



+ Taylors Bay (PS23) - Central Interceptor Connection Works

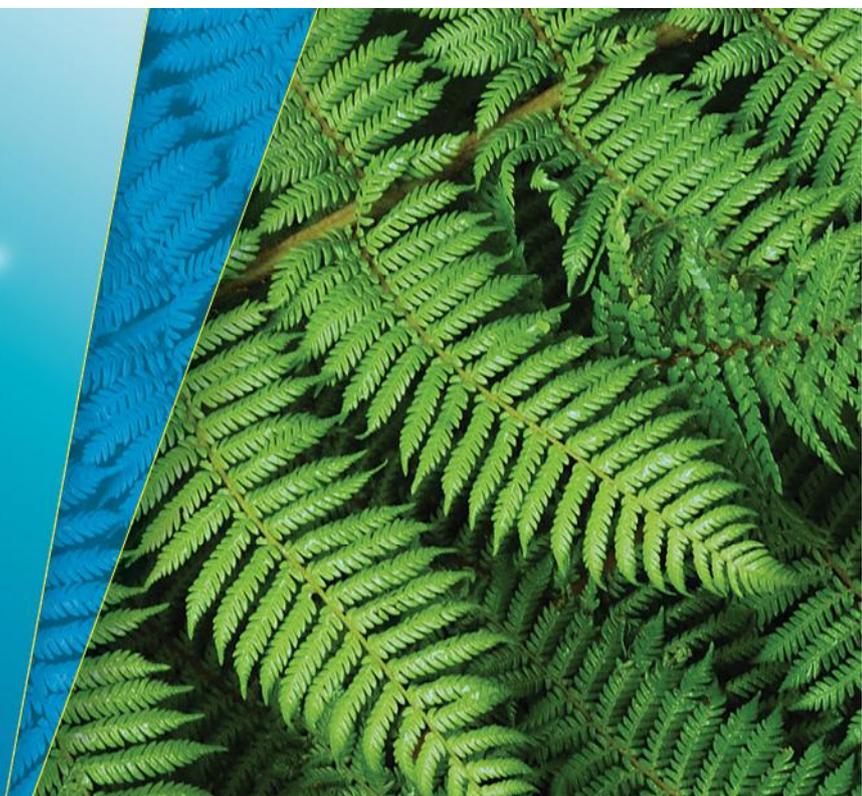
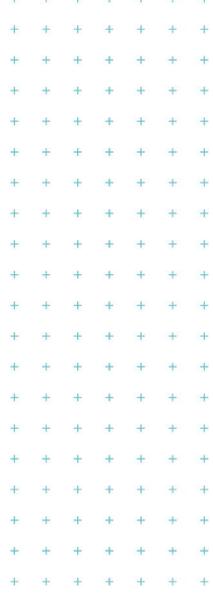
Land use consent for minor works in a natural hazard area

Prepared for  
Watercare Services Limited

Prepared by  
Tonkin & Taylor Ltd

Date  
April 2021

Job Number  
1015172,1500



*Exceptional thinking together*

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## Document Control

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## 1 Introduction

### 1.1 Overview of proposed works

This Assessment of Effects on the Environment (AEE) report has been prepared on behalf of Watercare Services Limited (Watercare) to support a resource consent application to authorise manholes in the coastal storm inundation 1 per cent annual exceedance probability (AEP) plus 1 m sea level rise area (coastal inundation area) as part of the Central Interceptor (CI) project at Taylors Bay, Hillsborough.

This report has been prepared in fulfilment of section 88 of the Resource Management Act 1991 (RMA), and in accordance with Tonkin & Taylor Ltd's (T+T) letter of engagement dated 25 January 2021.

### 1.2 Background

The CI is a fundamental part of Watercare's long-term strategy to effectively manage wastewater within the Auckland region, to protect public health and the environment, and to provide for growth. The CI is a 14.7-kilometre long and 4.5-metre wide tunnel that runs between Grey Lynn and the Māngere Wastewater Treatment Plant (MWTP), collecting and transferring wastewater for treatment and safe disposal. It will have permanent shafts for operational use and future access – these will collect and transfer wastewater from the existing network into the tunnel.

Watercare holds a designation (ref. 9466) under the Auckland Unitary Plan Operative in part (AUP) for the purposes of the construction, operation and maintenance of wastewater infrastructure, which applies to its Pump Station 23 (PS 23) site at Fredrick Street. In addition to this designation, the existing regional and district resource consents authorise the wider site works associated with CI, including the removal of existing buildings on site, traffic management and the establishment of site construction areas and associated earthworks<sup>1</sup>.

As part of the Hoskins Avenue Sewer connection works for PS23, Watercare has identified two additional manholes (MH-XX and MH-03) that will be required. These manholes are located outside of Designation 9466 and will be within a coastal inundation area as identified in Auckland Council's GIS viewer. These manholes are part of CI connection works i.e. the Hoskins Avenue Sewer connection works at Taylors Bay. While the manholes and associated construction is provided for under the existing suite of CI resource consents, Auckland Council (AC) has advised that a further resource consent is required in accordance with Rule E36.4 (A56) of the AUP due to the location of the manholes (being in a natural hazard area).

### 1.3 Applicant and property details

Table 1.1: Applicant and property details

Applicant	Watercare Services Ltd
Owner/occupier of application site	Crown owned land <sup>2</sup>

<sup>1</sup> R/LUC/2012/2846, R/LUC/2012/2846/1, PRC40962, PRC40963, 40834, 40835, 40836, 40837, 40838, 40839, 40840, 40841, 40842, 40843, 40844, 40845, 40846, 40848, 40849 and 40850

<sup>2</sup> The site is on reclaimed land within the Coastal Transition zone and was vested in the Crown under Section 5 of the Foreshore and Seabed Endowment Revesting Act 1991. We understand Watercare has been given approval from Land Information New Zealand (LINZ) to undertake the works at this site.

Site address / map reference	Bluffs Terrace, Hillsborough (Taylors Bay)
Site area	Approx. 3 ha (approx. works area 30 m <sup>2</sup> )
Legal description	Not applicable
Record of Title reference	
Council / Plans	Auckland Council Auckland Unitary Plan Operative in Part (AUP)
Address for service during consent processing	Tonkin + Taylor Ltd Attention: Laila Alkamil Phone: 09 352 2948 Email: <a href="mailto:LAlkamil@tonkintaylor.co.nz">LAlkamil@tonkintaylor.co.nz</a>
Address for service during consent implementation and invoicing	Watercare Services Ltd Attention: Xenia Meier Phone: 021 574 585 Email: <a href="mailto:xenia.meier@water.co.nz">xenia.meier@water.co.nz</a>

There are no relevant Records of Titles. We attach drawings in Appendix A and a Natural Hazard Assessment in Appendix B.

#### 1.4 Overview of resource consent requirements

AC has advised that resource consent is required under Rule E36.4.1 (A56) of the AUP as a restricted discretionary activity for infrastructure in the coastal inundation area not otherwise provided for as a permitted activity.

Pursuant to Section 125(1) of the RMA, a standard lapse date of 5 years is sought.

## 2 Site description

The site works are located at Taylors Bay Road Reserve, Hillsborough, within the coastal marine area.

Taylors Bay Road Reserve is a grassed reserve approximately along the coastal edge. The reserve runs along Frederick Street and connects to a small pocket beach at the end of Bluff Terrace (see Figure 2.1). There is a small playground and toilet facility within the reserve, with a car park accessed via Bluff Terrace.

A path approximately 1m in width extends along the edge of the reserve connecting the reserve to the playground and beach at Bluff Terrace. The reserve slopes steeply down from Frederick Street, with a set of timber stairs connecting the footpath to the road. A row of maturing Pohutukawa stands between the road and coastal edge.

The site is surrounded by residential development to the west and east and Watercare's PS23 site to the north along the coastal edge. The site is zoned Coastal – Coastal Transition under the AUP.

An overland flow path runs through the site and the site is located within a coastal inundation area and flood plain (see Figure 2.2 below).

The site is not located within an area of significant cultural value or within a statutory acknowledgement area. A review of the ArchSite<sup>3</sup> database shows that there are no identified archaeological items within the site and hence there is little potential for discovery of archaeological remains.



Figure 2.1: Proposed area of works (in orange). (Source: T+T MapViewer, 2021).

<sup>3</sup> Archaeological Site Recording Scheme: <http://www.archsite.org.nz/>



Figure 2.2: Coastal inundation area. (Source: Auckland Council GeoMaps,2021).

### 3 Description of works

#### 3.1 Consented CI works

The PS23 site is on the main tunnel alignment and is required to provide connection to the Onehunga Branch Sewer. It is a secondary construction site and includes the Hoskins Avenue Sewer connection works at Taylors Bay that serve to divert the Hoskins Avenue catchment from the Western Interceptor into the local network and from there, into the Central Interceptor tunnel.

The works at this location generally comprise a shaft and diversion chamber. Works are programmed to take place over a 24-month period, with construction expected to commence in mid 2021 and to be completed by mid-2023. As discussed in Section 1.2 above, the CI works are authorised under the designation and existing regional and district resource consents.

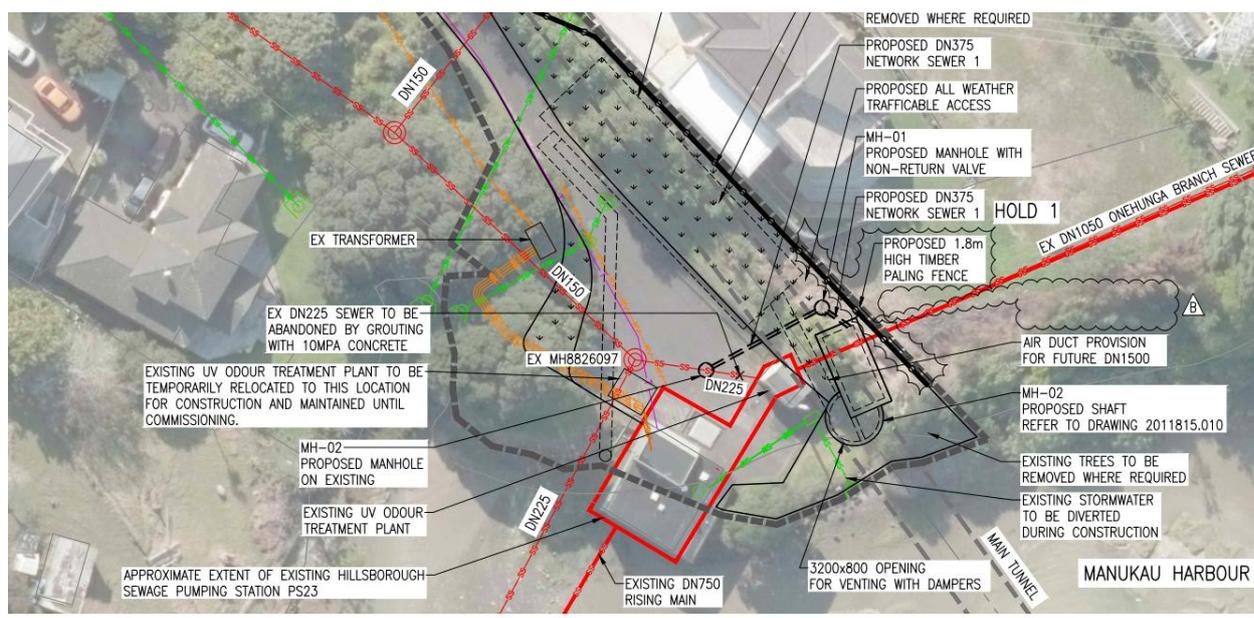


Figure 3.1: PS23 site works. (Source: Watercare, 2021).

#### 3.2 This application

For the purpose of this application, the works which require resource consent are limited to two manhole structures within a coastal inundation area (see Figure 3.2 below). As outlined in Section 3.1, all other site works are authorised under Watercare's existing resource consent and hence this application relates to works within the natural hazard area only.

The two manholes will be 1.5 m in diameter and approximately 2 m deep. The manholes will have a diameter lid of approximately 600 mm, which will be flush with ground level.

Both manholes will be fitted with a sealed access hatch to minimise the ingress of seawater through the hatches. Operator access to these manholes will be very infrequent. The access hatches will be visible from the ground surface and will be set flush with the existing ground level. The surface will be reinstated with topsoil and grass. There is no proposed above-ground infrastructure and no proposed change to the existing ground levels (see drawings in Appendix A).

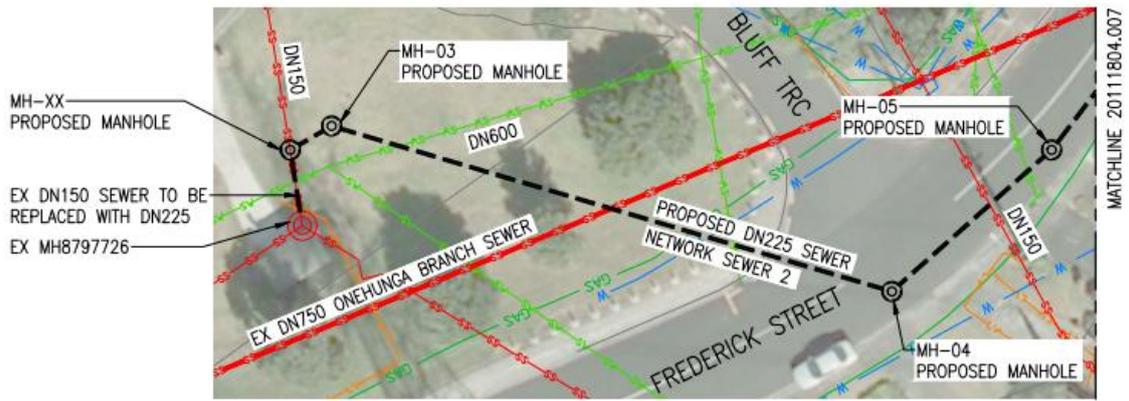


Figure 3.2: Proposed MX-XX and MH-03. (Source: Watercare, 2021).

## 4 Resource consent requirements

### 4.1 Auckland Unitary Plan

The requirements for resource consents are determined by the rules in the AUP. The rules which apply are determined by the zoning of the site, any identified notations in the plan and the nature of the activities proposed. Zoning and planning notations which apply to the site are set out in Table 4.1 and resource consent requirements are identified in Table 4.2 below.

Table 4.1: Zoning and planning notations

Zoning/planning limitation	Comment
Coastal – Coastal Transition zone	Applies across the entire site. This zone applies to land above mean high water springs that was typically un-zoned in previous district plans.
Designation 9466	Purpose of this designation is the construction, operation and maintenance of wastewater infrastructure with Watercare as the requiring authority. This designation applies to the PS23 site only. Although the proposed works are consistent with the purpose of this designation, they are located outside the designation boundaries and therefore this designation cannot be relied upon for these works.
Coastal Storm Inundation 1% AEP plus 1m sea level rise area	Indicates areas predicted to be inundated by sea water in the coastal area during storm events. Applies across all of the site.
1 per cent annual exceedance probability (AEP) flood plain	Indicates areas predicted to be covered by flood water as a result of a rainstorm event of a scale that occurs on average once every hundred years. Applies across eastern section of the site.
Overland flow path	Runs through sections of the site.

Table 4.2: Resource consents required

Proposed activity	Rule reference / description	Comment	Activity status
Construction of wastewater infrastructure (manholes) within a natural hazard area	Infrastructure in the Coastal Storm Inundation 1% AEP plus 1m sea level rise area and overland flow path Rule E36.4.1 (A56) – All other infrastructure in areas listed in heading above not otherwise provided for.	The construction of the proposed manholes within a natural hazard area (coastal inundation area) is not specifically provided for under the provisions of E36.	Restricted discretionary

Under Rule E36.8.1 (18) the Council has restricted its discretion. These matters of discretion are addressed in Section 5 of this report.

AC has advised that consent is required as the manholes are not specifically provided for as a permitted activity under Chapter E36 of the AUP, despite the proposed manholes being flush with the ground surface and having no potential effects in terms of natural hazard risks.

It is also relevant to note that Rules E36.4.1 (A11) and (A39) of Chapter E36 of the AUP provide for a range of activities and structures located within a coastal inundation area, flood plain and/or overland flow path as permitted activities well beyond what is proposed in this application<sup>4</sup>.

The consent requirement triggered for these proposed works is not a reflection of actual or potential effects (which are negligible - see Section 5), but rather a consequence of plan drafting and interpretation, and this activity not being specifically provided for in the plan provisions.

## 4.2 Permitted activities and existing resource consents

Chapter E26 of the AUP establishes a broad range of permitted activities in relation to infrastructure including underground pipelines (A49), manholes (A57) and associated earthworks (A100).

Notwithstanding this, as discussed in Section 1.2 above the existing designation and regional and district consents already authorise the works associated with CI. This includes wastewater infrastructure at the PS23 site, which includes construction of the Hoskins Avenue Sewer connection works at Taylors Bay. Therefore, the proposed works are already provided for under the existing regional and district consents. The consent requirement advised by Auckland Council is therefore limited specifically to the location of proposed manholes within a coastal inundation area.

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<sup>4</sup> Including additions of habitable rooms up to 25 m<sup>2</sup> (A11) in the coastal inundation area and fences and walls within or over an overland flow path (A39).

## 5 Assessment of effects on the environment

The following assessment identifies and assesses the types of effects that may arise from the proposed works. This assessment also outlines the measures that the applicant proposes to avoid, remedy or mitigate any potential adverse effects on the environment.

As set out in Section 3.2, the scope of this application is very narrow and is limited to the construction of two manholes within a coastal inundation area. This is reflected in the assessment set out below.

### 5.1 Positive effects

The proposed works contribute to the wider CI project, which has significant numerous positive effects. These include providing network capacity for growth and development, addressing asset risk due to the ageing Western Interceptor and reducing overflows to the stream environment in the catchment it serves.

The CI main works will be integral to the ongoing operation of wastewater network in Auckland over the next 50 years and beyond. The wastewater network enables the communities of Auckland to provide for their ongoing health and wellbeing and for continued economic growth and development across Auckland. The wastewater network is fundamental to the health and operation of Auckland.

### 5.2 Effects on natural hazard risk

Under Rule E36.8.1 (18) of the AUP, Council has restricted its discretion to the matters assessed in Table 5.1 below. For further details regarding natural hazard risk, please refer to the Natural Hazard Risk Assessment in Appendix B.

Table 5.1: Assessment against matters of discretion

Matters of discretion	Assessment
a the functional and/or operational need to locate within the hazard area.	There is a functional and operational need for the manholes to be located within a natural hazard area in order to connect to the existing wastewater network.
b the risk of adverse effects to other people, property and the environment including all of the following: i risk to public health and safety;	There is no change to the existing public health and safety risk as a consequence of the proposed works.
ii impacts on landscape values and public access associated with the proposed activity including a need for hard protection structures to be required to protect the utility from the natural hazard;	The proposed works are not located within any notable landscapes or in proximity to any notable landscape features. There are no effects on landscape values.  While the works will require temporary restrictions on public access in the vicinity for health and safety reasons, this is already addressed through the CI consents and the location of the manholes has no particular effect on public access.
iii the management or regulation of other people and property required to mitigate	There is no change to the flood risk as a consequence of the proposed works and hence no mitigation is required.

	natural hazard risks resulting from the location of the infrastructure;	
iv	the storage or use of hazardous substances in relation to the activity;	Hazardous substances will not be stored in the hazard area.
v	any exacerbation of an existing natural hazard or creation of a new natural hazard as a result of the structure;	Not applicable. MH-XX and MH-03 are not located within an overland flow path or floodplain. Both manholes will be buried completely belowground and existing ground levels will not change.
vi	the use of non-structural solutions instead of hard engineering solutions; and	Not applicable to the proposed works, being two manholes flush with ground level.
vii	the ability to relocate or remove structures	The manholes are required as part of wider CI works. It cannot be relocated as it is required to connect to the Hoskins Avenue Sewer.

Table 5.2 contains an assessment of the proposed works against the relevant assessment criteria contained in the AUP.

Table 5.2: Assessment criteria

Relevant Criteria	Assessment
<p>Rule E36.8.2 (17) – for the operation, maintenance, renewal, repair and minor infrastructure upgrading of infrastructure in the coastal erosion hazard area; or in the coastal storm inundation 1 percent annual exceedance probability (AEP) area; or in the coastal storm inundation 1 percent annual exceedance probability (AEP) plus 1m sea level rise area; or in the 1 percent annual exceedance probability (AEP) floodplain; or in overland flow paths; or on land which may be subject to land instability:</p> <p>a the long-term management, maintenance and monitoring of any mechanisms associated with managing the risk of adverse effects resulting from the placement of infrastructure within a hazard area to other people, property and the environment including the management of hazardous substances;</p>	<p>The very minor nature of the works means that no particular long-term management or monitoring is required beyond Watercare's standards procedures.</p> <p>MH-XX and MH-03 are completely below ground.</p> <p>Storage of hazardous substances will not occur.</p>
<p>b the extent to which residual risks to people, property and the environment resulting from any mitigation measures implemented to manage the hazard;</p>	<p>There are no residual risks associated with a natural hazard.</p>
<p>c the extent to which an existing hazard is exacerbated or a new hazard is created as a result of the structure;</p>	<p>MH-XX and MH-03 are buried completely below ground and existing ground levels will not change. The flood level, flows, velocities and overland flow path routes will not change as a consequence of the proposed works and hence there will be no exacerbation of existing natural hazard risk.</p>

Relevant Criteria	Assessment
d the extent to which the proposal includes non-structural solutions to protect infrastructure from the hazard and resulting adverse effects; and	Not applicable to this application.
e the extent to which landscape values and/ or public access are affected by the proposed structure or structures associated with the mitigation of the hazard.	The proposed works are not located within any notable landscapes or in proximity to any notable landscape features. There are no anticipated adverse effects on landscape values.  Public access will not be affected by this application.

As discussed above and in the Natural Hazard Risk Assessment (Appendix B), the proposed works will not result in any change to existing ground level. The manholes are located outside of the floodplain and overland flow paths. Hence, the continuity of the overland flow paths both within the site and upstream and downstream of the site will be maintained and there will be no diversion of overland flow paths or overall increase of impermeable surface area.

### 5.3 Conclusion

As is typical in relation to wastewater infrastructure, Watercare has taken into account the natural hazard (coastal inundation area) in the design of the manhole structures. Watercare considers that the hazard will have no impact on the resilience of the infrastructure.

As discussed above, the proposed works will have a negligible (if any) effect on natural hazard risk and more broadly will have significant positive effects in relation to improving wastewater infrastructure in Auckland as part of the wider CI project.

## 6 Statutory assessment

### 6.1 RMA assessment

Section 104 of the RMA sets out the matters to which a consent authority must have regard to, subject to Part 2 of the RMA, when considering an application for resource consent. These include:

- Any actual and potential effects on the environment of allowing the activity (refer Section 5 above);
- Any relevant provisions of:
  - a national environmental standard;
  - a national policy statement;
  - the AUP; and
- Any other matter the consent authority considers relevant and reasonably necessary to determine the application.

#### 6.1.1 Part 2 of the RMA

Part 2 of the RMA sets out the purpose and principles of the Act. The purpose of the RMA is to promote the sustainable management of natural and physical resources. The AUP has been prepared recently and is clear and directive, and clearly deals with Part 2 subject matter such that recourse to Part 2 is not likely to add anything to the assessment.

### 6.2 National Environmental Standards

The Resource Management (National Environmental Standards for Freshwater) Regulations 2020 regulates activities that pose risks to the health of freshwater and freshwater ecosystems. The standards relate to activities related to streamworks, intensive irrigation and the discharge of sediment to waterways. There are no applicable standards relevant to this application.

### 6.3 National Policy Statements

#### 6.3.1 National Policy Statement for Freshwater Management 2020

The National Policy Statement for Freshwater Management 2020 (NPS-FM) provides guidance on how freshwater is to be managed in a manner that gives effect to Te Mana o te Wai.

As discussed in Section 5, the proposed works will contribute to the wider CI project, which will include positive effects such as reducing overflows to the stream environment. The proposed works are considered consistent with the overall objective of the NPS-FM, in terms of providing firstly for the health of freshwater ecosystems as well as the social, economic and cultural well-being of communities.

#### 6.3.2 The New Zealand Coastal Policy Statement 2010

The New Zealand Coastal Policy Statement 2010 (NZCP) sets out objectives and policies in order to achieve the purpose of the RMA in regard to New Zealand's coastal environment.

The proposed works will reduce wastewater overflows and will have no adverse effect on natural hazard risk. Overall, the proposed works are considered consistent with the objectives and policies of the NZCPS.

## 6.4 Auckland Unitary Plan policy assessment

An assessment against key relevant objectives and policies of the AUP is set out in Table 6.1 below.

Table 6.1: Objectives and policies assessment

Reference	Comment
Chapter B3 – Infrastructure, transport and energy	
B3.2.1 Objective (2) The benefits of infrastructure are recognised, including: a Providing essential services for the functioning of communities, businesses and industries within and beyond Auckland; ..... d Providing for public health, safety and the well-being of people and communities	The proposed works will contribute to the wider CI project – regionally significant infrastructure which will directly support the social, economic, environmental, and cultural wellbeing of communities within Auckland.
B3.2.2 Policy (1) – Enable the efficient development, operation, maintenance and upgrading of infrastructure	The proposed works are required in order to provide two manhole structures to ensure the efficient upgrading of wastewater infrastructure.
B3.2.2 Policy (9) – Ensure where there is a functional or operational need for infrastructure to be located in areas subject to natural hazards: ..... b That risk that cannot be avoided by location or design should be mitigated to the extent possible	The proposed works have a functional and operational need to be located in a coastal inundation area in order to connect to existing wastewater infrastructure. As discussed in Section 5, adverse effects on natural hazard risk are considered to be negligible (no effects).
Chapter E26 – Infrastructure	
E26.2.1 Objective (4) – Development, operation, maintenance, repair, replacement, renewal, upgrading and removal of infrastructure is enabled.	The proposed works are required in order to provide two manhole structures as part of the wider CI package of works.
E26.2.1 Policy (2) – Provide for the development, operation, maintenance, repair, upgrade and removal of infrastructure throughout Auckland by recognising: a Functional and operational needs; b Location, route and design needs and constraints; c The complexity and interconnectedness of infrastructure services; d The benefits of infrastructure to communities within Auckland and beyond.	The proposed works have a functional and operational need to be located in the coastal inundation area in order to connect to the wastewater network.  The proposed works contributes to the wider CI project, which will have numerous benefits in terms of providing an improved wastewater network for the communities within Auckland.
Chapter E36 – Natural hazards and flooding	
E36.2 Objective (4) - Where infrastructure has a functional or operational need to locate in a natural hazard area, the risk of adverse effects to other people, property, and the environment shall be assessed and significant adverse effects are sought first to be avoided or, if avoidance is not able to be totally achieved, the residual effects are otherwise mitigated to the extent practicable.	The proposed works have a functional and operational need to be located in a coastal inundation area due to the location of the existing infrastructure. Adverse effects on natural hazard risk have been assessed and are considered to be negligible (no effects).

## 6.5 Non-notification assessment

Section 95A of the RMA is relevant when a consent authority is considering whether a consent application should be considered with or without public notification.

Section 95A identifies a four step process. In relation to these steps we note the following:

- The applicant does not request public notification of the application;
- There is no rule or national environmental standard that precludes or requires public notification of this application;
- An assessment of effects on the environment is provided in Section 5 of this AEE report. This assessment concludes that the adverse effects on the environment are less than minor;
- No special circumstances are considered to exist in relation to the application.

Based on this assessment, we consider that this proposal meets the tests of the RMA to be processed without public notification.

For applications that are not publicly notified, under section 95B, the consent authority must determine whether to give limited notification of an application to any affected parties. Section 95B identifies a four step process. In relation to these steps we note the following:

- The application does not need to be notified to any parties under section 95B(4). The proposed change will not affect any customary rights;
- The proposed activity is not on or adjacent to, or does not affect, land that is the subject of a statutory acknowledgement;
- There are no applicable rules or national environmental standards precluding limited notification;
- No special circumstances are considered to exist that warrant limited notification.

In terms of Section 95E(1), the application is for the construction of two manhole structures at ground level within a coastal inundation area. No person is considered to be adversely affected by the application and the proposal meets the tests of the RMA to be processed without limited notification.

The proposed manholes are a very minor component of the wider CI project which was publicly notified. This includes works at PS23 and associated connecting works. The Hoskins Avenue Sewer connection will allow flows to be redirected from the Western Interceptor into the CI tunnel. As the proposed works involve the construction of two manhole structures which will be completely below ground, there are no adversely affected parties. Given no persons is considered to be adversely affected by the application, the proposal meets the tests of the RMA to be processed without limited notification.

Following the steps set out in sections 95A and 95B, we consider that the application should be processed without public or limited notification.

## 7 Conclusion

This AEE report has been prepared on behalf of Watercare Services Ltd to accompany a resource consent application to AC for the construction of two manholes within a coastal inundation area under Rule E36.4.1 (A56) of AUP.

The works are very minor in nature and the scope of this application is limited only to the construction of the manhole structures within a natural hazard area. The works will have negligible effect (if any) on natural hazard risk and are consistent with the relevant objectives and policies of the AUP as the structures are entirely below ground.

Accordingly, we consider that this resource consent application should be granted on a non-notified basis, subject to fair and reasonable conditions while noting that the CI resource consent conditions can be relied on to manage effects.

## 8 Applicability

This report has been prepared for the exclusive use of our client Watercare Services Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

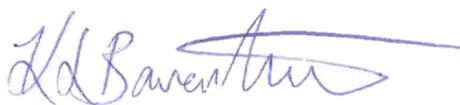
We understand and agree that this report will be submitted to Auckland Council in support of an application for resource consent for the works described herein, and that Auckland Council will rely on this report for the purpose of assessing that application.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

Authorised for Tonkin & Taylor Ltd by:



.....  
Laila Alkamil  
Planner

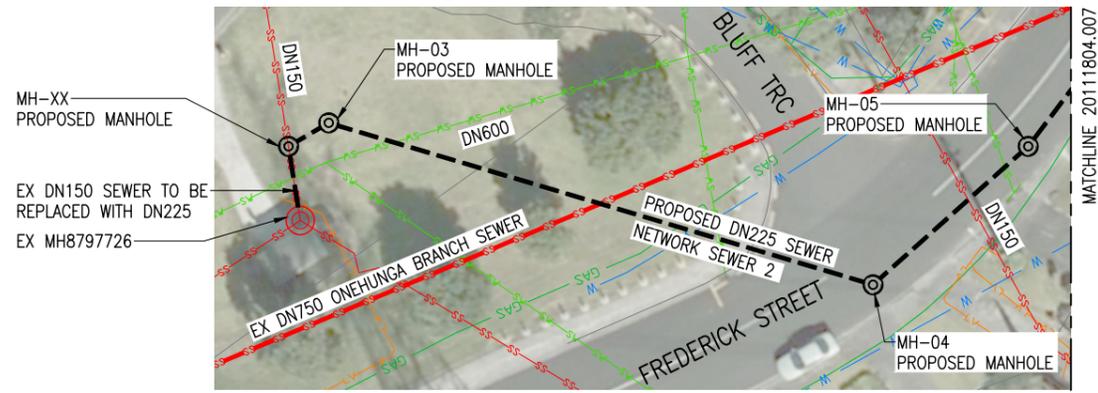
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Karen Baverstock  
Project Director

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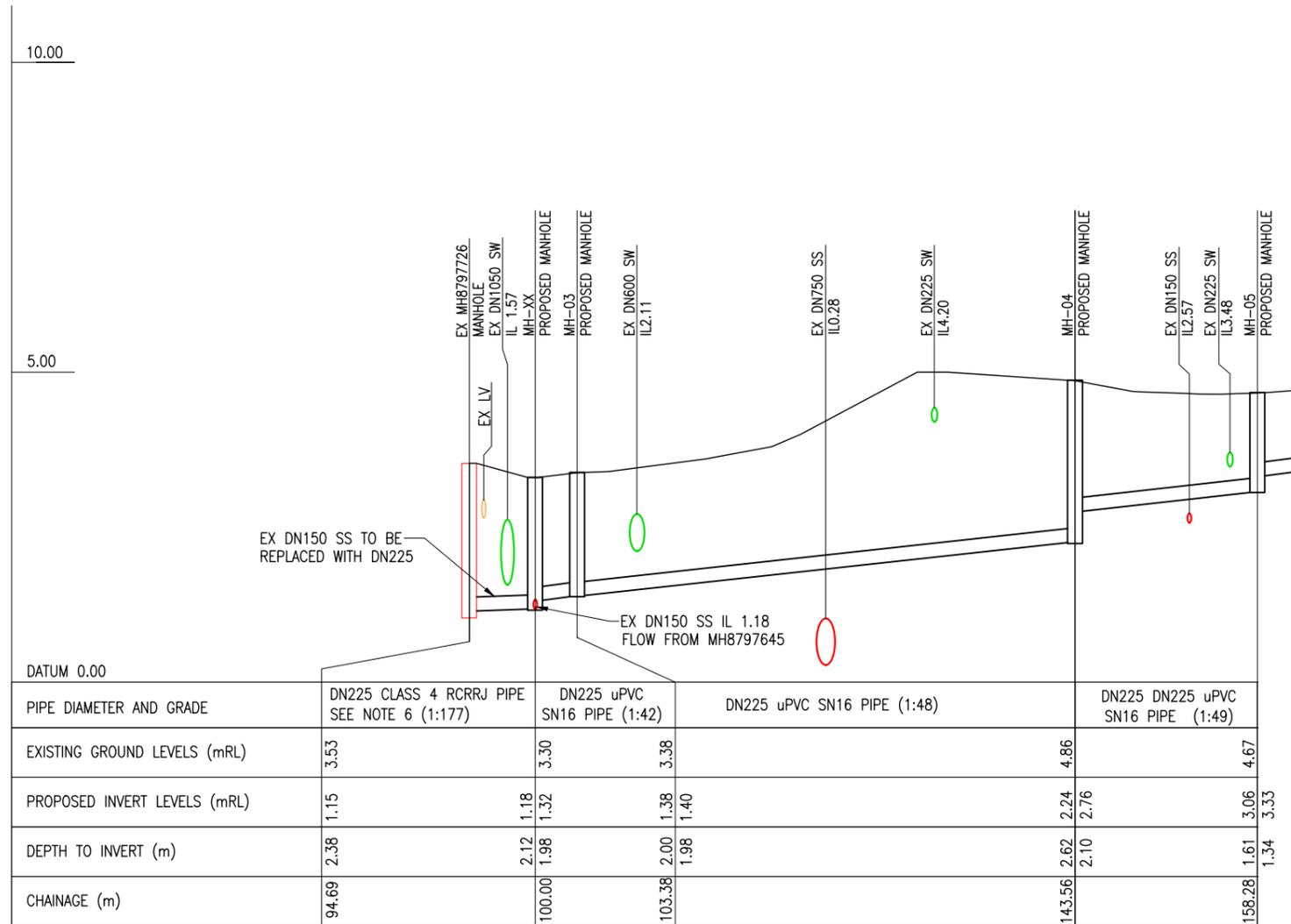
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## Appendix A: Drawings

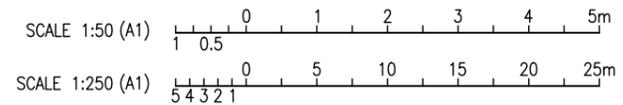
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PLAN  
SCALE: 1:250 (A1)



LONGITUDINAL SECTION  
SCALE: 1:50 V 1:250 H (A1)



NOTES:

- CO-ORDINATES ARE IN NZTM AND LEVELS ARE TO AUCKLAND L&S 1946 DATUM.
- LOCATION OF EXISTING SERVICES HAVE BEEN EXTRACTED FROM AUCKLAND COUNCIL GIS AND UTILITIES PLANS AND ARE INDICATIVE. PHYSICAL LOCATION OF AFFECTED SERVICES WILL BE REQUIRED PRIOR TO CONSTRUCTION. ALL AFFECTED SERVICES SHALL BE PROTECTED DURING CONSTRUCTION.
- REFER TO WATERCARE STANDARD DRAWING 2010070.005B FOR PIPE BEDDING DETAIL.
- ALL PIPEWORK TO HAVE ROCKER PIPES AT JUNCTION WITH CHAMBERS IN ACCORDANCE WITH DRAWING 2011804.030.
- BACKFILL AROUND MH'S TO BE ORDINARY BACKFILL IN ACCORDANCE WITH CLAUSE C2-16.
- A MIN OF 75mm THICK HIGH DENSITY POLYSTYRENE TO BE INSTALLED ACROSS THE IMMEDIATE INTERFACE BETWEEN THE DN1050 SW AND PROPOSED DN225 SS.

LEGEND

- PROPOSED MAIN TUNNEL
- PROPOSED LINK SEWER
- FUTURE CSO COLLECTOR SEWER AND MANHOLE
- PROPOSED SEWERAGE
- PROPOSED STORMWATER
- PROPOSED POWER/CONTROL DUCT
- EXISTING STORMWATER
- EXISTING STORMWATER STREAM
- EXISTING NETWORK WASTEWATER
- EXISTING TRANSMISSION WASTEWATER
- EXISTING WATERMAIN
- LV POWER CABLE
- HV POWER CABLE
- MV POWER CABLE
- FIBRE OPTIC CABLE
- TRANSPOWER LINE
- VECTOR TRANSMISSION LINE
- COMM CABLES
- TELECOM
- GAS LINE
- TO BE ABANDONED
- EXISTING SEWER PREVIOUSLY ABANDONED
- DESIGNATION BOUNDARY
- PROPOSED ALL WEATHER TRAFFICABLE ACCESS
- PROPOSED AIR DUCT

CONSTRUCTION ISSUE



Plot Date: Jan 01, 2021 - 22:28am C:\Users\ss034\25\appdata\local\temp\AcPublish\_4660\201804\_006.dwg

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE
C	29.01.21	IFC - ASSET TAG NUMBERS UPDATED	SS	DJK	DESIGNED	CW 06.16
B	16.09.20	REVISED CONSTRUCTION ISSUE	SS	CW	DES. CHECKED	DJK 06.16
A	30.01.20	CONSTRUCTION ISSUE	PMF	EM	DRAWN	AP 06.16
-	30.08.17	TENDER ISSUE	PJG	NK	DWG. CHECKED	CW 06.16
2	14.03.17	ISSUED FOR CLIENT REVIEW	PJG	DJK	PROJECT LEADER	NK 08.17
1	10.11.16	ISSUED FOR CLIENT REVIEW	PJG	DJK	INFRASTR APP'D	SG 08.17

**Watercare**

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**PS23 - ONEHUNGA CATCHMENT (ZDONE)**  
**82 GRAVITY SEWER INCLUDING MANHOLES**  
 NETWORK SEWER 2 - PLAN AND LONGITUDINAL SECTION - SHEET 1 OF 4

CAD FILE 2011804.006	DATE 29.01.21
ORIGINAL SCALE A1	CONTRACT No. 6661
AS SHOWN	
REF. No. CI-CIVIL	ISSUE
DWG. No. 2011804.006	C

# Appendix B: Natural Hazard Assessment

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# CENTRAL INTERCEPTOR

## Memorandum

To: Xenia Meier

From: Lucy Ferris

Reviewed: Tess Gilham/Tim Hegarty

CC: Shalini Sanjeshni, Laila Alkamil

Subject: Central Interceptor PS23 Taylors Bay MH-XX and MH-03 Natural Hazard Assessment – Revision 2

Doc. Ref: JNZ-WSL-CIP-TM-0000050 Rev. 2

Date: 01 April 2021

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### Introduction

As part of the Central Interceptor project, it is proposed to build two new manholes (MH-XX and MH-03) as part of a larger Hoskins Avenue sewer diversion to divert flows from an existing local sewer away from the Western Interceptor to the Central Interceptor tunnel. This sewer diversion will enable the Western Interceptor to be fully isolated to allow either future rehabilitation or decommissioning.

MH-XX will be constructed over an existing local sewer. This is the connection point to the existing network which will discharge into the Central Interceptor tunnel. MH-03 is required to facilitate this connection.

Proposed manholes MH-XX and MH-03 are located within Taylors Bay Road Reserve next to the Manukau Harbour. Auckland Council's GeoMaps (GeoMaps) show the proposed manholes MH-XX and MH-03 are located adjacent to the 100 year Annual Recurrence Interval (ARI) storm event flood plain, a large overland flow path, and within the Coastal Inundation 1% Annual Exceedance Probability (AEP) plus 1m sea level rise zone.



# CENTRAL INTERCEPTOR



Figure 2 Overland Flow Paths from 2017 LIDAR

TP108 was used to estimate ARI storm event peak flow rates, a summary is shown in Table 1.

Table 1 Summary of Peak Runoff Flow Rates

ARI (years)	100	10	2
Peak Flow Rate (m <sup>3</sup> /s)	6.19	3.86	2.06

Dependent on tide conditions, the pipe network is either headwater or tailwater controlled and the existing stormwater outlets have an approximate capacity of 3.6-4.0m<sup>3</sup>/s. This is equivalent to the 10 year ARI storm event being able to be conveyed by the existing pipe network, with any flow above this being conveyed as overland flow down Bluff Terrace to the Manukau Harbour.

In summary, the Taylors Bay Road Reserve is not subject to flooding or overland flow paths, as the overland flow is contained within Bluff Terrace. Hence manholes MH-XX and MH-03 are positioned to be clear of any flooding or overland flow paths.

## Coastal Inundation

### Storm Surge

Proposed manholes MH-XX and MH-03 are located within Taylors Bay Road Reserve next to the Manukau Harbour within the Coastal Inundation 1% AEP plus 1m sea level rise zone. This can be seen on GeoMaps and is shown in Figure 3.

# CENTRAL INTERCEPTOR

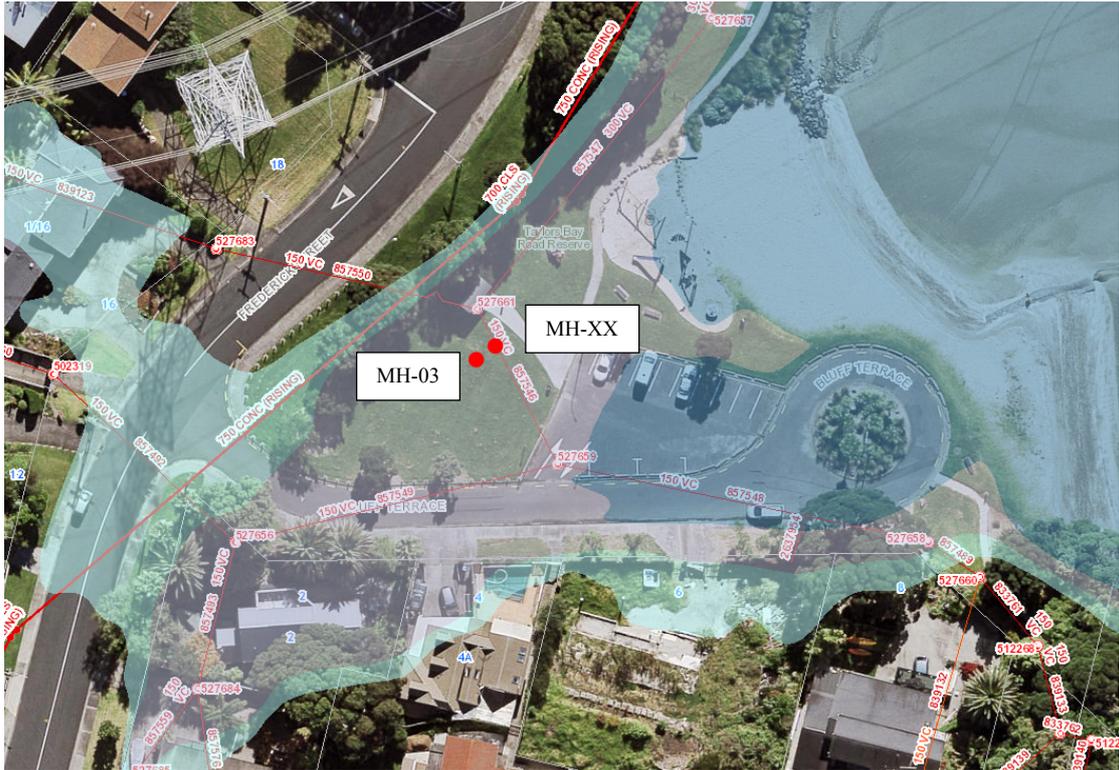


Figure 3 Coastal Inundation Zone from Auckland Council GeoMaps

Auckland Council’s Technical Report 2020/024 Auckland’s Exposure to Coastal Inundation by Storm Tides and Waves, (December 2020) tabulates extreme sea levels in the Manukau Harbour for various ARI storm events.

Storm surge/extreme sea level in the Manukau Harbour is summarised in Table 3-6 from this Technical Report. Taylors Bay is near site 15, copied in Table 2. These extreme sea level rises do not include sea level rise due to climate change; one metre has been added to these values to account for climate change.

Table 2 Extreme Sea Level Rise Elevations

Site	Easting (NZTM)	Northing (NZTM)	AEP	0.39	0.18	0.1	0.05	0.02	0.01	0.005
			ARI	2 yr	5 yr	10 yr	20 yr	50 yr	100 yr	200 yr
			Sea Level Rise Elevations (mRL)	2.5	2.57	2.63	2.71	2.83	2.92	3.02
15	1757321	5911763								
			+1 metre climate change (mRL)	3.5	3.57	3.63	3.71	3.83	3.92	4.02

The proposed access hatch levels for MH-XX and MH-03 are 3.30mRL and 3.38mRL, respectively, which are above the 100-year ARI storm event maximum extreme sea level.

## Storm Surge & Climate Change

The AUP(OP) (Chapter E36), contains specific requirements for developments located within the flooding zone for a 1 in 100 year plus 1 metre sea level rise inundation event.

# CENTRAL INTERCEPTOR

Adding 1 metre of sea level rise due to climate change onto the extreme sea levels results in both MH-XX and MH-03 access hatches being submerged at times.

MH-XX and MH-03 cannot be relocated to be outside of the extreme sea level & 1 metre of climate change area. They must be located where designed to enable the connection to the existing sewer, which ultimately allows for the rehabilitation or decommissioning of the Western Interceptor.

Both manholes will be fitted with one sealed access hatch each to minimise the ingress of seawater through these hatches. Operator access to these manholes will be very infrequent.

MH-XX and MH-03 will be buried approximately 150mm below the existing ground level. The access hatches will be visible from the ground surface and will be set flush with the existing ground level. The surface will be reinstated with topsoil and grass.

There is no proposed above ground infrastructure and there is no proposed change to the existing ground levels.

## Risk Hazard Assessment

A risk assessment for constructing MH-XX and MH-03 within the flood plain is summarised in Table 3.

*Table 3 Risk Mitigation for Construction Within Flood Plain*

<b>Risk</b>	<b>Mitigation Response</b>
The risk of adverse effects to other people, property and the environment	There is no increased adverse risk to other people, property and the environment. MH-XX and MH-03 are not located within an overland flow path or flood plain.
The risk to public health and safety	There is no change to the existing public health and safety risk from flooding as a consequence of constructing MH-XX and MH-03.
The management or regulation of other people and property required to mitigate natural hazard risks resulting from the location of the infrastructure	There is no change to the flooding risk as a consequence of constructing MH-XX and MH-03 hence no mitigation is required.
Any exacerbation of an existing natural hazard or creation of a new natural hazard as a result of the structure	Not applicable. MH-XX and MH-03 are not located within an overland flow path or flood plain. MH-XX and MH-03 will be buried completely belowground and existing ground levels will not change.
The ability to relocate or remove structures	Not applicable. MH-XX and MH-03 are not located within an overland flow path or flood plain.

# CENTRAL INTERCEPTOR

Risk	Mitigation Response
	MH-XX and MH-03 will be located belowground, with MH-XX above an existing local sewer. MH-XX must be constructed in this location to allow diversion of local sewer flows to the Central Interceptor tunnel.
The long-term management, maintenance and monitoring of any mechanisms associated with managing the risk of adverse effects resulting from the placement of infrastructure within a hazard area to other people, property and the environment including the management of hazardous substances	Not applicable. Storage of hazardous substances at MH-XX and MH-03 will not occur. MH-XX and MH-03 will be completely belowground.
Subdivision, use and development including redevelopment, is managed to safely maintain the conveyance function of floodplain and overland flow paths	Not applicable. MH-XX and MH-03 are not located within an overland flow path or flood plain. MH-XX and MH-03 will be buried completely belowground and existing ground levels will not change.
Where infrastructure has a functional or operation need to locate in a natural hazard area, the risk of adverse effects to other people, property, and the environment shall be assess and significant adverse effects are sought first to be avoided or, if avoidance is not able to be totally achieved, the residual effects are otherwise mitigated to the extent practicable.	Not applicable. MH-XX and MH-03 are not located within an overland flow path or flood plain. MH-XX and MH-03 will be located belowground, with MH-XX above an existing local sewer. MH-XX must be constructed in this location to allow diversion of local sewer flows to the Central Interceptor tunnel. MH-XX and MH-03 will be buried completely belowground and existing ground levels will not change.
Ensure all development in the 1 per cent annual exceedance probability (AEP) floodplain does not increase adverse effects from flood hazards or increased flood depths and velocities, to other properties upstream and downstream of the site	Not applicable. MH-XX and MH-03 are not located within an overland flow path or flood plain.
Maintain the function of overland flow paths to convey stormwater runoff safely from a site to the receiving environment	Not applicable. MH-XX and MH-03 are not located within an overland flow path or flood plain. There are no changes to the function of the flood plain or overland flow path.
Require changes to overland flow paths to retain their capacity to pass stormwater flows safely without causing damage to property or the environment	Note applicable. MH-XX and MH-03 are not located within an overland flow path or flood plain. There are no changes to the function of the flood plain or overland flow path.

# CENTRAL INTERCEPTOR

A risk assessment for constructing MH-XX and MH-03 within the coastal inundation zone is summarised in Table 4.

*Table 4 Risk Mitigation for Construction Within Coastal Inundation Zone*

<b>Risk</b>	<b>Mitigation Response</b>
The risk of adverse effects to other people, property and the environment	There is no increased adverse risk to other people, property and the environment. MH-XX and MH-03 will be buried completely belowground and existing ground levels will not change. Hence the coastal inundation zone will not change as a consequence of constructing MH-XX and MH-03. MH-XX and MH-03 will only be accessed occasionally by Watercare's maintenance workers.
The risk to public health and safety	There is no change to the existing public health and safety risk from coastal inundation as a consequence of constructing MH-XX and MH-03. MH-XX and MH-03 will be buried completely belowground and existing ground levels will not change.
Impacts on landscape values and public access associated with the proposed activity including a need for hard protection structures to be required to protect the utility from the natural hazard	MH-XX and MH-03 will be buried completely belowground and existing ground levels will not change. One new access hatches will be constructed on each proposed manhole to allow for future maintenance access, these access hatches will be proposed to be sealed to prevent water ingress. Only these access hatches will be visible from the surface, Hence the coastal inundation zone will not change as a consequence of constructing MH-XX and MH-03.
The management or regulation of other people and property required to mitigate natural hazard risks resulting from the location of the infrastructure	MH-XX and MH-03 will be located within a public reserve. There is no change to the coastal inundation risk as a consequence of constructing MH-XX and MH-03 hence no mitigation is required.
The long-term management, maintenance and monitoring of any mechanisms associated with managing the risk of adverse effects resulting from the placement of infrastructure within a hazard area to other people, property	Not applicable. No long-term monitoring proposed as new manholes will be completely buried belowground with only access hatches visible from the surface. Storage of hazardous substances at MH-XX and MH-03 will not occur.

## CENTRAL INTERCEPTOR

<b>Risk</b>	<b>Mitigation Response</b>
and the environment including the management of hazardous substances	
Any exacerbation of an existing natural hazard or creation of a new natural hazard as a result of the structure	MH-XX and MH-03 will be buried completely belowground and existing ground levels will not change. Hence the coastal inundation zone will not change as a consequence of constructing MH-XX and MH-03.
The use of non-structural solutions instead of hard engineering solutions	Not applicable. MH-XX and MH-03 will be located belowground. No non-structural or hard engineering solutions proposed.
The ability to relocate or remove structures	Not applicable. MH-XX and MH-03 will be located belowground, with MH-XX above an existing local sewer. MH-XX must be constructed in this location to allow diversion of local sewer flows to the Central Interceptor tunnel.

