BUN60395603. The Bulk earthworks consent for 73 Trig Road BUN60410316 has been approved.

Further earthworks will be necessary in the PCA to form the roads and prepare platforms for the development. For supporting the Plan Change, this report only addresses the high-level earthworks principles what will apply to the future development as following:

- Proposed earthworks will be designed to practically minimize the cut fill volumes.
- Proposed land modification will retain the 10m riparian margin of streams and natural wetlands where practicable and avoid or minimize adverse impacts on the streams and wetlands.
- All earthworks and land modification will be supervised by a suitably qualified geotechnical engineer who will provide the certification to confirm the earthworks completed in accordance with the geotechnical recommendations.

Detailed earthworks design for future site development will be submitted at resource consent stage.

4.0 Sediment and Erosion Control

All sediment and erosion controls shall comply with the Auckland Region Guideline Document: Erosion and Sediment Control for Land Disturbing Activities (GD05). Erosion and Sediment Control will consider the following:

- Prior to the commencement of earthworks, a detailed sediment and erosion control plan shall be submitted for council approval.
- All controls shall be monitored and maintained during the construction. Any alternative methodology shall be approved by the site engineer and Auckland Council Monitoring Team.
- Stabilisation shall be progressively undertaken upon completion.
- Specific erosion and sediment control measures in relation to the earthworks near watercourses and natural wetlands shall be employed to avoid potential adverse environmental impacts.

5.0 Roading

An Integrated Transport Assessment (ITA) has been prepared by Team Traffic and peer reviewed by Don McKenzie Consulting Limited, which has assessed the existing and proposed road networks, the proposed roading upgrades and mitigation measures where appropriate.

Three new collector roads are proposed within the PCA to service the future development. It is proposed to upgrade the Trig Road/Brigham Creek Road intersection to a roundabout. Two new intersections are proposed on Brigham Creek Road (a signalised intersection to the east, and a "left in, left out" intersection to the west of the Spark site), and one new intersection on Trig Road by way of a roundabout to connect the proposed collector road. Supporting Growth Alliance (SGA) have proposed upgrades to both Brigham Creek Road and Trig Road. The proposed corridors within the PCA have been shown as per the North West Local Network Notice of Requirement (NoR) (the decision was notified on 20 June 2024, and appeals closed on 12 July 2024). Cato Bolam has undertaken an assessment to determine the best interim solution for Brigham Creek Road and Trig Road upgrades that aligns with SGA's design as much as practicable while considering the current boundary constraints.



Figure 2: Concept Road Networks

5.1 Proposed Road Upgrades

The proposed typical road cross-sections and the Constraints Plan (47712-DR-C-8090) are included in Appendix A. The boundaries of properties not included in the Plan Change – particularly the properties owned by the NZ Defence Force and Spark – limit the extent to which existing roads can be upgraded.

5.1.1 Brigham Creek Road

It is proposed to upgrade Brigham Creek Road from the Trig Road intersection to the western corner of the Kauri Road intersection (excluding the intersection).

The section of upgrades from the Kauri Road intersection to the proposed signalised intersection is to a full arterial width and generally in line with the NoR design. It includes a two-way cycle lane and pedestrian path to the north, and a pedestrian path to the south.

The most constrained section is where Brigham Creek Road passes between land owned by Spark NZ and the NZ Defence Force. The width available between the two properties is approximately 20.18m which limits the road to one lane each way.

To the west of the Spark NZ property, it is proposed to transition Brigham Creek Road to three lanes as it heads towards the proposed "left in, left out" intersection.

Brigham Creek Road will then transition back to one lane each way as it approaches Trig Road.

It is proposed to provide new cycle and pedestrian facilities to the south of Brigham Creek Road between the Trig Road intersection and the proposed signalised intersection. The existing shared path to the north is to be maintained for this section.

Refer to the drawing 47712-DR-C-8100-8102 for the concept design of Brigham Creek Road upgrade works.

5.1.2 Trig Road

The proposed upgrades to Trig Road are generally in accordance with the upgrades proposed by SGA for Trig Road in its NoR. This includes cycling and pedestrian facilities on both sides of the road. The proposed alignment differs from what has been proposed by SGA due to the position of existing property boundaries, and to allow for the proposed roundabout intersection to the new collector road running through PCA1. The Brigham Creek Road/Trig Road intersection is proposed to be upgraded to a roundabout. The plans are included in Appendix A.

5.2 Proposed New Roads

Three new collector roads are proposed which includes three new intersections with existing roads. These include:

- A signalised intersection on Brigham Creek Road on the eastern side of PCA1
- A left in left out intersection on Brigham Creek Road in the middle of PCA1
- A roundabout on Trig Road

6.0 Wastewater

6.1 Existing Wastewater

The existing Whenuapai pump station is located at the eastern side of Waiarohia Stream off Brigham Creek Road. An existing 400PE gravity line coming from the southeastern side of Trig Road discharges wastewater flow from the Redhill pump station to the existing 450 PE transmission gravity line which follows the southern boundary of PCA1 before discharging to the existing Whenuapai pump station.

In consultation with Watercare, it has been found that the existing Whenuapai pump station has possible capacity constraints and odour issues at the satellite manhole at the south-east corner of PCA1. Watercare stated that constraints in the system (if any) will be assessed at resource consent stage. However, Watercare's Whenuapai and Redhills wastewater project will upgrade the wastewater network to service the growth in the northwest of Auckland. Once Package 2 is complete, this will redirect the flow currently arriving from the Massey North pump station to the Northern Interceptor, the constraints will be lifted. The upgrade works are currently programmed for completion in 2028. The Watercare project map is shown in Figure 3.



Figure 3: Watercare Whenuapai and Redhills wastewater project

6.2 Proposed Wastewater

PCA2 is proposed to have private pump stations to service the development in these lots. Private rising mains will discharge the flows to the existing 400 PE gravity line via a new satellite manhole.

Given the existing topography, it was agreed with Watercare in previous discussions (meeting minutes are attached in Appendix C) that the PCA1 can be split into two sub-catchments to avoid extremely deep lines. The western and southern section will be serviced by proposed gravity lines.

In consultation with Watercare, a new public pump station is proposed at the north-eastern corner of the site which will service the eastern and northern section of PCA1. A new rising main will discharge the flow to the proposed gravity reticulation to the 450 PE gravity line. The concept wastewater layout is shown in Figure 4.

Final wastewater reticulation for the PCA is subject to detailed design at the Resource Consent and Engineering Approval stage. The design at Resource Consent Stage will take into consideration the status of Watercare's Whenuapai and Redhills upgrade works. In consultation with Watercare it was discussed that for the initial stages of the development it is likely that the flows will be quite low as the business park develops and it is likely that the low flows may be accommodated within the current capacity of the existing wastewater system.

Records of correspondence and consultation with Watercare is included in Appendix C.



Figure 4: Conceptual Wastewater Layout

7.0 Stormwater

There is no existing public stormwater reticulation within the plan change area. The existing site is naturally draining to the existing gullies and streams. Several existing culverts under Brigham Creek Road discharge to the plan change area.

A Stormwater Management Plan (SMP) for the PCA has been prepared separately in support of the plan change application which outlines the stormwater management requirements and approaches, generally as per the treatment train below. Stormwater reticulation will be designed in the future as part of Resource Consent applications and Detailed Design stages.

New public stormwater networks shall convey the 10% AEP flow from the PCA for the Maximum Probable Development (MPD) scenario. Climate Change shall be accounted for in accordance with the Auckland Code of Practice for Land Development and Subdivision.



Figure 5: Proposed Stormwater Management Treatment Train

A Flood and Flood Hazard Risk Assessment Report was completed which includes an assessment of existing and future overland flow paths and flooding in the 1% AEP storm and a hazard assessment for the road network. The analysis revealed that there is preexisting flooding along Brigham Creek Road, unrelated to the culvert or its catchment area. When considering the direct influence of the fully developed PCA on flood depths above the box culvert (in a scenario where the culvert is conservatively assumed 50% obstructed), the impact is less than minor and does not worsen the hazard beyond the existing as per the standards established by Auckland Transport.

To extend the buildable area, the 1% AEP overland flow within the PCA and the existing and new roads shall be diverted to the nearest stream. Earthworks will recontour the land to form channels, future public roads, and private accessways which will be utilised to convey the overland flow paths and address areas currently shown as flood prone. See Figure 6 below.

No downstream habitable floor levels are affected by flood water resulting from the development of the PCA.



Figure 6: Post-development Flood extent

8.0 Water Supply

Auckland Council's GeoMaps shows an existing 150mm AC and 315mm PE public pipes within Brigham Creek Road, an existing 225mm concrete pipe and a 150mm AC pipe within Trig Road. An existing 125mm PE public pipeline, which is connected to 150mm AC within Trig Road, terminates within the existing driveway, and extended with 40uPVC and 25 PE lot connections to service 69 and 71 Trig Road.

To service the plan change area, an extension of the watermain network within the PCA1 will be required to link the watermains between Brigham Creek Road and Trig Road. Watercare advised that the existing 150mm AC pipe within Brigham Creek Road will be abandoned, and the proposed pipelines shall be extended from the existing 315PE within Brigham Creek Road. A Looped watermain network will be required in the proposed roads within the plan change area to service the development. The watermain will be sized, and hydrants and fire flow capacity shall be assessed as per SNZ PAS 4509:2008 during the Resource Consent and Engineering Approval stage.

Water supply for PCA2 can be provided by extension from the existing 150AC in Trig Road.

A Hydraulic assessment was undertaken by Watershed Engineering Ltd. The assessment indicates that sufficient water supply can be provided to support the plan change to Light Industrial land use. FW3 firefighting can be achieved throughout the proposed network with pipe internal diameter of 150mm and 200mm.

Watercare has identified that a section of 150mm watermain near the intersection of Brigham Creek and Hobsonville Road is causing a network constraint. Upgrading this section to 355mm PE will lift this constraint.

Records of correspondence and consultation with Watercare is included in Appendix C.



Figure 5: Concept Water Supply Layout

9.0 Utilities & Services

Power and telephone services are currently located within the road reserve of Brigham Creek Road and Trig Road.

Overhead power in front of the site in Trig Road will be undergrounded and re-routed.

The power and telephone services will be extended throughout the proposed development to service the individual Lots. It is anticipated that upgrades may be required to service the development.

10.0 Conclusions and Recommendations

The required infrastructure for the proposed plan change area (PCA) has been assessed, and can be summarised as following:

- Further earthworks will be required to form the roads and prepare building platforms. Developments will be designed to practically minimize the cut and fill volumes.
- Proposed land modification will retain the intermittent streams and natural wetlands wherever practicable and minimize adverse impacts on these features.
- Modest land modifications and overland flow paths can eliminate the existing low-lying areas shown as Flood Plain and Flood Prone in the property at 141 Brigham Creek Road
- Erosion and sediment controls will be employed during construction to minimize the potential adverse impacts.

- Wastewater services can be provided by extension from the existing manholes. A new public pump station and rising main can be installed to avoid the use of deep lines and can be connected to the existing gravity line.
- The existing water network can be extended to supply potable water and provide firefighting for the development. An existing section of 150mm AC watermain near the intersection of Brigham Creek Road and Hobsonville road is considered a constraint and will need to be upgraded to 355mm PE to alleviate the constraint.
- Utility services are available within the road reserve and will be extended to service the development.

Considering the above, the existing and proposed infrastructure is adequate to allow for the PCA to be rezoned.

11.0 Limitations

This report has been prepared for the applicant, Neil Construction Limited in relation to Whenuapai Business Park Private Plan Change application for 69-73 Trig Road, 94 Trig Road, 96, 96A Trig Road, and 141-159 Brigham Creek Road in Whenuapai, Auckland.

The comments within this report are limited to the purpose stated. Cato Bolam accept no liability for the use of this report by any other person that that stated above, or use for any other purpose, and any such person who relies upon any matter contained in this report does so entirely at their own risk.

Neil Construction Limited Whenuapai Business Park Private Plan Change Infrastructure Report

Appendix A: Engineering Plans



PLANNERS SURVEYORS ENGINEERS ARCHITECTS ENVIRONMENTAL





Neil Construction Limited Whenuapai Business Park Whenuapai

Precinct Plan



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Neil Construction Limited Brigham Creek Road and Trig Road Whenuapai

Precinct Plan Infrastructure Staging

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| | | Proposed Pedestrian and Cycleway Link |
| bad Upgrade | | Proposed Road Upgrade |
| | | Pedestrian Connection |
| == | D | Proposed New Intersection - Signalized |
| | B | Proposed Upgraded Intersection - Roundabout |
| | AF | Proposed New Intersection - Roundabout |
| | 0 | Proposed New Intersection - Left in, Left out |
| | E | Proposed New Intersection - Signs and Marking |
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Neil Construction Limited Brigham Creek Road and Trig Road Whenuapai

Road Upgrading Constraints Plan with SGA Design Overlaid



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Neil Construction Limited Brigham Creek Road and Trig Road Whenuapai

Typical Road Cross Sections Sheet 1



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Brigham Creek Road Upgrading - Typical Cross Section (Eastern side of the proposed new signalized intersection)



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Typical Road Cross Sections Sheet 2



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Proposed Collector Road- Typical Section



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Neil Construction Limited Whenuapai Business Park . Whenuapai

Private Plan Change Road Upgrading Overview



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Neil Construction Limited Whenuapai Business Park Whenuapai Private Plan Change Brigham Creek Road Upgrading Blow Up Sheet 1

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Neil Construction Limited Whenuapai Business Park Whenuapai

Private Plan Change Brigham Creek Road Upgrading Blow Up Sheet 2

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Neil Construction Limited Whenuapai Business Park Whenuapai Private Plan Change Trig Road Upgrading Blow up Sheet 3
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Neil Construction Limited Whenuapai Business Park Whenuapai

Private Plan Change BCR Upgrading Near Kauri Road Blow up Sheet 4



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Neil Construction Limited Whenuapai Business Park Whenuapai

Proposed Road 2 and Trig Road Intersection Concept Plan



Legend





Proposed cycleway

Proposed footpath

Proposed raised traffic island

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Proposed Trig Road and Brigham Creek Road Intersection Concept Plan

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Existing boundary NoR Extent Proposed Road Boundary Proposed kerb/pavement



Proposed cycleway

Proposed footpath

Proposed raised traffic island

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| | | DRAWN | | M.Chen | 21/08/2024 |
| | | DESIGNED | | M.Chen | 21/08/2024 |
| M.Chen | 20/08/2024 | SURVEYED | | - | - |
| NAME | DATE | | | NAME | DATE |



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PLANNERS | SURVEYORS | ENGINEERS ARCHITECTS | ENVIRONMENTAL

Whenuapai Business Park . Whenuapai

Proposed Brigham Creek Road and Road 3 Intersection Concept Plan



| Legend | |
|------------|--------------------------------|
| | Existing boundary |
| | NoR Extent |
| | Proposed Road Boundary |
| | Proposed kerb/pavement |
| | Proposed cycleway |
| | Proposed footpath |
| | Proposed raised traffic island |
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| ON | | DRAWING NO. | 712-DR-C- | 8512 | REVISION |
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| | | DRAWN | | M.Chen | 21/08/2024 |
| | | DESIGNED | | M.Chen | 21/08/2024 |
| M.Chen | 21/08/2024 | SURVEYED | | - | - |
| NAME | DATE | | | NAME | DATE |





Neil Construction Limited Whenuapai Business Park Whenuapai

Proposed Brigham Creek Road and Road 1 Intersection Concept Plan



No. REVISION (DESCRIPTIONS)
A Issued For Information



| M.CHEII | 21/00/2024 | DESIGNED | | M.Chen | 21/08/2024 |
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| | | DRAWN | | M.Chen | 21/08/2024 |
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Neil Construction Limited Whenuapai Business Park Whenuapai

Proposed Road 2 and 3 Intersection Concept Plan





| ON | | DRAWING NO. | 712-DR-C- | 8515 | REVISION |
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| | | 21/08/2024 | 1:75 | 0 | A3 |
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| M.Chen | 21/08/2024 | SURVEYED | | - | - |
| NAME | DATE | | | NAME | DATE |





Brigham Creek Road and Trig Road Whenuapai

Concept Wastewater Plan

FOR INFORMATION



19/09/2023

47712-DR-C-8011

DRAWING NO.

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Α

REVISION





Neil Construction Ltd 151,155-157 Brigham Creek Road 69 & 71Trig Road, Whenuapai

Existing watermain upgrading



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| DATE | ORIGINAL SCALE | ORIGI | NAL SIZE |
| DRAWN | | M.Chen | 22/11/2023 |
| DESIGNED | | M.Chen | 22/11/2023 |
| SURVEYED | | - | |
| | | NAME | DATE |
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Neil Construction Limited Whenuapai Business Park Private Plan Change Infrastructure Report

Appendix B: Hydraulic Modelling Technical Memo

PLANNERS SURVEYORS ENGINEERS ARCHITECTS ENVIRONMENTAL


TECHNICAL MEMO

Neil Construction Brigham Creek Road Private Plan Change

Water Supply Assessment

Prepared for Neil Construction Limited Prepared by: Watershed Engineering Limited

06 October 2022

1 INTRODUCTION

Cato Bolam Limited has approached Watershed Engineering Ltd (WSE), on behalf of Neil Construction Limited, to provide a water supply assessment in relation to the proposed private plan change of properties 141, 145, 151-159 Brigham Creek Road, and 69-73, 94, 96 and 96A Trig Road.

Water is to be provided, via connections, to the Watercare Services Ltd (WSL) network running along Brigham Creek and Trig Roads. The site currently straddles two water supply zones operating at different pressures. Understanding the impact that this may have on WSL's ability to provide levels of service, will be key to this assessment. It is likely development of this site will result in an internal water supply zone boundary.

At this stage there is no proposed water supply network layout; however, Cato Bolam has provided an indicative road layout, which infers connections points (at the intersections) to the public network - see Figure 1.

WSE was previously engaged (by Neil Construction Limited) to provide pre-feasibility design for a water supply network servicing 151,155-157 Brigham Creek Road and 69-71 Trig Road. This assessment involved developing a model, however the proposed private plan change is for a larger area. The boundary conditions set at Brigham Creek Road and Trig Road for the hydraulic modelling were provided by WSL in 2022 and are assumed to be the same for this assessment.

This assessment has also used hydrant flow testing commissioned by Neil Construction Limited in September 2021.





Figure 1 Provisional Road Layout for Private Plan Change Area

2 SCOPE

This section sets out the scope of works for assessment, as below:

- Description of current public network (WSL) water availability for normal operation and firefighting purposes.
- Define water demands associated with the proposed Plan Change.
- Review of previous work hydrant flow testing/WSL provided boundary conditions.
- Identification of likely connection points.
- Identification of any likely design constraints such as network looping, and working with existing pressure zones.
- Provisional pipe sizing based on WSL provision of firefighting coverage classification and demand.



3 PUBLIC NETWORK DESCRIPTION

As shown in Figure 2, the proposed plan change area (hashed) is spread over two water supply zones. These zones operate at different pressures and will need to be kept isolated within the development. Based on discussions previously undertaken with WSL, there is opportunity to revisit the location of the boundaries, based on a proposed road layout; however, for the purposes of this assessment, the zone boundaries will be adopted as they are set out below. This results in the development area being split as follows:

- Supply from Whenuapai Zone: 20.5Ha.
- Supply from Westgate Zone: 27.5Ha.



Figure 2 Water Supply Zone Boundaries - Proposed Plan Change Area (shown hashed).



4 HYDRANT FLOW TESTING

Hydrant logging is used to assess the following:

- Static pressure in the network (pressure available with no additional demand from development).
- Reduction in pressure associated with design demand flows from the development.
- Reduction in pressure associated with fire flow demands.

Measuring the reduction in pressure associated with fire flow is achieved by opening a hydrant in one part of the network and, while measuring the flow through the hydrant, also recording the pressure drop at a nearby, hydraulically connected hydrant. The location of the hydrants selected is critical to providing usable results.

In September 2021, Nova Flowtech Services Ltd (Nova Flowtech) was engaged by Neil Construction to review hydrants suitable for flow testing. They have provided the follow output.



Figure 3 Hydrants Available for Logging in Brigham Creek Road (source Nova Flowtech)

At the time of review, Nova Flowtech was unaware of the need to flow test the Trig Road Main; however, this was scheduled into the test at a later date. The selected sites are shown in Figure 4.





Figure 4 Flow Test Hydrants

4.1 HYDRANT FLOW TEST ANALYSIS

Hydrant flow testing was undertaken by Nova Flowtech at 7:30am on 10th November 2021. Both hydrants were flowed in stages until maximum flow (hydrant valve fully open) was achieved. Testing of hydrants was not concurrent. The results of the flow test are set out in Table 1; the full data sheet from the test is attached as Appendix A.



Table 1 Nova Flowtech Hydrant Flow Test Results

| Brigham Cr | eek Rd (Whenuapai Zone) | Trig Road (Westgate Zone) | | | | |
|------------|-------------------------|---------------------------|--------------|--|--|--|
| Flow (L/s) | Pressure (m) | Flow (L/s) | Pressure (m) | | | |
| 0 | 53.0 | 0 | 55.0 | | | |
| 10 | 48.9 | 10 | 48.9 | | | |
| 15 | 46.9 | 15 | 46.9 | | | |
| 20 | 45.9 | 20 | 41.8 | | | |
| 25 | 43.8 | 25 | 37.7 | | | |
| 36.5 | 41.8 | 33.3 | 26.0 | | | |

5 WATER DEMANDS

Demand has been assessed by adopting the WSL CoP, as set out in the sections below.

5.1.1 Residential Demand

There are no residential sites proposed for development within the study area.

5.1.2 Commercial/Industrial Demand

For design purposes, it has been assumed that the entire area will be developed as light industrial/commercial. Of the total area it has been assumed that 60% will be developed for water use activities (accounting for road reserve, parking areas etc). Of that 60%, it is assumed that:

- 30% are offices with 1 person/15m² @65l/day (commercial demand).
- The remaining 70% are warehouses (assuming 20% warehouse as light water users, 80% medium water users).
 - Warehouse (Light Water Use) (4.5l/m²/day) (light industrial demand).
 - Warehouse (Medium Water Use) (6/m²/day) (medium industrial demand).

These demand calculations result in a Commercial/Industrial flow of 8.91 L/s and 6.63 L/s in the Westgate and Whenuapai Zone respectively, as set out in Table 2.

Table 2 Demand Summary

| Connection Point/Zone Commercial (L/s) | | Industrial (Light)(L/s) | Industrial (Medium)(L/s) | Total (L/s) | |
|--|------|-------------------------|-----------------------------|-------------|--|
| Westgate Zone | 2.49 | 1.6 | 4.8 | 8.91 | |
| Whenuapai Zone | 1.85 | 1.2 | 3.6 | 6.63 | |
| Totals (L/s) | 4.34 | 2.80 | 8.40 | 15.54 | |

Based on the hydrant flow testing set out in Table 1, the abstraction of 8.91 L/s from the Westgate Zone would result on a network pressure drop of approximately 5.4m. However, it is noted that the hydrant test was

Oct 2023 | FINAL



undertaken on the 150mm pipe, which has limited connectivity to the 225mm pipe (on the east side of the road). It is assumed that this estimated pressure drop (of 5.4m) would be significantly less with the demand distributed between the two pipes. The abstraction of 6.63 L/s from the Whenuapai Zone is estimated to result in 2.7m of network headloss, which is considered minimal, given that the network is operating at a pressure of 53m.

The full set of demand calculations are tabulated in Appendix B.

6 PROVISIONAL CONNECTION POINTS

This section sets out some provisional connection points for the proposed plan change area. These are not to be considered as part of a design, and are just provided to support feasibility of the plan change.

6.1 CONNECTION TO THE WHENUAPAI ZONE

There is a 315mm PE watermain running along the Brigham Creek Road boundary of the project site. It is proposed to connect the area of the site currently within the Whenuapai Zone to the 315mm watermain. The proposed road layout shows two entrances to the site off Brigham Creek Road; in order to provide network resilience, it is proposed to create two connections points – one at each intersection (labelled as A and B in Figure 5).

6.2 CONNECTION TO THE WESTGATE ZONE

The proposed plan change site is separated by Trig Road; however, both sides of Trig Rd are situated within the Westgate Zone. There are two watermains running along Trig Road: a 150mm Asbestos Cement pipe on the west side, and a 225mm Concrete Lined Steel on the east side.

The east side of the Westgate Zone has the larger demand and is proposed to connect to the 225mm pipe; the west side is proposed to connect to the 150mm watermain. There is likely to be only one intersection (with Trig Rd) servicing each side, so it is proposed to connect to the respective WSL mains with a fire main, and a rider main to provide resilience.

The provisionally proposed connection points are shown in Figure 5.





Figure 5 Proposed Connection Points.

6.3 FIRE FLOW ASSESSMENT

Boundary conditions (hydraulic grade) have been provided at the connection points to the public network. These connection points are in different pressure zones, so have been treated separately. Table 3 and Table 4 list the boundary conditions provided by Watercare Services Ltd.

Table 3 Model boundary conditions connecting to the 315mm PE Main at 151 Brigham Creek Road (Whenuapai Zone)

| Operational Condition | Hydraulic Grade (mAD) |
|-----------------------|-----------------------|
| Normal Operation | 60 |
| Fire flow 25 L/s | 56 |
| Fire flow 50 L/s | 49 |



Table 4 Model boundary conditions connecting to the 225mm Conc Main at 71 Trig Road (Westgate Zone)

| Operational Condition | Hydraulic Grade (mAD) |
|-----------------------|-----------------------|
| Normal Operation | 90 |
| Fire flow 25 L/s | 81 |
| Fire flow 50 L/s | 68 |

7 NETWORK SIZING AND SYSTEM PERFORMANCE

In lieu of street layout, the site topography and network boundary conditions have been used to confirm that WSL levels of service can be met at the site. The following levels of service have been adopted for the assessment:

7.1 LEVELS OF SERVICE

7.1.1 Normal Operation with Peak Day Demand

- Minimum pressure under normal operating conditions 25m
- Maximum pressure under normal operating conditions 90m
- Maximum pressure fluctuation (30m)
- Maximum pipe headloss 10 m/km
- Maximum pipe velocity 1m/s

7.1.2 Firefighting Conditions

It is appreciated that specific design for individual buildings will likely result in the application of sprinklers. In the absence of the specific land use preferences, the network has been assessed against the New Zealand Fire Service specification SNZ PAS 4509:2008, as shown in Table 5. This is assessed at 66% of peak day demand, and with a residual pressure of 10m.

| Water Supply Classification SNZ PAS 4509:2008 | Water flow required within a radial distance of 135m (L/s) | Additional water flow required within a radial distance of 270m (L/s) | Maximum number of fire hydrants to provide flow | | | |
|--|---|---|---|--|--|--|
| FW1 | 7.5 | - | 1 | | | |
| FW2 | 12.5 | 12.5 | 2 | | | |
| FW3 | 25 | 25 | 3 | | | |
| FW4 | 50 | 50 | 4 | | | |
| FW5 | 75 | 75 | 6 | | | |
| FW6 | 100 | 100 | 8 | | | |
| FW7 | As calculated (See note 7 SNZ PAS 4509:2008) | | | | | |

Table 5 SNZ PAS 4509:2008



7.2 SITE PRESSURE CHECK

In terms of water supply servicing, the site can effectively be split into three sub-sites: the Whenuapai Zone; the Westgate Zone, fed from the 225mm Trig Road Main; and the Westgate Zone, fed from the 150mm Trig Road Main. See Figure 2 for clarification of the sub-sites. These have been listed below, in Table 6, with estimated minimum pressure at the highest location in each sub-site.

As shown in Table 6, the highest point in each site is capable of meeting WSL levels of service for pressure.

| Connection Point/Zone | Network HGL (mRL) | Highest Elevation (mRL) | Estimated length of pipe (Km) | Estimated Minimum Pressure based on Headloss of 3 m/Km (m) |
|--------------------------|----------------------|----------------------------|-------------------------------|--|
| Westgate Zone (225mm) | 90 | 50 | 0.27 | 39.2 |
| Westgate Zone (150mm) | 90 | 39.8 | 0.25 | 49.5 |
| Whenuapai Zone | 60 | 29.6 | 0.335 | 29.4 |

Table 6 Site Pressures

7.2.1 Firefighting capacity

The proposed plan change is for commercial and industrial use and, as a result, firefighting requirements will dominate the network sizing. WSL have provided boundary conditions to supply 50 L/s FW3 firefighting flows; these have been used to provide indicative pipe sizes for the network. It is stressed that these sizes are indicative only; based on providing flows at the highest point in the network, a full assessment (once the layout is confirmed) will need to be undertaken to confirm sizing.

As shown in Table 7, fire fighting coverage can be provided within the site, based on reasonable (for a commercial/industrial site) minimum pipe diameters between 150 and 200mm.

Table 7 Fire Watermain Sizing

| Connection Point/Zone | Network HGL (mRL) | Highest Elevation (mRL) | Estimated length of pipe (Km) | Available head for delivering fire flows (at 10m residual) | Pipe Size (mm) |
|-------------------------------------|----------------------|-------------------------------|----------------------------------|--|----------------|
| Westgate Zone (225mm connection) | 68 | 50 | 0.27 | 8 | 200 |
| Westgate Zone (150mm connection) | 68 | 39.8 | 0.25 | 18.2 | 150 |
| Whenuapai Zone | 49 | 29.6 | 0.335 | 9.4 | 200 |





7.3 SUMMARY AND RECOMMENDATIONS

- The proposed plan change area is split over two water supply zones: Westgate, and Whenuapai. This needs to be accounted for in servicing.
- Peak demand for the site has been calculated, based on WSL CoP, to be 8.91L/s from the Westgate Zone and 6.6 L/s from the Whenuapai Zone.
- Based on hydrant flow testing at the site in September 2021, the calculated demand results in a pressure drop in the network of approximately 5.4m (Westgate Zone) and 2.7m (Whenuapai Zone). It is, however, proposed to split the demand between two mains in the Westgate Zone, possibly significantly reducing the predicted network head loss of 5.4m.
- The public system has sufficient pressure to provide minimum levels of service at the site, with the lowest anticipated pressure of 29.4m occurring at the highest point in the site supplied by the Whenuapai Zone.
- FW3 (50 L/s) firefighting can be achieved throughout the proposed network with pipe internal diameters of 150mm and 200mm.
- The provisional assessment undertaken in this report indicates that there are sufficient water supply service options at the site to support the proposed plan change to Industrial/Commercial land use.

| Revision | Name | Signed | Date |
|----------|------------------|--------|-------------------|
| A | Tristan Jamieson | J | 22 September 2023 |
| В | Tristan Jamieson | J | 06 October 2023 |

Disclaimer: This report has been prepared solely for the benefit of Neil Construction with respect of the particular brief and it may not be relied upon in other contexts for any other purpose without Watershed Engineering Limited's prior review and agreement. Watershed Engineering Limited accepts no responsibility with respect to its use, either in full or in part, by any other person or entity.



APPENDIX A – HYDRANT FLOW TEST



E: info@novaflowtec.co.nz T: 09 444 8375 PO Box 241, Albany Village, Auckland 0755 www.novaflowtec.co.nz

Mains Flow and Pressure Report

Hydrant locations: Brigham Creek Road Date: 10th November 2021 Time: 7.20am Flow: Hydrant 5 Residual pressure: Hydrant 6 Maximum flow result: 2190Lpm at 410kPa Test Supervisor: Anthony Blewman

Data:

| Flow (Lpm) | Pressure (kPa) |
|------------|----------------|
| 0 | 520 |
| 600 | 480 |
| 900 | 460 |
| 1200 | 450 |
| 1500 | 430 |
| 2190 | 410 |





Notes: The hydrant was flowed to full capacity at the time of testing.

Disclaimer: These results indicate the water networks performance on this given date and time. The networks performance is subject to fluctuations.

Hydrant Map: See page 2

<u>Hydrant Map</u>





E: info@novaflowtec.co.nz T: 09 444 8375 PO Box 241, Albany Village, Auckland 0755 www.novaflowtec.co.nz

Mains Flow and Pressure Report

Hydrant locations: Trigg Road Date: 10th November 2021 Time: 7.50am Flow: Hydrant 1 Residual pressure: Hydrant 2 Maximum flow result: 2000Lpm at 255kPa Test Supervisor: Anthony Blewman

Data:

| Flow (Lpm) | Pressure (kPa) |
|------------|----------------|
| 0 | 540 |
| 600 | 480 |
| 900 | 460 |
| 1200 | 410 |
| 1500 | 370 |
| 2000 | 255 |

Graph:



Notes: One hydrant could not be found so there was a change to original map. The hydrant was flowed to full capacity at the time of testing.

Disclaimer: These results indicate the water networks performance on this given date and time. The networks performance is subject to fluctuations.

Hydrant Map: See page 2

<u>Hydrant Map</u>





APPENDIX B DEMAND CALCULATIONS

| WSZ | id | Area (m2) | ConType | Floor Area (60%) | Area Commercial - light water users (30% of floor area) | Area Industrial - Medium Water users (20% of Commercial floor area) | Area Industrial - Light Water users (80% of floor area) | Residentail Dwellings | Commercial Demand (p/15m2 @65I/day) | Indstrial (Medium Water Use) Demand: (6l/m2/day) | Indstrial (Light Water Use) Demand: (4.5I/m2/day) | Total Comercial/Industr ial Demand (I/day) | Comercial/Industr ial Demand Peak Hour Demand (I/s) |
|-----------|---------|-----------|-----------------------|---------------------|---|--|---|--------------------------|--|---|--|---|--|
| Westgate | 4930260 | 32849 | Industrial/Commercial | 19709 | 5913 | 2759 | 11037 | 0 | 25622 | 16556 | 49668 | 91846 | 1.063 |
| Westgate | 3619628 | 61658 | Industrial/Commercial | 36995 | 11098 | 5179 | 20717 | 5 | 48093 | 31075 | 93226 | 172395 | 1.995 |
| Westgate | 3977835 | 26082 | Industrial/Commercial | 15649 | 4695 | 2191 | 8764 | . 8 | 20344 | 13145 | 39436 | 72926 | 0.844 |
| Westgate | 3645252 | 74239 | Industrial/Commercial | 44544 | 13363 | 6236 | 24944 | 9 | 57907 | 37417 | 112250 | 207573 | 2.402 |
| Westgate | 5177957 | 40132 | Industrial/Commercial | 24079 | 7224 | 3371 | 13484 | 0 | 31303 | 20227 | 60680 | 112210 | 1.299 |
| Westgate | 5177956 | 40383 | Industrial/Commercial | 24230 | 7269 | 3392 | 13569 | 0 | 31498 | 20353 | 61059 | 112910 | 1.307 |
| Whenuapai | 3597715 | 64952 | Industrial/Commercial | 38971 | 11691 | 5456 | 21824 | 0 | 50663 | 32736 | 98208 | 181606 | 2.102 |
| Whenuapai | 3672238 | 26278 | Industrial/Commercial | 15767 | 4730 | 2207 | 8829 | 0 | 20497 | 13244 | 39732 | 73474 | 0.850 |
| Whenuapai | 4225214 | 13604 | Industrial/Commercial | 8162 | 2449 | 1143 | 4571 | . 0 | 10611 | 6856 | 20569 | 38036 | 0.440 |
| Whenuapai | 3859245 | 2558 | Industrial/Commercial | 1535 | 460 | 215 | 859 | 0 | 1995 | 1289 | 3867 | 7151 | 0.083 |
| Whenuapai | 3955715 | 61252 | Industrial/Commercial | 36751 | 11025 | 5145 | 20581 | 2 | 47776 | 30871 | 92613 | 171260 | 1.982 |
| Whenuapai | 4225215 | 36209 | Industrial/Commercial | 21725 | 6518 | 3042 | 12166 | 6 | 28243 | 18249 | 54748 | 101240 | 1.172 |

Table 6.1.c - Wet and dry commercial assumed design allowances

| Commercial activity type | Design water flow allowance | | | | |
|---|---|--|--|--|--|
| Dry retail (Note 1) (where kitchen/toilets are <u>not</u> normally made- available to customers) | 1 person per 50m² net floor area at 65 litres per person per day. | | | | |
| Office buildings and dry retail where toilet facilities, etc. are provided to customers. | 1 person per 15m ² net floor area at 65 litres per person per day. | | | | |
| Wet retail (Note 2): Food and or beverage retail/preparation e.g. coffee shop, restaurant, bar, butcher, fresh fruit and vegetable retail. | 15 litres per day per net m ² of floor area (including kitchen and dining areas). | | | | |

Table notes:

- 1. Dry retail is where water is normally only used by staff for their own personal food preparation / toileting needs. Examples include: clothes shop, hardware retail.
- 2. Wet retail is where water is used to prepare food product for customers. Examples include: café, lunch bar, restaurant, butchery, fresh fruit and vegetable, food court-bar and supermarkets. 3. Assuming no significant irrigation.

Important:

Net floor area is the total floor area of the building (exclude any open land areas),, less non-productive areas, such as:

lobbies; lifts; machine rooms; electrical services; stairwells; fire escapes; corridors and other passages used in common with other occupiers; car parking areas; etc. If net area is unknown, and the type of buildings are unknown, it can be assumed that the Net floor area is = 80% of the gross floor area of the building.

As a guide to how activities will be assessed, commercial washing activities such as car / boat washing activities, etc. would be regarded as a "wet-industry" and not as a commercial - wet retail, as the water is being used as a part of a process (washing). Large-scale food-processing (i.e. for supply to commercial customers, as opposed to on-site retail customers) would be regarded as an industrial type activity. Preparation / manufacture of non-food based products, is also regarded as an industrial activity. Industry design flows are detailed in the section below.

Table 6.1.d - Wet and dry Industrial assumed design allowances

| Dry industry activity type | Routine Peak Daily Usage |
|---|---|
| | Litres per square metre per day (L/m ² /d) |
| Light water users, or up to 2 storeys (Note 1) | 4.5 |
| Medium water users, or 2 to 5 storeys (Note 2) | 6 |

Ver.2.4

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Appendix C: Correspondence/Consultation



PLANNERS SURVEYORS ENGINEERS ARCHITECTS ENVIRONMENTAL



Neil Construction Limited Whenuapai Business Park Private Plan Change Infrastructure Report

Watercare Correspondence

PLANNERS SURVEYORS ENGINEERS ARCHITECTS ENVIRONMENTAL

| From: | Matt Ashworth |
|--------------|--|
| To: | Ameya Bhiwapurkar, Maria.Utting@water.co.nz |
| Subject: | [NG4470DM] Consultation Request, Whenuapai Private Plan Change |
| Date: | Tuesday, 29 August 2023 3:37:20 pm |
| Attachments: | Watercare Consultation Letter, Whenuapai PPC.pdf |

Hi Maria, Ameya,

Please refer to the attached letter regarding *Neil Construction Limited's* proposed private plan change in Whenuapai.

We would like to engage with *Watercare* at your earliest convenience to ensure our plan change application is aligned with your requirements.

If you have any queries, please don't hesitate to get in touch.

We look forward to your response.

Regards,

Matt Ashworth Development Manager Neil Construction Limited



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29th August 2023

Watercare Services Ltd, Private Bag 92521, Victoria St West, Auckland 1142. C/O Ameya Bhiwapurkar and Maria Utting

Dear Ameya and Maria,

Neil Construction Limited (NCL) is seeking a Private Plan Change (PPC) in Whenuapai, adjacent to Brigham Creek Road. The proposal seeks to rezone a 39.29ha land parcel from *Future Urban* to *Business - Light Industry Zone*. Please refer to the appended map that shows the extent of the proposed plan change area and zoning. The zoning sought is generally consistent with what was proposed in the Whenuapai Structure Plan 2016 and Auckland Council initiated Plan Change 5 variation 1 which was withdrawn by Council on 16 June 2022.

The majority of this PPC area was included within the Whenuapai Business Park project, lodged under the COVID-19 Recovery (Fast-track Consenting) Act 2020 which you are familiar with. However, the proposed private plan change area includes additional land parcels, and the design may be a departure from our previous application. We are aware of the feedback received from Watercare Services Limited in its response to the invitation to comment, and subsequent outcome and agreements as a result of caucusing directed by the Expert Consenting Panel. These comments and agreements will be carefully considered in the PPC application. We do note however, that we would like to revisit the comments relating to the Network Discharge Consent (NDC) recorded in the joint expert witness statement as the FUZ land in Whenuapai is covered by the NDC.

NCL intends to provide a suite of self-funded infrastructure improvements that will mitigate the effects of the development whilst avoiding any impact on other planned developments and infrastructure improvements in the area. It is our intention to work as collaboratively as possible with *Watercare* and the wider Council team. We are aiming to lodge the private plan change application in October this year.

As the Plan Change is in its infancy, we are yet able to provide detail outside of the proposed zoning. However further detail will be provided as we progress through the design and plan change process. **Can you please advise me of your availability to meet with our project team to discuss the scope, design, and to ensure Watercare's requirements are integrated into our PPC application?**

The Neil Group Limited Neil Construction Limited Level 3, Building B 8 Nugent Street, Grafton Auckland 1023 PO Box 8751, Newmarket Auckland 1149 New Zealand Tel: +64 9 918 6565 ng@neilgroup.co.nz www.neilgroup.co.nz If you have any questions regarding the above, please do not hesitate to contact me.

We look forward to your response.

Yours faithfully,

MJX

Matt Ashworth Development Manager Neil Construction Limited 0273708309 matt@neilgroup.co.nz



| From: | Ameya Bhiwapurkar <ameya.bhiwapurkar@water.co.nz></ameya.bhiwapurkar@water.co.nz> |
|-----------------|---|
| Sent: | Monday, 18 September 2023 1:34 pm |
| То: | Matt Ashworth; Maria Utting |
| Subject: | RE: [NG4470DM] Consultation Request, Whenuapai Private Plan Change |
| Follow Up Flag: | Follow up |
| Flag Status: | Flagged |

Hi again Matt,

Can you please specify the matters you want us to include in the meeting?

Thanks.

Kind regards,

Ameya Bhiwapurkar | Development Engineer North/West, Developer Services

Watercare Services Limited Mobile: +64212298102 Customer service line: +64 9 442 2222 Postal address: Private Bag 92 521, Victoria St West, Auckland 1142, New Zealand Physical address: 73 Remuera Road, Remuera, Auckland 1050, New Zealand Website: www.watercare.co.nz

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From: Matt Ashworth
MAshworth@neilgroup.co.nz>
Sent: Monday, September 18, 2023 1:21 PM
To: Ameya Bhiwapurkar
Ameya.Bhiwapurkar@water.co.nz>; Maria Utting
Maria.Utting@water.co.nz>
Subject: RE: [NG4470DM] Consultation Request, Whenuapai Private Plan Change

CAUTION:External Email! Hi Ameya,

Plan of the extent of the Private Plan Change area was included in my email from the start of this month.

Regards,

Matt Ashworth Development Manager Neil Construction Limited Hi Ameya

Matt has passed your query onto us.

Basically the area of development that we worked on for the resource consent application has expanded for the purposes of the Private Plan Change that is about to be lodged. As the area of proposed development is altered, we need confirmation that the position we agreed with Watercare stands for this expanded area. This was that connection can be made, subject to the network upgrades that are in progress.

We provide a summary plan which highlights the area of the plan change with the catchments and connection points to the transition main with calculated flows from each subcatchment. It would be good to discuss this to agree or for Watercare to provide suitable correspondence to support the ability to connect. We have Watershed water network modelling report which we should be able to send you next week, although we acknowledge that there were upgrades identified through the Resource consent work.

Regards

Chris





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From: Ameya Bhiwapurkar <<u>Ameya.Bhiwapurkar@water.co.nz</u>> Sent: Monday, 18 September 2023 1:34 pm



| From: | Amber Taylor <amber.taylor2@water.co.nz></amber.taylor2@water.co.nz> |
|--------------|--|
| Sent: | Thursday, 5 October 2023 1:34 pm |
| То: | Matt Ashworth; ChrisS@catobolam.co.nz |
| Cc: | Lars Fog; MaeC@catobolam.co.nz; PaulK@catobolam.co.nz |
| Subject: | FW: [#CBC 47712] Consultation Request, Whenuapai Private Plan Change |
| Attachments: | 47712-DR-C-8011-WW.pdf |
| | |

| Follow Up Flag: | Follow up |
|-----------------|-----------|
| Flag Status: | Flagged |

Kia ora rā korua Matt and Chris,

Lars Fog (Major Developments Programme Lead North) and myself would be happy to meet with you over Teams to discuss your private plan change proposal.

Could you please resend the letter attached to the original email below.

Our availability next week as follows: Mon 2pm-5pm Tues 9-10am; 1-2.30pm Weds 2pm-5pm Thurs 9-11am; 1pm-5pm

Please let me know which time suits.

Ngā mihi,

Amber Taylor Development Planning Lead | Major Developments Kaihautū Mataamua Whakamahere Whanaketanga | Ngā Hanganga Matua

Watercare Services Limited Mobile: 022 158 4426 Customer service line: +64 9 442 2222 Postal address: Watercare, Private Bag 92 521, Victoria St West, Auckland 1142, New Zealand Physical address: 73 Remuera Road, Remuera, Auckland 1050, New Zealand Website: www.watercare.co.nz

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From: Ameya Bhiwapurkar <Ameya.Bhiwapurkar@water.co.nz>
Sent: Tuesday, October 3, 2023 11:38 AM
To: Lars Fog <Lars.Fog@water.co.nz>
Cc: Amber Taylor <Amber.Taylor2@water.co.nz>; Maria Utting <Maria.Utting@water.co.nz>
Subject: FW: [#CBC 47712] Consultation Request, Whenuapai Private Plan Change

| From: | Matt Ashworth |
|--------------|---|
| Sent: | Friday, 6 October 2023 9:34 am |
| То: | Amber Taylor; ChrisS@catobolam.co.nz |
| Cc: | Lars Fog; MaeC@catobolam.co.nz; PaulK@catobolam.co.nz; Trevor Canty |
| Subject: | RE: [NG4470DM] [#CBC 47712] Consultation Request, Whenuapai Private Plan Change |
| Attachments: | 1. Watercare Consultation Letter, Whenuapai PPC.pdf |

Hi Amber,

Thanks for the confirmation and we are looking forward to meeting yourself and Lars.

We propose a Teams meeting @ 4pm on Monday 9th October. I will send out an invite now.

Letter attached.

Regards,

Matt Ashworth Development Manager Neil Construction Limited



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From: Amber Taylor <Amber.Taylor2@water.co.nz>
Sent: Thursday, 5 October 2023 1:34 pm
To: Matt Ashworth <MAshworth@neilgroup.co.nz>; ChrisS@catobolam.co.nz
Cc: Lars Fog <Lars.Fog@water.co.nz>; MaeC@catobolam.co.nz; PaulK@catobolam.co.nz
Subject: FW: [#CBC 47712] Consultation Request, Whenuapai Private Plan Change

Kia ora rā korua Matt and Chris,

Lars Fog (Major Developments Programme Lead North) and myself would be happy to meet with you over Teams to discuss your private plan change proposal.

Could you please resend the letter attached to the original email below.

Our availability next week as follows: Mon 2pm-5pm Tues 9-10am; 1-2.30pm Weds 2pm-5pm Thurs 9-11am; 1pm-5pm

Please let me know which time suits.

| From: | Matt Ashworth |
|----------|---|
| Sent: | Monday, 16 October 2023 5:13 pm |
| То: | Lars Fog (Lars.Fog@water.co.nz); Amber Taylor |
| Cc: | Paul Kleynhans - Cato Bolam (paulk@catobolam.co.nz); Mae Chen; Trevor Canty; Chris Solleder |
| Subject: | [NG4470DM] Whenuapai Business Park Private Plan Change Meeting : Watercare |

Hi Lars, Amber,

Thank you for your time to meet today to discuss our Whenuapai Business Park Private Plan Change.

We appreciate the clarity your provided. A summary of our conversation/points of agreement are as follows:

- 1. Matt introduced and explained the additional land included in the proposed plan change following the decline of the FastTrack consent. This land is not all owned by us, but we are working with the individual owners.
- 2. Paul displayed the overall scheme for wastewater.
- 3. Private pump stations are proposed on the properties of the west of Trig Road
- 4. Lars agreed that this was the best solution as it was too far from the future slaughterhouse pump station which would involve crossing numerous private properties. No one was very sure that WSL would want to take on another public pump station anyway.
- 5. We discussed the location of the Main pump station as being the only option given that a gravity pipe could not cross the stream in the 1:100 flood zone. There were a few issues with this in the FastTrack consent, noted. Lars was keen to make sure we have no negative pressure in the rising main, and that we deal with the issues raised by the FastTrack consenting panel about discharge of emergency overflow. This could be either by additional capacity and or standby generation. We advised that standby generation had previously been resisted by Watercare (not wanting to store fuel), but this could be discussed at resource consent stage.
- 6. We discussed the water issues for the supply to be in two separate zones (Watershed investigating). Upgrade the Brigham Creek/Hobsonville Road Main to 355 mm where 150 Dia pipes exist. All parties were aware of the through the FastTrack process.
- 7. Wastewater transmission line manhole needs to be connected into very carefully due to high hydrogen sulphide levels. It's a health and safety issue. Watercare contractors may need to complete this work.
- 8. It was noted that the new flows into the wastewater transmission line Massey Branch Sewer to pump station 68 would be OK, especially if connected after 2025 capacity issues are **not** expected.
- 9. NCL agreed to supply reports for Watercare to review and comment on as soon as possible and planning to lodge pre-the end of 2023

If you have anything to add, please let us know.

Otherwise, we shall provide you our reports as soon as possible.

Kind Regards,

Matt Ashworth Development Manager Neil Construction Limited



Level 3, Building B 8 Nugent Street, Grafton Auckland 1023 PO Box 8751, Newmarket Auckland 1149 New Zealand T: +64 9 918 6565 M: +64 27 3708309 W: neilgroup.co.nz

| From: | Amber Taylor <amber.taylor2@water.co.nz></amber.taylor2@water.co.nz> |
|-----------------|---|
| Sent: | Thursday, 19 October 2023 3:25 pm |
| То: | Matt Ashworth; Lars Fog |
| Cc: | Paul Kleynhans - Cato Bolam (paulk@catobolam.co.nz); Mae Chen; Trevor Canty; Chris Solleder |
| Subject: | RE: [NG4470DM] Whenuapai Business Park Private Plan Change Meeting : Watercare |
| Attachments: | Development Consultation Application Form.pdf |
| Follow Up Flag: | Follow up |

Flag Status: Flagged

Kia ora Matt,

Thanks for the minutes below.

These look fine to me. Will defer to @Lars Fog to comment if any of the technical details are not quite right.

In order for our planners to be able to review and provide comment on your reports (pre lodgement of the plan change) we will need to set up a Developer Consultation to charge for the assessment time.

Fees associated with this service are set out in Other Charges page 14 of our Customer Contract document.

An straight forward assessment would be expected to be in the order of 8-10hrs. The standard time frame is 10wd.

If you are happy to proceed please complete the attached form and return to me along your reports for review and include any specific questions that you would like answered.

Ngā mihi,

Amber Taylor Development Planning Lead | Major Developments Kaihautū Mataamua Whakamahere Whanaketanga | Ngā Hanganga Matua

Watercare Services Limited Mobile: 022 158 4426 Customer service line: +64 9 442 2222 Postal address: Watercare, Private Bag 92 521, Victoria St West, Auckland 1142, New Zealand Physical address: 73 Remuera Road, Remuera, Auckland 1050, New Zealand Website: www.watercare.co.nz

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From: Matt Ashworth <MAshworth@neilgroup.co.nz> Sent: Monday, October 16, 2023 5:13 PM

To: Lars Fog <Lars.Fog@water.co.nz>; Amber Taylor <Amber.Taylor2@water.co.nz> Cc: Paul Kleynhans - Cato Bolam (paulk@catobolam.co.nz) <PaulK@catobolam.co.nz>; Mae Chen <MaeC@catobolam.co.nz>; Trevor Canty <TCanty@neilgroup.co.nz>; Chris Solleder <ChrisS@catobolam.co.nz> Subject: [NG4470DM] Whenuapai Business Park Private Plan Change Meeting : Watercare

| From: | Matt Ashworth |
|--------------|---|
| Sent: | Friday, 27 October 2023 2:11 pm |
| То: | Amber Taylor; Lars Fog; Paul Kleynhans - Cato Bolam (paulk@catobolam.co.nz); Mae Chen; Chris Solleder |
| Cc: | Trevor Canty |
| Subject: | RE: [NG4470DM] Whenuapai Business Park Private Plan Change Meeting : Watercare |
| Attachments: | Development Consultation Application Form - Watercare 19.10.23.pdf |

Thanks Amber,

The completed form is attached.

Cato Bolam are currently tidying up the infrastructure report. We will distribute this to you next week for review.

Have a great weekend!

Regards,

Matt Ashworth Development Manager Neil Construction Limited



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From: Amber Taylor < Amber.Taylor2@water.co.nz>

Sent: Thursday, 19 October 2023 3:25 pm

To: Matt Ashworth
 MAshworth@neilgroup.co.nz>; Lars Fog <Lars.Fog@water.co.nz>
 Cc: Paul Kleynhans - Cato Bolam (paulk@catobolam.co.nz)
 PaulK@catobolam.co.nz>; Mae Chen
 <MaeC@catobolam.co.nz>; Trevor Canty
 TCanty@neilgroup.co.nz>; Chris Solleder
 ChrisS@catobolam.co.nz>
 Subject: RE: [NG4470DM] Whenuapai Business Park Private Plan Change Meeting : Watercare

Kia ora Matt,

Thanks for the minutes below.

These look fine to me. Will defer to *@*Lars Fog to comment if any of the technical details are not quite right.

In order for our planners to be able to review and provide comment on your reports (pre lodgement of the plan change) we will need to set up a Developer Consultation to charge for the assessment time.

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An straight forward assessment would be expected to be in the order of 8-10hrs. The standard time frame is 10wd.

Paul Kleynhans

| From: | Lars Fog <lars.fog@water.co.nz></lars.fog@water.co.nz> |
|----------|--|
| Sent: | Friday, 20 October 2023 8:43 am |
| То: | Amber Taylor; Matt Ashworth |
| Cc: | Paul Kleynhans; Mae Chen; Trevor Canty; Chris Solleder |
| Subject: | RE: [NG4470DM] Whenuapai Business Park Private Plan Change Meeting : Watercare |

Hi Matt,

Your summary of what was discussed looks fine to me.

Kind regards

Lars Fog | Programme Lead Major Developments

Watercare Services Limited Customer service line: +64 9 442 2222 Postal address: Private Bag 92 521, Wellesley Street, Auckland 1142, New Zealand Physical address: 73 Remuera Road, Remuera, Auckland 1050, New Zealand Website: www.watercare.co.nz

From: Amber Taylor <Amber.Taylor2@water.co.nz>
Sent: Thursday, October 19, 2023 3:25 PM
To: Matt Ashworth <MAshworth@neilgroup.co.nz>; Lars Fog <Lars.Fog@water.co.nz>
Cc: Paul Kleynhans - Cato Bolam (paulk@catobolam.co.nz) <PaulK@catobolam.co.nz>; Mae Chen
<MaeC@catobolam.co.nz>; Trevor Canty <TCanty@neilgroup.co.nz>; Chris Solleder <ChrisS@catobolam.co.nz>
Subject: RE: [NG4470DM] Whenuapai Business Park Private Plan Change Meeting : Watercare

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Watercare Services Limited Mobile: 022 158 4426 Customer service line: +64 9 442 2222 Postal address: Watercare, Private Bag 92 521, Victoria St West, Auckland 1142, New Zealand Physical address: 73 Remuera Road, Remuera, Auckland 1050, New Zealand Website: www.watercare.co.nz

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From: Matt Ashworth <<u>MAshworth@neilgroup.co.nz</u>>
Sent: Monday, October 16, 2023 5:13 PM
To: Lars Fog <<u>Lars.Fog@water.co.nz</u>>; Amber Taylor <<u>Amber.Taylor2@water.co.nz</u>>
Cc: Paul Kleynhans - Cato Bolam (<u>paulk@catobolam.co.nz</u>) <<u>PaulK@catobolam.co.nz</u>>; Mae Chen
<<u>MaeC@catobolam.co.nz</u>>; Trevor Canty <<u>TCanty@neilgroup.co.nz</u>>; Chris Solleder <<u>ChrisS@catobolam.co.nz</u>>
Subject: [NG4470DM] Whenuapai Business Park Private Plan Change Meeting : Watercare

CAUTION:External Email!

Hi Lars, Amber,

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- 9. NCL agreed to supply reports for Watercare to review and comment on as soon as possible and planning to lodge pre-the end of 2023

If you have anything to add, please let us know.

Otherwise, we shall provide you our reports as soon as possible.

Matt Ashworth Development Manager Neil Construction Limited



Level 3, Building B 8 Nugent Street, Grafton Auckland 1023 PO Box 8751, Newmarket Auckland 1149 New Zealand T: +64 9 918 6565 M: +64 27 3708309 W: neilgroup.co.nz

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Paul Kleynhans

| From: | Lars Fog <lars.fog@water.co.nz></lars.fog@water.co.nz> |
|----------|---|
| Sent: | Monday, 7 October 2024 5:05 pm |
| То: | Paul Kleynhans |
| Subject: | RE: [#CBC 47712] Whenuapai Business Park Private Plan Change - Whenuapai and Redhills wastewater upgrades |

Hi Paul,

Constraints in the system (if any) will be assessed at resource consent stage. For the initial stages of the development it is likely that the flows will be quite low as the business park develops and it is likely that the low flows may be accommodated within the current capacity of the existing wastewater system. However, this will depend on the timing of this and other developments within Whenuapai.

As mentioned above, water and wastewater capacity in the networks will be assessed at resource consent stage.

Kind regards

Lars Fog | Programme Lead Major Developments

Watercare Services Limited Mobile no. 021 159 9509 Customer service line: +64 9 442 2222 Postal address: Private Bag 92 521, Wellesley Street, Auckland 1142, New Zealand Physical address: 73 Remuera Road, Remuera, Auckland 1050, New Zealand Website: www.watercare.co.nz

From: Paul Kleynhans <PaulK@catobolam.co.nz>
Sent: Monday, October 7, 2024 4:23 PM
To: Lars Fog <Lars.Fog@water.co.nz>
Cc: Chris Solleder <ChrisS@catobolam.co.nz>; Trevor Canty <TCanty@neilgroup.co.nz>
Subject: RE: [#CBC 47712] Whenuapai Business Park Private Plan Change - Whenuapai and Redhills wastewater upgrades

Hi Lars

Thanks for your comments below.

Can you advice were the constraints currently are as would relate to the Whenuapai Business Park Plan Change Area, if there are any? Is it at the adjacent existing pump station, or within the reticulation leading to the pump station? Understanding this might enable temporary options to be considered if development precedes the Package 1 and 2 work.

Regards

Paul


PLANNERS | SURVEYORS | ENGINEERS ARCHITECTS | ENVIRONMENTAL Paul Kleynhans Associate - Engineering Manager BE(Env), NZCE(Civil), CPEng 09 837 0486 | 021 826 432 89 Central Park Drive, Henderson catobolam.co.nz



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From: Lars Fog <<u>Lars.Fog@water.co.nz</u>> Sent: Monday, October 7, 2024 4:17 PM To: Paul Kleynhans <<u>PaulK@catobolam.co.nz</u>> Subject: RE: [#CBC 47712] Whenuapai Business Park Private Plan Change - Whenuapai and Redhills wastewater upgrades

Hi Paul,

Point 99 as shown in your email below should include package 2 as well. I guess this was a typo as the say "both Whenuapai Packages 1 (Slaughterhouse pumping station) …. Whenaupai package 2 is likely to be the limiting works that will extend the time frame to then end of 2028. This is due in part to having to obtain resource consent, to the funding timing and to the length of time necessary to construct package 2.

Whenuapai pumping station (PS 68) will not be relieved until both Whenuapai packages 1 and 2 have been constructed and are operational.

I am not sure what the reference to capacity at the sewage treatment plant refers to. All Whenuapai flows are conveyed to Hobsonville Peninsula pumping station (PS 70) which will be able to pump to both the Mangere WWTP and the Rosedale WWTP.

Kind Regards

Lars Fog | Programme Lead Major Developments

Watercare Services Limited Mobile no. 021 159 9509 Customer service line: +64 9 442 2222 Postal address: Private Bag 92 521, Wellesley Street, Auckland 1142, New Zealand Physical address: 73 Remuera Road, Remuera, Auckland 1050, New Zealand Website: www.watercare.co.nz

From: Paul Kleynhans <<u>PaulK@catobolam.co.nz</u>>
Sent: Monday, October 7, 2024 1:36 PM
To: Lars Fog <<u>Lars.Fog@water.co.nz</u>>
Cc: Trevor Canty <<u>TCanty@neilgroup.co.nz</u>>; Chris Solleder <<u>ChrisS@catobolam.co.nz</u>>
Subject: [#CBC 47712] Whenuapai Business Park Private Plan Change - Whenuapai and Redhills wastewater upgrades

Hi Lars

The Whenuapai Business Park private plan change request will be heard at the Policy and Planning agenda on Thursday this week. The agenda is attached. In the Wastewater section (points 99 to 101) on page 41, it is noted that Package 1 will be completed by the end of 2028. The relevant points are also included as sips below. This represents a significant delay from the 2025 date previously discussed in our earlier conversations, granted this was in the second half of last year.

Could you confirm whether this revised timeline applies to Package 2 as well? We assume Package 2 will also need to be in place, but would appreciate clarification on this point.

Additionally, it would be helpful to explore temporary options that might enable development to proceed within the plan change area ahead of the completion of both Package 1 and Package 2. We would also appreciate more information on the current capacity restrictions at the existing pump station and the gravity main, which the plan change area is proposing to connect to.

If you are available for a meeting to discuss these matters, that would be greatly appreciated.

Wastewater

and 2?

- 99. Watercare has advised that there is some limited capacity in the existing wastewater network for development from this plan change area. Beyond that, both Whenuapai Packages 1 (Slaughterhouse pump station) will be required to support development. These projects are currently anticipated to be completed towards the end of 2028, but there is still some uncertainty around this timing as the pumpstation NoR is being heard next month.
- 100. If applications to connect to Watercare's network are made after the treatment plant reaches maximum capacity, but before the upgrade, development from the proposed Plan Change area will be delayed. This will be a risk to the applicants at the time, and the Requestor in terms of this private plan change.
- 101. Watercare has a preferred servicing plan for the plan change area, and this includes connecting to the proposed Whenuapai Centralised Wastewater Pump Station that Watercare plan to build to service the Whenuapai area (Whenuapai Pump Station). Indicative timing to build this pump station is 2025, to align with the FDS.

- 102. The Requestor has not proposed wastewater options which may be temporary until the Whenuapai Pump Station is built. Discussions between the Requestor and Watercare will be ongoing as the detail is developed. The private plan change precinct provisions also include wastewater servicing triggers which limit the subdivision and development of the land until wastewater servicing and treatment capacity is available. A 224(c) for a subdivision application cannot be issued until the site has a connection to the Watercare Wastewater infrastructure.
- 103. it is noted that the land is not going to be developed all at once and even within the triggers, development will occur gradually over a period of time. By the time the land is ready to be developed (i.e. the plan change process completed), resource consenting (which are lodged with the council), earthworks and building construction, upgrading of the wastewater treatment plant may be plant to be developed.
- treatment plant may be close to or have commenced.
- 104. If the land is ready to develop sooner and the wastewater treatment plant and associated infrastructure, then the developer cannot proceed to obtaining subdivision certificates. The provisions in the precinct would require such options to be considered as a non-complying resource consent application. It is therefore considered that wastewater servicing does not prevent the private plan change progressing to the next stage.

Regards

Paul



PLANNERS | SURVEYORS | ENGINEERS ARCHITECTS | ENVIRONMENTAL Paul Kleynhans Associate - Engineering Manager BE(Env), NZCE(Civil), CPEng 09 837 0486 | 021 826 432 89 Central Park Drive, Henderson catobolam.co.nz



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Neil Construction Limited Whenuapai Business Park Private Plan Change Infrastructure Report

Healthy Waters Correspondence

PLANNERS SURVEYORS ENGINEERS ARCHITECTS ENVIRONMENTAL



Minutes

| What: | Neil Group Development Whenuapai – Stormwater, Parks discussion held separately <u>https://neilgroup-</u> <u>my.sharepoint.com/:f:/g/personal/trevor_neilgroup_co_nz/EuPSL6QsVvINh52A6</u> <u>lxRtwBexxiAlEixgTOKvXH6y4F2A?e=KyTPBb</u> | | | | | |
|--------|---|---------------|--|--|--|--|
| Where: | Skype for Business | | | | | |
| When: | 30 April 2020 | | | | | |
| Who: | - | | | | | |
| | Applicant | Trevor Canty, | | | | |
| | Apologies Minute taker | | | | | |
| Topics | covered: | | | | | |
| A. Bac | kground- | | | | | |
| B. Pla | 1 Change 5 | | | | | |
| C. Tec | hnical Review/Feedback on | proposal | | | | |

| Decisions and action points: | | Responsible | By date |
|------------------------------|--|------------------|---------|
| BACKGROUND | | | |
| 1) | Neil Group has an interest in land at 155-157 Brigham Creek Road, 69 and 77 Trig Road. The proposal is for a mix of light industrial lots and residential development, consistent with the PC5 zoning. | Trevor Canty, | твс |
| 2) | Seeking early engagement from Council, Healthy Waters, AT, WSL so that when PC5 is adopted, consents/subdivision can be lodged with agreement on all engineering, water and wastewater solutions reducing potential delays. | | |
| 3) | had reviewed the information but need to clarify/agree on assumptions for road cross-sections and whether the mini-SMP should take into account stormwater treatment from AT's assets i.e. Brigham Creek Road. Healthy Waters to advise what it considers suitable stormwater devices given that ponds cannot be used because of potential bird-strike issues at Whenuapai Airbase. | | 14 May |
| PL | AN CHANGE 5 UPDATE | | DALC. |
| 4) 5) | Plan Change 5 has been on-hold pending the outcome of discussions with the second second for noise contours with possible changes pending. The second | Trevor Canty | TBC |

| Decisions and action points: | Responsible | By date |
|--|-------------|---------|
| other scenario provides for 80 dwellings. The higher density is preferred by the applicant and Overseas Investment Office (central govt). | | |
| TECHNICAL REVIEW & POST MEETING ACTIONS | | |
| Total site size is 15.5 Ha, therefore, the site falls under large brownfield category under Auckland-wide NDC. Neil Group will need to prepare a detailed site-specific SMP meeting the connection requirements in accordance with the PC5 SMP for Healthy Waters review. Second Second S | | твс |
| It is recommended that Neil Group discusses appropriate best practicable options with HW and obtain provisional approval for the SMP from Healthy Waters prior to lodging the recourse consent application. This is an opportunity to clarify any issues to avoid any delays to be occurred at the time of processing the resource consent application. | | |
| Healthy Waters would recommend the Neil Group to refer the Stormwater Management Plan Template (attached for your reference) as this sets out the guiding principles for detail stormwater management and design. | | |
| Agreed that ponds were not a suitable treatment device due to proximity with the Airbase. | | |
| ACTIONS/AGREED OUTCOMES | | |
| 6) Healthy Waters to advise if Neil Group can do similar treatment to other parts of Hobsonville i.e. on-site treatment and discharge to Rawiri stream. Neil Group's subdivision in Hobsonville put consent notices for detention/retention on titles and the purchasers are bound to comply with the conditions | o | 14 May |
| Heathy Waters agreed that improvements should be riparian margin planting/10m set-back for buildings. However, Healthy Waters do not wish to acquire riparian areas unless it performs a wider recreation purpose. | | |
| 8) Avoid locating any development/buildings in floodplain. Development must focus not to increase the flood risk but reduces where possible. Include flood modelling in SMP to assist assessment of options. | Neil Group | |
| said that Brigham Creek Road has to be modified and widened. It will end up with a 30m road reserve area, the toe of the road batter will be close to watercourse. Aim to deal with that in the SMP so that toolbox of treatment options is clear. | Noted | |
| 11) Maintain stream base flows and options considered for stream erosion management. Identify enhancement and restoration opportunities for streams to implement within the development. | | |
| 12) Protection and enhancement of fish passage and removal of barriers | 1 | |
| 13) Neil Group to prepare more information showing where critical pinch- points are. The proposed roading for Plan Change 5 will require bridges/culverts through several streams. | Neil Group | |
| 14) Agreed that Neil Group subdivide the land and prepare sections for sale The best way to deal with contamination issues is to suggest conditions of consent and consent notices on titles. Proposed activity of light | approach | - |

| Decisions and action points: | Responsible | By date |
|--|-------------|---------|
| industrial will be mainly warehousing and light manufacturing. No contaminating activities are proposed. | | |

Trevor Canty

| From: | Trevor Canty |
|----------|---|
| Sent: | Friday, 23 September 2022 3:44 pm |
| To: | |
| Cc: | |
| Subject: | [NG4470DM] Whenuapai Business Park - Documents for review |

12d Synergy: -1

12d Synergy Job: Projects/Brigham Creek Road & Trig Road - 4470/Development Management **12d Synergy Project**Projects/Brigham Creek Road & Trig Road - 4470/Development Management **12dSynergySendGU**a25fb5db-0d8f-4b71-958f-6691751f350a



Further to our recent meetings please find below a link to the infrastructure and flood reports for this project.

WPB HW Reports Draft 20220923

If you have any problems with the files or any questions, please come back to us.

Regards

Meeting Notes Healthy Waters

Friday 16th April 2021

Attendees:



There was initial discussion about the culvert under Brigham Creek Rd

We will need to comply with Section 4 of the network discharge consent.

Will need to deal with the 100 year event = does this require detention? Will require attenuation if the culvert capacity is a limitation – this will determine the ultimate flow available.

It's going to be important to mitigate roads **(access**) is the person to talk to if we need some advice on detailed design but it is sure that roads will need treatment and hydrology mitigation).

Not interested in ponds but dry ponds are OK but birds are a "no go" due to proximity of the air base.

Discussion on rain gardens they do not want the small precast ones but bespoke larger rain gardens would be HW's preference. The old TP10 pond is a "no go".

raised the fact that we are now getting pushed back at EPA where previously consented, with constant changes being put on developers and designers. The dual pipe system is not acceptable.

AT guidance is for a 20 square meter minimum rain gardens for long term maintenance efficiency.

Smaller ones are too costly to maintain. No one wants the "coffin boxes" & we need to put them as close to source as possible. Some can be tolerated at smaller sizes if there's nowhere else to fit them in special circumstances - these should not be the go to solution - treatment is a function of device <u>area</u>.

What's driving this is that it is easier to maintain 10 large rain gardens than 20 to 40 small ones and performance is better too.

Primary concerns are D1 - avoid degradation of the receiving environment and E9 - high contaminants. There was some discussion around treating water off inert roof materials but this was not expected to be an issue.

Trevor raised the conflict between Auckland Transport and Healthy Waters if there something had to give in terms of the stream versus the road – whose preference would prevail? It was pointed out that NPS FW protects watercourses. So where the road can be designed to avoid filling or compromising watercourses it should be. We will need an ecological stream evaluation and quality assessment for any interference with the stream to be accepted.

Agreed that would provide some concept layouts to AT and Healthy Waters



Notes prepared by Trevor Canty, post meeting.