REPORT

Tonkin+Taylor

Central Interceptor - Point Erin Tunnel

Assessment of Effects on the Environment

Prepared for
Watercare Services Limited
Prepared by
Tonkin & Taylor Ltd
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Glossary of abbreviations

Term	Definition
AEE	Assessment of Effects on the Environment
AEP	Annual Exceedance Probability
Amendment Act	Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021
AMP	Watercare's Asset Management Plan
ASCNVMP	Activity Specific Construction Noise and Vibration Management Plan
ATF	Air treatment facility
AUP	Auckland Unitary Plan – Operative in part
Bgl	Below ground level
CAR	Corridor Access Request
CCO	Council Controlled Organisation
ChTMP	Chemical Treatment Management Plan
CI	Central Interceptor
CMA	Coastal Marine Area
CMP	Construction Management Plan
CNVMP	Construction Noise and Vibration Management Plan
CPTED	Crime Prevention through Environmental Design
CSO	Combined Sewer Overflow
CTMP	Construction Traffic Management Plan
CVA	Cultural Values Assessment
DP	District Plan
DSI	Detailed Site Investigation
ECBF	East Coast Bays Formation
EOP	Engineered overflow point
EPB	Earth pressure balance
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
Freshwater NES	Resource Management (National Environmental Standards for Freshwater) Regulations 2020
GD05	Auckland Council Guidance Document 05
GLT	Grey Lynn Tunnel
HAIL	Hazardous Activities and Industries List
HDPE	High density polyethylene
Heritage NZ	Heritage New Zealand
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
IMP	Iwi Management Plan
ITA	Integrated Transport Assessment
LGA	Local Government Act 2002
LVEA	Landscape and Visual Effects Assessment

MDRS	Medium Density Residential Standards
MfE	Ministry for the Environment
NDC	Watercare's Network Discharge Consent
NESAQ	Resource Management (National Environmental Standards for Air Quality) Regulations 2004
NES Soil	National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011
NPS-FM	National Policy Statement for Freshwater Management
NPS-UD	National Policy Statement on Urban Development 2020
NZAA	New Zealand Archaeological Association
NZCPS	New Zealand Coastal Policy Statement 2010
PC78	Plan Change 78
PPV	Peak Particle Velocity
PRLP	Park Reinstatement and Landscape Plan
PSI	Preliminary Site Investigation
RMA	Resource Management Act 1991
RCP	Regional Coastal Plan
RP	Regional Plan
RPS	Regional Policy Statement
SEA	Significant Ecological Area
SH1	State Highway 1
SOI	Statement of Intent
TBM	Tunnel boring machine
The Project	Point Erin Tunnel
TMP	Traffic Management Plan
T+T	Tonkin and Taylor Ltd
Watercare	Watercare Services Limited
WIWQIP	Western Isthmus Water Quality Improvement Programme
WSA	Water Services Act 2021
WWTP	Wastewater treatment plant

Executive summary

Watercare Services Limited (Watercare) is a Council-Controlled Organisation (CCO) of the Auckland Council responsible for the treatment and supply of potable (drinking) water and for the collection, treatment and disposal of wastewater for around 1.7 million people in Auckland.

Watercare is currently building the Central Interceptor which is New Zealand's largest wastewater project, comprising a 14.7 km wastewater conveyance and storage tunnel that runs from Grey Lynn under central Auckland and the Manukau Harbour to the Māngere Wastewater Treatment Plant. Central Interceptor (CI) provides additional sewer capacity for growth and development and increases network resilience and security by duplicating the lower section of the ageing Western Interceptor. Importantly, CI results in a significant reduction in wet weather wastewater overflow discharges in the Meola Catchment, and this benefit is further extended into the Motions, Oakley and Whau catchments and to the local coastal waters on completion of the Combined Sewer Overflow (CSO) Collector Sewers which form part of the overall CI scheme. CI will reduce the average annual wastewater overflow volumes discharged into the receiving environment by approximately 80%. It also enables future works to further reduce wastewater overflows from the combined sewer system, improving water quality in central Auckland waterways, swimmable beaches and the Waitematā Harbour.

Watercare is proposing to extend the CI tunnel approximately 1.6 km from its current termination point in Grey Lynn through to Point Erin Park in Herne Bay. The Point Erin Tunnel ('the Project') involves the continuation of the CI tunnel boring machine (TBM) through to a proposed new shaft site to be constructed in Point Erin Park. There are no surface works required along the alignment of the tunnel itself as the tunnel is constructed entirely below ground at depths at depths generally ranging between 20 m and 60 m depending on local topography.

The works at Point Erin Park will occur in two discrete locations within the park:

- The main construction area (approx. 3,150 m2) for the proposed terminal shaft which is located in the grassed area immediately to the south of the Point Erin Pools and allows for the retrieval of the TBM.
- The south western construction area (approx. 1,880 m2) which is located near the intersection of Curran and Sarsfield Streets and provides for the proposed control chamber and plant room, along with connections to the local sewer network.

Aboveground structures are limited to the proposed plant room and associated retaining walls, and a small vent structure in Point Erin Park. Once complete, the construction areas within Point Erin Park will be reinstated and retained as public open space. A Park Reinstatement and Landscape Plan will be prepared as a condition of consent to ensure landscape and amenity values are maintained and enhanced.

The Point Erin Tunnel will collect flows from the existing Sarsfield overflow collector and the St Mary's Bay Pump Station and transport it to Māngere Wastewater Treatment Plant (WWTP). As a result of the Point Erin Tunnel, the St Mary's Bay Tunnel will not need to store as much flow as this could be pumped into the Point Erin Tunnel and its storage capacity utilised, thus reducing the frequency of overflows from the St Mary's Bay Tunnel. The Point Erin Tunnel will also provide for future local connections and increased network resilience through the diversion of flows to CI. This will reduce flows along the Ōrākei Main towards the Hobson Bay Tunnel and the Eastern Interceptor where there are capacity constraints.

The TBM is expected to arrive at Point Erin Park in May 2025 (noting that timeframes may change as the TBM progresses along the CI alignment). Construction of the terminal shaft, control chamber and

associated works at Point Erin Park are expected to take approximately two years (i.e. around 2024 to mid-late 2026), although it may take longer depending on the TBM's progress and other factors such as supply chains and resourcing (e.g. up to three years). Construction will not be continuous over this full duration, rather there are likely to be periods of more intensive or less intensive construction and then 'quieter' periods, for example when waiting for the arrival of the TBM. The Project is expected to be completed mid to late 2026, with the northern section of CI including the Point Erin Tunnel are expected to be commissioned in 2026/2027.

This Assessment of Effects on the Environment (AEE) has been prepared to accompany the application by Watercare to Auckland Council for the resource consents necessary for the proposed Project. Resource consent is sought for activities including, but not limited to, earthworks, tree works (trimming, alteration and removal), construction noise and vibration, diversion of groundwater and dewatering, temporary diversion and discharge of stormwater, discharge to air, construction of a vehicle access, and construction of aboveground infrastructure. Overall, resource consent is sought as a Discretionary Activity.

Watercare has initiated consultation and engagement with mana whenua and key stakeholders and this will continue throughout the consenting and construction phases of the Project.

Watercare requests public notification of the application.

The Point Erin Tunnel will provide a number of positive effects, notably by increasing sewer capacity and network resilience within the local catchment and wider network, reducing wet weather wastewater overflow discharges and improving public health and environmental conditions, and enabling future works to improve coastal and freshwater quality in the Herne Bay and St Mary's Bay catchments.

Whilst efforts have been made to minimise the Project footprint and any disruption to receivers, there will be adverse construction-related effects during the construction phase of the Project. These effects will generally be of a temporary nature and/or can be mitigated with appropriate construction management. Mitigation measures are recommended throughout the specialist reports and in this application. Watercare has also proposed a suite of key draft consent conditions to ensure adverse effects are appropriately avoided, remedied or mitigated.

Importantly, this current application to extend the CI tunnel including the conditions proposed by Watercare is informed by practical on-the-ground experience gained through the CI project to date, including directly comparable experience in relation to the type of works (tunnel and shafts) and location of works (in a park and surrounding residential area). This provides a high degree of confidence around the potential effects of the proposed works and how these effects can be appropriately managed[1].

The Project is assessed as being broadly consistent with the relevant objectives and policies of the AUP and finds support from those enabling provisions that recognise the benefits of infrastructure, the technical and operational requirements of infrastructure, and the need for resilient, efficient and effective infrastructure. Overall, this application for the Point Erin Tunnel is considered to be in accordance with Part 2 of the RMA and promotes the sustainable management of natural and physical resources.

[1] Since construction on CI commenced in 2019, the CI project team has established all of the major CI construction sites along the main CI tunnel and over half of the main CI tunnel has been completed (southern section). CI construction activities and associated effects are therefore well understood and able be appropriately managed.

1 Introduction

1.1 Watercare and Central Interceptor

Watercare Services Limited (Watercare) is responsible for the provision of potable (drinking) water and wastewater services in Auckland. Watercare is a Council-Controlled Organisation (CCO) of the Auckland Council. The company's vision is to be '*trusted by our communities to deliver performance every day'*.

Watercare is currently building the Central Interceptor which is New Zealand's largest wastewater project, comprising a 14.7 km wastewater conveyance and storage tunnel that runs from Grey Lynn under central Auckland and the Manukau Harbour to the Māngere Wastewater Treatment Plant. Central Interceptor (CI) provides additional sewer capacity for growth and development and increases network resilience and security by duplicating the lower section of the ageing Western Interceptor. Importantly, CI results in a significant reduction in wet weather wastewater overflow discharges in the Meola Catchment, and this benefit is further extended into the Motions, Oakley and Whau catchments and to the local coastal waters on completion of the Combined Sewer Overflow (CSO) Collector Sewers which form part of the overall CI scheme. CI will reduce the average annual wastewater overflow volumes discharged into the receiving environment by approximately 80%. It also enables future works to further reduce wastewater overflows from the combined sewer system, improving water quality in central Auckland waterways, swimmable beaches and the Waitematā Harbour.

Watercare is proposing to extend the CI tunnel approximately 1.6 km from its current termination point in Grey Lynn through to Point Erin Park in Herne Bay. The Point Erin Tunnel ('the Project') involves the continuation of the CI tunnel boring machine (TBM) through to a proposed new shaft site to be constructed in Point Erin Park. This shaft site will allow for the retrieval of the TBM and connections to the local sewer network. The Project also requires the construction of a control chamber in the south western corner of Point Erin Park. There are no surface works required along the alignment of the tunnel itself as the tunnel is constructed entirely below ground.

The Point Erin Tunnel will collect flows from the existing Sarsfield overflow collector and the St Mary's Bay Pump Station and transport it to Māngere Wastewater Treatment Plant (WWTP). As a result of the Point Erin Tunnel, the St Mary's Bay Tunnel will not need to store as much flow as this could be pumped into the Point Erin Tunnel and its storage capacity utilised, thus reducing the frequency of overflows from the St Mary's Bay Tunnel. The Point Erin Tunnel will also provide for future local connections and increased network resilience through the diversion of flows to CI. This will reduce flows along the Ōrākei Main towards the Hobson Bay Tunnel and the Eastern Interceptor where there are capacity constraints.

The overall objectives of the Project are to provide additional sewer capacity and network resilience within the local catchment and wider network, reduce wet weather wastewater overflow discharges and improve public health and environmental conditions, and enable future works to improve coastal and freshwater quality in the Herne Bay and St Mary's Bay catchments.

1.2 Project overview

This Assessment of Effects on the Environment (AEE) report has been prepared on behalf of Watercare to support an application for resource consents to authorise the construction, operation and maintenance of the Point Erin Tunnel. This report has been prepared in fulfilment of section 88 and Schedule 4 of the Resource Management Act 1991 (RMA).

An overview of the application is provided below. A full description of the Project including the proposed works and associated consent requirements is set out in Sections 4 and 5, respectively, of this AEE report.

The applicant requests that the application be publicly notified. In accordance with section 95A(2)(a) and 95A(3)(a), public notification is therefore mandatory.

1.2.1 Proposed works

The Project involves the construction, commissioning, operation and maintenance of a wastewater interceptor and associated activities at Point Erin Park in Herne Bay. The Project can be broken into two distinct parts:

A. The wastewater interceptor tunnel (extension of the CI tunnel)

The Point Erin Tunnel involves the continuation of the CI TBM from the current termination point at Tawariki Street in Grey Lynn to Point Erin Park in Herne Bay. The tunnel will have a length of up to approximately 1.6 km and be constructed at a slope of between 1:750 to 1:1000. The tunnel has an internal diameter of 4.5 m and is located entirely below ground at depths generally ranging between 20 m and 60 m depending on local topography. It will reach its shallowest point of approximately 17 m as it enters Point Erin Park where the terminal shaft is proposed to be located[2]. There are no surface works required for the tunnel between Tawariki Street and Point Erin Park.

Excavation of the tunnel will continue using the existing CI TBM. This machine is currently in operation and is excavating the southern section of the CI Tunnel with daily excavation rates of approximately 15-20 m/day. The TBM uses a cutter head to grind through a variety of different soils and rocks. Construction spoil from the Point Erin Tunnel will be taken back down the tunnel and removed at the existing consented/designated CI May Road construction site and does not form part of this application (refer Section 1.5 below).

The proposed indicative alignment for the tunnel is shown in Figure 1.1 below. The final alignment will be confirmed through detailed design and will be located within a 10 m wide horizontal corridor i.e. within 5 m either side of the centreline shown in Figure 1.1 below. Vertically, the tunnel will be located within a corridor of -2 m/+2 m based on the centreline and tunnel invert level (refer to the long section of the tunnel in Appendix B). The final level of the tunnel and alignment within the 10 m wide horizontal corridor will be determined by the required hydraulic grade and the specific geology encountered during detailed design.

[2] All depths are 'depth to invert' i.e. the base interior level of the pipe, unless otherwise stated.

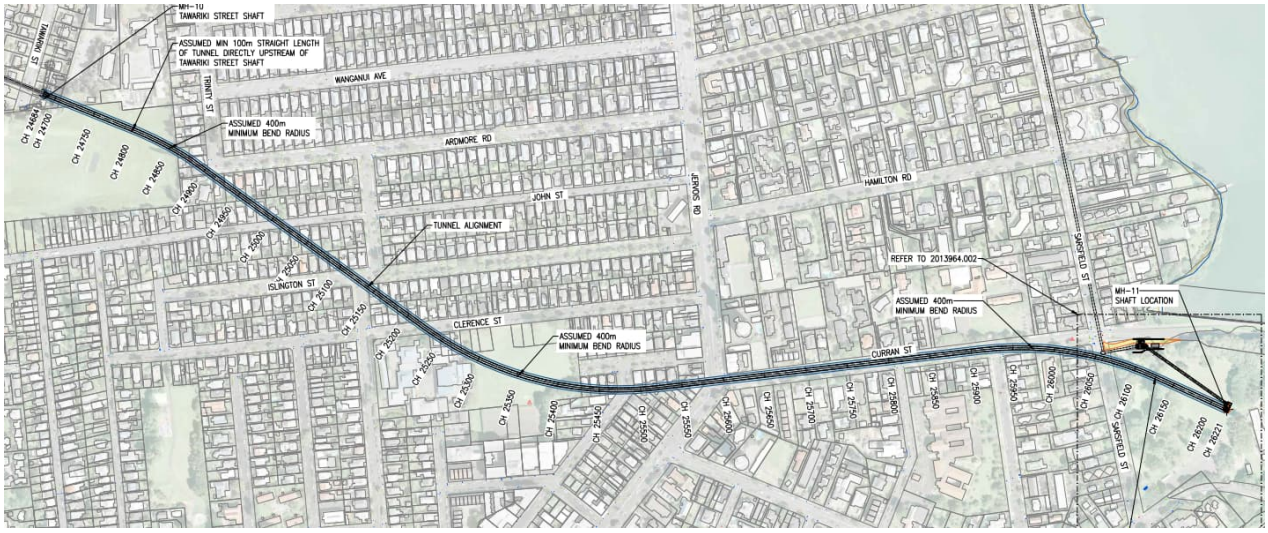


Figure 1.1: Proposed Point Erin Tunnel general alignment

B. The construction of a terminal shaft and control chamber in Point Erin Park

The proposed works at Point Erin occur in two discrete locations within the park:

- The terminal shaft and associated construction area is proposed to be located in the grassed area immediately to the south of the Point Erin Pools. The terminal shaft provides for the removal of the CI TBM.
- The control chamber, plant room and associated construction area is proposed to be located towards the southwest corner of Point Erin Park near the intersection of Curran and Sarsfield Streets (referred to as the south western construction area).

The Project works within the two locations in Point Erin Park broadly comprise:

- Construction of infrastructure (including the terminal shaft, control chamber, plant room, air vent and connections/adits) and removal of the TBM.
- Earthworks of approximately 5,000 m^2 in total across the two construction areas (approx. 3,150 m^2 in the grassed area to the south of the Point Erin Pools and approx. 1,880 m^2 in the southwest corner of the park).
- Tree works (pruning, works in the root zone, removal, relocation).
- Temporary works including retaining walls to create level working areas, site access and internal circulation, and contractor's site compound.
- Transport movements including delivery of plant and construction materials, removal of material excavated during the construction of the temporary shaft and control chamber, and removal of the TBM.
- Park reinstatement and landscaping following completion of construction works.

The proposed indicative layout for these activities is shown in Figure 1.2 below. A detailed description of the works is set out in Section 4 of this AEE.

The Project has been developed to a concept design stage. While all figures and dimensions provided are indicative and will be confirmed during the detailed design stage, they represent an appropriate basis for assessing the potential effects arising from construction and operation of the Point Erin Tunnel.

As the Project moves through the detailed design process and as the construction methodology is confirmed, it is likely that some design and construction details will change, but in each case these will remain within the envelope of effects assessed in this AEE and supporting technical documents.

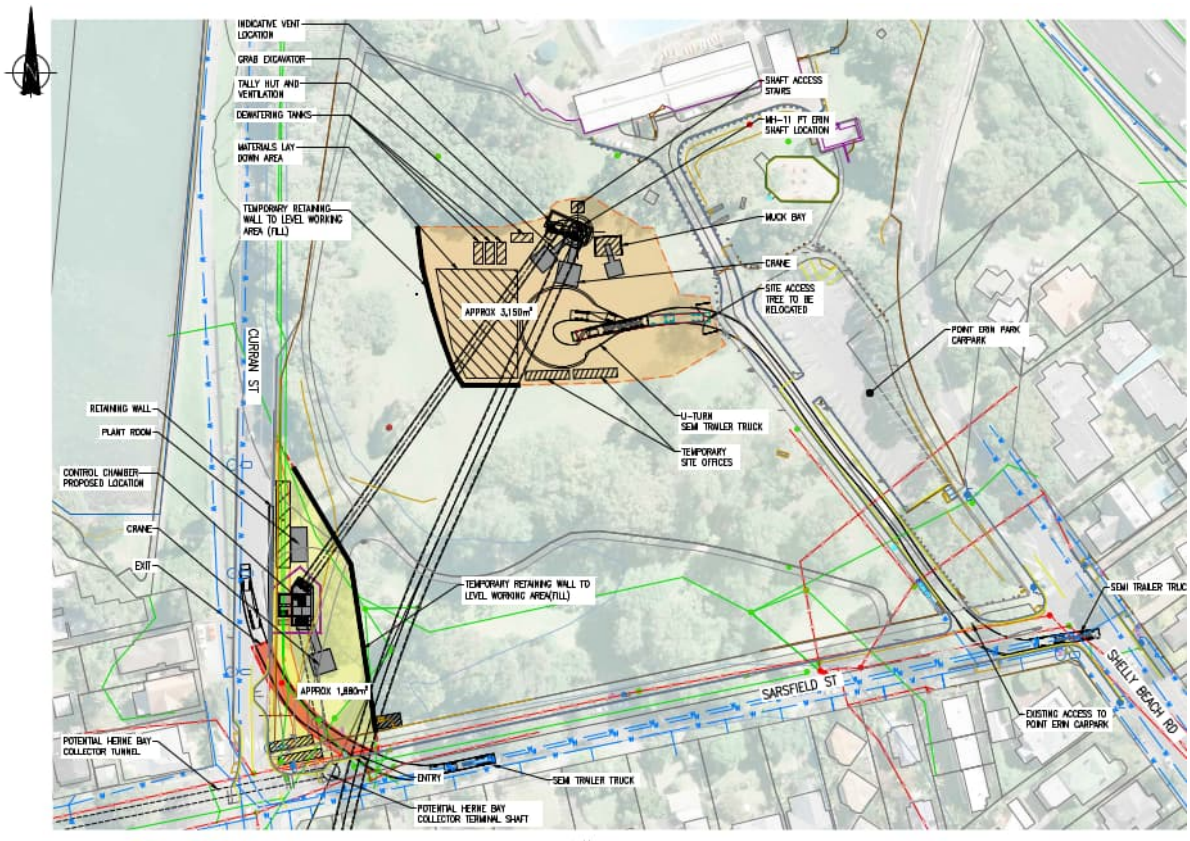


Figure 1.2: General layout of works within Point Erin Park showing main construction area (orange) and south western construction area (yellow).

1.2.2 Construction programme

The CI TBM is expected to arrive at Tawariki Street in Grey Lynn in around February 2025 and at Point Erin Park around May 2025 (noting timeframes may change as the TBM progresses along the CI alignment). Ideally, construction works at Point Erin Park will commence at least 12 months prior to the expected arrival of the TBM at Point Erin Park i.e. site establishment in the first half of 2024.

Overall construction works at Point Erin are expected to take approximately two years (i.e. around 2024 to mid-late 2026), although it may take longer depending on the TBM's progress and other factors such as supply chains and resourcing (e.g. up to three years). It is important to note that construction will not be continuous over this full duration, rather there is likely to be periods of more intensive or less intensive construction and then 'quieter' periods, for example when waiting for the arrival of the TBM.

The Project is expected to be completed mid to late 2026, with the northern section of CI including the Point Erin Tunnel expected to be commissioned in 2026/2027.

1.2.3 Approach to application

The Central Interceptor was granted consent in 2013[3] and construction commenced in 2019. Since this time, the CI project team has established all of the major CI construction sites along the main CI tunnel and over half of the main CI tunnel has been completed (southern section). Works-to-date include a number of sites located within public parks and reserves (e.g. Keith Hay Park, Western Springs, Miranda Reserve, Rawalpindi Reserve, Mt Albert War Memorial Reserve) and in close proximity to houses. CI construction activities and associated effects are therefore well understood and able be appropriately managed. This current application to extend the CI tunnel is informed by practical on-the-ground experience gained through the CI project to date, including directly comparable experience in relation to the type of works (tunnel and shaft) and location of works (in a park in proximity to houses). This provides a high degree of confidence around the potential effects of the proposed works and how these effects can be appropriately managed.

1.3 Applicant and property details

Table 1.1: Applicant and property details

Applicant	Watercare Services Limited	
	Point Erin Park – Terminal shaft and control chamber	Point Erin Tunnel wastewater interceptor alignment
Owner of application site	Auckland Council	Various The corridor for the wastewater interceptor tunnel traverses under approximately 72 properties between Tawariki Street and Point Erin Park (refer Appendix C).
Occupier of application site	Auckland Council	
Site address / map reference	Point Erin Park Curran Street road reserve	
Site area	4.2896 hectares more or less (Works area approx. 5,000 m^2)	
Legal description	Part Allotment 9-10 Section 8 Suburbs of Auckland, Part Deposited Plan 501 and Lot 3 Deposited Plan 48893 Curran Street – legal road reserve	
Certificate of Title reference	NA26B/385 (refer Appendix C)	
Council / Plans	Auckland Council Auckland Unitary Plan Operative in Part (AUP)	
Address for service during consent processing	Attention: Rachel Signal-Ross Phone: 09 352 2995 Email: RSignal-Ross@tonkintaylor.co.nz	
Address for service during consent implementation and invoicing	Watercare Services Ltd Attention: Xenia Meier Phone: 021 574 585 Email: Xenia.Meier@water.co.nz	

[3] The Grey Lynn Tunnel (GLT) section of the CI between Western Springs and Tawariki Street in Grey Lynn was consented in 2019.

1.4 Resource consent requirements

All necessary resource consents for the Project are sought as part of this application. Although specific consent triggers have been set out in Section 5 and summarised in the table below, to the extent that further consent matters are identified post lodgement of the application, these should also be considered as forming part of the application. The detailed assessments undertaken for the Project are such that all potential effects have been considered.

Table 1.2: Summary of resource consents required under the AUP

Rule reference / description	District / Regional Plan rule	Activity status
Point Erin Tunnel wastewater interceptor[4]		
Rule E26.6.3.1 (A117) - Earthworks in association with a network utility from 10 m^2 to 2500 m^2 and from 5 m^3 to 2500 m^3 within a Special Character Areas overlay[5]	DP	Restricted Discretionary
Rule E7.4.1 (A20) – Dewatering and groundwater level control exceeding the permitted activity standards	RP	Restricted Discretionary
Rule E7.4.1 (A28) – Groundwater diversion caused by an excavation as a restricted discretionary activity	RP	Restricted Discretionary
Terminal shaft and control chamber in Point Erin Park		
Rule C1.9 - Minor utility structure / above ground ancillary structures (plant room and vent shaft) associated with underground pipelines exceeding the permitted activity standards in E26.2.5.2(2) and (3)	DP	Restricted Discretionary
Rule E25.4.1 (A2) – Construction noise and vibration that does not comply with a permitted activity standard	DP	Restricted Discretionary
Rule E26.4.3.1 (A84) – Tree trimming or alteration in the open space zone that does not comply with standard E26.4.5.1	DP	Restricted Discretionary
Rule E26.4.3.1 (A88) – Works within the root zone not otherwise provided for	DP	Restricted Discretionary
Rule E26.4.3.1 (A92) – Tree alteration or removal of any tree greater than 4 m in height and/or greater than 400 mm in girth in the open space zone	DP	Restricted Discretionary
Rule E26.5.3.1 (A97/A97A) – Earthworks greater than 2,500 m^2/2,500 m^3	DP	Restricted Discretionary
E27.4.1 (A5) - Construction or use of a vehicle crossing where a Vehicle Access Restriction applies (within 10 m of any intersection) under Standards E27.6.4.1(2) or E27.6.4.1(3)	DP	Restricted Discretionary
Rule E36.4.1 (A56) – Infrastructure in a floodplain and overland flow path	DP	Restricted Discretionary
Rule E40 (A24) - Temporary activities associated with construction that exceed 24-months duration	DP	Restricted Discretionary
Rule E7.4.1 (A20) – Dewatering and groundwater level control exceeding the permitted activity standards	RP	Restricted Discretionary

[4] It is important to note that underground pipelines are a permitted activity in all zones in the AUP. Therefore the Point Erin Tunnel itself is a permitted activity. The resource consent requirements for the tunnel are limited to those identified in Table 1.2 above.

[5] As noted previously, these earthworks are entirely below ground / there are no surface works required for the tunnel.

Rule reference / description	District / Regional Plan rule	Activity status
Rule E8.4.1 (A10) – Diversion and discharge of stormwater runoff from an impervious area greater than 5,000 m^2 not otherwise provided for	RP	Discretionary
Rule E14.4.1 (A167) – The discharge of contaminants to air from a wastewater facility that is for the primary purpose of pumping, or storage or transfer of wastewater and not meeting the permitted activity standards[6]	RP	Restricted Discretionary
Rule E26.5.3.2 (A107) – Earthworks greater than 2,500 m^2 within the Sediment Control Protection Area (within 100 m of the coastal marine area)	RP	Restricted Discretionary
Rule E30.4.1 (A7) - Discharge of contaminants onto or into land without a Detailed Site Investigation (DSI)	RP	Discretionary

In addition to the above consent requirements, experience on other CI construction sites has indicated that contaminants above background levels may be present. On this basis, and out of an abundance of caution, consent is sought pursuant to Regulation 11 of the NES Soil as a discretionary activity.

Overall, resource consent is required from Auckland Council as a discretionary activity.

Due to the nature and scale of the project i.e. a large scale infrastructure project, a 10-year lapse period is sought.

1.5 Existing Watercare designations and consents

For the reasons explained further below in Sections 1.5.1 – 1.5.3, the Project will rely on the following existing designations and resource consents held by Watercare for CI and the Grey Lynn Tunnel (GLT):

- Designation 9466 and associated resource consents[7] which provide for the construction of the CI wastewater tunnel and the establishment of 19 construction sites, including sites at May Road and Western Springs. The purpose of the designation is the '*Construction, operation and maintenance of wastewater infrastructure*'.
- Designation 9468 and associated resource consents which provide for the construction of the GLT extension to CI from Western Springs to Grey Lynn, and the establishment of a construction site at Tawariki Street in Grey Lynn. Consistent with CI above, the purpose of the designation is the '*Construction, operation and maintenance of wastewater infrastructure*'.

1.5.1 CI Air Treatment Facilities

The CI ventilation approach with the Point Erin Tunnel in place will be consistent with the existing approach for the already consented CI network (including the GLT).

Air from within the 14.7 km CI network, including the 1.6 km Point Erin Tunnel extension to CI, is to be extracted for treatment and discharge at the primary air treatment facility (ATF) at the Māngere Pump Station. In storm events where wastewater inflows exceed the capacity of the Māngere WWTP and air cannot be extracted at the primary ATF, air flow is to be extracted at the secondary ATF located at May Road. Where the primary and secondary ATF cannot extract the air displaced by

[6] This is the only resource consent required for the operation of the Point Erin Tunnel. All other resource consent triggers are construction related.

[7] 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.

wastewater inflows to the CI tunnel, the air will be preferentially discharged from a pressure relief vent located at Western Springs[8]. In the event that this becomes surcharged during tunnel filling, air displaced from the remaining upstream section of the CI tunnel by wastewater inflows will need to be discharged upstream of the Western Springs vent. The resource consents for the GLT provide for the discharge via a pressure release discharge in these circumstances at Tawariki Street, Grey Lynn.

The primary and secondary ATF at Māngere Pump Station and May Road, and the ventilation facilities at Western Springs and Tawariki Street are already consented as part of the overall CI (including GLT) project. As an extension to the CI network, the Point Erin Tunnel will rely on these facilities in accordance with the relevant conditions of consent for the discharge of contaminants to air[9]. It will not give rise to any additional effects at these facilities beyond those already considered in the application material and evidence presented for CI[10]. As such, no further assessment of the extraction of air from the Point Erin Tunnel extension of the CI network for treatment at the primary or secondary ATF or at Western Springs or Tawariki Street is required to form part of this AEE. No alteration to the existing CI and GLT consent conditions is required.

As set out in Table 1.2 above, a resource consent to discharge contaminants to air is sought in this application specifically for the venting arrangement in Point Erin Park. This provides for continuous air entry into the terminal shaft to enable the flow of air downstream within the tunnel and to provide an outlet for air and relieve pressure within the CI system in the infrequent event that the tunnel fills beyond the primary and secondary ATF located at Māngere Pump Station and May Road, and beyond Western Springs and Tawariki Street. This is expected to occur on a very infrequent basis (less than once in every ten years) and only in a significant storm event meaning there would be significant stormwater dilution of wastewater as further described in Section 4.4.9.3 of this AEE.

1.5.2 May Road construction site

The Project will be constructed northwards from Tawariki Street in Grey Lynn using the CI TBM launched at the May Road construction site.

The TBM launched at the May Road site will tunnel to the Western Springs construction site[11] and then on to Tawariki Street (refer Figure 1.3). Excavation of the Point Erin Tunnel northwards from Tawariki Street will then continue using this TBM. As noted previously, this machine is currently in operation and is excavating the southern section of the CI Tunnel between the Māngere Wastewater Treatment Plant and May Road construction site.

Construction spoil from the Point Erin Tunnel will be taken back down the tunnel and removed at the CI May Road construction site in "general accordance" with the designation and existing consents, as the effects will not be materially different to those considered in the application material and evidence presented for CI.

It is noted that the effects of CI were assessed with the potential for the entire CI to be driven from the May Road construction site. However, the southern leg of CI is currently being driven from Māngere. As such, the amount of spoil removed from the May Road construction site and associated truck movements, including those required for the Project, would be less than what was originally anticipated and assessed.

The Project will increase the construction period at the May Road construction site by approximately 4 months beyond that previously considered through the CI and GLT applications. More specifically,

[8] The CI consent also provides for an ATF at Western Springs in future if this is demonstrated to be required.
[9] CI consent 40842 and GLT consent DIS60338392.
[10] The combined flows of St Mary's Bay and Herne Bay remain within the CI design criteria and there is no increase in flows to the Māngere WWTP beyond that considered in the application material and evidence presented for CI.
[11] The Project requires no aboveground works at the Western Springs construction site.

the tunnelling work for the Project will increase the duration, but not intensity, of the following activities at the site:

- Spoil storage and removal – Earthworks relating to spoil storage and removal at the site will not exceed 2500 m^3 and 2500 m^2 at any one time and are permitted activities (E26.5.3.1 (A95-96) of the AUP).
- Truck movements for spoil removal and delivery of precast concrete tunnel segments and other materials – the designation conditions relating to truck movement hours and traffic management will be complied with.

For works required at this site, the Project is consistent with the purpose of Designation 9466 set out above and will comply with the relevant designation and consent conditions. As such, no further assessment of the storage and removal of spoil from the Point Erin Tunnel at the May Road construction site is required to form part of this AEE. No alteration to the existing CI designation conditions, nor any new resource consents, are required.

1.5.3 Tawariki Street shaft site

The GLT currently terminates at 44 – 48 Tawariki Street[12] which is designated for wastewater infrastructure purposes as noted above. The designation provides for two shafts, known as the primary and secondary shaft. The primary shaft is currently the terminal shaft for the GLT and allows for the retrieval of the CI TBM (as well as connections to the Tawariki Local Sewer and Orakei Main Sewer). The secondary shaft to be constructed at the Tawariki Street site allows for the connection of future sewers from the Combined Sewers Overflow (CSO) network.

The Project does not require any aboveground works at the Tawariki Street shaft site beyond those already provided for in existing Designation 9468. The Project is consistent with the purpose of Designation 9468 and will comply with the relevant designation and consent conditions. No alteration to the existing GLT designation conditions, nor any new resource consents, are required.

The Point Erin Tunnel from the Tawariki Street shaft site to Point Erin Park is provided for under this current application.

[12] Watercare owns the property at 42 Tawariki Street and has served notice of its requirement to alter the existing designation to include this property.

Figure 1.3: CI including Point Erin Tunnel extension (Source: Watercare 2022)

1.5.4 Network discharges

The scope of the resource consents sought for the Project is for the construction, operation and maintenance of the proposed tunnel, terminal shaft and control chamber. No consents are required or are being sought for network discharges as part of this Project. The ongoing discharges from the network are addressed separately by the existing Comprehensive Wastewater Network Discharge Consent (NDC) held by Watercare.

2 Project Context

2.1 Watercare's responsibilities and corporate objectives

Watercare is responsible for the provision of potable (drinking) water and wastewater services providing lifeline utility services to 1.7 million Aucklanders. Secure and reliable water and wastewater services are critical to the economic, social, environmental and cultural well-being of Auckland's people and communities, and are a basic human right.

Watercare operates, develops, maintains and upgrades the wastewater network which consists of approximately 8,000 km of wastewater pipes, 18 treatment plants and over 500 wastewater pump stations. On a daily basis Watercare collects about 410 million litres of wastewater and treats it to a very high standard.

Watercare's obligations to deliver water and wastewater services for Auckland are established under the Local Government (Auckland Council) Act 2009 (LGA 2009). Section 57(1)(a) requires Watercare to '*manage its operations efficiently with a view to keeping the overall costs of water supply and wastewater services to its customers (collectively) at the minimum levels consistent with the effective conduct of its undertakings and the maintenance of the long-term integrity of its assets'.*

The LGA 2009 also requires that Watercare must give effect to the relevant aspects of the Auckland Council Long-term Plan (the Auckland Plan 2050) and must act consistently with other plans and strategies of the Council[13].

Under the Local Government Act 2002, Watercare must prepare an annual Statement of Intent (SOI) which sets out its activities and intentions for the next three years, and how they contribute to the Council's objectives. Watercare's SOI 2022 to 2025 identifies the Central Interceptor and Western Isthmus Water Quality Improvement Programme as significant wastewater network activities and programmes that will contribute to the Auckland Plan 2050.

2.2 Central Interceptor

The overall concept of the Central Interceptor is a 14.7 km gravity tunnel with two sewer tunnels extending from the main tunnel westward, a series of connections to the existing trunk sewer network to pick up wastewater flow, and a new pump station at Māngere WWTP. In addition to these works, the overall Central Interceptor scheme involves a series of smaller sewers (Combined Sewer Overflow (CSO) Collector Sewers) that extend out from the main project works into the local catchments to provide overflow mitigation at the numerous network overflow locations.

The Central Interceptor scheme has been designed to capture, store and convey for treatment wet weather overflows from the wastewater network in the Central Interceptor catchment. CI acts as a storage tunnel holding wet weather flows so that they can be pumped into the Māngere WWTP at a controlled rate.

If the Central Interceptor reaches capacity in wet weather, control gates can be shut to protect the tunnel from overfilling. These gates will cause wet weather flows to return to the engineered overflow points along the tunnel route. This will only occur in the heaviest rainfall events resulting in a significant reduction in overflow volumes and frequency of discharge within the CI catchment. Over time, ongoing separation across the CI catchment will gradually reduce the volume of stormwater entering the Central Interceptor Tunnel, allowing for long-term sustainable use of this important asset.

On completion of the main CI Tunnel, there will be significant positive effects. These include:

[13] Sections 58(1)and 58(2) of the LGA 2009, respectively.

- Providing additional sewer network capacity for growth and development.
- Providing asset security by duplicating the lower section of the ageing Western Interceptor.
- Significantly reducing the major wastewater overflows in the Meola Catchment. This benefit is further extended into the Motions, Oakley and Whau catchments and to the local coastal waters on completion of the CSO Collector Sewers.

With respect to overflow reduction effects, the CI scheme will reduce the average annual wastewater overflow volumes discharged into the receiving environment by approximately 80% and ensure ongoing compliance with the Network Discharge Consent (NDC)[14] for the CI catchment.

The wastewater network performance in 2017 and in 2030 with CI and the Western Isthmus Water Quality Improvement Programme is shown in Figure 2.1 below.

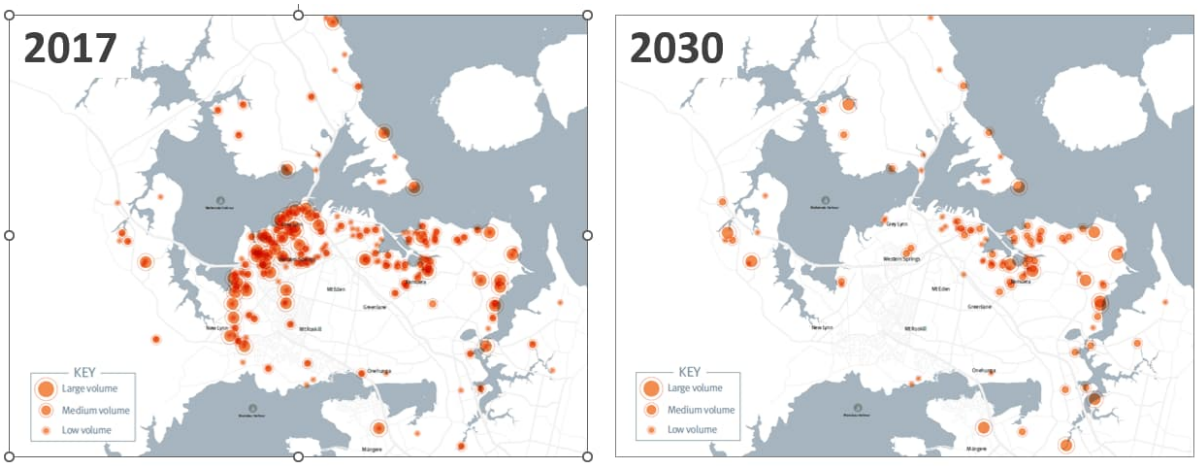


Figure 2.1: Wastewater network performance in 2017 and in 2030 with CI and WIWQIP

2.3 Western Isthmus Water Quality Improvement Programme

2.3.1 CSO in Herne Bay and St Mary's Bay

Parts of the Auckland Isthmus including Herne Bay and St Mary's Bay are serviced by the older components of Watercare's wastewater network. Much of this network was constructed in the earlier part of the 20th century to support a developing Auckland. The network servicing this area was constructed largely as a combined sewer system, where both wastewater and stormwater drain to the same pipe network. During dry weather conditions the pipe system conveys wastewater. However, during rainfall, stormwater enters the system and when the pipe is at capacity, the combined wastewater and stormwater flow discharges to the environment at specifically designed overflow locations, thereby avoiding uncontrolled discharges elsewhere in the network. While improvements have been made to this network over the years, stormwater inflows remain significant and will continue to increase with increasing growth and development and climate-change related impacts.

The total annual overflow volume from approximately 12 engineered overflow points (EOP) on the combined network in St Mary's Bay and Herne Bay is approximately 250 ML/year (refer Figure 2.2). These overflows affect the natural values of local beaches and waterways, including the Safeswim beaches of Herne Bay, Home Bay, Sentinel Beach, Masefield Beach and St Mary's Bay, creating

[14] There will still inevitably be significant wet weather events that exceed the storage capacity of the Central Interceptor scheme and when that happens, overflow from the wastewater network will occur. As set out in Section 1.5.4, Watercare has a Network Discharge Consent from Auckland Council to authorise discharges from the public wastewater network in the Central Interceptor catchment.

potential public health risks for recreational users, and reducing the environmental, amenity and cultural values of the waterbodies. With ongoing growth and development of the Auckland Isthmus this situation will continue to worsen if no improvements are made.

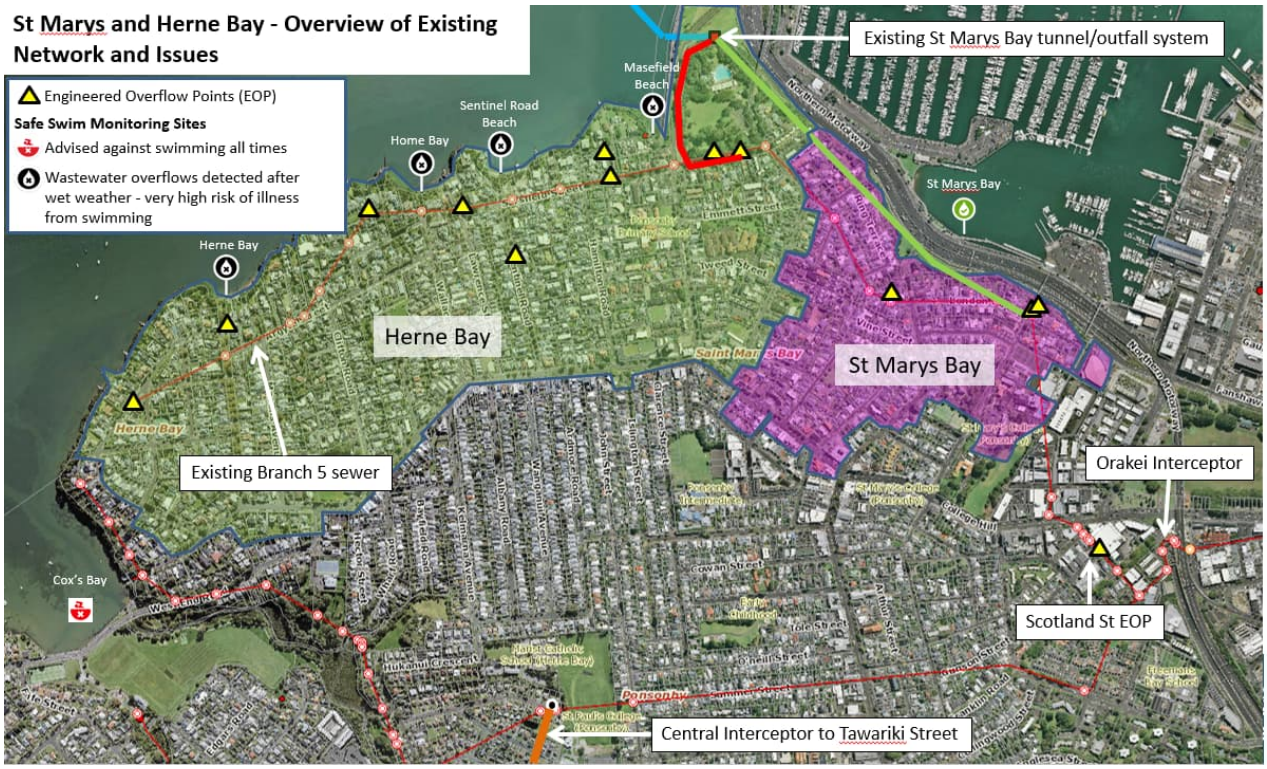


Figure 2.2: Combined network overflows from EOP in St Mary's Bay and Herne Bay (Source: Watercare and Auckland Council, 2022)

2.3.2 Aim of the WIWQIP

The Western Isthmus Water Quality Improvement Programme (WIWQIP) is a joint initiative between Watercare and Auckland Council that was established in 2017 and is aimed at reducing wastewater overflows and improving stream and beach water quality across the City's central western isthmus, including Motions Creek, Meola Creek, Oakley Creek, Whau Creek, and the coastal waters around Point Chevalier and the Waterview Inlet. In particular, it aims to significantly reduce the frequency and volume of overflows in the Western Isthmus. Locations where wastewater spills more frequently than two times per year on average will be reduced from 219 to 10 wastewater spill locations across the Western Isthmus through a combination of stormwater and wastewater upgrades, diversion of some of the overflows to CI and separation of the combined network in some areas (refer Figure 2.3 below).

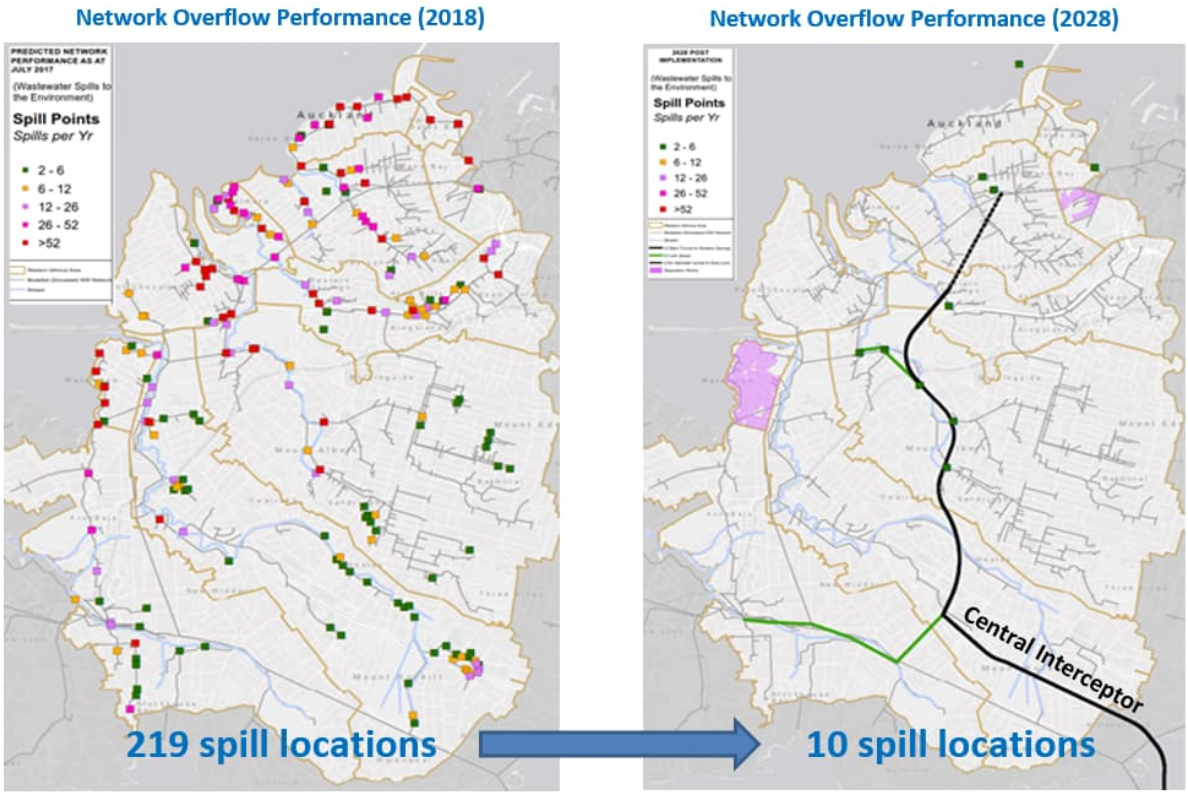


Figure 2.3: Wastewater network performance before and after WIWQIP (Source: Watercare and Auckland Council, 2022)

An overall schematic of the WIWQIP is set out in Figure 2.4 below. The WIWQIP includes the Central Interceptor extension from Western Springs to Grey Lynn (i.e. the 'Grey Lynn Tunnel / GLT') and local network upgrades. It also originally included early and widespread catchment-based sewer separation projects, including the St Mary's and Herne Bay separation projects. These works focused on separating the old, combined stormwater and wastewater pipes directing stormwater to the environment and wastewater to the Māngere WWTP via the Ōrākei Main. The project included a new public wastewater network, storage and a new pump station at Point Erin as well as private property drainage separation and connections.

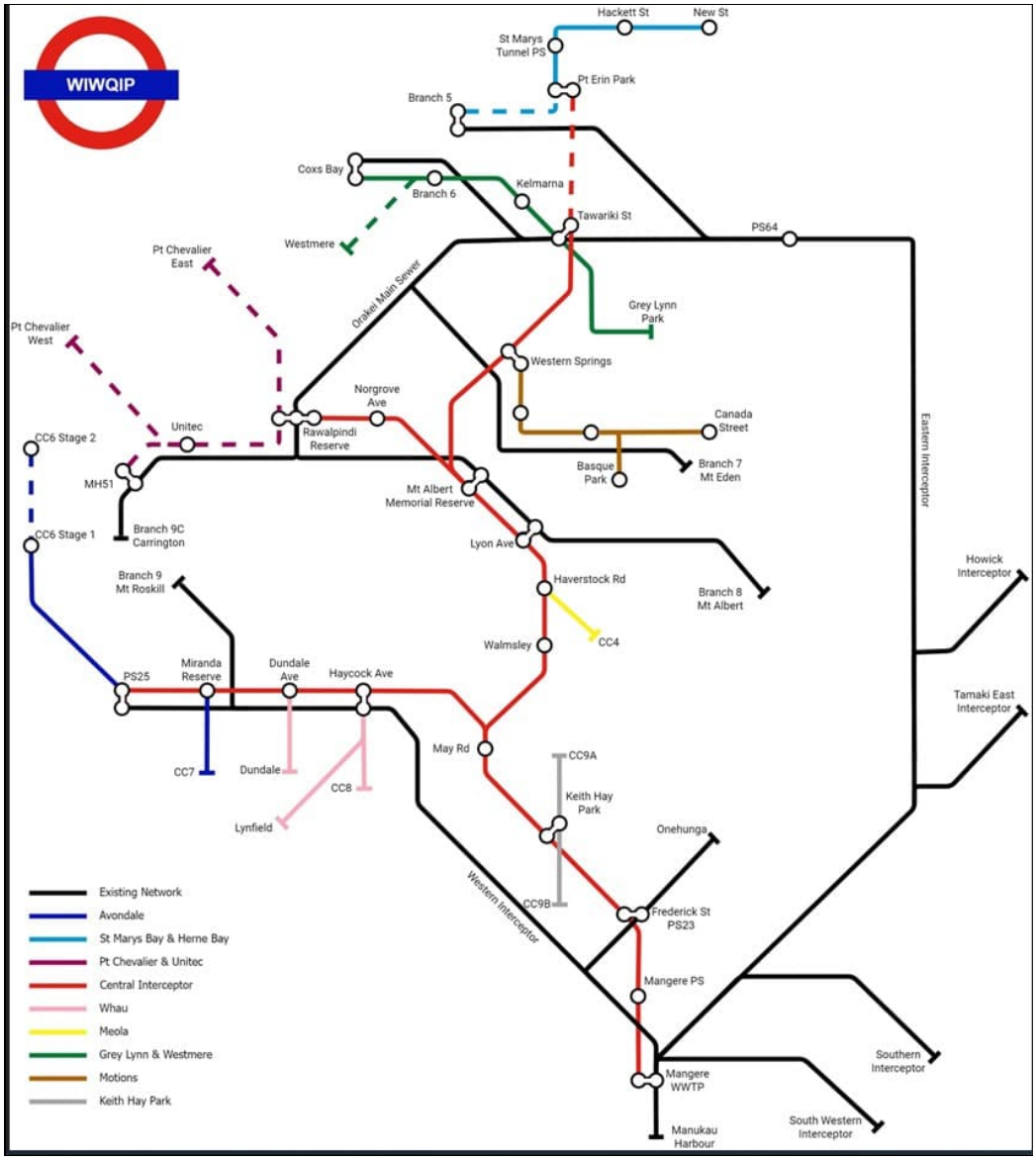


Figure 2.4: WIWQIP Schematic (Source: Watercare 2022)

2.4 Revised WIWQIP

2.4.1 Development of the CI extension option

Due to a range of factors the original WIWQIP 2017 programme has had to be revised. In particular, Covid 19 delays, associated supply chain issues and inflationary pressure on materials, and construction labour costs and shortages, as well as better knowledge of the work arising from detailed design have all contributed to the need to revise the original programme. In addition, experience from other separation projects has shown that they require extensive detailed investigations, the construction work can be very disruptive, and achieving full separation can be very challenging to achieve which in turn poses the risk of continuing wastewater contamination, albeit at a reduced volume and frequency compared with fully combined networks.

To achieve the WIWQIP aims, along with the wider network benefits outlined below, Watercare, along with Auckland Council Healthy Waters, proposes an extension of the Central Interceptor wastewater conveyance and storage tunnel from Grey Lynn to a new terminal shaft in Point Erin (the Point Erin Tunnel). A potential future Herne Bay wastewater pipeline will also ensure combined

overflows are collected and conveyed directly to the Central Interceptor[15], where they can be safely treated at the Māngere WWTP.

Importantly, the proposed Point Erin Tunnel will achieve the same, or better, water quality outcomes than the original proposal within the 2028 timeframe committed to through the WIWQIP. Over the longer term separation of stormwater and wastewater networks will remain an important tool to protect the capacity of the tunnel, continuing to improve water quality across the isthmus. A revised and more targeted programme of separation will continue across the isthmus. However, the location and timing of separation work will change from that originally proposed, and the programme will extend well beyond 2028.

Ongoing separation post 2028, including in the St Mary's Bay and Herne Bay catchments, will ensure that stormwater is gradually removed from the CI allowing for future sustainable growth across the isthmus. Various wastewater network upgrades are also programmed in the Motions, Grey Lynn, Mt Roskill and Owairaka catchments. Upgrades in St Mary's/Herne Bay, Westmere, Pt Chevalier and Carrington catchments are at the conceptual stage.

The proposed Point Erin Tunnel provides the same benefits as separation in terms of overflow reduction and water quality improvements within the immediate Herne Bay and St Mary's Bay catchments. As outlined in Section 2.4.4 below, this approach also provides wider network benefits which separation by itself would not provide and increases the overall resilience of the wastewater network.

2.4.2 Location of termination point

Options for siting the terminal shaft of the extension to the CI tunnel were determined by key technical requirements, in particular the need for space for all required equipment and construction activities. Given the significant progress already made towards constructing the CI tunnel in Auckland, construction activities and associated space requirements are well understood.

The need to be able to connect into the existing wastewater network, specifically the existing St Mary's Bay tunnel and Sarsfield overflow collector, and to provide for potential future local connections were also key factors in determining the location of the terminal shaft and associated infrastructure. Other important factors include the need to access the site during construction as well as for long term operational and maintenance requirements of permanent assets associated with the Project.

Point Erin Park was identified as the termination point for the extension to the CI tunnel as it was the only practicable option in the vicinity which did not directly impact on private property and which provided a connection point with existing wastewater infrastructure.

2.4.3 Layout within the site

The specific layout of infrastructure within Point Erin Park is also influenced by the technical requirements outlined above e.g. adequate space to enable construction, the need to connect into existing infrastructure and provide for future connections, provision for construction access and long-term access for operation and maintenance purposes. However, within these constraints, the following environmental considerations informed the site layout:

[15] Without the Point Erin Tunnel this would need to be pumped back into the Branch 5 and Orakei Main sewers which are already very constrained and at capacity, and subject to extensive growth in the CBD and wastewater overflows in the Newmarket, Epsom and Hobson Bay catchments.

- Avoiding effects on the scheduled Site of Significance to Mana Whenua and Significant Ecological Area Overlay located along the northern part of the Point Erin headland.
- Minimising the construction footprint while providing adequate space for constructability reasons i.e. to protect health and safety, ensure a level working platform and space for construction vehicles to manoeuvre, provide for an efficient construction programme. As noted above, given the significant progress already made on CI construction activities and associated space requirements are well understood. Experience on other CI sites has been that overly constrained works areas result in a more prolonged construction period.
- Minimising the impact on trees in the Open Space zone as well as on landscape and amenity values within the park.
- Minimising impacts on recreational uses and values and retaining parking and access to the Point Erin Pool.
- Minimising traffic effects on the surrounding roading network (and retaining parking and access to the Point Erin Pools as noted above).
- Minimising noise and vibration effects on surrounding receivers.

The proposed control chamber and plant room are sited in the south western corner of the park near the intersection of Curran and Sarsfield Streets. The location of the control chamber is determined by the location of existing infrastructure, specifically the St Mary's Bay pressure line and Sarsfield overflow collector. This location also facilitates future potential wastewater upgrades in the Herne Bay catchment.

The terminal shaft is proposed to be located in the grassed area immediately to the south of the Point Erin Pools. This area was selected to provide adequate space to undertake the works in a safe and efficient manner as well as to retrieve the TBM. The less-costly option of locating this shaft adjacent to the control chamber was rejected as it would necessitate the removal of additional mature trees in the south western corner of the park and would move the shaft construction activities closer to Curran Street and adjacent sensitive receivers. The pool carpark was also considered but was rejected on the basis that it would be too constrained and require the closure of the public carpark for a 2-3 year period including during the high demand summer months over a 3-year period 2024/25, 2025/26 and 2026/27.

2.4.4 Point Erin Tunnel operation

The Point Erin Tunnel will collect flows from the Sarsfield overflow collector and the St Mary's Bay Pump Station and transport it to Māngere WWTP for treatment. Currently, the St Mary's Bay Pump Station pumps back into the capacity constrained Branch 5 sewer. Diverting this flow to the CI Point Erin Tunnel will reduce pressure on the network downstream of Branch 5.

The Point Erin Tunnel will also provide for future connections, including the potential Herne Bay Collector Tunnel which would, if progressed, collect combined wastewater and stormwater overflows from Herne Bay with an associated reduction of wet weather flows along the Orakei Main, thereby reducing wet-weather overflow volumes and providing some benefit for the waterways and beaches from Newmarket through to Ōrākei. The diversion of flows into CI through the Point Erin Tunnel therefore has important benefits in terms of addressing existing capacity constraints, particularly in the Ōrākei Main and Eastern Interceptor, and increasing overall network resilience.

The total annual overflow volume from St Mary's Bay and Herne Bay is approximately 250 ML/year. Capturing up to 80% of the overflow volume from St Mary's Bay and Herne Bay at Point Erin does not increase the peak flows to the Māngere WWTP beyond that considered in the application material and evidence presented for CI. As such, resource consent conditions and compliance will continue to be met at the Māngere WWTP.

3 Description of Existing Environment

3.1 General site location and land uses

The Project alignment passes through the urban environment of the Auckland Isthmus, beneath a range of urban land uses in Grey Lynn and Herne Bay. The tunnel is located at a significant depth below ground, ranging from 20 m – 60 m depending on local topography. The only surface works required for the Project are located within Point Erin Park.

The Grey Lynn end of the tunnel is located within the Tawariki Street construction site (existing Watercare Designation 9468). Tawariki Street is a cul-de-sac defined by single-lot residential development. Land uses along the southern half of the tunnel alignment include residential dwellings, local businesses and a commercial area focused along the Jervois Road ridge line, a number of schools (Marist School Herne Bay, St Pauls College and Ponsonby Intermediate) and the road network.

The northern half of the alignment is largely contained within the Curran Street road corridor which is bordered by adjacent residential and business land uses. Ponsonby Primary School is also located towards the northern end of the alignment.

The Herne Bay end of the tunnel is located in Point Erin Park which is located on a coastal headland overlooking the Waitematā Harbour. The Auckland Harbour Bridge is located to the north of the park and the Westhaven Marina occupies a large area of the coastal marine area to the north and east of the headland across from SH1. Westhaven is also identified as being subject to the Tamaki Herenga Waka precinct.

Point Erin Park comprises a large area of grassed open space (approximately 2.1 ha) which is used for a variety of passive and active recreational purposes. The open space also contains a number of mature trees and vegetation. A dense and mature area of predominantly native trees which is identified as a Significant Ecological Area (SEA) in the AUP is located along the northern bank / cliff face of the headland. The SEA and the northern part of the Point Erin Pools are also identified as a Site and Place of Significance to Mana Whenua (refer Figure 3.3).

Point Erin Park is owned by Auckland Council. A small area of the park on the western boundary bordering the Curran Street onramp is held in a title which is technically road reserve. However, in practice this area is managed as part of Point Erin Park.

Point Erin Park is located within the coastal environment with natural character values concentrated around the historic cliff edge to the north of Point Erin Pools and the edges of the headland. However, the extensive modification, roading infrastructure and coastal reclamation around the headland have weakened connections between Point Erin Park and the coast.

A key feature of Point Erin Park is the Point Erin Pools which dominate the northern portion of the park. The pools are located on the high point of the headland, with the topography gently falling in all directions. The pool complex has operated in this location for over 50 years. It opens in the first week of November each year and closes in the last weekend of March and receives approximately 60,000 visitors across the season.

There are a number of other supporting amenities inside the park including a children's playground, toilet block, basketball half-court, paved walking/cycling paths, picnic tables and seating, drinking fountain and bike stands. The park is also used for a range of small-scale community events (as described further in the Recreation Assessment contained in Appendix H1). It is also identified as an off-leash area for dogs.

Vehicle access to the park is from Sarsfield Street which forms the southern boundary of the park. Car parking for 50 cars is available from the eastern end of Sarsfield Street. This access also provides for maintenance and operational access to the Point Erin Pools.

The park is bounded by Curran Street and the SH1 onramp to the Auckland Harbour Bridge on its western boundary, and the SH1 Shelly Beach Road offramp on its eastern side. Curran Street and onramp and Shelly Beach Road and offramp are subject to Waka Kotahi Designation 6718 for Motorway purposes: State Highway 1. This use of this road network contributes to an elevated ambient noise environment as discussed in the Noise and Vibration Assessment (contained at Appendix H2). Monitoring shows that daytime noise levels notably exceeds the AUP residential noise limit as is typical for locations dominated by traffic noise (particularly by roads associated with a motorway). Night time traffic noise is also expected to dominate background noise levels and exceed the relevant AUP limit[16].

The area immediately to the north of the park between the headland and the Auckland Harbour Bridge includes a grassed area of reclaimed land either side of the Curran Street SH1 onramp. The St Mary's Bay Pump Station (a Healthy Water's asset) is located in this area. The Harbour Bridge and SH1 on and off-ramps are a dominant feature within the localised setting of Point Erin. The Harbour Bridge is an iconic and highly recognisable feature of Auckland and has substantial social and historical associations. Masefield Beach and Reserve is located immediately to the west of Curran Street while the wider harbour edge to the west of Point Erin includes densely vegetated cliffs, bays and beaches.

The localised and wider context to the west, south and south-east of Point Erin includes residential development within Herne Bay and St Mary's Bay, located to the west of Curran Street and south of Sarsfield Street. Residential properties are of varying scale, typically between one to three storeys in height. Ponsonby Primary School is also located on Curran Street approximately 80 m south of the Project site at is closest point.

3.2 Zoning and special features

The relevant AUP zoning, and overlays and controls along the tunnel alignment, including the 10 m wide horizontal corridor (5 m either side of the centreline), and within Point Erin Park are set out in Table 3.1 and shown in Figure 3.1 and Figure 3.3 below.

Table 3.1: Zoning and planning notations

Location	AUP zones and notations
Tunnel alignment (from Tawariki Street shaft site to Point Erin)	
Tawariki Street shaft site	Designation 9468 – Grey Lynn Tunnel. Located at 44, 46, and 48 Tawariki Street, 183 Richmond Road, and Tawariki Street road reserve. Designated by Watercare for the purpose of the 'Construction, operation, and maintenance of wastewater infrastructure.'
From Tawariki Street shaft site to Jervois Road	Much of the tunnel alignment in this section passes beneath residentially zoned land, primarily Residential – Single House Zone with a Special Character Overlay over much of the area. An Historic Heritage Overlay Extent of Place is located along the western part of the alignment. There are areas of more intensive residential zoning near Tawariki Street (Mixed Housing Urban). Below are the applicable AUP zones and notations.

[16] Consistent with monitoring undertaken in 2017 in the same area as part of Healthy Water's St Mary's Bay project.

Location	AUP zones and notations
	• Special Purpose – School Zone. Applies to St Paul's College, located immediately to the north of Tawariki Street shaft site. • Residential – Single House Zone. Applies to all residentially used land between Tawariki Street shaft site and up towards Jervois Road. • Designation 4767 – Education purposes – primary school (years 0 – 8) (Ponsonby Intermediate). Ministry of Education. Underlying zoning is Residential – Mixed Housing Suburban Zone. • Historic Heritage and Special Character: Historic Heritage Overlay Extent of Place [rcp/dp] – 2516, Ardmore Road, Wanganui Avenue, Albany Road and Trinity Street Historic Heritage Area. As the tunnel alignment exits St Paul's College, it crosses beneath a small corner of this overlay. • Historic Heritage and Special Character: Special Character Areas Overlay Residential and Business – Residential Isthmus A. This overlay applies to properties overlying the tunnel alignment up to Jervois Road. • Business – Mixed Use Zoning – located along the Jervois Road ridge. • Road Zone – applies to roads the alignment passes beneath.
Between Jervois Road and Point Erin Park shaft site	From Jervois Road the tunnel alignment is beneath the Curran Street road reserve. Adjacent land is primarily zoned residential with a range of density with smaller pockets of overlays. • Road Zone – Curran Street • Business – Mixed Use Zoning – located on the intersection of Curran Street and Jervois Road. • Residential – Terraced Housing and Apartment Zone is located on the northern side of Jervois Road, either side of Curran Street. • Residential – Single House Zone. Located on the eastern side of Curran Street and the corner of Curran Street and Sarsfield Street. • Residential – Mixed Housing Suburban Zone. This applies to the majority of the western side of Curran Street and the eastern side between Tweed Street and Emmett Street. • Residential – Mixed Housing Urban Zone. This applies to the eastern side of Curran Street between Emmett Street and Sarsfield Street and the western side of Curran Street to the north of Sarsfield Street. • Historic Heritage and Special Character: Historic Heritage Overlay Extent of Place [rcp/dp] – 1704, Stichbury Apartments. • Historic Heritage and Special Character: Special Character Areas Overlay Residential and Business – Residential Isthmus A. This applies to the same area as the single house zone. • Designation 4768 – Education purposes – primary school (years 0 – 8) (Ponsonby Primary School). Ministry of Education. • Natural Heritage: Notable Trees Overlay: 71 – Pohutakawa: Located within the boundary of 9 Curran Street. 72 – English Oak: This is located within the extent of Ponsonby Primary School. • Open Space – Sport and Active Recreation Zone.
Residential areas along alignment	Plan Change 78 (PC78) was notified on 18 August 2022 and provides for significant intensification along the Point Erin Tunnel alignment extending from both sides of the Jervois Road ridgeline including into Herne Bay and St Mary's Bay. PC78 is Council's intensification plan change which incorporates the medium density residential standards and gives effect to policies in the NPS-UD as mandated by the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (Amendment Act). PC78 has identified some sites along the tunnel alignment and in the vicinity of the Project area as being subject to the combined wastewater network

Location	AUP zones and notations
	control qualifying matter which means that intensification is limited as anticipated by the Amendment Act (refer Figure 3.2 below).
Point Erin Park shaft site	
Terminal shaft construction area	The construction area for the terminal shaft occupies land largely zoned Open Space – Informal Recreation, with site access and a small part of the construction area located in the Open Space – Active Sport and Recreation also. See Figure 3.1: AUP zones (source: Auckland Council GeoMaps) for the zoning distinction. There are no relevant overlays or controls.
Control chamber construction area	The control chamber construction area is located within the Open Space – Informal Recreation Zone, however there is a small area zoned Strategic Transport Corridor (where the plant room is proposed). This area is part of the park and is managed as Open Space. There are no relevant overlays or controls.
Wider Point Erin Park (outside of the construction areas)	Point Erin Park is zoned Open Space. More specifically, the Open Space – Sport and Active Recreation Zone applies to the eastern and northern areas of the park, covering the Point Erin Pool and carpark and the Open Space Informal Recreation Zone applies to the south-western corner. Overlays apply within Point Erin Park, outside of the construction areas. These include: • Significant Ecological Areas (SEA) Overlay (SEA_T_6025). This overlay applies to the cliff face on the northern boundary of the park. No works are proposed within this area. • Mana Whenua: Sites and Places of Significance to Mana Whenua Overlay – 006, Te Koraenga Oka. This overlay applies to the northern third of Point Erin Park including the headland cliff. No works are proposed within this area.
Surrounding road network	• Road zone: Applies to Sarsfield Street and a small portion of Curran Street (before the on-ramp). • Strategic Transport Corridor: Applies to the Curran Street on-ramp (and small portion of Point Erin Park (where the plant room is proposed, however, this is managed as Open Space). • Designation 6718 – State Highway 1. Waka Kotahi. This applies to the road network surrounding Point Erin Park including Curran Street on-ramp and Shelley Beach Road off-ramp. No works are proposed within the designation.

Figure 3.1: AUP zones (source: Auckland Council GeoMaps)

Figure 3.2: Proposed PC78 Zones, showing Infrastructure – Combined Network Control qualifying matter (source: Auckland Council GeoMaps)

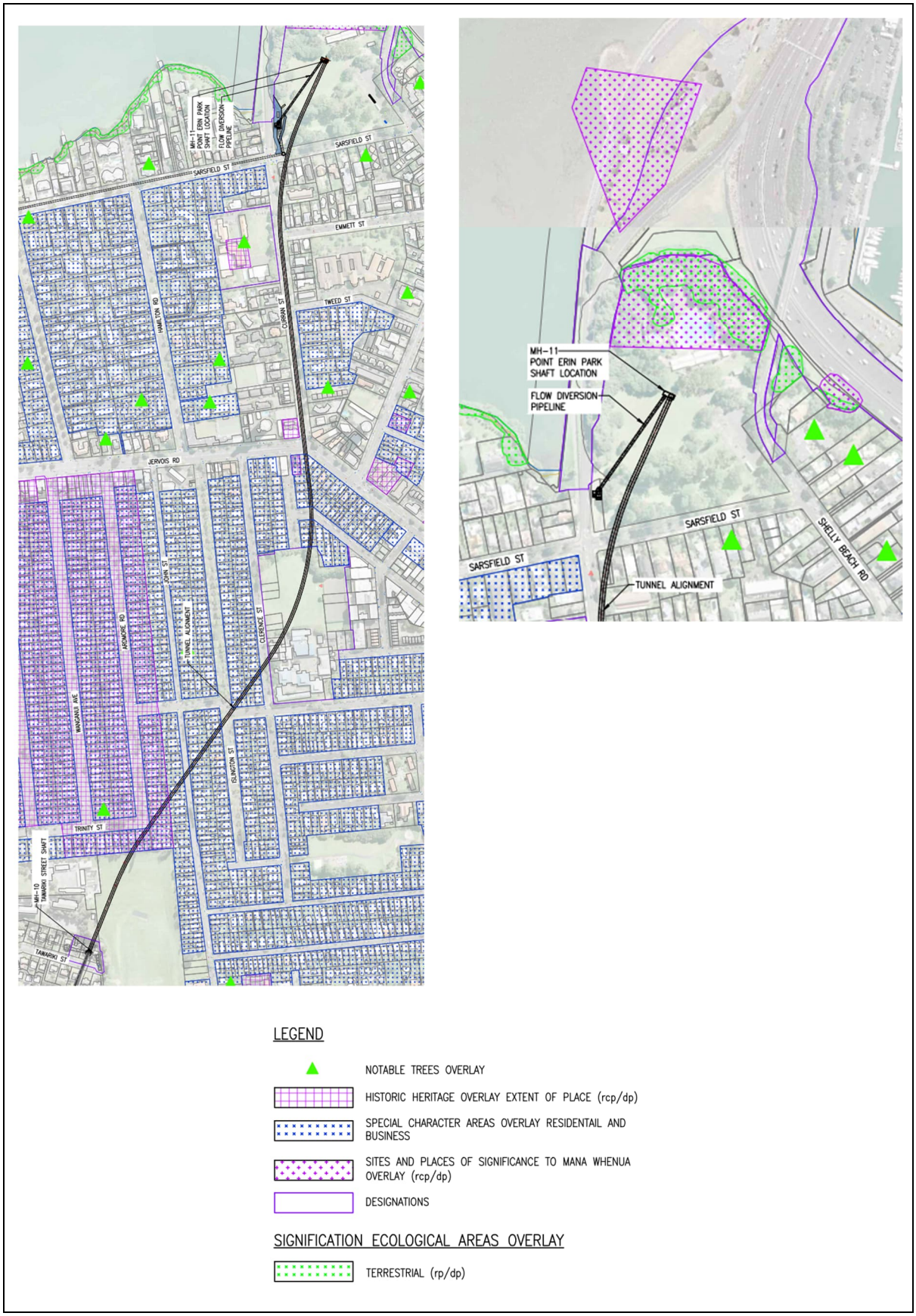


Figure 3.3: Relevant AUP Overlays and Controls (source: Auckland Council GeoMaps)

3.3 Road network

Sarsfield Street creates the southern border of Point Erin Park and has residential properties on the southern side. On street parking is available on both sides of Sarsfield Street however parking is limited to 120 minutes between 0800-1800 Monday to Friday.

Access to Point Erin Park and Point Erin Pools is located on Sarsfield Street (25 m to the west of the intersection with Shelly Beach Road). This access provides parking for 50 cars and is gated i.e. is closed between 2200 to 0600 daily. This access also provides for maintenance and operational access to the Point Erin Pools.

On the western side of the park, Curran Street is one way northbound leading onto the SH1 on-ramp to take traffic onto the Harbour Bridge and also continues around onto Westhaven (noting there is a short section which provides for southbound residential access near the intersection of Curran and Sarsfield Streets). The Curran Street / Sarsfield Street intersection has four legs and is controlled by STOP signage.

On the eastern side, SH1/the Northern Motorway runs along the bottom of the headland. Shelly Beach Road connects from the SH1 off-ramp via a bridge over the motorway and Curran Street merges onto this from Westhaven. Shelly Beach Road is one-way from the SH1 off-ramp, until its intersection with Sarsfield Street. The Shelly Beach Road / Sarsfield Street intersection is a give way controlled T-intersection, with a bay for right-turning movements from Shelly Beach Road.

Posted speed limits on all roads surrounding Point Erin Park are 50 km/h with the exception of 80 km/h on the SH1 on/off ramps and restrictions during certain hours/days to 40 km/h limits on Curran Street around Ponsonby Primary School.

3.4 Surface hydrogeology

Auckland Council Geomaps identifies a number of overland flow paths and areas susceptible to flooding beneath the tunnel alignment. However given the depth of the tunnel, the surface hydrogeology will be unaffected by the tunnelling works.

Within Point Erin Park, Auckland Council Geomaps indicates that there is an overland flow path (3 ha to 100 ha in size) in the southwestern corner of the park before it runs north along the motorway onramp toward the coastal receiving environment. The construction area in the southwestern corner is identified as being partly within a 1 per cent Annual Exceedance Probability (AEP) floodplain and flood prone area.

Figure 3.4: Overland flowpaths and floodplains (from Auckland Council Geomaps)

3.5 Geology and groundwater

The tunnel and shaft/chamber excavations are expected to only intercept the East Coast Bays Formation (ECBF) which is part of the Waitematā Group. GNS Science describe the ECBF unit as 'alternating sandstone and mudstone with variable volcanic content and interbedded volcaniclastic grits'. The upper surface of the ECBF has a variable weathering profile. This material is typically a firm to stiff silt or clay with a variable sand content. This is overlain by the unconsolidated fine sediments of the Tauranga Group and fill of different types and depths.

For the Point Erin Tunnel alignment, the water table is estimated to be shallowest toward the north and southern extents of the tunnel including Point Erin Park (0 to 0.5 m below ground level (bgl)), and deepest near the middle of the alignment (up to 20 m bgl).

3.6 Archaeology

Point Erin Park was originally in private ownership and contained a single residence and outbuildings. Point Erin was purchased by the Crown and became a public park in 1911. The original house was converted into a kiosk for the park and a band rotunda was built nearby. The Shelly Beach Baths associated with Point Erin Park were opened in 1912.

Over time, the Point Erin headland, including the park, and surrounds have been significantly modified. During the 1940's and 50's, the original foreshore surrounding Point Erin was reclaimed by the SH1 approaches to the Auckland Harbour Bridge, the Curran Street on-ramp and the Westhaven

marina breakwater. During this time, the southern stream gully of Point Erin Park was infilled and stormwater pipes installed.

With the loss of the Shelly Beach Baths to make way for the motorway approaches, the Point Erin Pools and carpark were constructed in the centre of the park and opened in 1962. Subsequent works including park facilities such as a playground, basketball halfcourt and footpaths, along with services and drainage have all resulted in further modification of the park.

While the proposed activity will not affect any known archaeological remains, Point Erin Park is considered an area of potential archaeological sensitivity given the recorded location of R11/78 Okā Pā and its scheduled extent of place (Te Koraenga Okā, AUP ID006 refer Section 3.7 below), and the location of late 19th century structures associated with early European occupation.

3.7 Cultural heritage

There are three Sites and Places of Significance to Mana Whenua identified in the AUP in proximity to the site as listed below. These sites are also identified on the Auckland Council Cultural Heritage Inventory (CHI).

- Te Koraenga Okā within the northern portion of Point Erin Park is a former pa site which is also scheduled (R11/78). Okā Pā at Pt Erin (Te Koraenga, or Okā, meaning 'the headland' or 'the place of burning') was part of a vast network of fishing stations and strongholds along the coastline of the Waitematā. During works for the construction of the Point Erin Pools in the early 1960s Okā Pā was recorded in the NZAA site records as having been destroyed. However in 1981 the site was revisited and was considered to have a few remaining areas of archaeological potential. This site is the closest to the proposed works within Point Erin Park. While the proposed works avoid the area identified in the AUP, the full extent of the pa site is unknown.
- Routu o Ureia. This site is located north of the Curran Street on-ramp. This site is also a Wahi Tapu site on the Heritage New Zealand list.
- One-Manu is located to the east of the proposed works at the base of the Point Erin cliff. The proposed works are separated from this site by Shelly Beach Road and houses.

The reclamation of the waterfront over time has resulted in substantial modification to the former headlands and Pā sites. Cultural values are not limited to those areas identified on available mapping databases. This area, as with much of the coastal margin of New Zealand, is of interest to Mana Whenua and may contain unknown archaeology from both pre and post European settlement.

3.8 Vegetation

The Point Erin Tunnel is located entirely below ground at depths generally ranging between 20 m and 60 m and will reach its shallowest point of approximately 17 m as it enters Point Erin Park. At this depth no roots from the trees within Point Erin Park are expected to be encountered.

Point Erin Park contains a large number of mature trees of varying species and conditions. The main construction area associated with the terminal shaft is located in the large, grassed area of Point Erin Park. This area is adjacent to a group of early-mature pōhutukawa trees, two mature oak trees and one mature macrocarpa tree. Several newly planted trees are located on the periphery of the proposed construction area. In addition, two mature elm trees hang low over the road and entranceway to the park off Sarsfield Street and may require pruning to improve overhead canopy clearance.

The south-western construction area will impact two mature pōhutukawa trees and a group of seven juvenile trees. The arborist has identified other trees (such as a willow myrtle, tulip tree and

syzygium trees) in, or adjacent to the southwestern construction area and has proposed their removal due to their poor condition.

As noted previously, a dense and mature area of predominantly native trees which is identified as an SEA is located along the northern bank / cliff face of the headland. No works are proposed within or within the vicinity of this area.

3.9 Soil contamination

A Preliminary Site Investigation (PSI) has been undertaken for the Project (Appendix H3). Historical aerial photographs indicate that Point Erin Park has been consistently used as a park since at least 1940 (the earliest available aerial photograph). That same aerial shows houses present in the surrounding land, and the local roads surrounding the park as established and consistent with the present-day layout.

The PSI concludes that an activity or industry described in the MfE Hazardous Activities and Industries List (HAIL) is unlikely to have been undertaken (both historical and current) within the construction areas.

4 Description of proposed works

4.1 Overview

The Project involves the construction, commissioning, operation and maintenance of a wastewater interceptor and associated activities at Point Erin Park in Herne Bay. As described in Section 1 of this AEE, the Project can be broken into two distinct parts:

1 The wastewater interceptor tunnel

The Point Erin Tunnel will run from Tawariki Street, Grey Lynn to Point Erin Park, Herne Bay. The tunnel is located entirely below ground at depths ranging between 20 m and 60 m and will reach its shallowest point of 17 m as it enters Point Erin Park where the terminal shaft is located (refer Figure 1.1 and the long section provided in Appendix B)[17]. There are no surface works required for the tunnel.

2 The Point Erin Park terminal shaft and control chamber

The works at Point Erin Park are proposed to occur in two discrete locations within the park:

- The main construction area surrounding the Point Erin Tunnel termination shaft and associated construction area (approx. 3,150 m^2) will be located in the grassed area immediately to the south of the Point Erin Pool.
- The southwestern construction area surrounding the control chamber, plant room and associated construction area (approx. 1,880 m^2) will be located towards the south west corner of Point Erin Park near the intersection of Curran and Sarsfield Streets.

The Project is described in detail below.

The Project has been developed to a concept design stage. As is standard for major infrastructure projects, as it moves through the detailed design process and as the construction methodology is confirmed it is likely that some details will change, but in each instances the potential effects will remain within the envelope of effects assessed in this AEE and supporting technical documents. All figures and dimensions provided are approximate and will be confirmed during the detailed design stage.

4.2 Background and experience to date

The Central Interceptor project was granted consent in 2013 and construction commenced in 2019. Since this time, the CI project team has established all of the major CI construction sites along the main CI tunnel and link sewer alignments. Over half of the main CI tunnel has been completed (southern section), Link Sewer C is almost complete and most of the 17 shafts along the CI alignment have been built.

These works-to-date includes a number of sites located within public parks and reserves (e.g. Keith Hay Park, Western Springs, Miranda Reserve, Rawalpindi Reserve, Mt Albert War Memorial Reserve) and in close proximity to houses. Given the significant progress already made towards constructing the CI tunnel in Auckland, the activities and effects of construction are well understood. The CI project team's experience over the past three years has demonstrated that the effects associated with the construction of the CI tunnel can be successfully managed by the CI designation and resource consent conditions, and the suite of management plans approved by Council for the current construction sites.

[17] As noted previously, all depths are 'depth to invert' i.e. the base interior level of the pipe, unless otherwise stated.

This application has been heavily informed by practical on-the-ground experience gained through the CI project to date, including directly comparable experience in relation to the type of works (tunnel and shaft) and location of works (in a park in proximity to houses). This provides a solid 'real-world' basis for understanding the nature of activities proposed at Point Erin, the actual and potential effects of those activities, and how the effects are best managed and mitigated to cause the least disruption to surrounding residents and to minimise environmental effects. Specific technical requirements and site specific characteristics have also been factored into the Project and informed the site location and layout (refer Section 2.4) as well as the approach to managing and mitigating effects on the environment and surrounding properties (refer Section 6 and proposed conditions of consent contained in Appendix A).

4.3 Wastewater interceptor tunnel

4.3.1 Description

The Point Erin Tunnel involves the continuation of the CI TBM from the current termination point at Tawariki Street in Grey Lynn to Point Erin in Herne Bay. The tunnel will have a length of up to approximately 1.6 km from Tawariki Street to Point Erin Park at a slope of between 1:750 to 1:1000. As noted above, the tunnel will typically be located between 20 m to 60 m below ground level and will reach its shallowest point of 17 m as it enters Point Erin Park.

The tunnel will take a reasonably direct route from Tawariki Street to Point Erin, with the alignment broadly following the road reserve beneath Curran Street to Point Erin [18](refer Figure 1.1). To allow for construction tolerances, a 10 m wide corridor centred on this alignment has been provided for i.e. within 5 m either side of the centreline shown for the length of the tunnel.

Vertically, the tunnel will be located within a corridor of -2 m/+2 m based on the centreline and tunnel invert level. The final level of the tunnel will be determined by the required hydraulic grade.

The tunnel will have an internal diameter of 4.5 m and will be concrete-lined with a HDPE (high density polyethylene) corrosion protection liner. There will be no aboveground structures associated with the tunnel between Point Erin and Tawariki Street.

4.3.2 Construction methodology

Excavation of the tunnel will continue using the existing CI TBM, specifically a Herrenknecht TBM Earth Pressure Balance (EPB) Shield machine (5.44 m outside diameter) shown in Figure 4.2 below. This machine is currently in operation and is excavating the southern section of the CI tunnel with daily excavation rates of approximately 15-20 m/day. The TBM uses a cutter head to grind through a variety of different soils and rocks. A schematic diagram of a TBM is shown in Figure 4.1.

As well as currently being used to construct the CI tunnel, this type of machine has been successfully used in Auckland in similar ground conditions on Project Hobson, City Rail Link, the replacement of the Rosedale Wastewater Treatment Plant Outfall and the Waterview Connection.

The tunnel drive direction will continue from the Western Springs site via the Tawariki Street site and will terminate at the Point Erin shaft. No aboveground works associated with the Project will be required at the Western Springs or Tawariki Street construction sites beyond what has previously been authorised.

The tunnel liner segments are brought into the tunnel via the May Road shaft and transported through the tunnel to the TBM. The segmental precast concrete tunnel liner is progressively placed behind the machine as the TBM moves forward. Figure 4.3 shows an example of an installed

18 A list of properties which the tunnel alignment passes beneath is provided in Appendix C.

segmental lining. The resulting 4.5 m-diameter pipe has a durable lining which protects the concrete from corrosion over its 100-year lifespan.

Infiltration of groundwater into the tunnel will be primarily controlled through the design and specification of near-watertight lining systems to limit water inflow. Groundwater inflows through the tunnel lining during construction are limited to less than 0.5 litre / m^2 of tunnel lining per day (13 m^3 per day for the 1.6 km length of the tunnel) based on lining specifications. CI experience to date indicates actual leakage is much lower than this. Any observable leakage would be repaired in situ prior to tunnel commissioning.

Construction spoil from the tunnel will be taken back down the tunnel and removed at the existing consented/designated CI May Road construction site and does not form part of this application (refer Section 1.5.2).

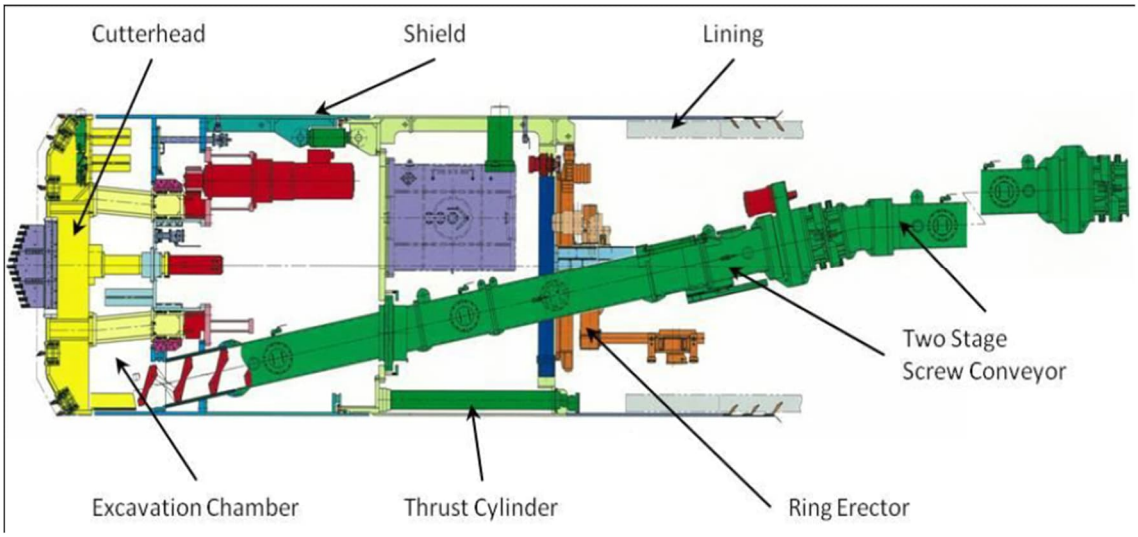


Figure 4.1: EPB TBM Schematic showing basic elements

Figure 4.2: TBM at factory testing

Figure 4.3: Precast Concrete Segmentally Lined Tunnel

Figure 4.4: CI Tunnel March 2022 – tracks and bins for removal of spoil from the tunnel

4.3.3 Tunnelling programme

The CI tunnelling operations occur 24 hours a day, 7 days a week as provided for under the CI and Grey Lynn Tunnel suite of consents and designations. Watercare seeks the same timeframes for the Point Erin Tunnel.

The CI TBM is expected to arrive at Tawariki Street, Grey Lynn around February 2025 where it will continue the final stage to the new terminal shaft site at Point Erin Park. The TBM advances in the order of 10 m to 20 m per day noting that actual tunnelling progress varies from day to day and week to week. The TBM is expected to arrive at Point Erin around May 2025. At the end of the tunnel drive the TBM will be retrieved from the Point Erin Shaft Site.

The Point Erin Tunnel project is expected to be completed mid to late 2026, with the northern section of CI including the Point Erin Extension expected to be commissioned in 2026/2027.

It should be noted that the dates above are estimates based on current progress of the TBM and could be subject to change.

4.4 Point Erin Park terminal shaft and control chamber

4.4.1 Description

As noted above, the works at the Point Erin Shaft Site will occur in two discrete locations within the park:

- The main construction area for the terminal shaft located in the grassed area immediately to the south of the Point Erin Pools.
- The south western construction area required for the control chamber, plant room and associated construction area located towards the south west corner of Point Erin Park near the intersection of Curran and Sarsfield Streets.

The Project works within these locations broadly comprise:

- The construction of the terminal shaft and removal of the CI TBM.
- A terminal shaft venting arrangement (air intake and pressure release).
- The construction of a control chamber.
- Connections from the control chamber to the Sarsfield overflow collector and St Mary's Bay pressure line, and the construction of a stub tunnel connection to facilitate a potential future connection to the proposed Herne Bay Collector tunnel.
- The construction of a plant room to house equipment to control the gates.
- Connections/adits between the terminal shaft, control chamber, vent and plant room, including a 2.5 m diameter piped connection between the terminal shaft and control chamber.
- Earthworks of approximately 5,000 m^2 in total across the two construction areas (approx. 3,150 m^2 in the grassed area to the south of the Point Erin Pools and approx. 1,880 m^2 in the southwestern corner of the park).
- Tree works (pruning, works in the root zone, removal, relocation).
- Temporary works including retaining walls to create level working areas, site access and internal circulation, and contractor's site compound.
- Transport movements including delivery of plant and construction materials, removal of material excavated during the construction of the shaft and control chamber, and removal of the TBM.
- Park reinstatement and landscaping following completion of construction works.

The proposed layout for these activities is shown in the below image:

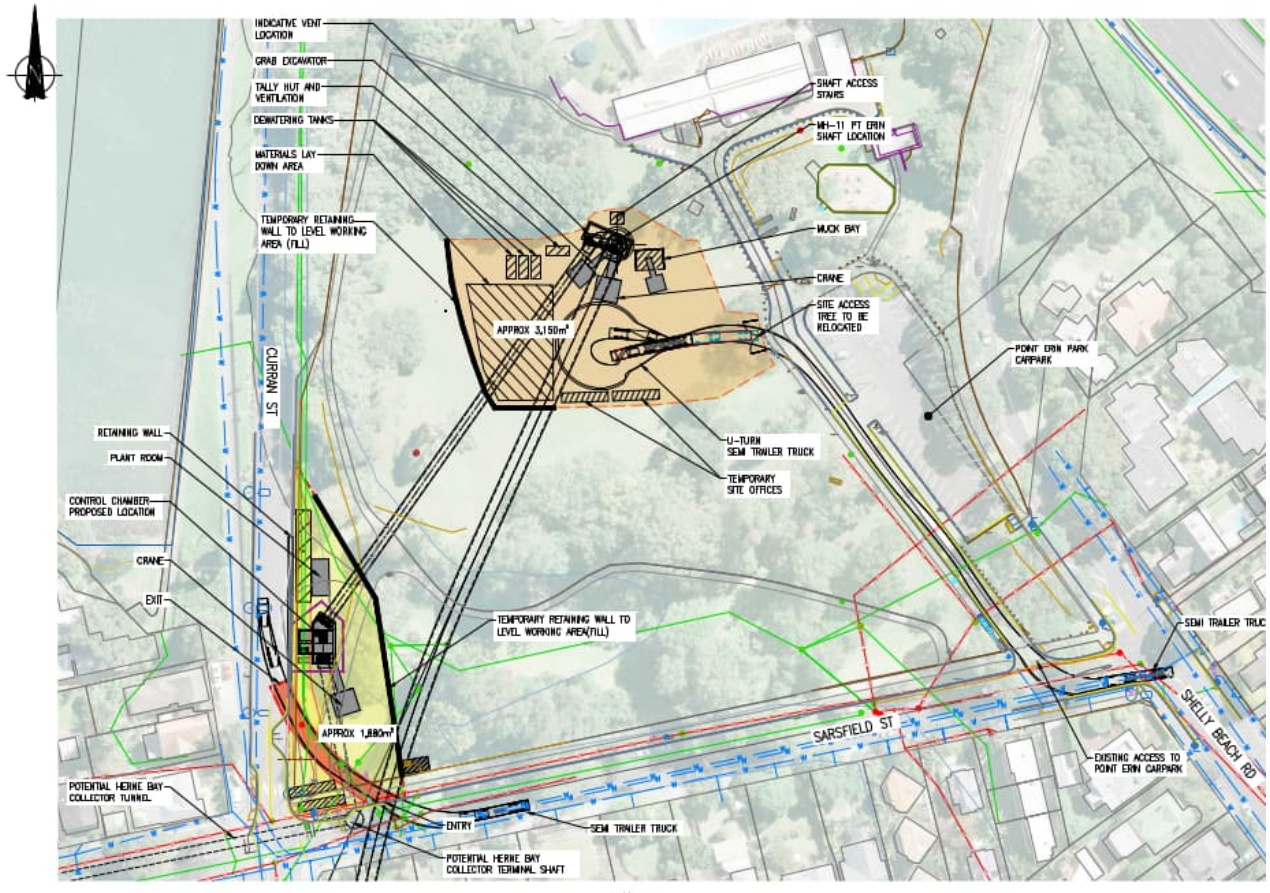


Figure 4.5: General layout of works within Point Erin Park showing main construction area (orange) and south western construction area (yellow).

4.4.2 Construction programme

The TBM is expected to arrive at Point Erin Park in May 2025 (as noted above, timeframes may change as the TBM progresses along the CI alignment). Ideally, construction works at Point Erin Park will commence at least 12 months prior to the expected arrival of the TBM at Point Erin to allow sufficient time for site establishment and terminal shaft construction prior to arrival of the TBM i.e. site establishment in the first half of 2024.

The CI terminal shaft construction is expected to occur over a 6-month period from around September 2024 to February 2025 potentially followed by a hiatus of a few months due to the time taken for the TBM to arrive at the shaft site. This will be followed by approximately 9 months of activity from May 2025 to February 2026 to remove the TBM and complete the internal structure of the main shaft.

The chamber construction is anticipated to take appropriately 4 to 6-months (indicatively from around January 2025 to June 2025).

Overall construction works at Point Erin are expected to take approximately two years (i.e. around 2024 to mid-late 2026), although it may take longer depending on the TBM's progress and other factors such as supply chains and resourcing (e.g. up to three years). It is relevant to note that construction will not be continuous over this full duration, rather there is likely to be periods of more intensive or less intensive construction and then 'quieter' periods, for example when waiting

for the arrival of the TBM. As indicated above, the shaft and chamber are likely to be constructed separately; although, there is the potential there may be some cross over in the construction programme with the programming of works determined by the Contractor.

The Project is expected to be completed mid to late 2026, with the northern section of CI including the Point Erin Tunnel expected to be commissioned in 2026/2027.

4.4.3 Construction hours

Construction hours are proposed to occur on the following general basis:

- Point Erin Park site construction activities – 7 am to 6 pm Monday to Friday, 8 am to 6 pm Saturday.
- Truck movements – 7 am to 6 pm Monday to Friday, 8 am to 6 pm Saturday.

There will be occasions where it is necessary to undertake construction activities outside of standard hours, similar to existing CI sites. However works outside of these standard hours will be limited as far as practicable, and this is supported by practical 'on-the-ground' experience at other CI sites which demonstrates that such activities occur intermittently and for a short period of time only.

Recent examples of works outside of standard construction hours at other CI sites are set out in the Assessment of Noise and Vibration Effects (Appendix H2). These examples show that for most CI sites, works outside of hours have been required generally less than five times per site, with most works outside of hours lasting for less than a week. The exception is overpumping and dewatering, which occurred for 24 hours a day, 7 days a week for durations between 1 and 4 months (depending on the location). However, overpumping and dewatering was able to demonstrate compliance with the night time limit of 45 dB $L_{Aeq.}$

Existing consent conditions for CI specifically provide for works to occur outside of standard hours for the following activities and scenarios[19]:

- Where, due to unforeseen circumstances, it is necessary to complete an activity that has commenced;
- Where work is specifically required to be planned to be carried out at certain times e.g. to tie into the existing network during periods of low flow, or to tie into tidal cycles for works in the CMA;
- For delivery of large equipment or special deliveries required outside of normal hours due to traffic management requirements;
- In cases of emergency;
- For the securing of the site or the removal of a traffic hazard; and/or
- For any other reason specified in the Construction Management Plan or Traffic Management Plan.

Consistent with the existing CI consents, the proposed conditions of consent for the Point Erin Tunnel contained in Appendix A also provide for these activities and scenarios.

In addition, experience on existing CI sites shows that it is likely that concrete pours and dewatering of the shaft and chamber may be required outside of standard hours[20]. These activities have therefore also been specifically provided for in the proposed conditions of consent contained in Appendix A.

[19] Subject to five working days' notice to council for authorisation prior to work commencing,
[20] Overpumping is already provided for in the second bullet point above i.e. to tie into the existing network.

Specific noise effects and proposed management and mitigation measures of works outside of standard hours will be addressed through the CNVMP (and ASCNVMP) required by the proposed conditions of consent. This process will also involve seeking Auckland Council certification prior to the works and adoption of appropriate mitigation, such as communication with surrounding properties, the use of acoustic barriers and other practicable controls such as locating the works away from dwellings to achieve appropriate noise levels. Experience on CI to date has shown that this approach appropriately ensures a BPO approach is taken to the management of these activities.

4.4.4 Construction methodology

As described above, two temporary construction areas are proposed within Point Erin Park; a main construction area associated with construction of the terminal shaft (approx. 3,150 m^2) and a secondary construction area associated with the control chamber in the south western corner (approx. 1,880 m^2). These construction areas will be in place for the duration of works, which is anticipated to be two years and up to three years.

In general, the construction methodology will include:

- Site establishment.
- Terminal shaft construction.
- TBM removal.
- Control chamber.

4.4.4.1 Site establishment

Construction at the Point Erin Park site will commence with site establishment works which generally involve the following activities:

- Establishment of the construction footprint (including tree survey and fencing off working area):

  The size of the construction areas have been kept to the minimum practicable size to minimise the amount of tree works and temporary closure of open space areas whilst ensuring adequate space for an efficient and safe construction layout. As discussed previously, given the significant progress already made constructing the CI tunnel, construction activities and associated space requirements are well understood. Experience on other CI sites has been that overly constrained works areas result in a more prolonged construction period.

- Vegetation clearance within the agreed construction footprint, and site establishment of both the terminal shaft and control chamber sites.
- Services relocation.
- Site levelling and drainage works, including construction of temporary retaining walls.
- Installation of perimeter sediment and erosion control measures (as per the draft Erosion and Sediment Control Plan (ESCP) attached as Appendix H4).
- Formation of stabilised construction access at each site / establishment of internal access and circulation for movement of construction traffic, plant and materials.
- Establishing a construction laydown area for marshalling of materials and temporary laydown during construction. This area will be used for:
  - Unloading materials away from work faces allowing trucks to get off the road and minimise traffic effects on local roads.
  - Storing formwork, plant and materials (reinforcing steel, mechanical equipment, pipework and general building materials).

- Establishment of site buildings, facilities and services (including worker welfare facilities, site offices, tally hut and ventilation, dewatering tanks, muck bay etc).
- Emergency equipment and activities including segregated muster area, staff safety briefing area, first aid room, storage of spill kits, firefighting equipment and man cages.
- Construction of site perimeter fencing and noise mitigation barriers (as required). The construction areas will be fenced for site security and health and safety reasons. The nature of this fencing will be determined through detailed design but is likely to comprise 1.8 m temporary fencing, or 2.4 m hoardings to provide visual and noise screening as required.

An indicative layout of a construction yard is shown in Figure 4.6, although it is likely that the actual layout and facilities within the construction yards could differ depending on the Contractor's requirements.

Figure 4.6: Haverstock Shaft Site construction yard

Tree removal

Vegetation clearance and pruning within the construction footprint will be undertaken as part of site establishment works to create adequate space for the establishment of the contractor's site compound, parking, access and circulation, and laydown areas.

Seventeen (17) trees are proposed for removal of which:

- Five (5) are required to be removed for the Project works and require resource consent due to exceeding the permitted activity threshold (i.e. 4 m high / 400 mm girth).
- Four (4) additional trees are recommended for removal as they are in poor condition (or with obvious tree risk features that warrant intervention). The removal of these trees also requires resource consent.

- The other eight (8) trees are below the permitted activity threshold and their removal does not require resource consent (noting landowner approval requirements still apply).

In addition to the 17 trees identified above, there will also be a limited number of trees where works within the dripline or pruning will be required[21]. This comprises:

- Site access – pruning of two existing mature elm trees on the Sarsfield Road entrance may be required to improve overhead canopy clearance.
- Terminal shaft – works within the rootzone of four trees.

Throughout detailed design of the permanent works and in the development of the construction site layout, all practicable measures will be taken to minimise the removal of quality, mature native trees. As set out in the proposed conditions (Appendix A), all works shall be undertaken in accordance with the Tree Protection Methodology set out in the Arboricultural Report and all tree removal and pruning shall be undertaken by a suitably qualified and experienced arborist.

Ngāti Whatuā Ōrakei has requested Watercare investigate taking seeds and cuttings from the two pōhutukawa trees that may be removed from the south western corner of Point Erin Park. Watercare is currently working with the project's arborist on this request.

Temporary retaining walls

Due to the varying contours on both construction work areas, earthworks will be required to level the ground to enable the formation of work platforms and access to a suitable width and gradient for plant and equipment access. Topsoil and any other material unsuitable for reuse will be stripped and disposed of off-site. Site levelling will be achieved through a mix of excavation and filling to form the construction area.

The size and design of temporary retaining walls required to form the flat construction areas will be determined by the Contractor. However, the height of the retaining walls will be minimised to the extent practicable whilst providing for a level construction area. Retaining walls are likely to be timber piles and removed (along with associated fill) at the completion of construction.

Based on the existing slopes on site, retaining walls are anticipated to be required in the following areas:

i Along the western boundary and a small part of the southern boundary of the termination shaft construction area (approximately 2 m in height); and

ii Along the northern and eastern boundaries of the south-western construction area of Point Erin Park (approximately 4 m in height).

The south-western construction area will be terraced into two platforms. The upper platform will include temporary fill works and will create a level area in the corner of the park to allow construction access and movement between Sarsfield Street and Curran Street. The lower platform will be cut into the landscape, and will include up to 4m high retaining walls along its western and southern sides. Smaller retaining walls will be provided along the eastern edge of the lower platform to tie-in to existing levels within the park. The retaining wall along the western side of the lower construction platform (parallel to Curran Street) will be permanent.

[21] Works within the rootzone are currently assessed to meet the permitted activity standards. However this rule trigger has been identified as part of the Project consent requirements should detailed design indicate encroachment into a rootzone is required.

4.4.4.2 Terminal shaft construction

A shaft is required at the termination of the CI tunnel to allow for the retrieval of the CI TBM. The shaft will be excavated to a depth of approximately 31 m, with the finished shaft invert approximately 29 m deep. The shaft diameter will be approximately 12 m for TBM retrieval but the finished inside diameter will be smaller.

On completion of the shaft and tunnel excavations, the shaft will be fitted out to form the permanent lined shaft. This will provide for flows from existing and future sewers into the CI tunnel. Operational access to the shaft will be required occasionally for inspection and maintenance. This will be provided via the existing access adjacent to the pool.

An approximately 2.5 m diameter pipe connection will be provided from the shaft to the control structure in the south west corner. This will be constructed via trenchless methods (likely pipe-jacking or alternative method).

Shaft construction

The shaft is expected to be excavated by conventional mechanical equipment (e.g. CAT 330 medium hydraulics excavator or similar) through overburden soils and East Coast Bay Formation (ECBF) material. This excavation will be undertaken progressively with the excavated material being loaded into skips which will then be lifted from the shaft by crane. These skips will then be emptied into a muck bin from which an excavator will load trucks for offsite disposal.

The excavation works will be managed to minimise sediment generation and runoff. As set out in the Erosion and Sediment Control Plan, management measures will include: maintaining a stabilised site; dedicated, bunded spoil stockpile areas; clean loading areas (to avoid vehicle tracking); and general housekeeping to maintain a tidy site. Contingency for a wheel washing facility will be provided near the entrance to the Site.

The shaft excavation will have a support system consisting of secant piles or another support system such, and will be designed to be near-watertight to limit groundwater drawdown. While sheet piling is provided for in this application, experience to date indicates that this is unlikely to be required[22]. Blasting and rock breaking will not be required for construction of the shaft.

In weathered to fresh ECBF bedrock, excavation support once piled is anticipated to consist of a combination of rock bolts, steel mesh and/or shotcrete depending on ground conditions. An example of a secant pile and rock mesh supported shaft is shown in Figure 4.7.

Permanent lining and interior shaft structures are required to form the hydraulic benching, provide ventilation and facilitate future access for inspection and maintenance. The shaft lining and interior structures will be constructed of either cast-in-situ concrete or precast concrete, and potentially of other corrosion resistant materials.

As noted above, construction of the terminal shaft will likely occur over a 4 to 6-month period from around September 2024 to February 2025 potentially followed by a hiatus of a few months due to the time taken for the TBM to arrive at the shaft site. This will be followed by approximately 9 months of activity from May 2025 to February 2026 to remove the TBM and complete the internal structure of the main shaft.

It is anticipated two cranes may be required on site at any one time during the construction period. The crane for the shaft construction is likely to be a typical crawler crane which is a 120 t crane, 7 m x 5 m footprint with extended belts. These cranes will be on site for the duration of the works within Point Erin Park.

[22] Sheet piling has not been used on any of the 10+ shafts constructed on the project to date.

Figure 4.7: Shaft at May Road supported by Secant Piles in overburden Soil and Shotcrete and Mesh in ECBF Rock

Figure 4.8: Haverstock shaft construction – secant piles

4.4.4.3 TBM removal

The TBM removal process will systematically recover each of the TBM elements through the terminal shaft. This will require the lifting and transportation offsite of the main TBM 'cans' as well as the support system gantries (18 elements). This extraction process will require approximately 21 lifts overall to recover these elements. This will require a specialised crane and wide-bodied transporters to remove each of the elements from the site.

The crane for the TBM recovery will be large - potentially a Liebherr LR 1280 crane based on the TBM installation methodology or an alternative based on equivalent lifting capacity. This larger crane will likely be on site for approximately 2 months.

Figure 4.9: TBM installation at Māngere shaft – June 2021

4.4.4.4 Control chamber

A control chamber is proposed to be constructed in the south west corner of Point Erin Park, close to the Sarsfield Street and Curran Street intersection and adjacent to the Sarsfield overflow collector and St Mary's Bay Pump Station pressure line. The chamber will be approximately 12 m x 12 m and 20 m deep to accommodate a peak design flow of 5.5 m^3/s. The chamber will divert flows from the Sarsfield overflow collector and the St Mary's Bay pressure main into the CI tunnel. In future, flows from the potential Herne Bay collector tunnel could also be provided for. The chamber will provide control gates to isolate the CI Point Erin Tunnel should the tunnel fill. Flows would then return to the existing arrangement.

The control chamber and associated works will comprise:

- Two independent flow control gates to isolate the CI tunnel.
- Connection to the Sarsfield overflow collector and St Mary's Bay pressure line.
- Connection to the CI Point Erin terminal shaft (2.5 m diameter pipe)[23].

23 During the construction of the connection tunnel, approximately 1,000 m^3 of drilled material will be removed.

- Stub tunnel to facilitate connection to the potential Herne Bay collector tunnel.
- A plant room and associated connection to the control chamber (See Section 4.4.9).

A conceptual arrangement for the control chamber is presented in Figure 4.10. This is intended to demonstrate the general scale and connectivity required noting that the final design is likely to change subject to detailed design.

Access to the control chamber for operational and maintenance purposes will be required on an intermittent basis. This will be provided for via a permanent sealed access off Sarsfield Street.

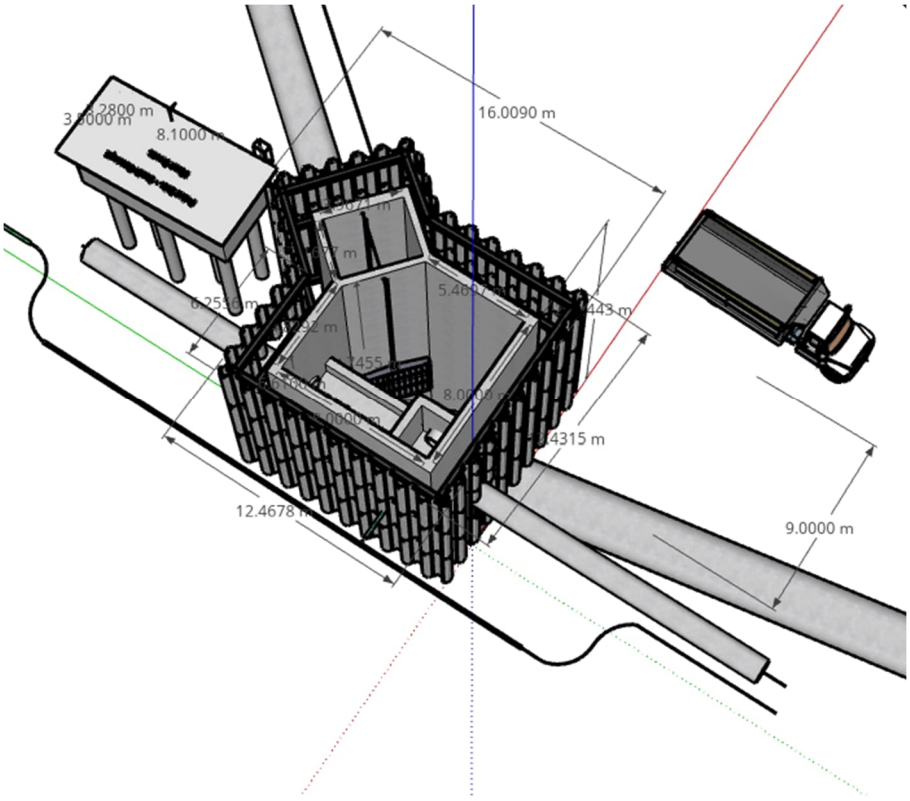


Figure 4.10: Chamber conceptual design

The construction of the chamber will follow similar construction methods as described above for the terminal shaft, and will require excavation of approximately 2,900 m^3. Installation of the stub tunnel connection towards Sarsfield Street will require the removal of approximately 350 m^3 of material.

Based on the construction works at previous CI sites, if sheet piling is required it is likely that it would be undertaken intermittently for an estimated total of 30 days and up to 60 days over a 4 to 6-month construction period for the control chamber.

An example of a sheet piled chamber is shown below.

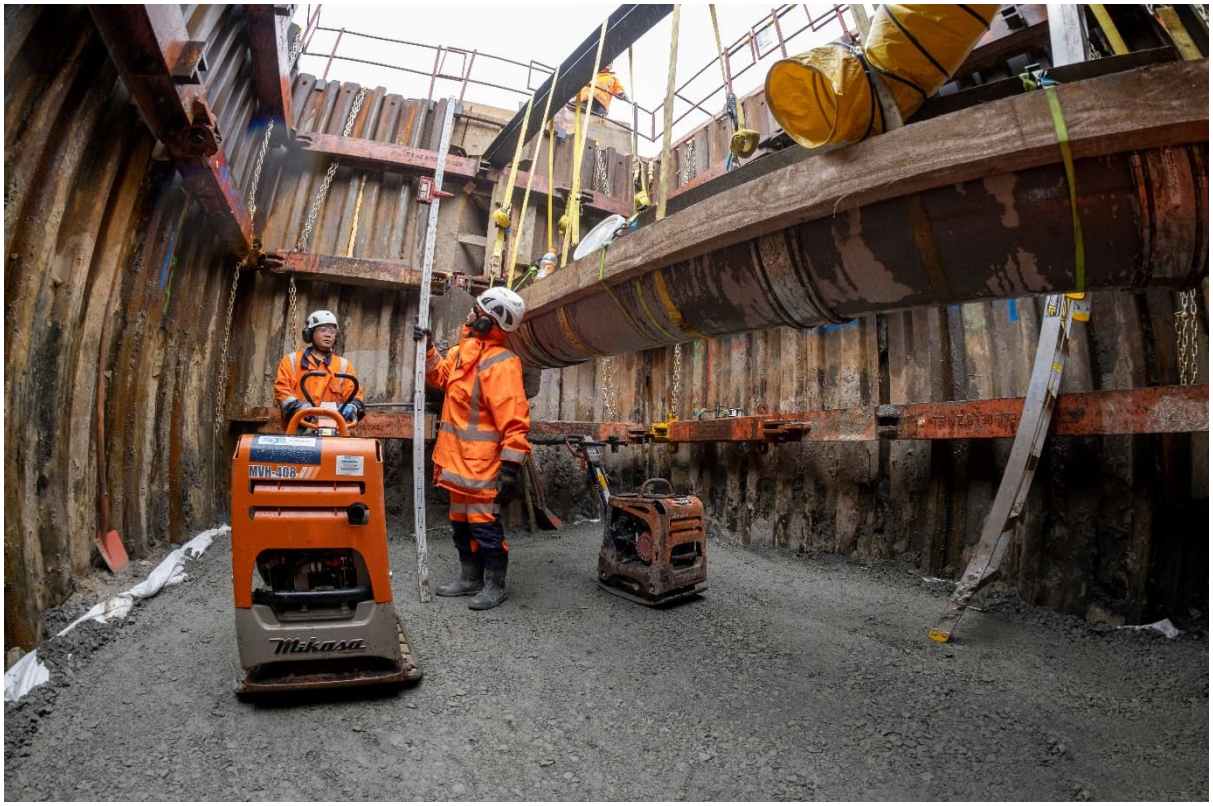


Figure 4.11: Haycock sewer chamber

4.4.5 Dewatering

The TBM has the ability to operate in open or closed mode, depending on the ground conditions and groundwater levels. Where the TBM is operating in competent rock, it will likely operate in open mode and some groundwater inflow into the tunnel is expected. However, this will occur for a short duration under any particular property as the TBM progresses along the alignment (at a rate of 10 to 20 m per day). Furthermore on completion of tunnelling every 12.5 m section, the lining is installed and grouted behind the TBM which effectively seals that section off from groundwater inflow.

Where appropriate, the TBM will operate in closed mode. In closed mode, no groundwater inflow into the tunnel or depressurisation of the aquifer immediately outside the tunnel is expected.

Infiltration of groundwater into the shaft and control chamber will be primarily controlled through the design and specification of excavation support systems, which reduce water inflows that would otherwise have to be pumped out of the shafts, treated and disposed of. However, some (limited) groundwater will still need to be removed from the proposed shaft and chamber at Point Erin Park, treated and disposed of.

Groundwater will be pumped out of the excavations at Point Erin and managed in accordance with *GD05 Chapter G1.0 Dewatering* or otherwise discharged to trade waste (subject to a trade waste agreement). Where dewatering water is discharged to the stormwater network, a water treatment plant will be provided on site and water will be treated to Auckland Council requirements (≥100 mm clarity and pH 5.5 – 8.5) prior to discharge. Where possible and appropriate, water may also be applied to adjacent trees during summer.

Any dewatering required will be limited to the duration of construction. On completion of construction there will be no dewatering or discharge of groundwater.

4.4.6 Site access – construction

Following establishment of erosion and sediment control measures and initial vegetation clearance, the Contractor will establish internal circulation and site access in and out of the two construction areas to allow for safe access of construction traffic. Construction vehicles will enter and leave the site in a forward direction avoiding the need for any reverse manoeuvres.

Vehicle tracking has been undertaken based on the largest anticipated vehicle (17 m semi-trailer) for both of the site accesses and is detailed in the Integrated Transport Assessment (ITA) (Appendix H9).

Access to the main construction area for the terminal shaft will be through the existing Point Erin Pool and public car park access road, which is accessed from Sarsfield Street. Vehicles arriving from the north will do so via Shelly Beach Road and exiting the site going north will be via Sarsfield Street and the Curran Street on ramp. Vehicles arriving and departing south will do so via either Shelly Beach Road or Curran Street. It is noted that throughout the construction period, the public car park will remain open and public access to the Pool and playground will be maintained.

The construction access for the southwestern construction area (including the control chamber, plant room and associated infrastructure) will be established off Sarsfield Street. This proposed access is located circa 20 m from the Curran Street/Sarsfield Street intersection and will provide for ingress of vehicles only. Similar to the terminal shaft, vehicles arriving from the north will do so via Shelly Beach Road and Sarsfield Street. Vehicles arriving from the south will do so via either Shelly Beach Road or Curran Street, except that heavy vehicles will be restricted to Shelly Beach Road – turning left onto Sarsfield Street and then right into the construction access for the southwestern construction area (i.e. heavy vehicles will not be allowed to access this construction area via Curran/Sarsfield Streets and turning left into the access).

Egress from the south-western construction access point will be onto Curran Street (just north of the existing solid median), where Curran Street is currently one lane. Once the truck has exited the site it will be able to safely manoeuvre into either lane 1 or lane 2 of Curran Street to continue either south via Curran Street/Shelly Beach Road or north via the SH1 on ramp.

An overarching CTMP, supported by Corridor Access Requests (CAR) and bespoke site-specific TMP (where required), will be developed. This management approach has been successfully applied across CI works to date.

4.4.7 Construction traffic volumes

Transport movements will be associated with a range of construction activities at the site, including delivery of plant and construction materials, staff access, site establishment, piling, removal of material excavated during the construction of the shaft and chamber, concrete pours, TBM removal and demobilisation, and site remediation and landscaping.

Construction traffic is anticipated to be generally generated in four stages[24], as indicated by the proposed construction programme:

- Stage 1 – Site establishment.
- Stage 2 – Terminal shaft excavation (main shaft) – involving removal of excavated material from the terminal shaft – September 2024 to February 2025.
- Stage 3 – Control chamber excavation and construction – involving removal of excavated material from the chamber, and construction of the chamber – January 2025 to June 2025.

[24] Noting that construction will not be continuous over this duration, rather there is likely to be periods of more intensive or less intensive construction and then 'quieter' periods, for example when waiting for the arrival of the TBM.

- Stage 4 – TBM removal (one off event) and completion of the internal structure of the terminal shaft – May 2025 to February 2026.

Table 4.1 below provides a summary of the number of construction vehicles predicted for each of the 4 stages of construction work identified above.

Table 4.1: Construction traffic trip generation

	Stage 1 – Site establishment (main and southwest access combined)	Stage 2 – Terminal shaft excavation (main access only)	Stage 3 – Control chamber excavation and construction (southwest access only)	Stage 4 -TBM removal and completion of terminal shaft (main access only)
Programme Date	July/August 2024	Sept 2024 to February 2025	January 2025 to June 2025	May 2025 to February 2026
Peak Truck vehicles/day	7	18	18	40
Peak Car vehicles/day	9	9	9	9
Peak total vehicles/day	16	27	27	49
Peak vehicles/hour	1.6	2.7	2.7	4.9

Therefore, the highest number of construction vehicles will occur during any single stage (Stage 4) is 49 vehicles during the day, which averages over a 10 hour working day at 5 vehicles per hour, or 1 vehicle every 12 minutes. There might be periods of overlap of these activities as described in the construction programme (such as Stages 2 and 3 and 3 and 4) therefore, conservatively, this would result in a total of 58 trucks and 9 car per day which averages over a 10 hour working day at 6 - 7 vehicles per hour, or 1 vehicle every 9 minutes. The potential construction traffic effects have been assessed on the basis of this worst-case scenario.

4.4.8 Park access during construction

Public access to areas of the park not required for construction will be maintained. In particular, access will be maintained to the Point Erin Pool, carpark and playground. Where works impact on existing pedestrian or cycle ways, alternative temporary accessways will be provided. Temporary accessways will be designed taking into account CPTED principles (Crime Prevention Through Environmental Design), with appropriate lighting and signage as necessary. The existing pathway through the south-west corner of Point Erin park will need to be diverted around the chamber construction area. An alternative temporary path and steps will be provided circa 90 m east of the existing footpath with appropriate wayfinding signage provided.

4.4.9 Permanent above-ground infrastructure

Once construction works are complete, the only above-ground components will comprise a plant room, associated retaining and operational vehicle access in the southwestern corner, and an air vent in the north-western corner of the green space area of the park.

4.4.9.1 Plant room

A plant room will be constructed in the south-western corner of Point Erin Park and is the main above-ground permanent structure associated with the Project. The plant room is required to house the equipment to operate the gates in the control chamber. The plant room will have a footprint of approximately 40 m^2 and be approximately 4 m in height, and will be designed to fit in with the surrounding landscape and maintain and enhance amenity.

Operation of the plant room will comply with all relevant permitted activity standards for noise and lighting.

4.4.9.2 Permanent retaining walls

Following construction of the plant room and control chamber, the construction platform will be reduced to approximately 10 m in width, with the permanent retaining wall along Curran Street being completed, and a smaller permanent retaining wall (or reinforced embankment) along the eastern edge of the platform. A permanent vehicular access will be retained adjacent to the plant room, between Sarsfield Street and Curran Street. It is anticipated that a handrail or safety barrier will be required along the top of the retaining wall for health and safety. The treatment of permanent retaining walls, including wall construction, design, and planting will be a key consideration for the Park Restoration and Landscape Plan (discussed further in Section 4.4.10).

4.4.9.3 Air vent

The terminal shaft will require a venting arrangement located in close proximity to the terminal shaft. The air vent is proposed to be located in the north-western corner of the green space area of the park. The air vent will serve two purposes:

- Air inlet for continuous air entry into the terminal shaft to enable the flow of air downstream within the tunnel. The CI network is designed to operate under negative pressure with air continuously drawn into the tunnel via air intakes along the sewer network.
- To provide an outlet for air and relieve pressure within the CI system in the infrequent event that the tunnel fills beyond the existing consented facilities (which depends on the scale and intensity of the rainfall event):
    - the primary ATF at Māngere Pump Station; and then
    - the secondary ATF at May Road; and then
    - the Western Springs pressure relief vent; and then
    - the Tawariki Street pressure relief vent.

The CI ventilation system is designed such that there is to be no discharge of odour from the Point Erin Park site during normal operations.

A discharge from the air vent is expected to be very infrequent e.g. less than once in ten years and only in significant storm events when the tunnel fills beyond the capacity of the existing consented facilities outlined above (noting further that this would be in a wet-weather scenario meaning there would be significant stormwater dilution). On the very infrequent occasion when exhausting of air from the vent is required, the discharge will occur vertically through an approximately 2.6 m^2 vent face within a uni-directional venting structure which will be approximately 10 m^2 (4 m x 2.5 m) in area and approximately 3 m high.

On rare occasions, emergency releases of the relatively small volume of air from the control chamber and connecting tunnel to the Point Erin Shaft may also be required. This emergency release would occur from the plant room with an expected discharge rate of air of 1.5 m^3/s which would occur for less than two minutes (100 seconds) based on peak anticipated inflows from the Sarsfield

overflow collector and St Mary's Bay pressure line. This discharge frequency is also anticipated to occur on a very rare basis and less than once in ten years.

The visual appearance of the air vent will be considered as part of the Park Restoration and Landscape Plan, to ensure it is visually integrated and responds to the immediate environment.

4.4.9.4 Operation and maintenance

Infrequent access (once or twice a year) to the two sites for ongoing maintenance and operation of the Point Erin Tunnel will be required. Access to the site for routine inspections will be via a car/ute. Where maintenance is required, this will typically be carried out using a smaller vehicle (likely a 7 m medium rigid truck).

For the main shaft and vent, access will continue to be from the Pool access road and then via the post and chain fence. Vehicles will then be able to turn around and leave the site forward facing.

For ongoing vehicle access to the control chamber, a similar 'one way' arrangement to that of the construction access is proposed:

- The ingress point on Sarsfield Road will be located circa 10 m from the Sarsfield Street/Curran Street intersection (at the location of the existing pedestrian ramp across Sarsfield Street). Bollards will prevent public access while also provide pedestrian access to the park (similar to the existing situation).
- Egress will be via an access point on Curran Street located north of the construction access. Egress would take place outside of peak traffic times. The approval of Waka Kotahi is being sought as this egress is in the SH1 designation. Similar to the ingress, this egress would contain bollards to prevent public access.

4.4.10 Park re-instatement and landscaping

Once construction works are complete, the park will be reinstated and landscaped. Other than the plant room (and associated retaining walls) and air vent, all other infrastructure will be flush with or below ground level. The starting point for reinstatement works is that they will replace what was at the site prior to construction in a like-for-like manner. Watercare proposes to work with mana whenua, Auckland Council Parks, and the local board (subject to their interest) post-consent to determine the final nature of the reinstatement works. The Landscape and Visual Effects Assessment Report (LVEA) and associated concept plans (Appendix H6) provides minimum reinstatement requirements that will be implemented by Watercare. However, the intention through the requirement for further consultation is to enable consideration to be given to mana whenua and Auckland Council aspirations and plans and build on these minimum reinstatement requirements.

At a minimum, the reinstatement works will include:

- Removal of construction yards, equipment, temporary retaining walls, and construction access not required for operation and maintenance access.
- Replacement of facilities that have been removed (e.g. footpaths and park furniture).
- Re-contouring and landscaping, which will comprise a mixture of grassed areas and tree planting (species mix and location to be determined through the proposed further consultation process).
- Mitigation planting to replace and mitigate the removal of trees within Point Erin Park
- Consideration of the treatment and design of permanent retaining walls, plant room and air vent, to include wall construction, design, planting and any health and safety requirements (eg fencing).

The objective of the design is to maintain and enhance the amenity of the surroundings and to visually integrate the buildings/structures into the surrounding environment. Planting may also be used to screen or visually anchor the permanent infrastructure and to enhance amenity values in the park. The remainder of the park will be grassed and landscaped. Manholes and hatches will be at ground surface and secured from public entry.

Consideration will also be given to opportunities to enhance Point Erin Park including its existing recreation and landscape values (e.g. additional or alternative walkways, seating, appropriate recognition of cultural values, etc).

Reinstatement and landscaping in the south western corner will take into consideration works required for the potential Herne Bay collector tunnel. While this project does not form part of this current application, the plans and timing for reinstatement will take into consideration potential future works in the south west corner of Point Erin Park.

5 Resource consent requirements

5.1 Auckland Unitary Plan

Resource consents are being sought to enable the Project works as described in this AEE. The application intends to include all necessary consents for those activities to occur, even if not specifically identified in Table 5.1 and Table 5.2. Therefore, the consent requirements set out below may not be an exhaustive list and if further consent matters are identified, including post lodgement of the application, these should also be considered as forming part of the application. The detailed nature of the effects assessments accompanying this application are such that all potential effects from the Project have been considered.

Table 5.1: Consent requirements for Point Erin Tunnel from Tawariki St to Point Erin Park[25].

Proposed activity	Description of works	Applicable rule and activity status
Groundwater diversion and dewatering	Dewatering and diversion of groundwater will be required for the construction of the tunnel, and will not meet the permitted activity standards.	E7.4.1 (A28) – The diversion of groundwater caused by any excavation, (including trench) or tunnel that does not meet the permitted activity standards or not otherwise listed is a restricted discretionary activity E7.4.1 (A20) – Dewatering or groundwater level control associated with a groundwater diversion authorised as a restricted discretionary activity under the Unitary Plan, not meeting permitted activity standards or is not otherwise listed is a restricted discretionary activity
Earthworks within Special Character Overlay[26]	The tunnel excavation will pass beneath the Special Character Areas – Residential Isthmus A Overlay and will involve earthworks of more than 10 m^2 and 5 m^3 (noting that as the tunnel will be progressively stabilised, earthworks volumes and areas at any one time will be less than 2500 m^2 and 2500 m^3).	Rule E26.6.3.1 (A117) – earthworks in association with a network utility from 10 m^2 to 2500 m^2 and from 5 m^3 to 2500 m^3 within a Special Character Areas overlay is a restricted discretionary activity

Table 5.2: Consent requirements for Point Erin Park terminal shaft and control chamber

Proposed activity	Description of works	Applicable rule and activity status
Plant room and vent shaft	Construction of an aboveground plant room and a vent shaft is proposed within the Open Space Zone. A small area of the plant room is located within a parcel of land which is technically unformed road.	Pursuant to Rule C1.9, minor utility structures / above ground ancillary structures associated with underground pipelines exceeding the permitted activity standards in E26.2.5.1(2) and (3), and

[25] As set out in Section 5.3, the tunnel itself is a permitted activity.

[26] The same approach to the AUP rules was taken for the Grey Lynn tunnel. It was determined by Matt Byrne, regional earthworks specialist for Auckland Council that because the earthworks for the GLT were below ground (and progressively stabilised) then no regional consent was required. See Grey Lynn Tunnel Auckland Council Technical Memos, Attachment 4, emails dated 1-13 March 2019.

Proposed activity	Description of works	Applicable rule and activity status
	These structures exceed the relevant permitted activity standards for minor utility structures (Rule E26.2.3.1 (A4)) and above ground ancillary structures associated with underground pipelines for the conveyance of wastewater (Rule E26.2.3.1 (A49)): The plant room will be approximately 40 m^2 and 4 m high, exceeding the permitted activity standards in the Open Space Zone (30 m^2/2.5 m), and in roads (2 m^2/1.8 m). The vent shaft will be located within the Open Space zone and will be 3 m high, which exceeds the permitted activity standard of 2.5 m in E26.2.5.2(3).	E26.2.5.2(2) and (3) is a restricted discretionary activity
Discharge to air from wastewater infrastructure	The total potential storage volume of the CI extension to Pt Erin exceeds the permitted activity storage volumes (Storage of wastewater must be within an enclosed tank of less than 4000 m^3; or between 4000 m^3 and 10,000 m^3 where it is fitted with an effective odour control system such as a bio-filter.	E14.4.1 (A167) – Wastewater facility that is for the primary purpose of pumping, or storage or transfer of wastewater and not meeting the permitted activity standards is a restricted discretionary activity
Groundwater diversion and dewatering	Dewatering and diversion of groundwater will be required for the construction of the shafts, and will not meet the permitted activity standards.	E7.4.1 (A28) – The diversion of groundwater caused by any excavation, (including trench) or tunnel that does not meet the permitted activity standards or not otherwise listed is a restricted discretionary activity E7.4.1 (A20) – Dewatering or groundwater level control associated with a groundwater diversion authorised as a restricted discretionary activity under the Unitary Plan, not meeting permitted activity standards or is not otherwise listed is a restricted discretionary activity
Temporary diversion and discharge of stormwater runoff from construction areas	The construction areas will be formed with compacted metal to create level work areas. Consent is conservatively sought for the construction period, on the basis that the combined construction areas will exceed 5000 m^2	E8.4.1 (A10) – Diversion and discharge of stormwater not otherwise provided for is a discretionary activity.

Proposed activity	Description of works	Applicable rule and activity status
Construction noise and vibration	Construction noise and vibration associated with the construction of the shaft and chamber will exceed the permitted activity standards, as described in the Noise and Vibration Assessment (Appendix H2).	E25.4.1 (A2) – Construction noise and vibration which exceeds the relevant standards is a restricted discretionary activity
Tree trimming and removal, and potential works within the root zone, within the Open Space Zone	As detailed in the Arboricultural Report (Appendix H7), two trees are proposed to be pruned where branches with a diameter greater than 100 mm are likely to be pruned. In addition, nine trees which are more than 4 m in height, and/or have a trunk girth greater than 400 mm are proposed to be removed. While the Arboricultural Report indicates works within the root zone will meet the permitted activity standards, this is being included on a conservative basis.	E26.4.3.1 (A84) – Tree trimming or alteration which does not comply with Standard E26.4.5.1 (trees in streets and open space zones) is a restricted discretionary activity. Rule E26.4.3.1 (A88) – Works within the root zone not otherwise provided for is a restricted discretionary activity. E26.4.3.1 (A92) – Tree alteration or removal of any tree greater than 4 m in height and/or greater than 400 mm in girth is a restricted discretionary activity.
Earthworks	Earthworks occur over an area of approximately 5,000 m^2 within Point Erin Park. The volume of earthworks will also exceed 2,500 m^3 (up to approximately 10 - 15,000 m^3 including the creation of level work platforms and control chamber (approx. 2,900 m^3), terminal shaft (approx. 3,500 m^3), connections including connecting tunnel (approx. 1,000 m^3) and stub connection (approx. 350 m^3).	E26.5.3.1 (district plan) Rule (A97) – Earthworks greater than 2500 m^2 is a restricted discretionary activity Rule (A97A) Earthworks greater than 2500 m^3 is a restricted discretionary activity E26.5.3.2 (regional plan) Rule (A107) Greater than 2,500 m^2 within the Sediment Control Protection Area is a restricted discretionary activity.
Vehicle crossing for operational access to the plant room	A vehicle crossing is proposed to be constructed in the south-western corner of Point Erin Park to provide operational access to the plant room. This may be within 10 m of the intersection of Sarsfield St and Curran St and as such, consent is sought[27].	E27.4.1 (A5) Construction or use of a vehicle crossing where a Vehicle Access Restriction applies under Standards E27.6.4.1(2) or E27.6.4.1(3) is a restricted discretionary activity
Infrastructure within a floodplain and overland flow path	The proposed south-western construction area will temporarily occupy part of the identified floodplain and overland flowpath.	E36.4. (A56) Infrastructure in areas subject to floodplains and overland flowpaths not otherwise provided for is a restricted discretionary activity
Specific temporary activities not otherwise provided for	Temporary activities associated with building or construction, including site office, fencing,	E40.4.1 (A24) Temporary activities associated with construction that exceed 24-months duration are

[27] Efforts will be made through detailed design to move the vehicle crossing further from the intersection.

Proposed activity	Description of works	Applicable rule and activity status
	structures and buildings that are accessory activities, may exceed 24-months in duration.	provided for as a restricted discretionary activity
Discharge of contaminants	While the Preliminary Site Investigation (PSI) at Appendix H3 did not identify any historical use of contaminants on the site, out of an abundance of caution (given no soil sampling has occurred), consent is being sought for the discharge of contaminants. Compliance with the permitted or controlled activity standards will not be achieved with the standards in E30.6.2.1 as a Detailed Site Investigation (DSI) has not yet been undertaken.	E30.4.1 (A7) Discharge of contaminants into air, or into water, or onto or into land, without a Detailed Site Investigation (DSI) as a Discretionary Activity.

For those restricted discretionary activities identified above, the Council has restricted its discretion. These matters are identified in Appendix D. The assessment in Section 6 of this AEE incorporates these matters, noting that overall the application falls for consideration as a discretionary activity.

5.2 NES Soil

The NES Soil applies to land where an activity described in the Hazardous Activities and Industries List (HAIL) is occurring, has occurred or likely to have occurred. The Preliminary Site Investigation attached as Appendix H3 concludes that it is unlikely that a HAIL activity has been undertaken within the construction areas however, experience on other CI construction sites has indicated that contaminants above background levels may be present and therefore HAIL activity I[28] may be applicable. On this basis, and out of an abundance of caution, consent is sought pursuant to Regulation 11 of the NES Soil as a Discretionary Activity.

5.3 Permitted activities

The activities in Table 5.3 have been identified as permitted activities under the AUP. An assessment against the relevant standards is provided in Appendix E.

Table 5.3: Permitted activities relevant to the proposed activity

Proposed activity	Description of works/activity	Applicable rule and activity status
Wastewater infrastructure	The Point Erin Tunnel and ancillary structures	E26.2.3.1 (A49) – Underground pipelines and ancillary structures for the conveyance of water, wastewater and stormwater (including aboveground ancillary structures associated with underground pipelines) is a permitted activity

[28] Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment.

Proposed activity	Description of works/activity	Applicable rule and activity status
	The proposed terminal shaft, control chamber and connecting infrastructure	E26.2.3.1 (A57) – Ventilation facilities, drop shafts and manholes are a permitted activity
Earthworks associated with tunnel construction below ground and outside of overlays[29]	Where earthworks for the tunnel are outside of overlays, areas and volumes at any one time will be less than 2500 m^2 and 2500 m^3, respectively, and the tunnel will be progressively stabilised.	E26.5.3.1 (A97) and (A97A) Earthworks outside of overlays, areas/volumes less than 2500 m^2 and 2500 m^3 is a permitted activity.
8 of the 17 trees proposed to be removed for the Project. Alteration and works in the root zone.	Alteration or removal of any tree less than 4 m in height and/or less than 400 mm in girth, and works within the protected rootzone of street trees where less than 20% of the protected rootzone is disturbed.	E26.4.3.1 (A87) and (A91) – Alteration or removal of any tree less than 4 m in height and/or less than 400 mm in girth, and works within the protected rootzone of street trees where less than 20% of the protected rootzone is disturbed is a permitted activity.
Discharge of water from construction activities (wheel wash) and from dewatering activities	Water associated with dewatering and construction activities will be discharged in accordance with best practise and to ensure compliance with relevant permitted activity standards.	E4.4.1 (A1) Discharge of water and/or contaminants from construction of any component of the wastewater network is a permitted activity E4.4.1 (A5) Discharge onto or into land and/or into water for the purpose of dewatering trenches or other excavations is a permitted activity
Vehicle generation required to construct the infrastructure	Conservatively, the highest trip generating phases of the Project would result in a total of 58 trucks and 9 cars per day which averages over a 10-hour working day at 6 – 7 vehicles per hour, or 1 vehicle every 9 minutes.	E27.6.1(1)(b) less than 100 v/hr (any hour) for activities not specified in Table E27.6.1.1 requiring a controlled or restricted discretionary land use activity consent in the applicable zone is a permitted activity.
Small portion of plant room located within a mapped flood plain	The footprint of the plant room and permanent retaining walls extends into the mapped flood plain area to a very small extent. As the plant room is a building for a network utility, it is considered to be a flood tolerant activity.	E36.4.1 (A35) – New structures and buildings designed to accommodate flood tolerant activities up to 100 m^2 gross floor area within the 1 per cent annual exceedance probability (AEP) floodplain is a permitted activity
Lighting of construction area	Lighting of the construction area to enable night-time working will be designed to comply with the permitted activity standards.	E24.4.1(A1) Activities that comply with all the relevant permitted activity standards

[29] The same approach to the Unitary Plan rules was taken for the Grey Lynn tunnel. It was determined the Regional Earthworks Specialist for Auckland Council that because the above-ground earthworks for the Grey Lynn tunnel were less than 2,500 m^2 no regional consent was required. See Grey Lynn Tunnel Auckland Council Technical Memos, Attachment 4, emails dated 1-13 March 2019.

5.4 Other consents and approvals required

5.4.1 General archaeological authority

The Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) provides overarching protection for archaeological sites, and in particular, no person may modify or destroy, or cause to be modified or destroyed, the whole or any part of an archaeological site, without the express authority of Heritage NZ.

An archaeological site is defined as any place in New Zealand, including any structure, that was associated with human activity that occurred before 1900 where there is evidence relating to the history of New Zealand that can be investigated by archaeological methods.

The Archaeological Assessment contained in Appendix H8 does not identify archaeological evidence based on background research or during a field survey. However, given the possibility of previously unrecorded subsurface archaeological remains associated with R11/78 Okā Pā, and/or 19th century early European occupation, the Archaeological Assessment recommends that an Authority under Section 44(a) of the HNZPTA be obtained from Heritage NZ before any work can be carried out that may affect these sites.

5.4.2 Requiring authority approvals

Section 176(1)(b) of the RMA requires the prior written consent of the requiring authority to undertake any activity on designated land which would prevent or hinder the work to which the designation relates.

No designations apply to the Point Erin Park construction areas. Waka Kotahi's designation for State Highway 1 (ID 6718) is adjacent to Point Erin Park's western boundary, and the operational vehicle crossing providing egress from the plant room for maintenance vehicles will slightly extend into the designation. Watercare is seeking Waka Kotahi's approval under s176(1)(b) for this encroachment.

The tunnel alignment will cross beneath Designation ID 4767 – Ponsonby Intermediate and the corridor for the tunnel (not the actual tunnel alignment) overlaps the eastern boundary of Designation ID 4768 – Ponsonby Primary. Both designations are considered to be unaffected by the Point Erin Tunnel as no above ground works are proposed within either of these sites and the tunnel will be a minimum of 20 m below ground level as it passes beneath Ponsonby Intermediate. Nevertheless, Watercare is seeking approval from Ministry of Education for the tunnel alignment within the designation for Ponsonby Intermediate.

5.4.3 Other approvals

Watercare is working with Auckland Council Land Advisory to secure Landowner Asset Approval in relation to works in Point Erin Park.

The Project involves work that will affect the normal operation of the road. A Corridor Access Request (CAR) is therefore required to be submitted to Auckland Transport for approval prior to work commencing.

Watercare will follow the process under the Local Government Act 2002 for undertaking works on private land. Notice has been provided to all properties along the tunnel corridor alignment (refer Section 8.2).

Upon completion of detailed design, Watercare will obtain the necessary building consents for the proposed buildings and structures in accordance with the Building Act 1991.

6 Assessment of effects on the environment

6.1 Introduction

Section 104(1)(a) and Clause 2(3) of Schedule 4 of the RMA require an assessment of the activity's effects on the environment. The detail of this assessment should correspond with the scale and significance of the effects that the activity may have on the environment.

The assessment in the following sections identifies and assesses the types of effects that may arise from the proposed works provided for under this application. This assessment also outlines the measures that Watercare proposes to avoid, remedy or mitigate any potential adverse effects on the environment.

While the application falls for consideration overall as a discretionary activity, a number of the activities are restricted discretionary activities (refer Section 5.1). The relevant matters of discretion are identified in Appendix D and have informed the broader assessment of effects set out below.

This assessment draws on information provided in the technical reports contained within Appendix H and addresses the following effects:

- Positive effects
- Effects on natural character, landscape and visual amenity
- Arboricultural effects
- Effects on recreational values of Point Erin Park and public access
- Archaeological effects
- Cultural effects
- Noise and vibration effects
- Traffic effects
- Effects of earthworks and sediment generation on water quality
- Disturbance of potentially contaminated soils
- Groundwater and settlement effects
- Flooding and stormwater effects
- Air quality effects

6.2 Permitted baseline and existing environment

6.2.1 Permitted baseline

The permitted baseline defines the environment against which the degree of adverse environmental effects of a proposed activity will be considered. In accordance with sections 104(2) of the RMA, when forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect. This includes activities that form part of the proposal that could be undertaken as of right as well as other permitted activities that could be undertaken on the site, provided these are realistic activities which could be reasonably expected to be undertaken.

The permitted aspects of the proposed works are outlined in Section 5.3 of this AEE report. The permitted baseline includes:

- Infrastructure including underground pipelines and above ground ancillary structures for the conveyance of wastewater, along with pump stations, drop shafts and ventilation facilities are permitted activities within the Open Space zones.

- Underground pipelines are permitted in all zones in the AUP including the Residential, Business and Special Purpose zones and Roads that the Point Erin Tunnel alignment traverses under.
- Small scale structures and buildings are permitted in the relevant Open Space zones (incl. workers' accommodation, education and research facilities related to the Open Space, accessory buildings, buildings for public amenities, and floodlighting including supports and towers up to 18 m high).
- Traffic generation of up to 58 trucks and 9 cars per day is substantially lower than the maximum permitted activity threshold of 100 vehicles per hour.
- Noise from the construction and operation of the proposed works is largely compliant with the relevant permitted activity thresholds including:
  - General construction activities within Point Erin Park and regenerated tunnelling noise for the construction of the tunnel are anticipated to comply with the relevant permitted activity thresholds.
  - The operation of the plant room and air vent is predicted to comply with relevant noise permitted activity criteria at all times with the recommended conceptual acoustic measures in place.
- Construction vibration for the tunnelling works along the proposed alignment is predicted to be less than the most stringent night-time AUP amenity criteria of 0.3 mm/s at all receivers.

As each of these activities can be undertaken as of right, any effects arising from these activities have been anticipated by the AUP. Accordingly, the actual and potential effects of the proposed works should be considered in this context.

6.2.2 Existing environment

The baseline against which the effects of an activity are assessed, as defined through case law, also incorporates the existing environment. The "environment" in s104(1)(a) RMA includes:[30]

a What exists in the environment at the time the application is considered, i.e. what you can see; and

b The future state of the environment as it might be modified:[31]

  i by the utilisation of rights to carry out permitted activities under a district plan; and

  ii by the implementation of resource consents which have been granted at the time a particular application is considered, where it appears likely that those resource consents will be implemented.

As noted in Section 3, surrounding residential properties are of varying scale, typically between one to three storeys in height. However, the existing AUP zones surrounding the site along with PC78 provide for intensification beyond the current level of development (including Mixed Housing Urban and Terraced Housing and Apartment Buildings along Shelly Beach Road in the immediate vicinity of Point Erin Park). The residential environment immediately surrounding Point Erin Park could therefore be subject to construction activities and associated visual, amenity, noise and traffic effects to give effect to as-of-right intensification provided for under the AUP.

[30] *Queenstown Lakes District Council v Hawthorn Estate Limited* CA45/05.
[31] *Queenstown Lakes District Council v Hawthorn Estate Limited* CA45/05 at [84].

6.3 Experience gained from existing CI construction activities

The proposed work forms part of the wider CI scheme, which has been developed to provide network capacity for growth and to mitigate wastewater network overflows in the Auckland region. As noted previously, construction commenced on CI in 2019 and since this time, the CI project team has established all of the major CI construction sites along the main CI tunnel and over half of the main CI tunnel has been completed (southern section).

Works-to-date include a number of sites located within public parks and reserves (e.g. Keith Hay Park, Western Springs, Miranda Reserve, Rawalpindi Reserve, Mt Albert War Memorial Reserve) and in close proximity to houses. CI construction activities and effects are therefore well understood. This current application to extend the CI tunnel is informed by practical on-the-ground experience gained through the CI project to date, including directly comparable experience in relation to the type of works (tunnel and shaft) and location of works (in a park in proximity to houses).

CI is being undertaken in accordance with a suite of approved management plans. These plans include a range of mitigation measures to address potential adverse effects. The CI management plans have been subject to certification by Auckland Council and are demonstrated to have worked across the course of the wider CI works. Site specific management plans will be developed for the Point Erin Shaft Site, drawing upon the extensive learnings obtained across the CI project.

6.4 Positive effects

The proposed works described in Section 4 will contribute to the wider CI project. This has significant positive effects which include:

- Providing network capacity for existing development and future growth.
- Reducing overflows to stream and coastal environments in the catchments it serves.
- Enabling future works to further improve freshwater and coastal water quality within the Western Isthmus catchment.

The Point Erin Tunnel will collect flows from the Sarsfield overflow collector and the St Mary's Bay pressure line and transport it to Māngere Wastewater Treatment Plant. As a result the St Mary's Bay tunnel will not need to store as much flow as this could be pumped into the CI and its storage capacity utilised, thus reducing the frequency of overflows from the St Mary's Bay tunnel.

The Point Erin Tunnel will also provide for future connections, including the potential Herne Bay Collector Tunnel which, if progressed, would collect combined wastewater and stormwater from Herne Bay with an associated reduction of flows along the Orakei Main, thereby reducing wet-weather overflow volumes and providing some benefit for the waterways and beaches from Newmarket through to Ōrākei. The diversion of flows into CI through the Point Erin Tunnel therefore has important benefits in terms of addressing existing capacity constraints, particularly in the Ōrākei Main and Eastern Interceptor.

The total annual overflow volume from St Mary's Bay and Herne Bay is approximately 250 ML/year. The Point Erin Tunnel is integral to significantly reducing these overflows. Importantly, the proposed Point Erin Tunnel will achieve the same, or better, water quality outcomes than the original proposal within the 2028 timeframe committed to through the WIWQIP. This approach also provides wider network benefits which separation by itself would not provide and increases the overall resilience of the wastewater network.

CI including the proposed Point Erin Tunnel is integral to the ongoing operation of the 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, safety and wellbeing and for the sustainable management of Auckland including its freshwater and coastal environments.

6.5 Natural character, landscape and visual amenity

A Landscape and Visual Effects Assessment (LVEA) has been prepared by Isthmus and is provided at Appendix H6. The following sections provide a summary of the LVEA.

6.5.1 Natural character effects

Point Erin Park and the Shaft Site is located within the coastal environment. The effects of the Project on natural character is therefore a relevant consideration.

The strongest natural characteristic of the coastal environment within the park is its visual relationship with the Waitematā Harbour. Modification of this part of the coastline, including through roading infrastructure and coastal reclamation and the resulting separation of the park from the original coastal edge, means the natural character values of Point Erin Park are otherwise limited. Remaining natural character values are concentrated around the historic cliff edge and edges of the headland which are subject to the AUP SEA and Mana Whenua overlays. The Project has sought to avoid these overlays.

The LVEA assesses the effects on natural character during the construction period as low/less than minor. Once construction is complete, the wider benefits of the Project include a significant reduction in overflows into the Waitematā Harbour. On this basis the LVEA concludes that the overall effects of the Point Erin Tunnel on the natural character of the coastal environment will be positive.

6.5.2 Construction effects on amenity and landscape character

During construction, the proposed temporary closure of areas of the park, earthworks, retaining walls, truck movements and construction machinery (including cranes) will be visually prominent elements within the setting of Point Erin Park, resulting in temporary adverse effects on open space amenity, landscape character and visual amenity for a number of potential viewing audiences.

Other temporary construction effects include:

- Lighting effects will be temporary and will comply with the relevant lighting standards in the AUP.
- The cranes and equipment will be visible and visually comparable to other large construction equipment used across Auckland.
- The proposed temporary fencing will constrain views into the construction area from ground floor views, however filtered views may still be available from upper floors of adjacent buildings. Larger-scale equipment and machinery will be visible above fencing and beyond the mature treeline.

The intensity of construction activity will fluctuate over the duration of the construction period, and similarly the effects will fluctuate and be lower or higher depending on the nature of activities at any particular time. Overall, the LVEA concludes that when construction activity is at its highest intensity the Project will result in high effects on open space amenity, and high visual amenity effects for users of Point Erin Park and a limited number of private properties located around the junction of Curran Street and Sarsfield Street (in the immediate vicinity of the southwestern construction area)[32]. Moderate effects on visual amenity are anticipated for a limited group of private properties along Sarsfield Street and Shelley Beach Road[33] and moderate-high effects on views from Masefield Beach. All other landscape and visual effects from the construction phase of the project are considered to be low-moderate (minor) or less.

[32] 18, 22, 24, 26, 28, 30, 32,34, 38 Sarsfield Street, 64, 70, 72, 74 Curran Street and 6, 7 Masefield Avenue.
[33] 82, 121 A-C, 117 and 115 Shelly Beach Road, 4(A), 6(A), 8, 10, 12 and 14 Sarsfield Street.

6.5.3 Post-Construction effects on amenity and landscape character

Once complete, the construction areas within Point Erin Park will be reinstated and retained as public open space. A Park Reinstatement and Landscape Plan (PRLP) will be produced as a condition of consent which will ensure the landform of the park is appropriately reinstated and landscape and amenity values are maintained and enhanced.

The permanent above ground infrastructure is limited and will be seen as barely perceptible features within the wider developed context and consistent with structures and activities which commonly occur in parkland settings. The retaining wall will be a distinctive modified feature within the southwestern corner of the park, however once the landscape treatment of the wall is established, it will be visually integrated into the park.

The LVEA concludes that overall, the Project will result in Low-Moderate (minor) effects on open space and landscape character, post construction. A limited number of properties[34] are anticipated to initially experience moderate effects on visual amenity, with the level of effect reducing to low-moderate (minor) over time as the landscape planting becomes more established. For all other audiences, public viewpoints and most private properties in the vicinity of Point Erin Park visual amenity effects will be very low / no adverse effects.

6.5.4 Conclusion

As set out in the LVEA, construction activities will be visually prominent elements within the setting of Point Erin Park, resulting in adverse effects on open space amenity, landscape character and visual amenity for a number of potential viewing audiences. Accordingly, the Project will result in temporary adverse effects during construction due to the restriction of access to areas of the park and the proximity of the construction areas to some residences. However, construction activities are common within residential and urban environments throughout Auckland including within parks and open space zones[35]. As set out above, the residential environment immediately surrounding Point Erin Park could be subject to construction activities and associated visual, amenity, noise and traffic effects to give effect to intensification provided for under the AUP.

Comprehensive measures will be implemented to avoid, remedy and mitigate effects. This includes through the use of site fencing, noise and vibration limits set out in the proposed consent conditions, noise barriers where required, provision of alternative access, and communication with surrounding properties and park users to minimise disruption as far as practicable. Once construction activities are established, it is reasonable to expect some degree of habituation through the construction period particularly for park users.

Once complete, the construction areas within Point Erin Park will be reinstated and retained as public open space and a Park Reinstatement and Landscape Plan implemented to ensure landscape and amenity values are maintained and enhanced. The permanent above ground infrastructure is limited and consistent with the scale of structures and buildings commonly located within parks[36].

[34] 18, 22, 24, 26, 28, 30, 32,34, 38 Sarsfield Street, 64, 70, 72, 74 Curran Street and 6, 7 Masefield Avenue

[35] Chapter E26 of the AUP sets out an enabling framework for infrastructure within these zones.

[36] As noted above, small scale structures and buildings are permitted in the relevant Open Space zones (incl. accessory buildings, buildings for public amenities, and floodlighting including supports and towers up to 18 m high). As such a structure of a similar scale and design to the plant room (e.g. storage building, toilet block) could be built in the same location as a permitted activity.

6.6 Arboricultural effects

An Arboricultural Assessment has been prepared in support of this resource consent application (Appendix H7) and provides an assessment of the effects on trees within Point Erin Park affected by the proposed works[37].

While the proposed location and design of the construction areas have sought to minimise the need for any tree alteration or removal, effects on trees have not been able to be avoided completely.

Works within the dripline of trees (rootzone) will be avoided as far as possible and in the event tree alteration or trimming is required, works will be undertaken in accordance with best arboricultural practice.

In regard to proposed tree removals, the assessment has been undertaken on a worst-case basis, in which tree retention is not possible. In this scenario up to 17 trees could potentially be required to be removed. Of these trees, the following is noted:

- Eight trees are able to be removed as a permitted activity;
- Nine trees are proposed for removal which exceed the permitted activity size. Of these:
    - five trees are directly within the Project footprint in Point Erin Park. The design team has explored many options for retention of two mature pōhutukawa (trees 16 and 17). However due to the positioning of existing infrastructure and the requirement to connect into this, there are no other feasible options.
    - four trees are recommended in the assessment for removal because they are in poor condition (or with obvious tree risk features that warrants intervention).

Replacement planting of at least thirty-eight exotic or forty-nine native trees is required to mitigate the loss in future carbon sequestration effects of the proposed tree removal. As many of these trees as practicable and acceptable to the landowner (Auckland Council) will be planted within Point Erin Park and comprise a component of the Park Restoration and Landscape Plan (required by the conditions of consent) which is to be developed in consultation with Auckland Council and mana whenua. This mitigation planting will ensure that there is no deficit in atmospheric carbon sequestration to the year 2050[38].

Beyond 2050, there will be a net benefit in annual sequestration rates. In conjunction with the Park Restoration and Landscape Plan required by the proposed conditions of consent this replanting will also mitigate any loss in amenity values associated with the proposed tree removal. As set out in the LVEA, the wider vegetated setting of the park will remain intact and the proposed re-instatement plan to mitigate the loss of the removals will ensure that the overall vegetated character of the park is maintained.

Overall, given the extent of tree removal (noting that of the nine trees that require consent, four are recommended for removal because they are in poor condition or with obvious tree risk features that warrants intervention) and the replacement planting proposed, adverse effects on arboricultural values are considered to be acceptable and no more than minor.

[37] Effects of tunnelling beneath the trees in Point Erin Park are considered to be nil due to the depth of the tunnel, which will not interfere with the root zone of trees, and therefore effects of the tunnel on trees have not been considered any further.

[38] Chosen as baseline year given the carbon neutral goal set by the Climate Change Response (Zero-Carbon) Amendment Act (2019) and the realistic lifespan of the trees.

6.7 Recreation and public access effects

A Recreation Assessment has been prepared by Rob Greenway & Associates and is provided at Appendix H1. This assessment finds that the key potential adverse effects of the proposed work on recreation effects are a temporary reduction in the scale of green space and the resulting displacement of recreational activities, albeit for general informal recreational activities (e.g. walking, running, dog exercising) this is likely to be elsewhere in the park outside of the construction areas.

Existing public access to the park itself will not be affected by the proposed works. However to ensure public safety, temporary restrictions on public access will be required around the immediate construction areas. These restrictions will be in place for the duration of the works (approx. 2 years and up to 3 years) and will be minimised as far as practicable.

The proposed construction phase has been designed to avoid existing footpaths where possible, however the temporary closure of a short section of path in the south-western corner of Point Erin Park will be required for the duration of the construction works. Temporary or alternative passage will be provided on, or near the existing access routes and as a minimum directional/ wayfinding signage will be used to provide clarity to park users. Specifically an alternative temporary path and steps will be provided approximately 90 m east of the existing footpath. Wayfinding signage will be provided for this temporary route as well as to direct people to the main path through the park (approximately 90 m further to the east) which will remain unaffected by the construction works. The Integrated Traffic Assessment (Appendix H9) has also considered the impact of the temporary closure of a short section of path, and concludes that the impact on pedestrian and cycle safety and efficiency will be minimal.

The Recreation Assessment recognises that the construction areas will reduce the area available for recreation activities including community events, passive activity and dog exercise. However, the assessment notes that there is no indication the Park is near or at capacity in this regard and considers that the remaining greenspace is likely adequate for recreation activities to take place and will remain usable for its existing main recreational purposes.

Mitigation would be provided through communication such as: providing signs advising the park users of what the work is for; keeping them updated on progress; and advising event managers of the project timing to enable forward planning. The picnic table in the north-western corner just south of the pools in the vicinity of the construction area will also be relocated to an appropriate site within the park. With the implementation of the proposed mitigation measures, park users will be able to adapt to the proposed activity during the construction phase and maintain the recreation benefits currently available at the Park.

In summary it is considered that the actual and potential adverse effects on recreation activities as a result of the construction phase will be minor with no particular effects post construction. More broadly, improving water quality in central Auckland waterways, swimmable beaches and the Waitematā Harbour means that recreational opportunities at local beaches will be improved.

6.8 Archaeological effects

An Archaeological Assessment has been undertaken for the proposed works and is provided at Appendix H8.

The actual and potential effects on archaeology from the proposed works relate to the potential destruction, modification or damage of archaeological sites arising from the construction works. The Heritage New Zealand Pouhere Taonga (HNZPT) Act 2014 defines an archaeological site as a place or structure associated with pre-1900 human activity and where there may be evidence relating to the history of New Zealand.

The tunnelling aspect of the works will be well below ground level and consequently is considered unlikely to have an effect on archaeology. Therefore, the potential effects of the tunnel on archaeological values have not been considered any further. Shallow ground disturbing works are of greater risk of adverse effects on archaeology. Ground disturbing works are required at Point Erin Park to construct the terminal shaft and control chamber.

The Archaeological Assessment considers that it is unlikely that any subsurface archaeological remains survive where the proposed southwestern construction area (for the chamber) will be located due to various road construction activities.

In regard to the main construction area, the proposed ground disturbance will not affect any known archaeological remains as the construction site location has ensured that known or scheduled areas of archaeological value have been avoided. However Point Erin Park is considered an area of potential archaeological sensitivity given the recorded location of R11/78 Okā Pā and its scheduled extent of place (Te Koraenga Okā, AUP ID006), and the location of late 19th century structures associated with early European occupation.

During works for the construction of the Point Erin Pools in the early 1960s, Okā Pā was recorded in the NZAA site records as having been destroyed. However, in 1981 the site was revisited and was considered to have a few remaining areas of archaeological potential. The extent to which the development of the pool complex modified the Point Erin landscape remains uncertain and some intact buried archaeological remains may survive. The Archaeological Assessment has established that the proposed activity will not adversely affect the scheduled extent of Te Koraenga Okā within Point Erin Park and will not affect any known archaeological remains. It also notes that any unknown remains are unlikely to be extensive or archaeologically significant given the level of modification that has taken place.

Pursuant to the HNZPT Act, it is unlawful for any person to modify or destroy, or cause to be modified or destroyed, the whole or any part of an archaeological site without the prior authority of Heritage NZ Pouhere Taonga. Given there is potential that archaeological remains could be encountered during construction, the Archaeological Assessment recommends archaeological monitoring of all preliminary earthworks and obtaining an Archaeological Authority prior to construction works commencing.[39] The Authority will contain a set of accidental discovery protocols which sets out the procedures to be followed should archaeological remains be encountered during construction (noting that the AUP accidental discovery protocols also apply).

Overall, while the proposed works are located in a highly modified area and Okā Pā is identified as being largely destroyed, the proposed ground disturbance still poses a risk of uncovering archaeological remains. Any effects on archaeological deposits or features, if present, can be appropriately mitigated through monitoring of preliminary earthworks and accidental discovery protocols as required by the proposed conditions of consent, and archaeological investigation and recording to recover information relating to the history of Point Erin. As such, the potential adverse effects on archaeology are considered to be no more than minor.

6.9 Cultural effects

Watercare recognises the importance of land and water resources to tangata whenua and acknowledge that an assessment of Māori cultural values can only be undertaken by mana whenua.

Engagement with mana whenua has occurred and is ongoing in order to understand the potential effects of the proposed works on Māori cultural values. This is discussed further in Section 8.1. As a result of the engagement with mana whenua to date, it is understood that at least five mana

[39] Noting that this would be subject to third-party approval by HNZPTA and which cannot therefore, in the context of this RMA consent application, be a mandatory requirement.

whenua entities[40] have indicated their interest in preparing a Cultural Values Assessment (CVA) which will consider effects of the Project on cultural values and cultural landscapes.

Information gathered during engagement with mana whenua undertaken to date and an understanding of cultural values based on previous project experience has resulted in the comments regarding potential effects on cultural values below. These may be expanded upon by mana whenua during further consultation and in any feedback or CVAs provided.

- Te Koraenga Okā is within the northern portion of Point Erin Park and is a former pa site which is scheduled in the AUP (R11/78). The layout of the proposed works was informed by the requirement to avoid the identified extent of this site. However the full extent of the pā site is unknown and it is important to appropriately acknowledge and recognise the spiritual and cultural significance of the wider landscape. Watercare proposes to prepare accidental discovery protocols in consultation with iwi and Heritage New Zealand Pouhere Taonga to ensure mana whenua-directed procedures are included.
- To ensure kaitiakitanga of the mauri (life force) of Papatūānuku (earth mother) during the proposed construction works, Watercare will notify mana whenua prior to commencement of works to agree on a process to bless the site prior to commencement of work, ensure contractors are culturally inducted for the site works, and undertake cultural and archaeological monitoring during topsoil removal for site establishment in Point Erin Park.
- Watercare acknowledges the need to ensure that adverse environmental effects of its works are minimised. Measures to achieve this include implementation of the best practice approach to earthworks and sediment and erosion control, which is designed to minimise the generation of sediment and prevent the discharge of sediment laden water, thereby protecting water quality.
- Watercare will seek to work with mana whenua in the reinstatement of the park following completion of the work. There will be opportunities for mana whenua to exercise their kaitiakitanga through this process, and to incorporate and acknowledge the history of the area and cultural significance of sites in the reinstatement of the construction area. Further discussions will be undertaken during detailed design and development of the landscape plans for the reinstatement of the park.

The overall objectives of the Project are to provide additional sewer capacity and network resilience within the local catchment and wider network, reduce wet weather wastewater overflow discharges and improve public health and environmental conditions, and enable future works to improve coastal and freshwater quality in the Herne Bay and St Mary's Bay catchments. Within these catchments, the Point Erin Tunnel will result in a significant reduction in the frequency and volume of network overflows. The reduction in the quantity of wastewater contaminants entering freshwater and the coastal environment contributes to the restoration of mauri of these environments and supports cultural well-being and health and safety.

Watercare will continue to engage with mana whenua and will respond to any issues raised as the consenting processing continues.

[40] Te Ākitai Waiohua, Ngāti Te Ata, Ngāti Whatuā Ōrakei, Ngāti Maru, Ngaati Whanaunga

6.10 Noise and vibration effects

The Noise and Vibration Assessment contained in Appendix H2 provides an assessment of potential noise and vibration effects associated with the construction and operation of the Project. A summary of this assessment is provided below.

6.10.1 Tunnel alignment

6.10.1.1 Construction noise effects

The TBM operates 24 hours, 7 days a week and will be operating beneath dwellings during the night time period (albeit at significant depths, ranging from a minimum of 20 m and up to 60 m deep). Regenerated noise levels from tunnelling activities along the alignment between Tawariki Street in Grey Lynn and Point Erin Park in Herne Bay are predicted to comply with the 35 dB L_{Aeq} lower night-time criterion set out in 'Australian/New Zealand Standard 2107:2016' at all receivers.

Indoor noise at 35dB L_{Aeq} is unlikely to be noticeable from normal indoor activities and should not result in any sleep disturbance effects. With the TBM moving at a rate of 10 - 20 m a day, the potential for regenerated noise while the TBM passes underneath individual properties will only occur for 1-2 days. The effects from regenerated noise due to tunnelling is therefore likely to be negligible. However advance communication when the TBM approaches within 50 m of receivers is recommended to ensure receivers are informed in advance of any potential for regenerated noise.

Stebbing Recording Centre is situated approximately 55 m above the tunnelling works and regenerated noise levels is predicted to be below 30 dB L_{Aeq}[41]. Whilst the effects of tunnelling works are likely to be negligible at the proposed distances, noise may still be audible within the studios with sensitive audio equipment. Consultation with the studio is recommended prior to the TBM approaching the receiver location to enable scheduling of sensitive recording times around TBM operations.

6.10.1.2 Construction vibration effects

The tunnel is located entirely below ground at depths typically between 20 m – 60 m and will reach its shallowest point of 17 m as it enters the Point Erin Park where the proposed terminal shaft is located. The closest receiver (30 Sarsfield Road) is located approximately 23 m above the tunnel near Point Erin Park[42]. Other receivers along the tunnelling alignment are generally between 35 – 60 m above the tunnelling works. Even with potential basements and pool depths taken into consideration, vibration from tunnelling is unlikely to be perceptible at any residential receiver.

It is predicted that vibration from tunnelling will be negligible and unlikely to exceed the 0.3 mm/s most stringent night time project criterion for all receivers along the alignment. Rather, it is predicted that all receivers will experience vibration levels less than 0.15 mm/s PPV, i.e. an imperceptible level of vibration.

In terms of the recording studio, at the vertical distance of over 55 m from the tunnelling works, a vibration level of 0.03 mm/s is predicted which is well below a 0.06 mm/s PPV construction vibration limit as adopted by other major projects for sensitive recording studios.

Predicted vibration levels are significantly below the DIN 4150-3 limit for cosmetic building damage at all receivers.

[41] City Rail Link (CRL), Mediaworks construction noise limit for inside Studio 1.

[42] Depth to invert i.e. to the bottom of the 4.5 m diameter pipe. The top of the pipe will therefore be over 12 m below ground as it enters Point Erin Park, and over 18 m below ground at the closest receiver (30 Sarsfield Road)

Overall the effects of vibration on receivers along the tunnel alignment from the TBM are expected to be negligible.

6.10.2 Terminal shaft and control chamber within Point Erin Park

6.10.2.1 Construction noise effects

Existing noise environment

Point Erin Park is bounded by Curran Street and the SH1 onramp to the Auckland Harbour Bridge on its western boundary, and the SH1 Shelly Beach Road offramp on its eastern side. SH1 / the Northern Motorway runs along the base of the headland on its eastern side.

Noise measurements were undertaken to gain an understanding of the existing environmental noise for dwellings in close proximity to the Point Erin construction site. Measurements were undertaken during an off peak period[43] to provide a more conservative (lower) basis for the assessment, noting that noise will be higher during the morning and evening period.

As set out in the Noise and Vibration Assessment, the noise environment around Point Erin Park is dominated by traffic noise from the local roads. Curran Street, Sarsfield Street and Shelly Beach Road and the State Highway were clearly audible from all monitoring locations. The noise levels recorded ranged between 61 – 68 dB L_{Aeq} which exceed the AUP residential noise limit of 50 dB L_{Aeq} by more than 10 dB. These recorded ambient noise levels are considered typical for areas near a State Highway slip road and with passing traffic on local roads. Night time noise levels in this area are also anticipated to be elevated above the relevant AUP noise standards (40 dB L_{Aeq}), especially during the early morning period before 7 am due to commuter traffic as well as after 10 pm.

General construction activities

The Noise and Vibration Assessment indicates that with the exception of specific activities outlined below, the proposed construction activities are predicted to comply with the relevant permitted activity standards for construction noise set out in Rules E25.6.27(1) and E25.6.27(2) of the AUP.

For supporting works and other general construction activities such as the use of excavators, mobile cranes, the Noise and Vibration Assessment recommends a minimum set back distance of 40 m and/or acoustic barriers as required to mitigate noise and comply with the daytime noise criterion of 70 dB $L_{Aeq(15min)}$.

Noise effects from the tree removal activities can be effectively managed using practicable measures, such as orientation of equipment and use of temporary barriers. These measures will be set out in an activity specific section within the CNVMP, such that the temporary effects will be less than minor.

In terms of retaining wall construction, the closest receiver is typically located more than 30 m from the closest proposed retaining wall and is well outside the required set back distance of 11 – 25 m to achieve the noise criterion. For the proposed retaining wall on the boundary of the park, adjacent to Curran Street, the distance to the nearest receivers is just over 20 m. Assuming a methodology of driven piles, without mitigation these receivers may experience noise levels of up to 72 dB L_{Aeq}. There may be opportunities to implement mitigation (noise barriers) or to adopt a different construction methodology to reduce the noise level to comply with the daytime noise criterion of 70 dB L_{Aeq}. In any case this is a marginal exceedance of the permitted activity noise limits and can be managed through the CNVMP.

Otherwise, general construction activities for the works within Point Erin Park are predicted to comply with the daytime noise limit of 70 dB L_{Aeq} set out in 'New Zealand Standard NZS6803:1999

[43] 2 November 2022 between 1pm and 3pm.

Acoustics – Construction noise' at nearby residential properties. Specific activities of sheet piling the control chamber and works outside of standard daytime construction hours have the potential to exceed the permitted activity thresholds as discussed below.

Sheet piling

The Noise and Vibration Assessment indicates that sheet piling activities to construct the control chamber in the south western corner of Point Erin Park, near the intersection of Curran Street and Sarsfield Street, may exceed the construction noise criterion at the following six properties:

- 1-3/7 Masefield Avenue – 73 dB L_{Aeq}
- 70 Curran Street – 74 dB L_{Aeq}
- 72 and 74 Curran Street – 78 dB L_{Aeq}
- 28 and 30 Sarsfield Street – 71 dB L_{Aeq}

The construction methodology will be determined by the Contractor through detailed design, however if sheet piling is required in the south western corner, then based on the construction of similar CI structures it is estimated that sheet piling would be undertaken for an estimated total of 30 days (and up to 60 days) over a 6-month period.

Noise from sheet piling cannot typically be effectively mitigated due to the requirement for an acoustic barrier to be over 6 m high before noise can be effectively reduced.

Predicted noise levels associated with sheet piling marginally exceed the permitted activity levels at four of the properties. A change in sound level of less than 3 dB is not usually discernible (i.e. 28 and 30 Sarsfield Street). An increase in sound level of 3 dB or more is perceptible (i.e. 1-3/7 Masefield Avenue and 70 Curran Street).

A maximum noise level of 78 dB L_{Aeq} is predicted at 72 and 74 Curran Street which are located less than 25 m from the piling works. This external noise level would usually equate to an internal noise level 20-25 dB lower, i.e. 53-58 dB L_{Aeq} depending on the glazing and façade construction. An internal noise level less than 60 dB L_{Aeq} is unlikely to interfere with normal residential activities for short durations.

The predicted maximum noise levels are only likely to occur when the sheet piling works is nearest to the receivers. These levels are anticipated to only occur for a relatively short period and intermittently within the total duration of the works.

High external noise levels for sheet piling are not uncommon for this type of works close to residential receivers and have been successfully managed on existing CI sites through the CNVMP and an ASCNMP, which includes industry standard practice for sheet piling mitigation and consultation with receivers around timing and duration.

Overall, due to the relatively limited duration and intermittent nature of sheet piling, along with the implementation of the CNVMP and activity-specific mitigation measures to appropriately manage sheet piling activities, it is considered that noise effects from sheet piling on surrounding residents will be reasonable, i.e. within an acceptable range of noise levels (75 – 80 dB L_{Aeq}) for construction activities that are temporary in duration.

Works outside of standard construction hours

As set out in Section 4.4.3, construction hours at Point Erin Park are generally proposed to be 7 am to 6 pm Monday to Friday and 8 am to 6 pm Saturday, however there will be occasions where it is necessary to undertake construction activities outside of standard hours similar to existing CI sites.

As set out in the Noise and Vibration Assessment, works outside of these standard hours will be limited as far as practicable, and this is supported by practical 'on-the-ground' experience at other CI sites which demonstrates that such activities occur intermittently and for a short period of time.

The Noise and Vibration Assessment indicates that concrete pours outside of standard construction hours are likely to exceed the most stringent night-time criterion of 45 dB L_{Aeq} at nearby receivers (> 65 dB L_{Aeq}). However with mitigation in place, such as a minimum set back distance of 80 m from all receivers (i.e. for the terminal shaft) and other practicable mitigation controls (e.g. temporary screens, high speed mixing away from receivers) to be outlined in the CNVMP, noise levels of less than 50 dB L_{Aeq} can likely be achieved. This equates to an internal noise level of 25-30 dB L_{Aeq} with closed windows which is below the recommended internal noise level criterion for sleeping areas. The noise assessment therefore considers that external noise levels of 50 dB L_{Aeq} for limited periods will be acceptable with prior communication and consultation, particularly given the higher ambient noise levels in this area. In addition, the noise effects of working at 50 dB L_{Aeq} or less outside standard construction hours will likely be masked by the existing noise environment, i.e. further reducing the potential adverse effects of the above works.

Dewatering and overpumping for temporary diversions or connections into the existing network will require the use of pumps that may operate 24/7. Similarly shaft ventilation is likely to operate outside of standard hours. All of these noise sources are likely to be located over 100 m from the nearest residential dwelling, and with localised noise screening the resulting noise effects will be less than minor.

Specific noise effects and proposed management and mitigation measures of works outside of standard hours will be addressed through the CNVMP and ASCNVMP required by the proposed conditions of consent and subject to Council certification. Experience on CI to date has shown that this approach appropriately ensures a BPO approach is taken to the management of these activities.

6.10.2.2 Construction vibration effects

The generation of vibration is dependent on the local site geology, the equipment being used, the nature of the works, and the operator. To account for this, the Noise and Vibration Assessment has calculated the likely worst-case vibration based on the construction equipment and hard ground geological conditions to provide predicted vibration levels at the closest receivers to the works in Point Erin Park.

For the works within Point Erin Park, vibration levels at the closest receivers are predicted to be 2 mm/s or less except at three receivers (70, 72 and 74 Curran Street). When sheet piling is occurring in the southwestern construction area, these three receivers are predicted to experience vibration levels above the 2 mm/s amenity level for short/intermittent periods when the piling is occurring. However predicted vibration levels at these receivers remain below the 5 mm/s DIN 4150-3 threshold for cosmetic damage to residential buildings. Properties located further away (> 50 m) are predicted to experience vibration levels of less than 2 mm/s.

Vibration levels are well below the DIN 4150-3 limit for cosmetic building damage for all vibration generating equipment.

The swimming pool is located over 40 m from the nearest works. For the pool, vibration levels are likely to be negligible (e.g. 1 – 2 mm/s) and well within both the limit for a commercial building and the lower limit of 5 mm/s PPV for a residential building. As such, there will be no adverse effects on the structural integrity of the pool.

Given the low levels of predicted vibration, and the mitigation to be proposed as part of the CNVMP, the actual and potential effects of construction vibration are considered to be negligible for the majority of receivers, and less than minor for the three receivers identified above.

6.10.3 Operational noise effects

There is no operational noise associated with underground infrastructure such as the Point Erin Tunnel.

A single storey plant room will house the power supply and controls for the chamber and is located on the south-western side of Point Erin Park by Curran Street and is expected to operate 24-hours per day, 7-days per week. The plant room will be designed to ensure compliance with the AUP's more stringent night time noise limit of 45 dB $L_{Aeq.}$ for residential zones.

The terminal shaft will require a venting arrangement located in close proximity to the terminal shaft. The air vent is proposed to be located in the north-western corner of the green space area of the park at a distance of over 100 m from the nearest residential dwelling. This setback distance ensures compliance with the night time noise limit of 45 dB $L_{Aeq.}$.

Operational noise effects are assessed as less than minor.

6.10.4 Conclusion

6.10.4.1 Tunnel alignment

Vibrations due to tunnelling are unlikely to be perceptible at all receivers and within the most stringent night time AUP amenity limit.

Regenerated noise due to tunnelling is also unlikely to be perceptible and is predicted to comply with the 35 dB L_{Aeq} night time criterion at all receivers. Overall the effects of regenerated noise and vibration from the TBM operating along the Point Erin Tunnel alignment are expected to be negligible.

6.10.4.2 Terminal shaft and control chamber within Point Erin Park

Noise effects

The noise environment around Point Erin Park is dominated by traffic noise from the local roads. Recorded noise levels exceeded the AUP residential noise limit of 50 dB L_{Aeq} by more than 10 dB. Night time noise levels in this area are also anticipated to be elevated above the relevant AUP noise standards for a residential zone (40 dB L_{Aeq}), especially during the early morning period before 7 am due to commuter traffic as well as after 10 pm.

The proposed construction activities are generally predicted to comply with the relevant permitted activity standards for construction noise set out in the AUP.

Sheet piling associated with the control chamber in the south western corner has the potential to exceed the permitted activity thresholds at six properties. High external noise levels for sheet piling are not uncommon for this type of works close to residential receivers and has been successfully managed on existing CI sites through the CNVMP and an ASCNMP, which includes industry standard practice for sheet piling mitigation and consultation with receivers around timing and duration. The predicted maximum noise levels are only likely to occur when the sheet piling works is nearest to the receivers. These levels are anticipated to only occur for a relatively short period and intermittently within the total duration of the works.

Works outside of standard construction hours including concrete pours, dewatering and over pumping, will be limited as far as practicable. This is supported by practical 'on-the-ground' experience at other CI sites which demonstrates that such activities occur intermittently and for a short period of time.

Specific noise effects and proposed management and mitigation measures for construction activities will be addressed through the CNVMP and ASCNVMP required by the proposed conditions of

consent and subject to Council approval. Experience on CI to date has shown that this approach appropriately ensures a BPO approach is taken to the management of these activities.

General acoustic management and mitigation measures are also recommended to be implemented throughout the course of the Project as a best practice provision e.g. selection of low noise and vibration equipment where practicable, maintenance of equipment to a high level, the avoidance of unnecessary noise and vibration such as the use of tonal reverse alarms. Communication and consultation with stakeholders is also a key management measure. Consistent with current CI practice, scheduling of works and noise barriers around equipment will also be employed to mitigate noise levels. These measures will be detailed in the CNVMP.

On the basis of the above, it is considered that the effects of construction noise can be managed such that they are no more than minor.

Vibration effects

Construction vibration is not likely to exceed the 5 mm/s DIN 4150-3 limits for cosmetic damage to residential buildings at any receiver. Three properties may experience vibration levels above the AUP 2 mm/s amenity criterion but below 5 mm/s during sheet piling in the south western corner. These effects will be short term in duration and intermittent and can be managed through the CNVMP such that the effects will be less than minor.

Operational noise effects

The operation of the plant room is predicted to comply with relevant noise criteria at all times with the recommended conceptual acoustic measures in place. Any residual noise effects from its operation will be less than minor.

6.11 Traffic effects

The Integrated Traffic Assessment (ITA) contained in Appendix H9 provides an assessment of potential traffic effects associated with the construction and operation of the Project. A summary of this assessment is provided below.

6.11.1 Construction traffic

The number of anticipated construction vehicle movements is discussed at Section 4.4.7 and in the ITA contained in Appendix H9. In summary, the highest number of construction vehicles will occur during Stage 4 of the works (TBM removal and completion of terminal shaft) with a total of 49 vehicles during the day, which averages over a 10 hour working day at 5 vehicles per hour, or 1 vehicle every 12 minutes. Even allowing for overlapping construction activities, the highest number of construction vehicles is a total of 58 trucks and 9 cars per day.

The assessment is considered conservative in that the additional vehicle demand that the site will generate will vary throughout the construction programme i.e., on any particular day the number of truck movements may be less than this, and on some days, significantly less. Further conservatism is provided in that the proposed truck movements are also spread out across the two access points at different stages of the construction period.

As set out in the ITA, compared to existing traffic flows on the surrounding road network, the proposed works will result in a minimal increase in vehicle movements on the roading network surrounding the Project area and is within the range of typical day to day fluctuations in traffic flow[44]. Appendix H9 sets out the percentage contribution of the Project's construction traffic to traffic volumes on the surrounding roads.

[44] Typical day to day fluctuations in traffic flow of 5% to 10% regularly occur on the road network.

Table 6.1: Impact of construction traffic on surrounding roads

Road name	Average Daily Traffic (veh/day)	% impact of construction vehicles
Sarsfield Street Curran Street to Shelly Beach Road	4,168*	3.2%
Curran Street Jervois Road to Sarsfield Street	8,179*	1.6%
Curran Street SH1 on ramp	6,162	1.1%
Shelly Beach Road Bridge / SH1 off ramp	5,429	1.2%
Shelly Beach Road Sarsfield Street to Emmett Street	7,371*	1.8%

Note: The above is a worst case assessment with overlapping construction activities and that the total predicted construction traffic will use each of these roads i.e. not taking into account any truck routing.

During the construction period the impact on pedestrian and cycle safety and efficiency are also considered to be minimal. The secondary (southwest) access will result in the temporary closure of the existing footpath on Sarsfield Street adjacent to the south western access and of the existing pedestrian path into the park during the construction period. An alternative temporary path and steps will be provided circa 90 m east of the existing footpath with appropriate wayfinding signage provided. An existing section of footpath on the northern side of Sarsfield Street immediately adjacent to the site access will also be temporarily closed during the construction period. Minor temporary improvements are proposed to the footpath on the southern side of Sarsfield Street to mitigate the temporary closure of the footpath on the northern side of the street. Once the construction works are completed, the footpath into the park at the west end and the footpath on Sarsfield Street will be reinstated.

Construction traffic accessing the main construction area will utilise the pool access road, which provides access to the parking lot to the east of the access road. A wide berm separates the carpark from the access road, physically separating the carpark from the access road. As part of the Construction Traffic Management Plan required by the proposed conditions of consent, a traffic management supervisor will be required to coordinate and manage construction traffic movements along the access road to ensure the safe movement of construction vehicles and cars, cyclists, pedestrians, service trucks and emergency vehicles accessing the Pool and the public car park. With these controls in place, the public car park will continue to operate safely during the construction work.

Vehicle tracking and sightline assessments have been undertaken in the ITA. These demonstrate that construction vehicles are able to safely access and exit both construction areas.

Notwithstanding the limited vehicle movements generated by construction activities, construction traffic effects will be managed in accordance with the mitigation measures set out in a Construction Traffic Management Plan (CTMP) proposed as a condition of consent. These measures include, but are not limited to:

- Ensuring appropriate access is provided to each work site, that there is no queueing of heavy vehicles, and required turning circles are provided for.
- Provision of a construction driver education programme due to the proximity to the Pool, park and pedestrians.
- Measures to manage any potential effects on Point Erin Pool users and to ensure safe access to the Pool and adjacent playground is maintained.

- Provide for controllers/supervisors to manage the movements of construction traffic to and from the road network to ensure the safety of all road users is maintained.
- Ensuring all construction areas are contained and cordoned off.
- Measures to maintain existing vehicle access to property where practicable, or to provide alternative access arrangements.
- Measures to maintain pedestrian and cyclist movements and reduce the impact on mobility impaired users on roads and footpaths adjacent to the construction works. This includes the requirement to provide alternative temporary footpaths/access where the construction works impact pedestrian and cyclist movement, such as in the southwestern corner.
- Implementing appropriate temporary traffic management measures to advise other road users and Point Erin public car park users of construction traffic or temporary restrictions.

Stakeholder communication around temporary traffic management will be critical in minimising effects so there are no surprises and road users can plan their journeys in advance as a result of the changes to the road network during the works. This will be set out in a Communications Plan (also proposed as a condition of consent).

Overall, the proposed works will result in low construction traffic volumes which are considered to be within the typical hourly fluctuations of the nearby roads. Effects on surrounding road network are therefore expected to be minimal. With the implementation of a CTMP, construction traffic effects are considered to be temporary and no more than minor.

6.11.2 Operational traffic

As detailed in section 3.7 above, ongoing maintenance and operation will be required at the main and southwestern access on an infrequent basis (once or twice a year) and will be programmed to occur at off peak times wherever practicable (noting emergency access may be required at times which are unable to be scheduled to avoid peak times). The site access and egress points will be appropriately designed and will have good sight lines. Overall, given the extremely low traffic volumes, operational traffic will have a negligible effect.

6.12 Earthworks, dust and sediment generation

Vegetation clearance and earthworks activities have the potential to cause adverse erosion and sedimentation effects which in turn can adversely affect freshwater and coastal receiving environments.

There are no surface works required along the alignment of the tunnel itself as the tunnel is constructed entirely below ground at depths generally ranging between 20 m and 60 m with all tunnelling spoil removed at the existing consented/designated CI May Road shaft site. Therefore tunnelling activities do not require erosion and sediment control measures as there is no potential for run off.

The terminal shaft construction area comprises earthworks over an area of approximately 3,150 m^2 and a volume of up to approximately 7,500 m^3 (approximately 4,500 m^3 of which is the terminal shaft and connecting tunnel to the control chamber which have limited (if any) potential to generate sediment run-off).

The control chamber construction area comprises earthworks over an area of approximately 1,880 m^2 and a volume of up to approximately 5,000 m^3 (approximately 3,250 m^3 of which is the control chamber and stub tunnel connection towards Sarsfield Street which have limited (if any) potential to generate sediment run-off).

As set out in the draft Erosion and Sediment Control Plan (ESCP) attached at Appendix H4, best practice erosion and sediment controls will be implemented at the construction areas within Point Erin Park. The ESCP outlines potential erosion and sediment control measures to be implemented during the works to minimise the effects of erosion and discharge of sediment laden runoff generated by the works. Specific measures proposed include maintaining a stabilised site and access, use of super silt fences and clean water diversion bunds around the perimeter of the works area, clean loading areas, general housekeeping to maintain a tidy site, and the pumping of water during dewatering to a water treatment plant (e.g. lamella clarifier or similar) for treatment prior to discharge. Where chemical treatment of the water treatment plant is required, it will be detailed within a Chemical Treatment Management Plan (ChTMP) provided prior to commencement of activities being undertaken on site (noting the CI Project has an existing, certified ChTMP which forms the basis of this approach). These measures are in accordance with GD05 guidelines and the project wide and site-specific ESCP for CI which have been certified by Auckland Council.

All erosion and sediment control measures will be regularly monitored and maintained (particularly following rain events) and upgraded/modified where necessary. This will ensure appropriate management and mitigation measures are in place to minimise surface erosion and prevent the discharge of sediment laden water from the site during and immediately following earthworks. Following initial topsoil strip, the sites will be stabilised as soon as practicable. Additionally, access to the sites will be via stabilised vehicle access (and wheel wash facilities used where necessary) to ensure that sediment is not tracked onto the surrounding road network.

Normal best practice construction management measures will be implemented to ensure that the potential for dust nuisance is minimised. Dust suppression measures (if required) will comply with the MfE 2016 document "Good Practice Guide for Assessing and Managing Dust". Provided appropriate dust management measures are implemented, the risk of nuisance dust effects from the construction activities at the nearest sensitive receptors is expected to be less than minor as has been the case at all other CI sites.

With the implementation of the proposed management and mitigation measures outlined above and in the ESCP, and noting the relatively small-scale area of the land disturbance works at Point Erin Park and the limited period associated with site establishment prior to stabilisation, potential adverse effects associated with sediment generation, dust and erosion are considered to be less than minor.

6.13 Disturbance of potentially contaminated soil effects

As outlined at Sections 3.9 and 5.2 of this AEE and in the PSI contained at Appendix H3, there are no known historical or present sources of contamination at the Point Erin Park construction areas. However, experience on other CI construction sites indicates that while no known sources of contamination or HAIL activities exist, there is potential for there to be contaminants above background levels. As no soil sampling has been undertaken to date, it is considered prudent to adopt a worst-case approach and seek consent on this basis.

Watercare has comprehensive procedures in place for the management of contaminated material at other CI sites. Should any contaminated material be discovered through the course of this Project, then it will implement the accidental discovery protocols in the AUP and manage the works in accordance with existing CI Contaminated Site Management Plans which will be adapted to address the particular type of contamination. In the unlikely event that contamination is discovered (by Watercare or the Contractor), then appropriate management measures will be implemented to inform health and safety measures and minimise potential discharges of contaminants to the environment such that any effects will be less than minor.

6.14 Groundwater and settlement effects

T+T has undertaken a screening-level settlement effects assessment which is based on published datasets and site specific available information at the time of writing. This assessment will be refined when the site specific data becomes available in March 2023, upon completion of the geotechnical investigations. However there is sufficient information at the time of writing to undertake a screening-level assessment of the potential groundwater and settlement effects for the Project. The results of this screening-level assessment are set out in Appendix H5 and summarised below.

6.14.1 Tunnel alignment

Two conservative scenarios were considered for the tunnel assessment, with an overarching conservatism in that all of the assumptions are required to be valid simultaneously for the drawdown presented to eventuate (which is unlikely). Hence the assessment is considered to represent a broad envelope of effects that will be refined once the geotechnical data is available.

- Scenario 1 (calculated groundwater inflow into the tunnel of 1.3 m^3/day) results show maximum drawdown of 3 m at the tunnel axis and a 9 m zone of influence. The maximum drawdown-induced settlement for Scenario 1 is 7.5 mm at the tunnel axis.
- Scenario 2 (calculated groundwater inflow into the tunnel of 62 m^3/day) results show maximum drawdown of approximately 10m at the tunnel axis and a 50 m zone of influence. The maximum drawdown-induced settlement for Scenario 2 is 26 mm at the tunnel axis.
- The maximum differential settlement assessed from both scenarios is 1:300 within 5 m of the tunnel axis (Scenario 2). The maximum distance at which settlement is less than 10 mm is 6 m from the tunnel axis (Scenario 2).

Actual settlement during construction is also anticipated to be less than that set out above. The assessment of the two scenarios is conservative in that the calculated settlement is based on a long term permanent stress change that occurs over a period of time. Typical durations of full consolidation for the type of material along the tunnel alignment is in the order of weeks to months, however the TBM takes only around 2-days to transit under any one property (and there is only a 12.5 m section of tunnel open at any one time).

Surface ground settlements results from mechanical settlement are expected to be less than 8 mm with differential settlement less than 1V:1300H for a tunnel centreline depth of 12 m which is expected to be the shallowest section of the alignment. The level of movement is expected to be within the natural seasonal fluctuations of the ground. Furthermore this section of the alignment is under Point Erin Park. The alignment which traverses beneath properties is generally at a minimum depth of 18 m at the northern end of the alignment and 30 m at the southern end of the alignment, and up to around 60 m towards the centre of the alignment under the Jervois Road ridge.

6.14.2 Point Erin Park shaft site

6.14.2.1 Terminal shaft

Based on the screening-level assessment, modelled drawdown is generally even in all directions around the proposed shaft excavation. Maximum groundwater drawdown levels of up to 2.5 m are predicted next to the shaft excavation located in the grassed open space area within Point Erin Park, reducing to less than 0.5 m at approximately 25 m distance, and to near zero to within 100 m distance.

Modelled groundwater induced ground settlement immediately outside the excavation ranges from approximately 5 mm to 8 mm and reduces towards zero at increasing distance from the excavation. This level of movement is expected to be within the natural seasonal fluctuations of the ground. This

assessment indicates there will be no effects on any buildings and structures (noting the terminal shaft is located at some distance from buildings and structures).

Based on previous assessments of secant piles shafts adopting a similar methodology and which are of similar depth in a similar geological setting, circular secant pile shafts result in very limited mechanical settlement (less than 5 mm at the edge of excavation). The effects of mechanical settlement associated with the construction of the terminal shaft in Point Erin Park are therefore expected to be negligible.

Adopting the Burland Classification[45] for risk of damage, the combined settlement effects associated with the terminal shaft is assessed to be within categories 0 to 1 (negligible to very slight).

6.14.2.2 Control chamber

Based on the screening-level assessment, modelled drawdown is generally even in all directions around the proposed control chamber excavation towards the south western corner of Point Erin Park. Maximum groundwater drawdown levels of up to 2.8 m are predicted next to the excavations, reducing to less than 0.5 m at approximately 25 m distance, and to near zero to within 100 m distance.

Modelled groundwater induced ground settlement immediately outside the excavation ranges from approximately 4 mm to 5 mm and reduces towards zero at increasing distance from the excavation. As noted above, this level of movement is expected to be within the natural seasonal fluctuations of the ground.

Based on the proposed construction methodology (sheet piling), a maximum vertical ground settlement of 36 mm can be expected at the edge of the control chamber[46]. Settlement of up to 10 mm (Category 1 on the Burland Classification) is estimated to occur at 6 m from the edge of the chamber. The effects of mechanical settlement are estimated to be negligible beyond 12 m from the chamber's edge.

6.14.2.3 Risk of damage to existing buildings, structures and services

The screening-level assessment indicates that all dwellings and building structures are outside the proposed 5 mm settlement contour line for the works being undertaken in Point Erin Park, indicating that the risk of damage to these structures is negligible based on the Burland Classification.

The only structures predicted to be subject to higher settlements are public assets located near the corner of Curran and Sarsfield Streets. Healthy Waters has provided written approval (refer Appendix G) and therefore, the only asset that requires detailed review and consultation with the asset owner is the road adjacent to the south-western construction area.

6.14.3 Conclusion

Ground settlement and groundwater drawdown monitoring during the construction works will be undertaken to assess if the response of the surrounding buildings and structures is within acceptable tolerances of damage risk. This process allows for the geotechnical effects to be monitored and can act as a trigger for mitigation measure to be implemented if required.

The TBM has the ability to operate in open or closed mode, depending on the ground conditions and groundwater levels. Where the TBM is operating in competent rock, it will likely operate in open mode and some groundwater inflow into the tunnel is expected. However, this will occur for a short

[45] Chapter 26 Building response to ground movements, John B.Burland, ICE manual of geotechnical engineering: Volume I. January 2012, 281-296. The building damage correlation in the Burland Classification is commonly referred to when specifying trigger levels and damage risk classifications

[46] The use of an alternative construction methodology (e.g. secant piles) will result in effects within (less than) this.

duration under any particular property as the TBM progresses along the alignment (at a rate of 10 to 20 m per day). Furthermore on completion of tunnelling every 12.5 m section, the lining is installed and grouted behind the TBM which effectively seals that section off from groundwater inflow.

Where appropriate, the TBM will operate in closed mode (i.e. ceasing groundwater drawdown associated with tunnelling) to ensure appropriate settlement levels are met and to manage the potential risk of damage to properties to within levels considered to be “less than minor” (i.e. Category 1 on the Burland Classification presented above).

Infiltration of groundwater into the shaft and control chamber will be primarily controlled through the design and specification of excavation support systems to control and reduce water inflows that would otherwise have to be pumped out of the shafts, treated and disposed of. The screening level assessment for the terminal shaft and control chamber indicates that groundwater drawdown induced settlement will be within natural season fluctuations, and that combined settlement effects (groundwater drawdown and mechanical settlement) on dwellings and buildings will be less than minor. The only structures predicted to be subject to higher settlements are public assets located near the corner of Curran and Sarsfield Streets.

Any dewatering required will be limited to the duration of construction. On completion of construction there will be no dewatering or discharge of groundwater.

Overall, the initial assessment summarised above indicates that the ground settlement and dewatering effects arising for the tunnel, and shaft and chamber excavations can be managed to acceptable levels provided standard construction methods are adopted and tunnel boring activities take into consideration the locality of compressible materials where inverts are shallow.

6.15 Flooding and stormwater effects

Auckland Council Geomaps indicates that there is an overland flow path (3 ha to 100 ha in size) in the southwestern corner of the park before it runs north along the motorway onramp toward the coastal receiving environment. The construction area in the southwestern corner is identified as being partly within a 1 per cent Annual Exceedance Probability (AEP) floodplain and flood prone area.

The primary flowpath through the area is within drainage pipes, and the construction platform will not modify the entry or exit points of the overland flowpath. Consequently the Flooding Assessment (Appendix H10) concludes that the construction platform will have a negligible effect on the primary and secondary flow paths through the southwestern corner of Point Erin Park.

The construction platform will encroach on the overland flowpath, reducing the cross-section through the flow path by 14% at its narrowest point. However, the predicted flow velocities are very low, and as such the increase in velocity associated with the encroachment into the flowpath, and any potential effects on the upstream or downstream catchments is expected to be negligible. Similarly, the construction platform will result in a temporary small reduction in the storage volume of the floodplain, which the Flooding Assessment concludes will a negligible effect.

Post-construction the eastern-most permanent retaining wall and the plant room will encroach to a small extent into the mapped floodplain. As set out in Section 5.3, as a flood tolerant activity, the infrastructure within the floodplain is a permitted activity. The Flooding Assessment also concludes that the permanent infrastructure will have a negligible effect on the flood plain.

Overall, it is considered that the proposal will not create any new flood hazards or exacerbate existing flood hazards, during the works and after works are completed. Therefore, the potential adverse flooding effects of undertaking the works within a mapped flood plain and overland flowpath will be negligible.

6.16 Air quality effects

An Air Quality Assessment has been prepared by T+T and is provided at Appendix H11.

The CI ventilation system is designed such that there is to be no discharge from the Point Erin Park site during normal operations. During significant storm events, the CI network may fill to the extent that the ATFs at Māngere Pump Station and May Road are no longer able to extract air. In this case, air displaced from the remaining upstream section of the CI tunnel by wastewater inflows will need to be discharged upstream at the Western Springs vent and then at Tawariki Street.

In a significant storm event, if the tunnel fills beyond these existing consenting facilities then a discharge from the air vent at Point Erin Park will occur. This is anticipated to occur less than once in every ten years. This means that very infrequently, and only during or after significant storm events[47], potentially odorous air will be released from the air vent at Point Erin Park for a period of typically up to an hour. The air vent is located at a distance of approximately 130 m from the closest residential dwellings and will be designed to disperse odour and minimise effects (including a stack height of at least 3 m and a uni-directional discharge vent to allow the discharge when required but prevent inlet of air and preferentially draw inlet air through the control chamber[48]).

An emergency release of a much smaller and finite volume of air may also occur from the Plant Room adjacent to Curran Street at an even lower frequency (less than once every ten years) and lower duration (less than two minutes (100 seconds)). This discharge will be directed towards the north or east away from residential areas.

The potential frequency of discharges from the air vent and plant room are therefore very low and the duration is anticipated to be short. Furthermore, the significant dilution of wastewater flows with stormwater will mean that the intensity of odour of the released air is likely to be significantly lower than is typically associated with dry weather sewer flows.

It is also relevant to note that the total annual overflow volume from approximately 12 EOP on the combined network in St Mary's Bay and Herne Bay is approximately 250 ML/year. As well as affecting the natural values of local beaches and waterways and creating potential public health risks for recreational users, these overflows also have odour and amenity-related effects. The CI scheme including the Point Erin Tunnel will reduce the average annual wastewater overflow volumes discharged into the receiving environment. The Point Erin Tunnel therefore has significant positive effects in terms of overflow reduction and associated benefits in terms of odour discharges.

Consent authorities can consider the effects of greenhouse gas emissions on climate change when considering air discharge permit applications[49]. The greenhouse gas effects of the Project are considered to be negligible.

On the basis of the assessment set out in the Air Quality Assessment and summarised above, adverse effects associated with the discharge to air (of odour) from the Project are considered to be less than minor.

6.17 Conclusion

The proposed work forms part of the wider CI scheme, which has been developed to provide additional network capacity and to mitigate wastewater network overflows in the Auckland region. The Project will broadly provide substantial positive effects in relation to providing network capacity and reducing the risk of wastewater overflows into the surrounding freshwater and coastal receiving

[47] Park use is anticipated to be low during significant storm events.

[48] Refer Proposed Consent Conditions in Appendix A.

[49] Section 104E of the RMA was repealed on 30 November 2022.

environments. The provision of resilient wastewater infrastructure will ensure the health and wellbeing of communities across Auckland is provided for.

Construction of the Project has the potential to give rise to a range of environmental effects that have been covered in the preceding assessment. Watercare proposes conditions as part of this resource consent application in order to avoid, remedy, or mitigate the effects of construction activities as appropriate (Appendix A).

In relation to cultural effects, engagement with mana whenua has occurred and is ongoing in order to understand the potential effects of the proposed works on Māori cultural values. Notably the works have avoided the area of the headland and coastal cliff that are identified as a Site of Significance and a recorded archaeological site. More broadly, the Project will result in a significant reduction in wastewater overflows thereby having positive effects on water quality and mauri of coastal waters. Watercare is committed to continuing to work with mana whenua across the life of the project. There will be opportunities for mana whenua to exercise their kaitiakitanga through this process, and to incorporate and acknowledge the history of the area and cultural significance of sites in the reinstatement of the construction area.

Noise and vibration effects associated with construction of the tunnel along the alignment from Tawariki Street in Grey Lynn to Point Erin Park are expected to be imperceptible. The Groundwater and Settlement Screening-level Effects Assessment indicates that dewatering and settlement effects along the alignment can be managed to within acceptable limits as is the current case for the operation of the CI TBM.

The proposed construction works associated with the terminal shaft and control chamber within Point Erin Park will be temporary in nature. It is considered that effects relating to vibration, traffic, earthworks, contaminated land, flooding and stormwater, and air quality will be minor or less than minor. Settlement effects associated with shaft and chamber dewatering will also be managed to within acceptable limits.

The works will be visually prominent elements within the setting of Point Erin Park, resulting in temporary adverse effects on open space amenity, landscape character and visual amenity. The proposed temporary closure of the two construction areas within the park and the proximity of the construction areas to some residences, along with truck movements and the operation of construction machinery (including cranes) and associated noise effects will also impact on amenity values. However the intensity of construction activity will fluctuate over the duration of the construction period and comprehensive measures will be implemented to avoid, remedy and mitigate effects. This includes through the use of site fencing, noise and vibration limits set out in the proposed consent conditions, noise barriers where required, provision of alternative access, and communication with surrounding properties and park users to minimise disruption as far as practicable.

As noted above construction activities are common within residential and urban environments throughout Auckland including within parks and open space zones. Furthermore, CI construction activities and effects are well understood. The management approach contained in this current application is informed by practical on-the-ground experience and mitigation measures that are demonstrated to have worked over the course of the wider CI works. This provides a high degree of confidence regarding the ability to appropriately manage and mitigate effects.

Once complete, the construction areas within Point Erin Park will be reinstated and retained as public open space and a Park Reinstatement and Landscape Plan implemented to ensure landscape and amenity values are maintained and enhanced. The permanent above ground infrastructure is limited and consistent with the scale of structures and buildings commonly located within parks.

Overall, the long-term effects of the CI extension are positive, providing network capacity and reducing the risk of wastewater overflows into the surrounding freshwater and coastal receiving environments, whilst the short-term construction related effects will be subject to extensive management and mitigation, as set out in the technical reports and proposed conditions, such that the effects on the environment can be appropriately managed.

7 Statutory assessment

7.1 Resource Management Act 1991

7.1.1 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.

Traditionally, an analysis of an application against Part 2 of the RMA has been fundamental to the overall assessment of applications for resource consents. Section 104(1) of the RMA requires that consideration of applications for resource consents be 'subject to Part 2'. Until recently this has been considered to require an 'overall broad judgement' approach in the form of a fulsome Part 2 analysis. However, this traditional approach has been called into question through decisions on R J Davidson Family Trust v Marlborough District Council (Davidson)[50].

The AUP has been prepared recently and is considered to contain provisions prepared having regard to Part 2 and a coherent set of policies to achieve clear environmental outcomes. Based on the direction established by the Court of Appeal, an assessment against Part 2 matters is considered to add little if anything to the overall evaluation. Rather the focus of this assessment is on the relevant AUP provisions.

7.1.2 Consideration of applications – section 104(1)

Section 104(1) 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 are:

- Any actual and potential effects on the environment of allowing the activity (section 104(1)(a)). This is discussed at Section 6 above.
- Any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity (section 104(1)(ab)).
- Any relevant provisions of:
  - a national environmental standard.
  - other regulations.
  - a national policy statement.
  - a New Zealand coastal policy statement.
  - a regional policy statement or proposed regional policy statement.
  - a plan or proposed plan (section 104(1)(b)).
- Any other matter the consent authority considers relevant and reasonably necessary to determine the application (section 104(1)(c)).

7.1.3 Applications that relate to a wastewater network – section 104(2D)

When considering a resource consent application that relates to a wastewater network, as defined in section 5 of the Water Services Act 2021 (WSA 2021), Section 104(2D) requires that a consent authority:

a Must not grant the consent contrary to a wastewater environmental performance standard made under section 138 of that Act; and

[50] R J Davidson Family Trust v Marlborough District Council [2018] NZCA 316.

b Must include, as a condition of granting the consent, requirements that are no less restrictive than is necessary to give effect to the wastewater environmental performance standard.

The application relates to a wastewater network under the WSA 2021 i.e. extending the CI wastewater interceptor tunnel, however there are no standards under s138 that apply as at the date of this application.

7.1.4 Matters relevant to certain applications – sections 105 and 107

Sections 105 and 107 are relevant to applications for discharges under section 15.

Section 105 requires the consent authority to have regard to the nature of the discharge and the sensitivity of the receiving environment, the applicant's reasons for the proposed choice and possible alternative methods of discharge.

Section 107 restricts the granting of discharge permits in certain circumstances, namely if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:

- The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials.
- Any conspicuous change in the colour or visual clarity.
- Any emission of objectionable odour.
- The rendering of fresh water unsuitable for consumption by farm animals.
- Any significant adverse effects on aquatic life.

The matters identified in Sections 105(1) and 107(1) have been addressed throughout this report. In particular, Section 3 which describes the receiving environments and Section 6 which assesses the effects on the environment.

Providing for the discharge of contaminants (odour) to air is a necessary operational requirement of a wastewater network. Any such discharge would occur on a very infrequent basis and the effects of such a discharge are very minor in nature.

Similarly, stormwater and construction site related discharges are of a minor nature and will be managed in accordance with industry best practice, as reflected in Council technical publications GD01 and GD05, and will not give rise to any of the effects identified above.

It is important to note that the matters identified in Sections 105(1) and 107(1) relate to the temporary diversion and discharge of stormwater from the construction areas which very marginally exceeds the permitted activity threshold of 5,000 m^2, and the discharge of odour to air on a very infrequent basis (less than once every ten years). As set out in Section 1.5.4, no consents are required or are being sought for network discharges as part of this Project. The ongoing discharges from the network are addressed separately by the existing NDC held by Watercare. Furthermore, a key objective of the Project is to reduce wet weather wastewater overflow discharges and support an 80% reduction in overflow volume as provided for by the NDC.

7.1.5 Proposed conditions of consent – sections 108 and 108AA RMA

Section 108 of the RMA provides that except as expressly provided in that section and subject to section 108AA and any regulations, a resource consent may be granted on any condition that the consent authority considers appropriate, including any condition of a kind referred to in subsection (2). Subsection (2) has not been set out in full for brevity.

Section 108AA sets out the requirements for conditions of resource consents as follows:

1) A consent authority must not include a condition in a resource consent for an activity unless—

   a) the applicant for the resource consent agrees to the condition; or
   b) the condition is directly connected to 1 or both of the following:
      i. an adverse effect of the activity on the environment:
      ii. an applicable district or regional rule, or a national environmental standard; or
   c) the condition relates to administrative matters that are essential for the efficient implementation of the relevant resource consent.

(2) – (5) … [Excluded for brevity]

A set of draft conditions proposed by the applicant are set out in Appendix A. These represent key conditions which capture the mitigation measures and management plans identified in the specialist reports and assessment of effects which are considered necessary to address the potential adverse effects of the proposed activity on the environment[51].

As discussed at Section 6.3, the CI project team's experience over the past three years has demonstrated that the effects associated with the construction of the CI tunnel can be successfully managed by the existing CI designation and resource consent conditions, and the suite of management plans approved by Council for the current construction sites. Therefore, these conditions have formed the basis for the set of conditions proposed at Appendix A.

7.2 National Policy Statements

7.2.1 New Zealand Coastal Policy Statement

The New Zealand Coastal Policy Statement 2010 (NZCPS) states objectives and policies to achieve the purpose of the RMA in relation to the coastal environment of New Zealand.

Point Erin Park is located on a coastal headland on the Waitematā Harbour. The Natural Character, Landscape and Visual Assessment (Appendix H6) identifies the area as being within the coastal environment due to its proximity to the coastal edge. However the Assessment also notes that:

> "*The park has few natural characteristics that contribute to its coastal setting. The natural character values of the coastal environment are concentrated around the historic cliff edge to the north of Point Erin Pools and the edges of the headland where the visual connections and physical access and proximity to the harbour edge are strongest. The extensive modification, roading infrastructure and coastal reclamation around the headland have weakened connections between Point Erin Park and the coast*".[52]

The Environment Court has recently held that it was satisfied that the AUP has given effect to the NZCPS[53]. Notwithstanding this, commentary on the proposed works against key provisions in the NZCPS is included for completeness below. An assessment of the works against the relevant coastal environment provisions of the AUP is provided at Section 7.4.

[51] The proposed conditions are intended to provide a key project-specific key condition set. Watercare expects that there will be standard and administrative type conditions, along with additional other conditions, Auckland Council considers are required.

[52] *Paragraph 55 of the Natural Character, Landscape and Visual Assessment.*

[53] *Auckland Council v Auckland Council [2020] NZEnvC 070 at [44].*

Table 7.1: NZCPS Assessment

NZCPS policy direction	Commentary
Objective 6 - To enable people and communities to provide for their social, economic, and cultural wellbeing and their health and safety, through subdivision, use, and development. Policy 6 – Recognise that the provision of infrastructure in the coastal environment is important to the social, economic and cultural well-being of people and communities (subclause (1)(a)). Consider how adverse visual impacts of development can be avoided in areas sensitive to such effects and as far as practicable and reasonable apply controls or conditions to avoid those effects (subclause (1)(h)). Set back development from the coastal marine area and other water bodies, where practicable and reasonable, to protect the natural character, open space, public access and amenity values of the coastal environment (subclause (1)(i)).	The proposed works will result in a significant reduction in wastewater overflows, increase capacity and provide for a more resilient network. There are many benefits of reducing wastewater overflows – amongst other things it improves coastal water quality which in turn improves public health, safety and the wellbeing of communities (including through enabling uses such as recreational activities, shellfish gathering and cultural activities). It also supports existing development and ensures sustainable and efficient growth. The proposed works also capitalise on the significant investment that Watercare has invested into the Central Interceptor project. Adverse visual effects during construction will be temporary. Following construction there will be limited above ground elements, limited to the plant room and air vent, which will be substantially set back from the CMA (within Point Erin Park) and will be designed to be visually recessive and to minimise visual impacts / maintain and enhance amenity.
Objective 2 / Policy 13 – To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development. Policy 13 Sub-clause (1)(b) requires the avoidance of significant adverse effects and avoidance, remediation or mitigation of other adverse effects of activities on natural character in all areas of the coastal environment not considered to have outstanding natural character.	Point Erin headland is a modified coastal environment due to extensive modification and development, including reclamation of the waterfront and SH1 construction. The LVEA concludes that the proposed work will result in a low level of effects on the natural characteristics of the coastal environment, and that the wider benefit of the Project in terms of reducing wastewater overflows into urban streams and the Waitematā Harbour will have positive effects on the overall health of the harbour and coastal environment. Overall natural character effects are assessed as low (positive).
Objective 1 / Policy 21 - To safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems. This includes maintaining and enhancing coastal water quality where it has deteriorated or is restricting existing uses.	Wastewater overflows have contributed over time to the degradation of coastal environments. The proposed works will provide capacity in the wastewater system thereby reducing wastewater overflow discharges which will improve coastal water quality and in turn, improve public health and wellbeing of communities.
Objective 3 / Policy 2 - To take account of the principles of the Treaty of Waitangi, recognise the role of tangata whenua as kaitiaki and provide for tangata whenua involvement in management of the coastal environment. Policy 17 – Identify and protect historic heritage from inappropriate subdivision, use, and development.	Watercare continues to engage with mana whenua to ensure mana whenua values and the exercise of kaitiakitanga is factored into the project. Notably the works have avoided the area of the headland and coastal cliff that are identified as a Site of Significance and a recorded archaeological site. More broadly, the Project will result in a significant reduction in wastewater

NZCPS policy direction	Commentary
	overflows thereby having positive effects on water quality and mauri of coastal waters.
Objective 4 / Policy 18 - To maintain and enhance the public open space qualities and recreation opportunities of the coastal environment… Recognise the need for public open space within and adjacent to the coastal marine area, for public use and appreciation including active and passive recreation, and provide for such public open space, including by:…	The Project will result in some temporary adverse effects during construction on open space amenity and recreation due to the closure and restriction of access to areas of the park required for construction. However, once construction is complete, the park will be restored in accordance with the condition requiring a Park Restoration and Landscape Plan.

In summary, Point Erin headland is a modified coastal environment with the natural character values concentrated around the historic cliff edge of the headland. The proposed works are located away from this area and will result in a temporary low level of effects on the natural characteristics of the coastal environment which is limited to the construction period.

The wider benefit of the Project in terms of reducing wastewater overflows into urban streams and the Waitematā Harbour will have positive effects on water quality and the health of the harbour and coastal environment. Overall, the Project is considered to be consistent with and finds support from the provisions of the NZCPS in terms of providing for the health of coastal ecosystems as well as the social, economic and cultural well-being of communities.

7.2.2 NPS on Urban Development 2020

The National Policy Statement on Urban Development (NPS-UD) 2020 sets out the objectives and policies for improve planning processes and enabling more development to contribute to well-functioning urban environments under the RMA. The NPS-UD is focused on providing sufficient development capacity to meet the different needs of people and communities and integrating land use planning and infrastructure planning.

The key provisions of the NPS-UD in regard to the Project include:

- Objective 1 is to ensure growth is strategically planned and leads to well-functioning urban environments that enable communities to provide for their social, economic, and cultural well-being and for their health and safety, now and into the future.
- Objective 4 recognises that urban environments, including amenity values, change over time in response to the changing needs of people, communities and future generations.
- Policy 2 requires Tier 1 councils such as Auckland Council to provide at least sufficient development capacity to meet expected demand for housing and for business land over the short, medium and long term.
- Policy 6 requires decision-makers when making planning decisions that affect urban environments to have particular regard to the built form anticipated by RMA planning documents, the benefits of urban development, any relevant contribution made to meeting the requirements of the National Objectives Framework (NOS) and the likely and future effects of climate change.

Auckland Council notified PC78 to the AUP on 18 August 2022. PC78 is an 'Intensification Planning Instrument' (IPI) which responds to the NPS-UD 2020 (amended in 2022) and the requirements of the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (Amendment Act). PC78 incorporates the Medium Density Residential Standards' (MDRS) and gives effect to policies in the NPSUD 2020 as mandated by the Amendment Act.

The general area along the alignment of the Point Erin Tunnel through Grey Lynn and Herne Bay, as well as St Mary's Bay and surrounding areas are subject to PC78. However, one of the qualifying matters identified in PC78 is an Infrastructure – Combined Wastewater Network Control. This limits the level of intensification anticipated by the MDRS and Policy 3 of the NPS-UD 2020. Large areas of the immediate catchment in Herne Bay and St Mary's Bay, as well as Grey Lynn and Freemans Bay are subject to this Combined Wastewater Network Control. This qualifying matter (control) has been identified as necessary by Watercare because of a lack of capacity in the combined system in this area to provide for the level of intensification anticipated.

Once complete, the CI project will allow for added network capacity across the wider wastewater network and increased network resilience as set out in Section 2.4. In this respect, the Project directly contributes to the direction established through the NPS-UD 2020.

7.2.3 NPS 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. The overarching objective of the NPS-FM (Objective 1) is to ensure that natural and physical resources are managed in a way that prioritises:

a First, the health and well-being of water bodies and freshwater ecosystems;

b Second, the health needs of people (such as drinking water); and

c Third, the ability of people and communities to provide for their social, economic and cultural well-being, now and in the future.

This objective is supported by relevant policies including:

- Policy 1 which seeks to ensure that freshwater is managed in a way that gives effect to Te Mana o te Wai;
- Policy 2 which seeks that tangata whenua are actively involved in freshwater management;
- Policy 3 which seeks that freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis; and
- Policy 15 which seeks that communities are enabled to provide for their social, economic, and cultural well-being in a way that is consistent with this National Policy Statement.

The proposed works form part of the larger CI project - a regionally significant wastewater interceptor which will provide network capacity and resilience to enable future development to occur while significantly reducing the potential for wastewater overflows to freshwater and coastal environments, thereby making a positive contribution to giving effect to Te Mana o te Wai.

At a land use level, the potential effects on water quality have been considered and will be managed in a way that prioritises the health and well-being of water bodies including surface water and groundwater.

Consultation with mana whenua is occurring as discussed at Section 8.1 to ensure tangata whenua are actively involved in freshwater management (Policy 2).

Overall, the proposed works are considered consistent with the objective of the NPS-FM, in terms of providing firstly for the health of freshwater ecosystems through the significant reduction in wastewater overflows provided for by the Point Erin Tunnel. It also enables future works to further reduce wastewater overflows from the combined sewer system, improving water quality in local waterways, swimmable beaches and the Waitematā Harbour. This, in turn, has benefits for the social, economic and cultural well-being of communities.

7.3 National Environmental Standards

7.3.1 Freshwater NES

The Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (Freshwater NES) sets requirements for carrying out certain activities that pose risks to freshwater and freshwater ecosystems. The standards apply to activities in relation to farming activities, natural inland wetlands, instream structures and the reclamation of rivers. There are no applicable standards relevant to this application[54].

7.3.2 NES Soil

The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES Soil) provides national planning controls that direct the requirement for consent or otherwise for activities on contaminated or potentially contaminated land.

As outlined at Sections 3.9 and 5.2 of this AEE and in the PSI contained at Appendix H3, there are no known historical or present sources of contamination at the Point Erin Park construction areas. However based on experience at other CI construction sites and the potential for there to be contaminants above background levels, Watercare has determined to take a conservative approach and seek consent under the NES Soil.

7.3.3 NES Air Quality

The Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (NESAQ) contains standards related to specific contaminants (particulate matter, carbon monoxide, nitrogen dioxide, ozone and sulphur dioxide) and activities. The proposed discharge to air does not contain any of the specified contaminants and is not one of the specified activities, therefore the NESAQ is not relevant to this application.

7.4 Auckland Unitary Plan

The AUP became operative in part on 15 November 2016. The AUP contains the Regional Policy Statement (RPS), Regional Coastal Plan (RCP) and Regional Plan (RP) and District Plan (DP) objectives and policies.

An assessment of the proposed works in relation to the key policy direction of the AUP is set out below. Relevant objections and policies are set out in Appendix F.

7.4.1 Development and operation of infrastructure

Benefits of infrastructure

The RPS provisions contained in Chapter B3 and the Regional and District Plan provisions contained in Chapter E26 of the AUP contain enabling provisions and provisions that recognise the importance and benefits of infrastructure. Specifically, these provisions seek to:

- Provide for the development, operation, maintenance, repair, upgrade and removal of infrastructure (incl. Objective B3.2.1 (3), Objective E26.2.1 (4) and Policy E26.2.2 (2)).
- Enable resilient, effective, efficient, safe and secure infrastructure (incl. Objective B3.2.1 (1), Objective E26.2.1 (3)).

[54] The NES-F and NPS-FM were amended to confirm that they do not apply to wetlands in the CMA. These amendments took effect on 5 January 2023.

- Recognise the benefits of infrastructure (incl. Objective B3.2.1 (2) and Objective E26.2.1 (1)).

The proposed works provide for an extension of CI from its current termination point at Grey Lynn into Herne Bay, thereby providing an extension of regionally significant infrastructure which efficiently capitalises on the significant investment that Watercare has made in CI (Objective E26.2.1 (2)).

As noted previously, the total annual overflow volume from St Mary's Bay and Herne Bay is approximately 250 ML/year. The CI scheme including the Point Erin Tunnel will reduce the average annual wastewater overflow volumes discharged into the receiving environment and therefore enables the wastewater network in the Herne Bay and St Mary's Bay catchments to be more resilient, efficient and effective in addressing wastewater overflows and associated effects (Objective B3.2.1 (1) and Objective E26.2.1 (5)).

The diversion of flows into CI through the Point Erin Tunnel also has important benefits in terms of addressing existing capacity constraints, particularly in the Ōrākei Main and Eastern Interceptor. The Project therefore provides wider network benefits and increases the overall resilience of the wastewater network.

CI including the proposed Point Erin Tunnel is integral to the ongoing operation of the 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, safety and wellbeing and for the sustainable management of Auckland including its freshwater and coastal environments.

Functional and operational requirements

The functional and operational requirements of infrastructure are recognised through the AUP provisions (Incl. Objective B3.2.1 (4), Policy B3.2.2 (3) and Policy E26.2.2 (2)). As discussed in Section 2.4, options for siting the terminal shaft of the extension to the CI tunnel were determined by key operational and technical requirements, in particular the need for space for all required equipment and construction activities. The need to be able to connect into the existing wastewater network, specifically the St Mary's Bay pressure line and Sarsfield overflow collector, and to provide for potential future local connections were also key factors in determining the location of the terminal shaft and associated infrastructure. Other important factors include the need to access the site during construction as well as for long term operational and maintenance requirements of permanent assets associated with the Project.

Point Erin Park was identified as the termination point for the extension to the CI tunnel as it was the only practicable option in the vicinity which did not directly impact on private property and which provided a connection point with existing wastewater infrastructure.

Managing and assessing the effects of infrastructure

While the above provisions recognise the benefits and requirements of infrastructure, the need to manage the effects of infrastructure is also specifically addressed in the AUP. Relevant provisions seek to:

- Enable infrastructure while appropriately managing adverse effects (incl. Objective E26.2.1 (9) and Policy E26.2.2 (4)), including on the quality of the environment, in particular areas that have been scheduled in the AUP, and on the health and safety of communities and amenity values (Objective B3.2.1 (3)).
- Require the development, operation and maintenance of infrastructure to avoid, remedy or mitigate adverse effects (Policy B3.2.2 (8)) including on (as specified in Policy E26.2.2 (4)):
  (a) health, well-being and safety of people and communities, including nuisance from noise, vibration, dust and odour emissions and light spill;
  (b) safe and efficient operation of other infrastructure;

(c) amenity values of the streetscape and adjoining properties;
(d) environment from temporary and ongoing discharges; and
(e) values for which a site has been scheduled or incorporated in an overlay.

- Following on from the above policy direction, consider the following matters when assessing the effects of infrastructure (Policy E26.2.2 (5)):
  (a) the degree to which the environment has already been modified;
  (b) the nature, duration, timing and frequency of the adverse effects;
  (c) the impact on the network and levels of service if the work is not undertaken;
  (d) the need for the infrastructure in the context of the wider network; and
  (e) The benefits provided by the infrastructure to the communities within Auckland and beyond.

As discussed at Section 2.4, the proposed works have been designed to avoid adverse effects on scheduled sites and overlays through the location of infrastructure outside of the site of significance to mana whenua and SEA overlays located in the northern part of Point Erin Park. The construction areas including the specific location, size and layout has then been optimised to minimise effects including traffic, noise and vibration effects and effects on trees, amenity and recreation values as far as practicable. Furthermore, the measures set out at Section 6 and in the proposed conditions of consent in Appendix A provide robust measures to minimise and mitigate effects (Objective B3.2.1 (8) and Policy B3.2.2 (8)).

As concluded at Section 6.17, the proposed works are anticipated to cause some, mainly temporary, adverse effects due to construction activities in Point Erin Park but will avoid significant adverse effects (with the majority of effects in fact being minor or less, and temporary in nature). Importantly, the Point Erin Tunnel will result in significant benefits in terms of the reduction in wastewater overflows and broader capacity and network resilience benefits.

Based on the numerous benefits the Project will realise and the appropriate management of adverse effects, it is considered that the proposed work is consistent with and also supported and enabled by these RPS and Plan objectives and policies.

7.4.2 Wastewater networks

In addition to the provisions that relate generally to infrastructure above, there are a number of specific provisions that directly relate to the wastewater network. These include Policy B7.4.2 (10), Objective E1.2 (3) and Policy E1.2 (21) which seek to:

- Manage the adverse effects of wastewater discharges to freshwater and coastal water to protect public health and safety.
- Progressively reduce the existing network overflows and associated adverse effects.
- Adopt the BPO for preventing or minimising the adverse effects of discharges from wastewater networks including works to reduce overflow frequencies and volumes.

The total annual overflow volume from approximately 12 engineered overflow points (EOP) on the combined network in St Mary's Bay and Herne Bay is approximately 250 ML/year. These overflows affect the natural values of local beaches and waterways, including the Safeswim beaches of Herne Bay, Home Bay, Sentinel Beach, Masefield Beach and St Mary's Bay, creating potential public health risks for recreational users, and reducing the environmental, amenity and cultural values of the waterbodies. With ongoing growth and development of the Auckland Isthmus this situation will continue to worsen if no improvements are made.

As discussed at Section 2, the Western Isthmus Water Quality Improvement Programme (WIWQIP) was established in 2017 and is aimed at reducing wastewater overflows and improving stream and beach water quality across the City's central western isthmus. Due to a range of factors the original WIWQIP 2017 programme has had to be revised. To achieve the WIWQIP aims, along with the wider

network benefits outlined previously, Watercare, along with Auckland Council Healthy, proposes an extension of the Central Interceptor wastewater conveyance and storage tunnel from Grey Lynn to a new terminal shaft in Point Erin. The extension of the Central Interceptor, the Point Erin Tunnel as provided for in this application, was identified as the best option to achieve the same environmental benefits or better within the 2028 timeframe committed to through the WIWQIP.

As outlined in Section 2.4.4, this approach also provides wider network benefits which separation by itself would not provide and increases the overall resilience of the wastewater network.

The Project is therefore consistent with and contributes to the realisation of these wastewater network provisions, in that it is a BPO approach which entails works to (significantly) reduce overflow frequency and volume.

7.4.3 Open space zoning and trees

Infrastructure is managed through the Auckland-wide provisions set out above. The Zone provisions therefore have limited relevance, however for completeness commentary on the Zone provisions is provided below.

The proposed works are for the construction of wastewater infrastructure which is enabled in open spaces (Policy H7.3 (4)). The terminal shaft and control chamber have a functional and operational need to be located in the open space zone due to space requirements (for construction and ongoing operations and access) as well as to ensure local network connections as discussed further at Section 2.4.

The Project has avoided the headland and coastal cliff area that are identified as a Site of Significance to Mana Whenua. Watercare continues to engage with mana whenua to ensure mana whenua values and the exercise of kaitiakitanga and the relationship iwi have with this area can be factored into the Project (Policy H7.5.3 (3) and Policy H7.6.3 (4)).

While there will be temporary effects from construction works on the amenity values of Point Erin Park, measures will be implemented to avoid, remedy, or mitigate effects and minimise disruption as far as practicable (e.g. through the use of site fencing, noise and vibration limits set out in the proposed consent conditions, noise barriers where required, communication with the public, etc (Objective H7.2 (2)).

Trees within Point Erin Park generally contribute to cultural, amenity, landscape and ecological values that need to be protected (Objective E16.2 (1)). While the site layout has sought to minimise effects on trees, including through locating the terminal shaft in the open grassed area, the proposed works will impact on a limited number of existing trees as part of the site establishment (refer Section 4.4.4.1). Individual trees that do not conflict with construction will be retained and robust tree protection measures adopted (consistent with the Tree Protection Methodology applied on existing CI sites). Replacement tree planting will be undertaken such that there in as increase in the quality and extent of tree cover overall (Objective E16.2 (2)) with a focus on the use of native species where possible (Policy E16.3 (3)).

In addition, as required by the proposed conditions of consent a Park Restoration and Landscape Plan (PRLP) will detail how the amenity values of the park will be restored and enhanced upon the conclusion of construction (Objective H7.5.2 (1) and Policy H7.5.3 (2)). The permanent structures will be located and designed to minimise effects on the open space and amenity values (Policy H7.5.3 (5)) and all other areas will be returned to public use and recreation space (Objective H7.5.2 (2), Objective H7.5.2 (3) and Policy H7.5.3 (4)).

The proposed work is consistent with the relevant Zone objectives and policies.

7.4.4 Coastal environment

There are no works proposed within or directly adjacent to the coastal environment, however given Point Erin Park is located on a headland surrounded by the Waitematā Harbour, an assessment of the provisions that relate to the coastal environment has been undertaken for completeness.

The following comments are made in respect of the works located within the coastal environment:

- The proposed works are located in a modified environment and not in an area of high natural character. Point Erin Park contains the public pools and is flanked on either side by SH1 motorway on and off-ramps. This has weakened the connection Point Erin Park has with the coast (Policy E18.3 (3) and Policy E19.3 (2)).
- As discussed at Section 2.4, there is a functional and operational need for the proposed works to be located in Point Erin Park (Policy E19.3 (2)).
- The adverse effects of construction have also been avoided, remedied and mitigated as far as practicable as discussed at Section 6 (Policy B8.3.2 (4), Policy E18.3 (3) and Policy E19.3 (2)).
- Following completion of the works it is proposed to reinstate the park and restore and enhance landscape, amenity and recreation values (Objective B8.3.1 (1), Objective E18.2 (1) and Objective E19.2 (1))).
- The works will enable network improvements which will directly reduce discharges of wastewater to the CMA (in the Western Isthmus from 219 locations where wastewater spills more frequently to 10 wastewater spill locations) by diversion of the overflows to CI and separating the combined network in some areas. This will therefore aid in safeguarding the integrity, form and functioning of coastal environments, sustaining ecosystems and maintaining coastal water quality.

The proposed works avoid significant adverse effects, and avoid, remedy or mitigate other adverse effects on the coastal environment. More broadly, the Project has significant positive effects on coastal ecosystems and water quality. The proposed works are therefore considered to be consistent with these RPS and Plan objectives and policies.

7.4.5 Mana Whenua

The assessment of environmental effects set out in Section 6 includes a preliminary assessment of effects of the proposed activities on cultural values (Policy B6.3.2 (3)), noting that ongoing engagement is being undertaken with relevant mana whenua as described in Section 8 (Objective B6.3.1 (1), Policy B6.3.2 (2) and Policy B6.3.2 (6)) to ensure the principles of the Treaty of Waitangi can be recognised and provided for through the Project (Objective B6.2.1 (1), Objective B6.2.1 (2) and Policy B6.2.2 (1)).

The proposed work avoids the identified extent of the scheduled places of significance to mana whenua overlay, particularly Te Koraenga Oka – a former pā site (Policy H7.5.3 (3), Policy B6.5.2 (1) and Policy B6.5.2 (6)). It also minimises the amount of land being disturbed as far as practicable (Policy E12.3 (2)). Accidental discovery protocols will be implemented and as a precautionary measure a General Authority from Heritage NZ will be obtained prior to the works commencing (Objective B6.5.1 (1), Policy E11.3 (3) and Policy E12.3 (4)).

Watercare will notify mana whenua prior to commencement of works to agree on a process to bless the site prior to commencement of work, ensure contractors are culturally inducted for the site works, and undertake cultural and archaeological monitoring during topsoil removal for site establishment in Point Erin Park.

Erosion and sediment controls will be employed, and dewatering will be limited to the duration of construction and the proposed works are not expected to adversely affect waterbodies, heritage

values or groundwater users. Construction effects on water will be temporary and will be avoided and mitigated as far as practicable (Policy B6.5.2 (8)).

Watercare will seek to work with mana whenua in the reinstatement of the park following completion of the work. There will be opportunities for mana whenua to exercise their kaitiakitanga through this process, if they wish, and to incorporate and acknowledge the history of the area and cultural significance of sites in the reinstatement of the construction area (Objective H7.5.2 (1)). Further discussions will be undertaken during detailed design and development of the landscape plans for the reinstatement of the park.

The overall objective of the Project is to provide additional sewer capacity and network resilience. The Project will result in a significant reduction in the frequency and volume of network overflows thereby reducing the quantity of wastewater contaminants entering freshwater and the coastal environment. This contributes to the restoration of mauri of these environments and supports cultural well-being and health and safety (Objective B6.3.1 (2)).

The proposed works are therefore considered to be broadly consistent with these RPS and Plan objectives and policies.

7.4.6 Noise and vibration

In relation to noise and vibration, the provisions of the AUP seek to:

- Protect people, and the amenity values of residential zones, from unreasonable levels of noise and vibration, particularly at night (Objective E25.2 (1) and Objective E25.2 (2));
- Enable construction noise and vibration that cannot meet noise and vibration standards by controlling duration, frequency and timing to manage adverse effects (Objective E25.2 (4)); and
- Avoid, remedy and mitigate the adverse effects of noise and vibration from construction, particularly at its source or on the site from which it is generated (Policy E25.2 (10) and Policy E25.2 (2)).

The majority of the construction works will be able to comply with the permitted activity noise and vibration criteria. Specific activities of sheet piling the control chamber and works outside of standard daytime construction hours have been identified as having the potential to exceed the permitted activity thresholds. The duration of these noisier activities will be short, and where possible, the timing of particularly noisy and vibration-inducing activities will be undertaken during standard construction hours to minimise amenity and sleep disturbance. Measures will be implemented in accordance with a CNVMP (or ASCNVMP), which is considered to be the best practicable option for managing construction noise and vibration.

The proposed works are consistent with these objectives and policies.

7.4.7 Land disturbance, water management and flood hazard

The provisions of the AUP related to land disturbance and water management seek to ensure that infrastructure is provided for while ensuring that land and water is managed in an integrated manner. The following comments are made in relation to land disturbance and water management for the proposed works:

- The proposed works will provide important water quality benefits through the reduction in overflows to the environment. As previously noted, this will improve coastal and freshwater quality.

- The area of earth exposed as part of the proposed works is small and will be contained within the identified construction areas within Point Erin Park (Objective E11.2 (2), Policy E11.3 (2) and Policy E12.3 (2)).
- There are no known historical or present sources of contamination at the Point Erin Park construction areas as discussed in the PSI (Appendix H3).
- The proposed works in Point Erin Park will be undertaken following best practice management measures. Erosion and Sediment Control measures (in accordance with the Auckland Council Guidance Document (GD05)) will be implemented for the duration of the proposed works to prevent the discharge of sediment laden water to watercourses and to avoid, remedy and mitigate adverse effects of people and the environment as far as practicable (Policy B3.2.2 (8), (Policy B7.4.2 (8), Objective E11.2 (1), Objective E12.2 (1), Policy E11.3 (1), Policy E12.3 (1) and Policy E1.3 (26)).
- The proposed works will largely involve the installation of underground infrastructure (i.e. a wastewater interceptor tunnel). At Point Erin a small portion of the proposed surface work interact with an identified floodplain and overland flood path. The works have a functional need to be located in the floodplain, due to the need to connect to existing wastewater infrastructure (Objective E36.2 (4)). As discussed in the Flooding Assessment (Appendix H10) there will be no adverse effects on flood risk as a result of the proposed works (Policy B10.2.2 (5), Objective E36.2 (2), Objective E36.2 (5), Policy E36.3 (3) and Policy E36.3 (4), Policy E36.3 (21)). The function of the relevant overland flow paths will be maintained (Policy E36.3 (29) and Policy E36.3 (30).
- Appropriate stormwater management will be employed. The works at Point Erin will create impervious areas which marginally exceed the permitted activity thresholds, however this is temporary over the construction period and the surfaces will be subject to low vehicle traffic and there will be limited sources of contaminants (Policy B7.4.2 (9) and Policy E1.3 (11)).
- The effects of the groundwater take and diversion due to tunnel and shaft construction have been considered in Section 6.14 of this AEE. Where required, groundwater levels and any potential settlement will be monitored and any groundwater containing sediment/other contaminants will be treated prior to discharge. Any dewatering required will be limited to the duration of construction. On completion of construction there will be no dewatering or discharge of groundwater. The proposed works are not expected to adversely affect waterbodies, heritage values, groundwater users or result in significant damage to structures, buildings or services (Policy E2.3 (7) and Policy E2.3 (23)).
- Appropriate protocols will be in place (through proposed conditions of consent and through obtaining a General Authority from Heritage New Zealand) for the accidental discovery of archaeology or mana whenua cultural heritage given the land disturbance is in proximity to known sites of value (Policy E11.3 (3) and Policy E12.3 (4)).

The proposed works will ensure that freshwater and sediment quality are maintained (Objective E1.2 (1)) and are therefore consistent with these RPS and Plan objectives and policies.

7.4.8 Air quality

There are functional and operational requirements which have driven the proposed works location in Point Erin Park as discussed in Section 2 (Objective E14.2 (4)).

The terminal shaft will require a venting arrangement located in close proximity to the terminal shaft. The ventilation system is designed such that there is to be no discharge of air during normal operations and in all but extreme weather circumstances as discussed in Section 6.16. The frequency of potentially odorous air discharges is low (less than once in every ten years and only in a significant

storm event), with significant dilution of wastewater with stormwater during an extreme weather event, and the duration is short.

The air vent is located at an adequate separation distance of approximately 130 m from the closest residential dwellings and will be designed to disperse odour and minimise effects. This is considered to be the best practicable option that is appropriate to the scale of the discharge and potential adverse effects (Objective B7.5.1 (3), Policy E14.3 (2) and Policy E14.3 (8)). The Air Quality Report confirms that the Project avoids offensive or objectionable effects from dust and odour discharges and remedies or mitigates all other adverse effects of dust and odour discharges (Policy E14.3.2(a)).

The proposed works are consistent with these RPS and Plan objectives and policies.

7.4.9 Transport

As described at Section 4.4.6, a new vehicle crossing is proposed on Sarsfield Street for access to the control chamber construction area. It is also proposed to use the Curran Street shoulder for egress from the south-western construction area. The terminal shaft will utilise the existing Point Erin Pools carpark and vehicle crossing.

The site layout, predicted vehicle movements, parking, loading and access have all been considered as part of the design and layout of the proposed works presented in this application and will be managed by way of a Construction Traffic Management Plan to avoid and mitigate adverse effects (Policy E27.3 (21)). For example:

- The Sarsfield Street vehicle crossing has been setback from the Sarsfield Street/Curran Street intersection as far as practicable (Policy E27.3 (20)). The proposed vehicle crossing has been located and will be designed to provide safe, efficient and effective movement of vehicles.
- Pedestrian safety and amenity along public footpaths is prioritised in that where the works impact a pedestrian route, an alternative route will be provided (and adequately sign posted) as close to the original route as possible (Objective E27.2 (5)).

Therefore, the proposed work is consistent with these RPS and Plan objectives and policies.

7.5 Other matters

7.5.1 Watercare's responsibilities and obligations

Watercare's responsibilities and obligations are canvassed in Section 2 of this report. In summary:

- Watercare's obligations to deliver water and wastewater services for Auckland are established under s57 (1) of the Local Government (Auckland Council) Act 2009 (LGA 2009).
- Amongst other things, the LGA 2009 requires that Watercare must manage its operations efficiently with a view to keeping the overall costs of water supply and wastewater services to a minimum.
- The LGA 2009 also requires that Watercare must give effect to the relevant aspects of the Auckland Plan 2050 (discussed below) and must act consistently with other specified plans and strategies of the Council.
- Watercare's Asset Management Plan 2021 – 2041 (AMP) identifies CI as a strategic wastewater project to provide additional conveyance capacity (to handle additional wet-weather volumes), reduce overflows and clean up local beaches and waterways.
- The Statement of Intent (SOI) 2022 – 2025 identifies Central Interceptor as a significant current work programme to future proof growth and provide supply assurance.

7.5.2 The Auckland Plan 2050

The Auckland Plan 2050 is a spatial plan that sets the direction for how Auckland will grow and develop over the next 30 years.

The Plan identifies that Auckland faces significant wastewater management challenges, including that much of the network is ageing and does not meet modern requirements or expectations and that this, coupled with insufficient capacity, can result in negative water quality impacts.

The Auckland Plan recognises that future growth requires greater levels of investment and that there is effectiveness in delivering infrastructure in existing urban areas to create a quality compact urban form. The Plan also recognises that provision of infrastructure provides an opportunity to enhance our natural environment and deliver significant positive environmental outcomes.

The Central Interceptor is identified as an improvement of the critical infrastructure network that has commenced since 2018 (Map 21 – Development Strategy) to rectify this issue and provide for a sustainable and long-term wastewater management system for the Auckland Region.

7.5.3 Waitematā Local Board Plan 2020

Local board plans are strategic three-year plans that are developed in consultation with the community. They set out the direction for the local area that reflects community aspirations and priorities. Improvement of the environmental quality and biodiversity of the Hauraki Gulf is an advocacy area of the Waitematā Local Board. CI is identified as part of the Western Isthmus Water Quality Improvement Programme targeting improvements in water quality at beaches and within harbours (refer Sections 2.3 and 2.4 above).The Waitematā Local Board has been consulted on the proposed work (refer Section 8.4.1).

7.5.4 Heritage New Zealand Pouhere Taonga Act 2014

The purpose of Heritage New Zealand Pouhere Taonga Act 2014 is to promote the identification, protection, preservation, and conservation of the historical and cultural heritage of NZ. Modification or destruction of an archaeological site is prohibited unless an archaeological authority is obtained from Heritage NZ, and this applies whether or not the site has been previously recorded or listed.

Given the coastal location and proximity to known sites of significance to mana whenua and recorded archaeological sites, as discussed at Section 5.4.2 a General Authority will be obtained from Heritage New Zealand prior to works commencing.

7.5.5 Reserves Act 1977

Point Erin Park is held in freehold by Auckland Council. That is, the Reserves Act 1977 does not apply to the land. There is no relevant management plan for the Park prepared by the Auckland Council.

7.5.6 Iwi Management Plans

An iwi management plan (IMP) is a term commonly applied to a resource management plan prepared by an iwi, iwi authority, rūnanga or hapū. The Auckland Council website identifies the following hapu/ iwi as potentially having an interest in the area:

- Ngāi Tai ki Tāmaki.
- Ngāti Maru.
- Ngāti Pāoa Iwi Trust and Ngāti Pāoa Trust Board.
- Ngāti Tamaoho.
- Ngāti Tamaterā.

- Ngāti Te Ata.
- Ngāti Whanaunga.
- Ngāti Whātua o Kaipara.
- Ngāti Whātua Ōrākei.
- Te Ahiwaru – Waiohua.
- Te Ākitai Waiohua.
- Te Kawerau ā Maki.
- Te Patukirikiri.
- Te Rūnanga o Ngāti Whātua.
- Waikato – Tainui.

No publicly available IMPs were able to be sourced for the iwi listed above except Ngāti Whātua Ōrākei and Waikato – Tainui which are discussed below.

7.5.6.1 Te Pou o Kahu Pokere – Iwi Management Plan for Ngati Whatua Orakei 2018

The proposed works fall within the rohe of Ngāti Whātua Ōrākei and they play an active role in development of the city. The Ngāti Whātua Ōrākei Iwi Management Plan (IMP) is a statement of Ngāti Whātua Ōrākei interests and values as they apply in resource management matters.

The IMP contains sections related to key resource management areas including climate change, urban design and spatial planning, terrestrial biodiversity, waste management, water and cultural heritage. Each of these areas contains specific desired outcomes sought by Ngāti Whātua Ōrākei. The IMP expects that Mātauranga Māori values and the active exercise of kaitiakitanga is embedded into statutory plans, policy documents and development proposals.

The IMP also sets out clear engagement protocols. These protocols include a list of activities that have priority for engagement and a preferred means of engagement (including, but not limited to, early contact and proactive approach in the spirit of partnership). The proposed works are of interest to Ngāti Whātua Ōrākei, particularly given the works are within 50 m of a known site of cultural significance.

Engagement with Ngāti Whātua Ōrākei is ongoing and is described at Section 8.1. It is expected that any particular considerations (e.g. the Ngāti Whātua Ōrākei Accidental Discovery Protocol) as well as other requirements such as cultural induction monitoring and practices will be confirmed through this engagement process.

7.5.6.2 Waikato-Tainui's Environmental Management Plan (Tai Tumu Tai Pari Tai Ao)

Although not in the Waikato, the proposed works are within the rohe of Waikato-Tainui.

The Environmental Plan is developed out of Whakatupuranga 2050 (Waikato-Tainui strategic plan), which is a long-term development approach to building the capacity of Waikato-Tainui marae, hapu, and iwi. The goal of Waikato-Tainui is to ensure that the needs of present and future generations are provided for in a manner that goes beyond sustainability towards an approach that enhances the environment.

The Plan sets out the specific environmental matters of interest to Waikato-Tainui (Section D) including freshwater, land, air, coastal environment, infrastructure and recreation and tourism.

Engagement with Waikato-Tainui has occurred through Watercare's kaitiaki forum and is described at Section 8.1.

8 Consultation

As part of the wider authorisation process for the CI consents and designations, Watercare undertook extensive consultation with a broad range of parties including mana whenua, Local Boards and communities, Auckland Council, Auckland Transport and landowners.

In relation to this application, Watercare has undertaken targeted consultation with mana whenua partners and stakeholders identified below. This consultation will continue throughout the application process, including the notification period, with any particular outcomes or results of consultation reported on to Council.

8.1 Mana whenua

Prior to late 2018, engagement with Mana Whenua about the CI project was primarily completed via Watercare's Mana Whenua Kaitiaki Managers' Forum ('the Forum'). Watercare engages this Forum to seek mana whenua guidance on strategic projects.

Due to the scale and complexity of the Central Interceptor project, more regular and focussed involvement of mana whenua was considered appropriate. This was achieved with the establishment of a Cultural Outcomes Group (COG) in March 2019 which acts as a sub-group of the Forum. This group meets with CI representatives as a working group to support the project team in delivering project outcomes with cultural aspects. The group provides specialist advice particularly in the areas of consent compliance, new consent applications and social outcomes, as well as reporting back to the Forum. Current members of the group are from Te Rūnanga o Ngāti Whātua, Te Ākitai Waiohua, Ngāti Te Ata, and Ngāti Maru.

The CI project also has a specific Cultural Management Plan developed under the guidance of the COG and with the wider Forum membership. A number of procedures and initiatives give effect to the Cultural Management Plan including:

- A process of engagement for cultural monitoring for topsoil stripping activities.
- Cultural inductions.
- Karakia for significant events (such as when the TBM entered/exited the Manukau Harbour section of its journey.)
- Economic opportunities (such as establishing a commercial laundry business for CI PPE with the aim of expanding this business post project).

This Project was presented to the Forum in mid-2022 by Nick Vigar (Healthy Waters) and Tom Scott (WIWQIP Project Manager) with a presentation to the CSO working group in August 2022.

The Point Erin Tunnel project was then added to the Kaitiaki Schedule in October. Te Ākitai Waiohua and Ngāti Te Ata expressed an interest in the application and follow up hui and site visits to Point Erin Park were held with each of these iwi. Ngāti Whatuā Ōrakei also attended the site visit, which was held on 16 November 2022. The site visit was hosted by the CI Environmental Manager (Watercare).

At the site visit, the CI Environmental Manager provided an overview of the Project, and its objectives. Feedback from the site visit attendees included:

- As a pā site, the park is wāhi tapu.
- The cultural aspects of the proposal will need to be worked through over time. While it was acknowledged that the application needs to be submitted on 7 February 2023 to meet the overall project timeframes, the partners will continue to work together through the application process.

- Cultural measures should include cultural monitoring, inductions, blessings.
- Other measures could include use of the Ngāti Whatuā Ōrakei nursery, collection of seeds and cuttings from pōhutukawa that may need to be removed (noting that this needs more mahi on retaining these rākau).

In November, requests for assistance on the reinstatement plan and co-design project for Point Erin were made to 31 mana whenua contacts (the Kaitiaki Forum distribution list). A follow up request was made on 28 November. A briefing was scheduled for 5 December with all interested parties, however the invitees were unable to attend. The meeting has been rescheduled for 8 February 2023 with Forum members from Ngāti Te Ata and Te Ākitai Waiohua who have agreed to assist.

The CI Environmental Manager (Watercare), presented to the Kaitiaki Forum in December 2022 and Ngaati Whanaunga expressed their interest during the presentation.

On 21 December 2022 the CI Environmental Manager met with a representative from Ngāti Te Ata, where the cultural significance of the site as a former pā site was discussed. Watercare acknowledges the significance of the site, and presented on the Project and some of the initial conclusions of the technical assessments. Regarding the development of the park reinstatement plan, Ngāti Te Ata confirmed their interest in being involved, and provided initial feedback, including a recommendation that Ngāti Whātua Ōrakei nursery be used to source plants, that further efforts be made to prune and retain the two pōhutukawa in the south-western corner of the park if possible, and to collect seeds and cuttings, along with a myrtle rust assessment prior to construction.

On 25 January 2023, Watercare met with three interested partners (Te Ākitai Waiohua and Ngaati Whanaunga were not able to attend) to present an overview of the draft technical reports. The key concern for the attendees was about how to engage with the pā in a traditional and customary way.

As a result of the engagement with mana whenua to date, five mana whenua entities[55] have indicated their interest in preparing a Cultural Values Assessment which will consider effects of the Project on cultural values and cultural landscapes.

Engagement with interested mana whenua partners is ongoing and will continue through the Project development and delivery phases, particularly in regard to the reinstatement of Point Erin Park. In addition, regular updates will be provided to the COG monthly hui, interested partners and to the Forum (subject to their agenda availability). Watercare is open to involving mana whenua partners in various aspects of the project design and reinstatement of the Park if consent is granted. Feedback received from mana whenua partners will be provided to Council either directly or at their request.

8.2 Private landowners

In November 2022, a letter was sent to 72 properties[56] along the tunnel alignment containing information about the proposed Point Erin Tunnel. The letter informed those owner/occupiers that their property was in the vicinity of the proposed tunnel construction corridor and that Watercare would shortly be sending them a pack with more detailed information regarding the route of the tunnel in relation to their property.

In December 2022, a second letter was sent to the owners and occupiers along the tunnel alignment. This second letter provided more information about the Point Erin Tunnel and the potential impact on the properties along the tunnel alignment and sought:

- The owner's written consent under the Local Government Act 2002 (LGA). To ensure Watercare has the necessary rights to carry out the construction works under private property, Watercare needs to either obtain written consent from the owner of the land to the

[55] Te Ākitai Waiohua, Ngāti Te Ata, Ngāti Whatuā Ōrakei, Ngāti Maru, Ngaati Whanaunga

[56] The letter was also emailed to 33 of these properties, where Watercare was able to find an email address for the owners.

construction of the tunnel beneath their property or follow a process under legislation. This is a separate legislative process that is not relevant to this consent application.

- That if the owner/occupier was comfortable with the information provided, their written approval under the RMA to the Project. While written approval was sought from owners/occupiers along the tunnel alignment at the same time as consent was sought under the LGA, they are not considered affected in an RMA sense.

Subsequently, Watercare has undertaken a door-knocking programme at all properties along the alignment, to inform owners and occupiers of the proposed Project, and to get their feedback. At the time of writing, the majority of owners/occupiers had been contacted but were reserving their decision. Approximately 11 owners/occupiers had returned the written consent forms and approximately 23 owners/occupiers had questions or concerns that Watercare is working to respond to. Most concerns related to the potential effect of vibration from the TBM, potential effects on their property's structural integrity, and property values. Watercare will continue to respond to questions and concerns from residents along the alignment.

Ongoing engagement with affected landowners and residents in the immediate vicinity of the project works, including offers to meet and discuss directly, is occurring and will continue throughout the consent application process.

8.3 Wider community (including the Herne Bay Residents Association and St Mary's Bay Residents Association)

In August 2022, Watercare updated their public website to detail the reasons the extension works are proposed[57].

In September 2022, an email was sent to 4948 residents in four suburbs, including copies to two local residents' associations, containing an introduction to the Central Interceptor project and Point Erin Tunnel purpose and route, along with an invitation to a public information event. This public information event was in the form of a community drop-in session which was held at the Ponsonby Community Hall on 12 October. A follow up event was held on 15 December 2022 and 20 people attended. The attendees whose properties were directly on the tunnel route were supportive of the project and were reassured about noise and vibration when informed about the depth of the tunnel and project experience to date.

An email was received from one resident raising concerns regarding traffic and vibration. A response was sent 30 November 2022 acknowledging those concerns and confirming Watercare will continue to engage with concerned residents throughout the consent process.

8.4 Auckland Council

8.4.1 Waitematā Local Board

A presentation was made to the Waitematā Local Board on 7 November 2022. Copies of public consultation materials have been also provided to the Local Board.

8.4.2 Parks and Community Facilities

Watercare requires landowner approval from Auckland Council Parks & Community Facilities for the works within Point Erin Park.

A site visit was held on the 16 December 2022 with a representative from the Council Parks team who raised no particular issues with the proposal at that time. The Project's arborist has also been in

[57] https://www.watercare.co.nz/About-us/News-media/Central-Interceptor-extension-proposed-to-clean-up

contact with one of the Council's Senior Urban Forest Specialists. A key item raised was the protection of recently planted juvenile trees by the main construction area as they are doing well (noting the tree 38 will require relocation/removal) and options to retain trees 16 and 17 if possible (the two pōhutukawa in the south western corner).

The Landowner Approval Application was lodged on 15 December 2022, and Watercare will continue to work with the Council Parks team as the application progresses.

8.4.3 Healthy Waters

This Project is a joint Watercare/Healthy Waters initiative under the wider Western Isthmus Water Quality Improvement Programme, an integrated infrastructure improvement programme to enable growth and reduce wet weather overflows. Healthy Waters support the Project (see letter in Appendix G). Watercare will continue to communicate with Healthy Waters in relation to the Project delivery programme.

8.4.4 Regulatory

Ongoing regular meetings regarding the wider CI project have occurred with Auckland Council since mid-2020 to provide a forum to report on progress with the applications, any potential risks and issues etc. Attendees at these meetings include the CI Project's Key Account Lead and Compliance Monitoring Officer.

A Project briefing was held on 12 December 2022 with a number of the Council's specialists to brief them on the Point Erin Tunnel. The briefing was followed by site visits to CI Haverstock and Haycock Shaft Sites.

A meeting was held with Council's groundwater specialist and team leader on 20 December 2022 to present the proposed approach to the groundwater and settlement assessment for the application and the initial high-level findings.

A site visit at Point Erin Park was held with a number of Council specialists on 17 January 2023, and the proposed project was explained in further detail, along with discussion of the approach taken to technical assessments and initial conclusions.

8.5 Auckland Transport

The Project team has engaged with Auckland Transport on the proposed new vehicle crossing on Sarsfield Street to provide site access. In addition, the plant room will be located on a parcel of land which is technically road reserve, although in practice it is managed as part of Point Erin Park. Watercare is seeking Auckland Transport's written approval for the plant room.

A site visit was held with Auckland Transport representatives on 19 December 2022. A representative from Auckland Transport also attended the site visit with the Council specialists on 17 January 2023. Watercare intends to continue engaging with AT representatives on key aspects of the proposal.

8.6 Waka Kotahi

Operational access to the control chamber for maintenance purposes is proposed to be via a permanent sealed access from Sarsfield Street with an exit onto Curran Street and will only be required on an intermittent basis. This is subject to the prior agreement of Waka Kotahi. The permanent egress from the site will extend into the Waka Kotahi designation for the on-ramp and State Highway 1.

A site visit was held with an Environmental Planner from Waka Kotahi on 16 December 2022, and a meeting was held with a Waka Kotahi Traffic Engineer on 21 December 2022. At both discussions, the feedback was that Waka Kotahi was generally comfortable in principle with the proposal but would need to see the detail around design and traffic management to inform their formal position. Two Waka Kotahi representatives attended a site visit to Point Erin Park on 17 January 2023. No concerns were raised at that time.

Watercare intends to continue engaging with Waka Kotahi to understand and respond to any concerns raised.

9 Conclusion

Watercare is proposing to extend the CI tunnel approximately 1.6 km from its current termination point in Grey Lynn through to Point Erin Park in Herne Bay. The Point Erin Tunnel ('the Project') involves the continuation of the CI tunnel boring machine through to a proposed new shaft site to be constructed in Point Erin Park. This shaft site will allow for the retrieval of the TBM and connections to the local sewer network. The Project also requires the construction of a control chamber in the south-western corner of Point Erin Park.

The application is assessed overall as a Discretionary activity.

The Point Erin Tunnel will collect flows from the existing Sarsfield overflow collector and the St Mary's Bay pressure line and transport it to Māngere Wastewater Treatment Plant. As a result of the Point Erin Tunnel, the St Mary's Bay Tunnel will not need to store as much flow as this could be pumped into the Point Erin Tunnel and its storage capacity utilised, thus reducing the frequency of overflows from the St Mary's Bay Tunnel.

This AEE report has been prepared on behalf of Watercare to support an application for resource consents to authorise the construction, operation and maintenance of the Point Erin Tunnel. Watercare requests that the resource consent applications be publicly notified. In accordance with section 95A(2)(a) and 95A(3)(a), public notification is therefore mandatory.

The key draft resource consent conditions proposed by Watercare are included in Appendix A.

This AEE report draws the following conclusions:

- Construction of the Project has the potential to give rise to a range of adverse environmental effects as discussed at Section 6, however given the limited extent of surface works and the proposed mitigation and management measures, the overall effects are considered to be appropriately avoided, remedied and mitigated.
- The actual and potential effects of the proposed works include significant positive effects as the Point Erin Tunnel will significantly reduce overflows into the harbour when it rains. Importantly, the proposed Point Erin Tunnel will achieve the same, or better, water quality outcomes than the original separation proposal within the 2028 timeframe committed to through the WIWQIP. It also enables future works to further reduce wastewater overflows from the combined sewer system, improving water quality in central Auckland waterways, swimmable beaches and the Waitematā Harbour.
- The Project is assessed as being broadly consistent with the relevant objectives and policies of the AUP and finds support from the suite of RPS and Plan objectives and policies that recognise the benefits of infrastructure subject to ensuring that adverse effects are appropriately managed; the need for resilient, efficient and effective infrastructure; and the functional and operational needs of infrastructure.
- Overall, it is considered that the proposed Point Erin Tunnel and associated works are in accordance with Part 2 of the RMA and promote the sustainable management of natural and physical resources.

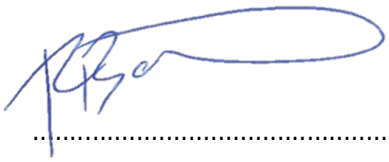
10 Applicability

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 our client will submit this report as part of an application for resource consent and that Auckland Council as the consenting authority will use this report for the purpose of assessing that application.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:



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Rachel Signal-Ross
Senior Planner

Authorised for Tonkin & Taylor Ltd by:

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Karen Baverstock
Project Director

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Mikayla Woods
Senior Planner

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Appendix A Proposed Consent Conditions

Appendix A - Proposed Key Conditions

Notes:

The effects of the proposed Point Erin Tunnel project are well understood as a result of the existing work that has occurred to date on CI. The conditions of consent proposed below are informed by practical on-the-ground experience gained through the CI project to date and have proven to be effective at managing effects while also providing sufficient flexibility for the contractor.

The proposed conditions are based on the CI and Grey Lynn Tunnel consent conditions previously approved by Auckland Council, subject to changes to reflect current practice for condition drafting, experience from CI and implementation of the CI conditions, and specific matters relevant to the Project location particularly for the works in Point Erin Park.

The proposed conditions are intended to provide a project-specific key condition set. Watercare expects that there will be standard and administrative type conditions, along with additional other conditions, Auckland Council considers are required.

A. General conditions

1	Except as modified by the conditions below and subject to final design, the works shall be undertaken in general accordance with the plans and information submitted with the application, including the Central Interceptor – Point Erin Tunnel Assessment of Effects on the Environment (AEE) prepared by Tonkin & Taylor Ltd dated February 2023 and Appendices to the AEE: • Appendix B – Drawings. • Recreation Assessment, prepared by Rob Greenaway, dated 23 January 2023. • Assessment of Noise and Vibration Effects, prepared by Tonkin & Taylor Ltd, dated February 2023. • Preliminary Site Investigation, prepared by Tonkin & Taylor Ltd, dated December 2022. • Draft Erosion and Sediment Control Plan, prepared by McConnell Consultancy Ltd, dated 25 January 2023. • Screening-level Assessment of Groundwater and Settlement Effects, prepared by Tonkin & Taylor Ltd, dated February 2023. • Natural Character, Landscape and Visual Assessment Report, prepared by Isthmus, dated February 2023. • Arboricultural Assessment of Effects, prepared by Tree Consultancy Company, dated 25 January 2023. • Archaeological Assessment, prepared by Clough & Associated Ltd, dated January 2023. • Integrated Transport Assessment, prepared by Tonkin & Taylor Ltd, dated February 2023. • Assessment of Potential Flood Impacts, prepared by Jacobs, dated 25 January 2023. • Air Quality Assessment, prepared by Tonkin & Taylor Ltd, dated February 2023.
2	The consent shall lapse on the expiry of a period of ten (10) years after the date on which the last of any appeals on the consent are determined or withdrawn, or if no appeals are lodged, the date on which the consent is granted in accordance with Section 104 of the RMA. ***Advice note:*** *An extension to the lapse date specified above is subject to the provisions of Section 125 (1A) of the RMA.*
3	**Detailed drawings and design**

	At least twenty (20) working days prior to commencement of works, the Consent Holder shall submit detailed engineering design plans for the Project, or for that stage of the Project works, to the Council.

B. Construction phase consent conditions

Community Liaison and Communications	
4	A liaison person shall be appointed by the Consent Holder for the duration of the construction phase of the Project to be the main and readily accessible point of contact for persons affected by the construction work. The liaison person's name and contact details shall be advised to affected parties by the Consent Holder. This person must be reasonably available for on-going consultation on all matters of concern to affected persons arising from the Project. If a liaison person will not be available for any reason, an alternative contact person shall be nominated to ensure that a Project contact person is available by telephone 24 hours per day seven days per week during the construction phase.
5	The Consent Holder shall prepare a Communications Plan (CP) for the construction phase of the Project or for each Project stage. The CP shall be submitted to the Council no less than twenty (20) working days prior to works commencing for certification that the CP complies with the requirements of Condition 6. ***Advice note:*** *"Project stage" means a separable part of the Project by activity, programme or location/geographic extent (e.g. tunnelling, terminal shaft construction, control chamber construction, TBM removal).*
6	The objective of the CP is to set out a framework to ensure appropriate communication is undertaken with key stakeholders during the construction phase of the Project. The CP shall set out: (a) the method(s) of consultation and liaison with key stakeholders and the owners/occupiers of neighbouring properties regarding the likely timing, duration and effects of works. This shall include the method(s) to ensure affected properties are notified of noisy activities prior to works commencing; (b) details of prior consultation or community liaison undertaken with the parties referred to in (a) above, including outlining any measures developed with such persons or groups to manage or to mitigate any adverse effects or inconvenience that may arise from any construction; (c) full contact details for the person appointed in accordance with Condition 4 to manage the public information system and be the point of contact for related enquiries.
Construction Management	
7	The Consent Holder shall prepare a Construction Management Plan (CMP) for the Project or for each stage of the Project (e.g. tunnelling works, terminal shaft construction and control chamber construction). The purpose of the CMP is to set out the detailed management procedures and construction methods to be undertaken in order to avoid, remedy or mitigate potential adverse effects arising from construction activities and to achieve compliance with the specific conditions of this consent that relate to the matters referred to in Condition 8 (a) to (l) below. The CMP shall be submitted to Auckland Council no less than twenty (20) working days prior to works commencing on the Project or stage of the Project (as relevant) for certification that the CMP complies with the requirements of Condition 8 as applicable.

8	The CMP required by Condition 7 above shall include specific details relating to the management of all construction activities associated with the relevant Project stage, including: (a) Details of the site or project manager and the construction liaison person identified in Condition 4 including their contact details (phone, postal address, email address); (b) An outline construction programme; (c) The proposed hours of work; (d) Measures to be adopted to maintain the land affected by the works in a tidy condition in terms of disposal / storage of rubbish, storage and unloading of construction materials and similar construction activities; (e) Location of site infrastructure including site offices, site amenities, contractor's yards site access, equipment unloading and storage areas, contractor car parking, and security; (f) Procedures for controlling sediment run-off, dust and the removal of soil, debris, demolition and construction materials (if any) from public roads and / or other places adjacent to the work site; (g) Procedures for ensuring that residents, road users, park users and businesses (including Community Leisure Management (CLM) which manages the Point Erin Pool) in the immediate vicinity of construction areas are given prior notice of the commencement of construction activities and are informed about the expected duration and effects of the works; (h) Means of providing for the health and safety of the general public and for pedestrian management as required by Conditions 31 and 32; (i) Procedures for the management of works which directly affect or are located in close proximity to existing network utility services (note: this requirement does not apply to the Consent Holder's infrastructure or where written approval has been obtained from the relevant network utility operator); (j) A mechanism and nominated stakeholder manager responsible for receiving, addressing and monitoring queries and responding to complaints in relation to the construction works; (k) Procedures for the refuelling of plant and equipment; (l) Measures for the protection and management of trees as identified in Conditions 39 and 40.
9	The CMP shall be implemented and maintained by the Consent Holder throughout the entire construction period for the Project or relevant Project stage to manage potential adverse effects arising from construction activities. The CMP or any specific component of the CMP shall be updated as necessary and provided to the Council for certification prior to being implemented.
Construction hours	
10	Construction hours shall be as follows, except where work is necessary outside the specified days or hours for the purposes specified in Condition 11 below. (a) Tunnelling activities - 24 hours a day, 7 days a week operations for all tunnelling activities; (b) General site activities - 7 am to 6pm, Monday to Friday, 8am to 6pm Saturday; and (c) Truck movements - 7am to 6pm, Monday to Friday, 8am to 6pm Saturday.

11	Work may occur outside of the specified days or hours set out in Condition 10 for the following purposes: (a) where, due to unforeseen circumstances, it is necessary to complete an activity that has commenced; (b) where work is specifically required to be planned to be carried out at certain times (e.g. to tie into the existing network during period of low flow or for commissioning sewer connections); (c) for delivery of large equipment or special deliveries required outside of normal hours due to traffic management requirements; (d) in cases of emergency; (e) for the securing of the site or the removal of a traffic hazard; and/or (f) for any other reason specified in the CMP or CTMP. Where any work is undertaken pursuant to (a) to (f) above, the Consent Holder shall, within five (5) working days of the commencement of such work, provide a report to Council detailing how the work was authorised under those provisions. Activities such as dewatering during excavation and concrete pours may be undertaken outside of the specified days or hours subject to meeting the noise limits specific in Condition 24 (or as otherwise provided for through an ASCNVMP required by Condition 25).
Earthworks *Note: It is anticipated that Auckland Council will include a full suite of standard earthworks conditions. The below proposed conditions are intended to provide a key condition set.*	
12	At least ten (10) working days prior to the commencement of any earthworks at the site authorised by this consent, the Consent Holder must submit a final Erosion and Sediment Control Management Plan (ESCP) for certification by the Council. No earthworks activities shall commence until the ESCP has been certified. Any subsequent amendments to the certified ESCP(s) and/or methodology must be provided to the Council at least ten (10) working days prior to the proposed amendment and certified prior to any such amendment being implemented.
13	The objective of the ESCP shall be to shall be to set out the methods and techniques and management procedures and protocols for controlling the potential for erosion and sediment runoff as a consequence of earthworks. The ESCP must be prepared by a suitably qualified and experienced practitioner in accordance with Auckland Council Guidance Document, Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region, June 2016, Guideline Document 2016/005 (GD05) and the draft ESCP referenced in Condition 1.
14	The ESCP shall include the following information: (a) Timing and duration of construction and operation of control works; (b) Specific erosion and sediment control works (location, dimensions, capacity) in accordance with GD05, including staging details (where relevant) and specific erosion and sediment controls. Erosion and sediment controls are to include: a. stabilised site accesses b. clean water diversion around the construction areas to reduce the contributing catchment to the exposed working areas; c. silt fences and super silt fences;

	d. stabilised construction area platform surface; e. wheel wash facility at the site exit (as a contingency/if required); f. progressive stabilisation of works area as required; and g. the removal of stripped topsoil and surplus excavated material from site. (c) Supporting calculations and design drawings; (d) Catchment boundaries and contour information; (e) Provision for regular inspection and maintenance of ESC measures to maximise the sediment retention efficiency of the site; and (f) Specific dust control measures (where required) in accordance with the Good Practice Guide for Assessing and Managing the Environmental Effects of Dust Emissions, MfE (2016) and the Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region – GD05, Auckland Council (2016).
15	All perimeter controls shall be operational before bulk earthworks commence. All cleanwater runoff from stabilised surfaces including catchment areas above the construction areas shall be diverted away from earthworks areas via a stabilised system so as to prevent surface erosion.
16	At least ten (10) working days prior to the commencement of earthworks at the site, a Chemical Treatment Management Plan (ChTMP) shall be submitted to the Council for certification. The objective of the ChTMP is to set out the management methods, controls and reporting standards to be implemented relating to the chemical treatment of the water treatment devices. For the avoidance of doubt, the ChTMP can be prepared as a standalone plan or as part of the ESCP required by Condition 12 above.
17	To prevent discharge of sediment-laden water or other debris into any public stormwater drainage systems or watercourses and therefore into receiving waters, and to prevent nuisance and amenity impacts on users of the road reserve, there shall be no deposition of earth, mud, dirt or other debris on any public road or footpath resulting from earthworks activity on the site. In the event that such deposition does occur, it shall immediately be removed. In no instance shall roads or footpaths be washed down with water without appropriate erosion and sediment control measures in place to prevent contamination of the stormwater drainage system, watercourses or receiving waters.
18	The Consent Holder shall ensure that all excavation, dewatering systems, retaining structures and associated works for the construction of the chamber, shafts, tunnels, underground structures and associated works, including all temporary and permanent works, are designed, constructed and maintained to avoid, as far as practicable, any damage to buildings, structures and services (including road infrastructure assets such as footpaths, curbs, catch-pits, pavements and street furniture).
19	The Consent Holder shall ensure that all discharges from dewatering activities, wheel washes and other occasional construction site related discharges are treated to an appropriate standard prior to discharge to either land or stormwater drainage systems or other receiving waters.
Unexpected Contamination	
20	In the event of the accidental discovery of contamination during earthworks which has not been previously identified, including asbestos material, the consent holder must immediately cease the works in the vicinity of the contamination, notify the council, and engage a suitably qualified and experienced contaminated land practitioner (SQEP) to assess the situation (including possible sampling and revision of the ESCP) and decide on the best option for managing the material.

Construction Lighting	
21	Construction lighting shall be minimised to the extent practicable and shall meet the relevant permitted standards in Chapter E24 of the Auckland Unitary Plan.
Construction Noise and Vibration	
22	The Consent Holder shall prepare a Construction Noise and Vibration Management Plan (CNVMP) for the Project, or each stage of the Project, that addresses the management of construction noise and vibration from the works. The CNVMP shall be submitted to the Council no less than twenty (20) working days prior to works on that stage commencing for certification by Council that the CNVMP complies with the requirements of Conditions 23 to 29, as applicable. The objectives of the CNVMP are to: (a) Identify the Best Practicable Option (BPO) for the management and mitigation of construction noise and vibration effects. (b) Identify how Project noise and vibration limits will be met and set out the methods for scheduling and undertaking works to manage disruption. (c) Ensure engagement with affected receivers and timely management of complaints.
23	The CNVMP shall be prepared by a suitably qualified and experienced practitioner and shall set out, as a minimum: (a) The relevant construction noise and vibration criteria/limits set out in these conditions; (b) Description and duration of the works, predicted construction noise and vibration levels, anticipated equipment and hours of operation (including specific times and days when construction activities causing noise/vibration would occur); (c) The processes to be undertaken including general acoustic management and mitigation measures proposed to be implemented throughout the course of the Project consistent with best practice and the triggers or thresholds for implementing them (if relevant); (d) Physical noise mitigation measures, including prohibiting the use of tonal reverse alarms, maintenance of access roads (to ensure they are smooth), plant selection and maintenance procedures, orientation of plant and machinery, and site layout. Physical noise mitigation measures shall also include the following, as required to ensure a BPO approach to the management of noise: setting minimum setback distances from sensitive receivers (dwellings); acoustic screening of the control chamber construction area and shaft site construction area; and/or pre-drilling of pile locations; (e) The identification of activities (e.g. sheet piling, tree chipping, out of hours concrete pours, night works) and locations that will require specific noise mitigation measures (including scheduling of works, location and orientation of works and/or the use of temporary acoustic barriers e.g. for tree chipping or night works), consultation undertaken with affected properties to develop the proposed noise management measures, any feedback received from those stakeholders along with the noise management measures that will be adopted based on this consultation; (f) Identification of any activities particularly sensitive to vibration and noise in the vicinity of the proposed works (e.g. Stebbing Recording Centre located at 108/114 Jervois Road, Herne Bay) along with the details of consultation with the land owner(s) of the sites where the sensitive activities are located and any management measures that will be adopted, where required, based on this consultation; (g) Details of noise and vibration monitoring to be undertaken and reporting requirements.

	(h) Communication requirements with stakeholders including notice to owners and occupiers of adjacent buildings prior to construction activities commencing on the site; (i) A complaint management system with contact numbers for key construction staff responsible for the implementation of the CNVMP and complaint investigation. (j) The process for changing, updating, and certifying any changes to the CNVMP; and (k) Training procedures for construction personnel. The CNVMP shall be implemented and maintained by the Consent Holder throughout the construction period for the Project or relevant Project stage to manage potential adverse noise and vibration effects arising from construction activities. The CNVMP or any specific component of the CNVMP shall be updated as necessary and provided to the Council for certification prior to being implemented.
24	Construction noise shall be measured and assessed in accordance with NZS6803:1999 *Acoustics – Construction Noise*, and shall comply with the following AUP noise limits except where authorised by an ASCNVMP (Condition 25): **Time of week** / **Time Period** / **Maximum noise level (dBA)** (L_{eq} / L_{max}) Weekdays: 6:30am - 7:30am: 60 / 75; 7:30am - 6:00pm: 75 / 90; 6:00pm - 8:00pm: 70 / 85; 8:00pm - 6:30am: 45 / 75 Saturdays: 6:30am - 7:30am: 45 / 75; 7:30am - 6:00pm: 75 / 90; 6:00pm - 8:00pm: 45 / 75; 8:00pm - 6:30am: 45 / 75 Sundays and public holidays: 6:30am - 7:30am: 45 / 75; 7:30am - 6:00pm: 55 / 85; 6:00pm - 8:00pm: 45 / 75; 8:00pm - 6:30am: 45 / 75 ***Advice note:*** *i. These limits are contained in Table E25.6.27(1) of the AUP and modified by Standard E25.6.27(4).* *ii. Project construction hours are subject to Condition 10.*
25	An Activity Specific Construction Noise and Vibration Management Plan (ASCNVMP) shall be prepared for works predicted to exceed the project construction noise or vibration limits. For the avoidance of doubt, an ASCNVMP may be a separate management plan or may be included as a section in the CNVMP or otherwise appended to the CNVMP.
26	In preparing an ASCNVMP, the Consent Holder shall consult with those parties likely to be exposed to noise levels exceeding the relevant noise limit(s) and shall submit the results of this consultation to Auckland Council, including any response by the Consent Holder to a matter raised in consultation. The ASCNVMP(s) shall be submitted to the Council for review and approval at least 7 working days prior to the proposed works commencing. Works subject to the ASCNVMP(s) shall not commence until approval is received from the Council. If monitoring shows that levels specified in an ASCNVMP are being exceeded, work generating the exceedance shall stop and not recommence until further mitigation is implemented in accordance with an amended ASCNVMP approved by the Council.

<table>
<tr><td></td><td>An ASCNVMP must:

(a) describe the activity (including duration), plant and machinery that is expected not to comply with the noise limits in Condition 24;

(b) describe the mitigation measures proposed to reduce the noise levels as far as practicable, including any options that have been discounted due to cost or any other reason;

(c) provide predicted noise levels for all receivers where the noise levels will not be compliant with the limits in Condition 24, including the effect of mitigation specified in (b) above;

(d) provide a set of noise limits that are Activity – Specific;

(e) describe the noise monitoring that will be undertaken to determine compliance with the Activity – Specific noise limits; and

(f) describe any additional noise mitigation measures that may be implemented to maintain compliance with Activity Specific noise limits.

Note: It is accepted that the noise limits in Condition 24 may not be met at all times, but that the Consent Holder will adopt the Best Practicable Option to achieve compliance.</td></tr>
<tr><td>27</td><td>An ASCNVMP shall be submitted to Auckland Council no less than seven (7) working days prior to works on that stage commencing for certification that the ASCNVMP complies with the requirements of Conditions 25 and 26, as applicable.</td></tr>
<tr><td>28</td><td>Construction activities shall comply with the Guideline vibration limits set out in the German Industrial Standard DIN 4150-3 (1999) Structural Vibration – Part 3 Effects of Vibration on Structures (DIN 4150).</td></tr>
<tr><td>29</td><td>All tunnelling and construction works must be designed and undertaken to ensure that vibration from the Project does not exceed the following vibration limits in buildings (amenity values):

<table>
<tr><th>Receiver</th><th>Period</th><th>Peak Particular Velocity (PPV) mm/s</th></tr>
<tr><td rowspan="2">Occupied activity sensitive to noise</td><td>Night-time 10 pm to 7 am</td><td>0.3 mm/s</td></tr>
<tr><td>Day-time 7 am to 10 pm</td><td>2.0 mm/s</td></tr>
<tr><td>Other occupied buildings</td><td>At all times.</td><td>2.0 mm/s</td></tr>
</table>

Note: Works generating vibration for three days or less between the hours of 7 am to 6 pm may exceed these limits subject to compliance with Condition 28 and provided that all occupied buildings within 50 m of the extent of the works generating vibration are advised in writing no less than three days prior to the vibration-generating works commencing. The written advice must include details of the location of the works, the duration of the works, a phone number for questions and complaints and the name of the site manager.

Advice note: These limits are contained in Table E25.6.30.1 of the AUP.</td></tr>
<tr><td>30</td><td>If measured or predicted vibration exceeds the limits set out in Condition 29 the Consent Holder must consult with the occupants to:

(a) Discuss the nature of the work and the anticipated days and hours when the exceedances are likely to occur.
(b) Determine whether the exceedances could be timed or managed to reduce the effects on the receiver.</td></tr>
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	(c) Provide in writing, no less than three (3) days before the vibration-generating works begin, details of the location of the works, the duration of the works, a phone number for questions and complaints, and the name of the liaison person (Condition 4). The Consent Holder must maintain a record of the consultation and provide this to the Council upon request. **Advice note:** *Vibration amenity limits do not apply at any dwelling that is not occupied during the works. This allows high vibration works to be scheduled when residents are not home, subject to compliance with Condition 28 and compliance with amenity controls at other nearby dwellings that are occupied.*
Traffic management	
31	The Consent Holder shall submit a Construction Traffic Management Plan (CTMP) to Council at least twenty (20) working days prior to the commencement of Project works at Point Erin Park. No construction activity shall commence until certification is provided from Council that the CTMP satisfactorily gives effect to the objectives set out below, and complies with the requirements in Conditions 32 to 34. The objectives of the CTMP are to: (a) Ensure construction traffic movements on the transport network, including Sarsfield Street, Curran Street and the SH1 onramp, are appropriately managed; (b) Provide for the safety of everyone at all times; (c) Minimise disruption and maintain pedestrian and vehicle access to/from surrounding residential properties and Point Erin Park including Point Erin Pool, carpark and playground; (d) Minimise disruption from construction traffic on the travelling public and road users along the identified sections of the construction routes; (e) Seek to avoid full road closures and minimise any partial or managed closures; (f) Manage integration with other construction projects and Auckland Transport projects.
32	The CTMP shall be prepared by a suitably qualified and experienced traffic expert and in accordance with the Council's requirements for traffic management plans or CTMPs (as applicable) and New Zealand Transport Authority's Code of Practice for Temporary Traffic Management and must set out, as a minimum: (a) Traffic management measures to be implemented; (b) Any road closures that will be required and the nature and duration of any traffic management measures that will result, including any temporary restrictions, detours or diversions for general traffic and buses; (c) Construction traffic routing;. (d) The design of the access roads and vehicle crossings; (e) Methods to manage the effects of the delivery of construction material, plant and machinery. This shall include, but not be limited to: • ensuring heavy vehicles access the south-western construction area via Shelly Beach Road and Sarsfield Street and a right turn into the construction area (i.e. not via Curran and Sarsfield Streets / no left turn into the construction area); • traffic management measures, including a site Traffic Management Supervisor: – to ensure the safe movement of construction vehicles on Sarsfield Street and the Pool access road, to manage any potential effects, and to ensure the safe access of cars, cyclists, pedestrians, service trucks and emergency vehicles accessing the Pool and public carpark; – to ensure safe ingress from Sarsfield Street to the southwestern construction area and safe egress onto Curran Street;

	– to ensure construction vehicles can negotiate access and egress to avoid any additional queueing on the adjacent road network during congested peak periods and to ensure a suitable truck layover area is provided if required. (f) Measures to maintain existing vehicle access to property where practicable, or to provide alternative access arrangements; (g) Measures to maintain pedestrian and cyclist movements adjacent to and through Point Erin Park and measures to reduce the impact on mobility impaired users on roads and footpaths adjacent to the construction works. Where the works impact on existing pedestrian or cycle ways, alternative temporary accessways shall be provided where practicable in accordance with Condition 37. Such access shall be safe, clearly identifiable and seek to minimise significant detours. (h) Provision for construction staff and visitor parking on site as far as practicable; (i) Proposed traffic volumes and movements associated with works outside the usual construction hours specified in Condition 10 and associated management and mitigation measures to be implemented. (j) A construction driver education programme (due to the proximity of the Point Erin Pool, carpark and playground); (k) Measures to communicate traffic management measures throughout construction activities (note: these measures may form part of the CP required by Condition 5). (l) Any proposed monitoring to measure the impact of the works on traffic and the impact of the traffic management measures. If safety or operational issues are evident, measures to be implemented to address these issues.
33	The Consent Holder shall consult with the landowner (Auckland Council) and CLM to confirm measures to manage parking and ensure access is maintained for Pool maintenance and operational vehicles, emergency vehicles, and construction traffic during peak parking demand periods for the Point Erin Pool, how these measures will be implemented and the party responsible for implementing any measures identified.
34	Access for all vehicles to the south western construction area shall be via a one-way system entering from the Sarsfield Street access and exiting from the Curran Street access. The design of the access and vehicle crossing on Curran Street shall ensure it does not affect the effective, efficient and safe operation of the Curran Street SH1 onramp.
35	The temporary and permanent vehicle crossings from the south western construction area onto Curran Street shall be designed to meet minimum sight distance requirements of the Safe Intersection Sight Distance (SISD) requirements set out in '*Austroad (2009). Guide to Road Design Part 4A: Unsignalised and Signalised Intersections. Sydney*'.
36	The Consent Holder shall ensure the construction areas in Point Erin Park are cordoned off/fenced to ensure public safety.
37	The Consent Holder shall install construction site fencing to prevent pedestrians using the section of footpath on Sarsfield Street between Curran Street and the site ingress. Prior to the temporary closure of the existing footpath through the south-western corner of Point Erin Park, the Consent Holder shall: (a) provide temporary pedestrian access through the Park to the east of the construction area and wayfinding signs to direct pedestrians to the temporary route and an existing accessible route in the south eastern corner of the Park. (b) undertake temporary improvements on the north side of Sarsfield Street for pedestrians to cross Sarsfield Street. This shall include the provision of a dropped kerb and tactile paving, a short section of surfacing in the berm, and a temporary parking restriction in the immediate area.

	These shall be maintained for the duration of the construction works. Once construction works are completed, the closed footpath through the south-western corner of Point Erin Park and the section of footpath on the northern side of Sarsfield Street shall be reinstated. ***Advice note:*** *These requirements are subject to landowner and asset manager approvals.*
38	All construction traffic shall be managed at all times in accordance with the certified CTMP.
Tree management	
39	The Consent Holder shall provide details in the CMP (required by Condition 7) as to how the potential impacts of construction on trees and vegetation will be managed and minimised. The details shall provide for the: (a) Identification of trees to be protected, pruned, removed, or transplanted and procedures for marking these out on site. (b) Procedures for identifying and protecting trees to be retained where works occur in the dripline or rootzone of such trees as identified by a suitably qualified and experienced arborist. (c) Temporary tree protection fencing which must remain in place for the duration of the works for the Project or relevant Project stage. (d) Procedures for undertaking the works under the supervision of a suitably qualified and experienced arborist including works within the dripline or rootzone of trees and the installation of the temporary fencing.
40	All works shall be undertaken in accordance with the Tree Protection Methodology set out in Appendix A of the Arboricultural Report referenced in Condition 1. All tree removal and pruning shall be undertaken by a suitably qualified and experienced arborist, with all work carried out in accordance with currently accepted arboricultural techniques (e.g., Arb Australia and NZ Arb Minimum Industry Standard MIS308).
41	Within thirty (30) working days following completion of works on the site, the Consent Holder must supply a completion report to Council. The report must be prepared by a suitably qualified and experienced arborist. The completion report must confirm (or otherwise) that the works have been undertaken in accordance with the tree protection measures contained within the Arboricultural Report referenced in Condition 1 and subject to the specific tree protection measures identified in accordance with Conditions 39 and 40 above.
Cultural	
42	*[To be developed in consultation with mana whenua and in response to forthcoming cultural values assessments]*
Archaeology and heritage	
43	The Consent Holder must engage a suitably qualified and experienced archaeologist to give advice on work undertaken on the site in Point Erin Park including monitoring preliminary earthworks. The names and qualifications of this specialist must be provided to the Council prior to earthworks commencing. ***Advice note****:* *The Heritage New Zealand Pouhere Taonga Act 2014 (hereafter referred to as the Act) provides for the identification, protection, preservation and conservation of the historic and cultural heritage of New Zealand. All archaeological sites are protected by the provisions of the Act (section 42). It is unlawful to modify, damage or destroy an archaeological site without prior authority from Heritage*

	New Zealand Pouhere Taonga. An Authority is required whether or not the land on which an archaeological site may be present is designated, a resource or building consent has been granted, or the activity is permitted under Unitary, District or Regional Plans. *It is the responsibility of the Consent Holder to consult with Heritage New Zealand Pouhere Taonga about the requirements of the Act and to obtain the necessary authorities under the Act should these become necessary, as a result of any activity associated with the consented proposals. For information please contact the Heritage New Zealand Pouhere Taonga Archaeologist - 09 307 0413 / archaeologistMN@historic.org.nz.*
44	If any archaeological sites, including human remains are exposed during site works then the following procedures shall apply: (a) Immediately after it becomes apparent that an archaeological or traditional site has been exposed, all site works in the immediate vicinity shall cease. (b) The Consent Holder shall immediately secure the area so that any artefacts or remains are untouched. (c) The Consent Holder shall notify mana whenua, the Heritage New Zealand Pouhere Taonga and the Council (and in the case of human remains, the New Zealand Police) as soon as practicable, and advise those parties that an archaeological site has been exposed so that appropriate action can be taken. Works shall not recommence in the immediate vicinity of the archaeological site until approval is obtained from the Heritage New Zealand Pouhere Taonga. ***Advice note:*** *Should earthworks on the site result in the identification of any previously unknown archaeological site, including any archaeological artefact, koiwi or taonga, the Land Disturbance – Regional Accidental Discovery rule [E12.6.1] set out in the AUP(OP) apply.*
Groundwater and settlement *The below proposed conditions are intended to provide key conditions to inform the application. It is anticipated that Auckland Council will impose further standard groundwater conditions, including monitoring requirements, similar to the Grey Lynn Tunnel conditions.*	
45	**Monitoring and Contingency Plan** The Consent Holder shall, before Commencement of Dewatering, prepare a Monitoring and Contingency Plan (M&CP) addressing groundwater and settlement monitoring for each of the relevant Project stages. This includes a draft and final M&CP as required by Condition 46. The M&CP shall demonstrate how the conditions of this consent will be implemented and shall include the following: (a) details of the groundwater monitoring programme; (b) details of the ground surface settlement and building movement monitoring required; (c) details of the building risk assessment process and building condition surveys process; (d) a location plan of settlement and building deformation marks and the location of existing and proposed groundwater monitoring bores. (e) details of the shaft and control chamber retaining wall monitoring programme. (f) the groundwater, deformation and settlement Alert and Alarm Levels (Trigger Levels) to be utilised for early warning of settlement with the potential to cause damage to buildings and services and details of the processes used to establish, and if necessary, to review these triggers;

	(g) details on the procedures for notification of the Manager in the event that Trigger Levels are exceeded; (h) options for additional investigations and analyses to determine the potential for groundwater effects or settlement and for damage to structures, including additional groundwater or settlement monitoring and building condition surveys; and (i) details of the contingency measures to be implemented in the event of Trigger Levels being exceeded, including details on the practicable methodologies to avoid, remedy, or mitigate surface settlements with the potential to cause damage to buildings. ***Advice note:*** *'Commencement of Dewatering' means commencement of bulk excavation and/or commencing taking any groundwater from a chamber/shaft or tunnel excavation.*
46	The Consent Holder shall submit to the Auckland Council for certification: (a) a draft M&CP including aspects dealing with pre-construction monitoring and locations of monitoring marks, including the pre-construction monitoring required under the conditions of this consent. This shall be provided at least 6 months prior to the Commencement of Dewatering for chamber excavations/shaft sinking or tunnelling of any Project stage; and (b) the final M&CP. This shall be provided at least 20 working days prior to Commencement of Dewatering for chamber excavations/shaft sinking or tunnelling of any Project stage.
47	The Consent Holder shall comply with the M&CP at all times. The Consent Holder may amend the M&CP from time to time, as necessary for the Project or any Project stage. Any amendments to the M&CP must be certified by Auckland Council prior to any such amendment being implemented.
48	**Risk Assessment** The Consent Holder shall undertake a risk assessment to identify existing buildings and structures at risk of damage due to settlement caused by shaft sinking and chamber excavations, or tunnelling activities. The risk assessment process shall be set out in the M&CP required by Condition 45 and shall be based upon the final tunnel alignment and construction methodology of the tunnel and chamber/shaft excavations, the groundwater and settlement monitoring required under this consent, and groundwater and settlement modelling completed using this data. The risk assessment shall include: (a) identification of the zone of influence where differential settlements of greater (steeper) than 1:1,000 are predicted due to chamber excavations/shaft sinking or tunnelling activities; (b) identification of the building types in this zone, and their susceptibility to settlement induced damage; and (c) identification of the buildings and structures at risk of damage due to chamber excavations/shaft sinking or tunnelling activities.
49	A schedule of the addresses of existing buildings and structures identified as being potentially at risk of damage through the risk assessment process defined in Condition 48 shall be included in the M&CP required by Condition 45 (Note: this requirement does not apply to the Consent Holder's infrastructure or where written approval has been obtained from the relevant network utility operator).

50	**Pre-construction condition survey** The Consent Holder shall consult with owners of existing buildings and structures identified through the building risk assessment process defined in Condition 48, and subject to the owner's approval on terms acceptable to the Consent Holder, undertake a detailed pre-construction condition survey of these structures to confirm their existing condition and enable the sensitivity of the existing buildings and structures to any groundwater and ground settlement changes to be accurately determined. The survey shall be completed at least three months prior to the Commencement of Dewatering of any Project stage involving shaft sinking and chamber excavation, or tunnelling. The intent of the survey is to assist in enabling the magnitude of allowable effects from changes in groundwater pressure and ground settlement movements to be reasonably determined. The survey shall include but not necessarily be limited to the following: (a) major features of the buildings and site developments, including location, type, construction, age and existing condition; (b) type and capacity of foundations; (c) existing levels of aesthetic damage; (d) existing level of structural distress or damage; (e) assessment of structural ductility; (f) susceptibility of structure to movement of foundations, including consideration of the local geological conditions.
51	**Post-construction condition surveys** Unless otherwise agreed in writing with the building owner that such survey is not required, the Consent Holder shall (subject to the owner(s) approval on terms acceptable to the Consent Holder), within six months of the Completion of Dewatering of any Project stage involving shaft sinking, chamber excavation or tunnelling, undertake a post construction survey of buildings identified in accordance with Condition 48. The Consent Holder may, if they are able to provide evidence to show the deformation was not caused by activities related to this consent, seek written approval from Auckland Council to waive this condition. If any building damage is identified following completion of the pre-construction survey, the survey shall determine the likely cause of damage. ***Advice note:*** *'Completion of Dewatering' means when all the permanent chamber and shaft lining, base slab and walls are complete and the tunnel lining is complete, and effectively no further groundwater is being taken for the construction of the chamber/shaft/tunnel, in accordance with the design.*
52	**Additional condition surveys** The Consent Holder shall, at the direction of Auckland Council, and subject to the owner's approval on terms acceptable to the Consent Holder, undertake an additional survey on any existing building or structure surveyed in accordance with Condition 48, for the purpose of checking for damage and for following up on a report of damage to that building. The requirement for any such survey will cease six months after the Completion of Dewatering of any Project stage involving shaft sinking, chamber excavation or tunnelling.
53	The Consent Holder shall ensure that a copy of the pre, post-construction and any additional building survey reports are provided to the respective property owner(s). A copy is also to be made available to Auckland Council upon request (unless the property owner(s) has instructed the Consent Holder not to do so).

54	The building condition surveys required by this consent shall be undertaken by an independent and suitably qualified and experienced practitioner. When requested in writing by Auckland Council, the Consent Holder provide the contact details and qualifications of this person within five workings days.
55	**Repair of damage** If the exercise of this consent causes any unforeseen damage to buildings, structures or services not assessed under Condition 48 and/or 52, the Consent Holder shall notify Auckland Council as soon as practicable, and provide in writing to the Auckland Council a methodology for repair of the damage caused that has been certified by a Chartered Professional Engineer, and shall urgently undertake such repairs in accordance with the certified methodology, at its cost, unless written approval for this damage is provided from the owners. ***Advice note:*** *Unforeseen damage - means damage to buildings and structures that has occurred outside the area identified as the zone of influence under Condition 48 or to buildings or structures that are located within the zone of influence but were not considered to be at risk at the time of the approval of the M & CP.*
56	**Settlement and Deflection Monitoring** The Consent Holder shall establish and maintain a Settlement Monitoring Network of ground settlement monitoring marks and inclinometers to detect any deformation (vertical and/or horizontal movements) at the locations described in the M&CP and for the period required by the conditions of this consent. a. The locations of the monitoring marks shall be identified on a plan within the draft M&CP, as required under Condition 45 (note: this shall reflect the draft monitoring plans provided as Appendix F to the Groundwater Assessment referenced in Condition 1); b. The locations and number of monitoring marks shall be sufficient to provide a reliable basis for assessing, monitoring and responding to settlement risk during chamber/shaft and tunnel construction work, and for confirming compliance with the limits set out in the M&CP.
57	Prior to the Commencement of Dewatering of any Project stage involving chamber/shaft sinking or tunnelling, the Consent Holder shall assess the potential settlement effects resulting from the exercise of this consent. The output of this assessment shall be used to define the expected settlement levels and to establish settlement Trigger Levels (Alert Levels and Alarm Levels) that minimise the potential for damage to existing buildings or structures. The process for establishing settlement Trigger Levels shall be set out in the M&CP and shall be based upon the final tunnel alignment and construction methodology, any groundwater, deformation or settlement monitoring required under this consent, and groundwater and settlement modelling completed using this data. A factor of natural seasonal variability shall be allowed for in this review. ***Advice Note:*** *'Alert Level' is the Differential and Total Settlement Limit set at a threshold less than the Alarm Level, at which the Consent Holder shall implement further investigations and analyses as described in the M&CP to determine the cause of settlement and the likelihood of further settlement.* *'Alarm Level' is the Differential and Total Settlement Limit set in M&CP, or which has the potential to cause damage to buildings, structures and services, at which the Consent Holder shall immediately stop dewatering the site and cease any activity which has the potential to cause deformation to any building or structure or adopt the alternative contingency measures approved by the Team Leader Compliance Monitoring Central.*

58	The Consent Holder shall ensure that the exercise of this consent does not cause building or ground settlement greater than the Alarm Level thresholds specified below or as otherwise identified in the approved GSMCP. (a) greater (i.e. steeper) than 1:1,000 differential settlement (the Differential Settlement Alarm Level) between any two adjacent settlement monitoring marks required under this consent; or (b) greater than 50 mm total settlement (the Total Settlement Alarm Level) at any settlement monitoring mark required under this consent.

C. Park reinstatement and permanent assets

Permanent buildings and structures	
59	At least three (3) -months prior to their construction, the Consent Holder shall provide design plans and information which specifies the design details, location and materials of the permanent above-ground wastewater infrastructure to remain at the site including: (a) The plant room; (b) The air vent; (c) Any lid structures and chamber covers. The design for the buildings/aboveground structures shall take into account the following matters: (a) The requirement to meet the AUP permitted activity limits for operational noise (Condition 65); (b) The extent to which the buildings/structures minimise potential adverse effects, and maintain and enhance the amenity of the surroundings (including neighbouring properties) including through; • The use of building materials which minimise the potential for graffiti and vandalism; • Ensuring buildings/structures are visually integrated into, and respond to, the immediate surrounding environment through use of appropriate colours, textures, design and modulation of the plant room building form; • Minimising the visual clutter of surface elements; • The application of Crime Prevention Through Environmental Design (CPTED) principles in the design of the plant room; and • The use of planting to screen and/or visually anchor the plant room building and enhance amenity values. The design plans and information for permanent buildings and structures may be provided separately or may form part of the PRLP required by Condition 62 below.
Mitigation Planting	
60	The Consent Holder shall provide planting to replace and mitigate the removal of trees within Point Erin Park. This shall comprise the planting of a minimum of 38 exotic trees or 49 native trees (native trees shall be preferentially used wherever practicable. As many of these trees as practicable and acceptable to the landowner (Auckland Council) shall be planted within Point Erin Park and comprise a component of the Park Restoration and Landscape Plan required by Condition 62 below. ***Advice note:*** *Where these trees are to be planted within Auckland Council Parks, then the location and species to be planted shall be subject to the agreement of Auckland Council as landowner (Parks and Community Facilities).*

Park Restoration and Landscape Plan (PRLP)	
61	The Consent Holder shall prepare a photographic record of the pre-construction condition of the park and any park assets within the footprint and immediate vicinity of the construction areas. This record shall be provided to the Council at least one (1) month prior to construction in Point Erin Park commencing.
62	At least three (3) months prior to the completion of the Project, the Consent Holder shall prepare and submit to Auckland Council for certification a Park Restoration and Landscape Plan (PRLP) for the site. The objective of the PRLP is to provide details on the reinstatement of Point Erin Park to restore and enhance the landscape, amenity and recreation values of the park.
63	The PRLP is to be prepared by a suitably qualified and experienced landscape architect in consultation with the landowner (Auckland Council) and mana whenua and shall include the following: (a) Removal of construction yards, equipment, temporary retaining walls, and construction access not required for operation and maintenance access. (b) Details of the restoration of the open space to at least the same standard as that recorded as per Condition 61. (c) Replacement or reinstatement of any park assets that were affected by the Project, or any new proposed assets, including, but not limited to: • grassed areas • footpaths • park furniture (d) Details of proposed contouring, landscaping and planting. This is to include: • finished contours / levels • details on the replacement of trees removed as per the mitigation planting required by Condition 60 • any additional planting (including proposed species, location and planting timetable). This shall include details of replacement planting in the south western corner of the park to mitigate tree removal in this area and to assist in visually integrating the plant room and permanent retaining walls • implementation and maintenance programmes (including a landscape planting management and maintenance plan) (e) Details of the treatment of permanent retaining walls, including wall construction, materials and design, planting, and any health and safety requirements (e.g. fencing). (f) Details of all hard landscaping materials, dimensions and specifications; (g) Any details of proposed way finding and interpretation signage within and adjacent to the park. (h) Record of consultation with the landowner (Auckland Council) and mana whenua. In preparing the PRLP, consideration shall be given to opportunities to enhance Point Erin Park including its existing recreation, landscape and amenity values (e.g. additional or alternative walkways, seating, appropriate recognition of cultural values, etc), and planting and landform modification around the plant room, ventilation arrangement and permanent retaining walls to assist in the visual integration of any permanent above ground infrastructure.
64	The PRLP shall set out a timeframe for implementation. This shall be as soon as reasonably practicable, and unless otherwise confirmed through the PLRP, shall be within twelve (12) months of practical completion of construction works.

D. Operational phase consent conditions

Noise

65 The noise arising from the operation of the plant room shall not exceed the following noise limits when measured within the boundary of any site zoned as follows:

Residential	
Time	Noise Limit
Monday to Saturday 0700-2200 hours	50 dB L_{Aeq}
Sunday 0900-1800 hours	
All other times	40 dBL_{Aeq} 75 dB L_{AFmax}

Advice notes:

(a) These noise limits relate to noise generated by the normal operation of permanent works associated with the Project and do not apply to short term maintenance activities.

(b) Noise levels shall be measured and assessed in accordance with New Zealand Standards NZS6801:2008 Acoustics - Measurement of Environmental Sound and NZS6801:2008 Acoustics - Environmental Noise.

Operational air quality

66 The Consent Holder shall, at all times operate, monitor and maintain the Point Erin Tunnel so that odour discharges authorised by this consent are maintained at the minimum practicable level.

67 Within any private property there shall be no odour caused by discharges from the normal operation of the Point Erin Tunnel which, in the opinion of an enforcement officer, is noxious, offensive or objectionable.

Advice Note: *The storage and transfer of wastewater within the Point Erin Tunnel as well as scheduled maintenance activities, and any discharges into air arising from this, are considered part of the normal operation of the tunnel.*

68 The air vent shall be designed to disperse odour and minimise effects. This shall include:

(a) a stack height of at least 3 m; and
(b) a uni-directional discharge vent to allow the discharge when required but prevent inlet of air and preferentially draw inlet air through the control chamber.

In the event that odour discharges are found to result in noxious, dangerous, offensive or objectionable, the Team Leader, Central Compliance Monitoring, may require the Consent Holder increase the vertical stack height to enable greater dispersion.

69 Except during maintenance, cleaning, or other inspections all access hatches shall be adequately covered to ensure fugitive discharges to atmosphere are kept to a minimum practicable level

70 All odour complaints that are received arising from the operation of the Point Erin Tunnel shall be recorded. The complaint details shall include:

	(a) the date, time, location and nature of the complaint; (b) the name, telephone number and address of the complainant, unless the complainant elects not to supply these details; (c) weather conditions, including approximate wind speed and direction, at time of the complaint; and (d) any remedial actions undertaken. Details of any complaints received (as recorded above) shall be provided to the Manager within 7 days of receipt of the complaint(s).

Appendix B Drawings

LEGEND:

- THE CORRIDOR
- PROPOSED TUNNEL ALIGNMENT

NOTES:

1. DESIGN AT CONCEPT STAGE AND SUBJECT TO CHANGE THROUGH DESIGN PROCESS.
2. TUNNEL ALIGNMENT SHOWN WITH 2.5m WIDE CORRIDOR EITHER SIDE OF PROPOSED ALIGNMENT.

PLAN
SCALE. 1:2000

SCALE 1:2000 (A1)

0 40 80 120 160 200m
40 20

CONSENT ISSUE

JACOBS AECOM McMILLEN JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
2	02.02.23	ISSUED FOR CONSENT APPLICATION	PJG	DJK
1	21.12.22	ISSUED FOR CONSENT APPLICATION	PJG	

DESIGNED	AD	12.22
DES. CHECKED	MBS	12.22
DRAWN	PJG	12.22
DWG. CHECKED	PMF	12.22
PROJECT LEADER		
INFRAST'R APP'D		
	BY	DATE

OPERATIONS

INFRASTRUCTURE

Watercare

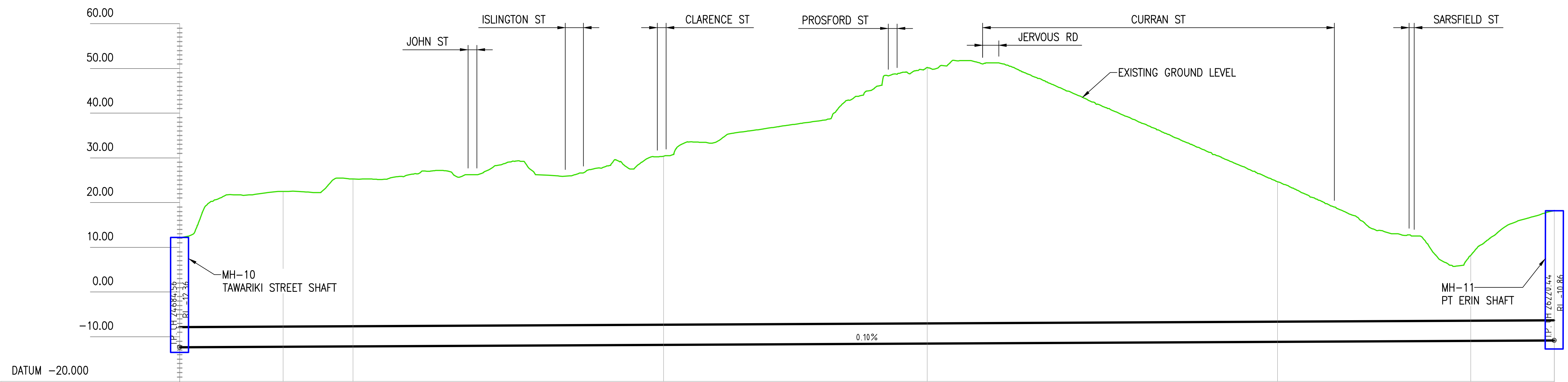
CENTRAL INTERCEPTOR (DSCIN)
82 GRAVITY SEWER INCLUDING MANHOLES
TAWARIKI ST TO PT ERIN – TUNNEL PLAN

CAD FILE 2011933.006	DATE 02.02.23
ORIGINAL SCALE A1 1:2000	CONTRACT No. 6661
REF. No. CI-STAT&PLAN	ISSUE
DWG. No. 2011933.006	2

Plot Date: Feb 07, 2023 - 9:17am C:\pw_work\jacques.greyling@jacobs.com\dms886481_2011933.006.dwg

NOTES:

1. DESIGN AT CONCEPT STAGE AND SUBJECT TO CHANGE THROUGH DESIGN PROCESS.



PIPE DIAMETER AND GRADE: 4500 MM ID PRECAST SEGMENTAL LINING (1 IN 1000)

CHAINAGE (m)	EXISTING GROUND LEVELS (mRL)	INVERT LEVEL (mRL)	DEPTH TO INVERT (m)
		−12.361	
24700	12.99	−12.35	25.33
24725	20.65	−12.32	32.97
24750	21.75	−12.30	34.05
24775	22.03	−12.27	34.30
24800	22.50	−12.25	34.75
24800.1	22.50		
24825	22.38	−12.22	34.60
24839.3			
24850	23.78	−12.20	35.98
24875	25.29	−12.17	37.46
24878.4	25.26		
24900	25.26	−12.15	37.41
24925	25.71	−12.13	37.83
24950	26.42	−12.10	38.52
24975	27.21	−12.08	39.29
25000	25.87	−12.05	37.93
25025	26.87	−12.03	38.90
25050	28.91	−12.00	40.91
25075	27.68	−11.98	39.66
25100	26.06	−11.95	38.02
25125	26.16	−11.93	38.09
25150	27.70	−11.91	39.60
25175	29.28	−11.88	41.16
25200	28.91	−11.86	39.58 40.77
25225	30.39	−11.83	42.22
25225.1	30.40		
25250	33.47	−11.81	45.27
25275	33.36	−11.78	45.14
25300	35.41	−11.76	47.16
25325	36.14	−11.73	47.88
25350	36.87	−11.71	48.58
25372.5			49.22
25375	37.60	−11.69	49.29
25400	38.32	−11.66	49.98
25425	42.06	−11.64	53.70
25450	44.59	−11.61	56.21
25475	48.41	−11.59	60.00
25500	48.81	−11.56	60.38
25519.8	50.22		
25525	49.88	−11.54	61.42
25550	51.80	−11.51	63.31
25575	51.43	−11.49	62.92
25600	51.23	−11.46	62.69
25625	49.38	−11.44	60.82
25650	47.27	−11.42	58.69
25675	45.00	−11.39	56.39 55.50
25700	42.90	−11.37	54.26
25725	40.74	−11.34	52.09
25750	38.61	−11.32	49.93
25775	36.53	−11.29	47.82
25800	34.31	−11.27	45.58
25825	32.15	−11.24	43.39
25850	29.95	−11.22	41.17
25875	27.87	−11.20	39.06
25900	25.65	−11.17	36.82
25911.4	24.65		35.81
25925	23.51	−11.15	34.66
25950	21.19	−11.12	32.32
25975	19.00	−11.10	30.10
26000	16.79	−11.07	27.86
26019.3			25.07
26025	13.80	−11.05	24.85
26050	12.75	−11.02	23.77
26075	11.73	−11.00	22.73
26100	6.49	−10.98	17.47
26125	7.76	−10.95	18.71
26127.3	8.23		19.18
26150	12.26	−10.93	23.18
26175	15.47	−10.90	26.37 27.35
26200	16.99	−10.88	27.87
	18.15	−10.857	

LONGITUDINAL SECTION

SCALE. 1:2500H 1:500V

SCALE 1:500 (A1) 10 8 6 4 2 0 10 20 30 40 50m

SCALE 1:2500 (A1) 50 25 0 50 100 150 200 250m

CONSENT ISSUE

JACOBS AECOM McMILLEN JACOBS ASSOCIATES

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DESIGNED	AD	12.22
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DRAWN	PJG	12.22
DWG. CHECKED	PMF	12.22
PROJECT LEADER		
INFRAST'R APP'D		

OPERATIONS

INFRASTRUCTURE

Watercare

CENTRAL INTERCEPTOR (DSCIN)
82 GRAVITY SEWER INCLUDING MANHOLES
TAWARIKI ST TO POINT ERIN – TUNNEL LONGITUDINAL SECTION

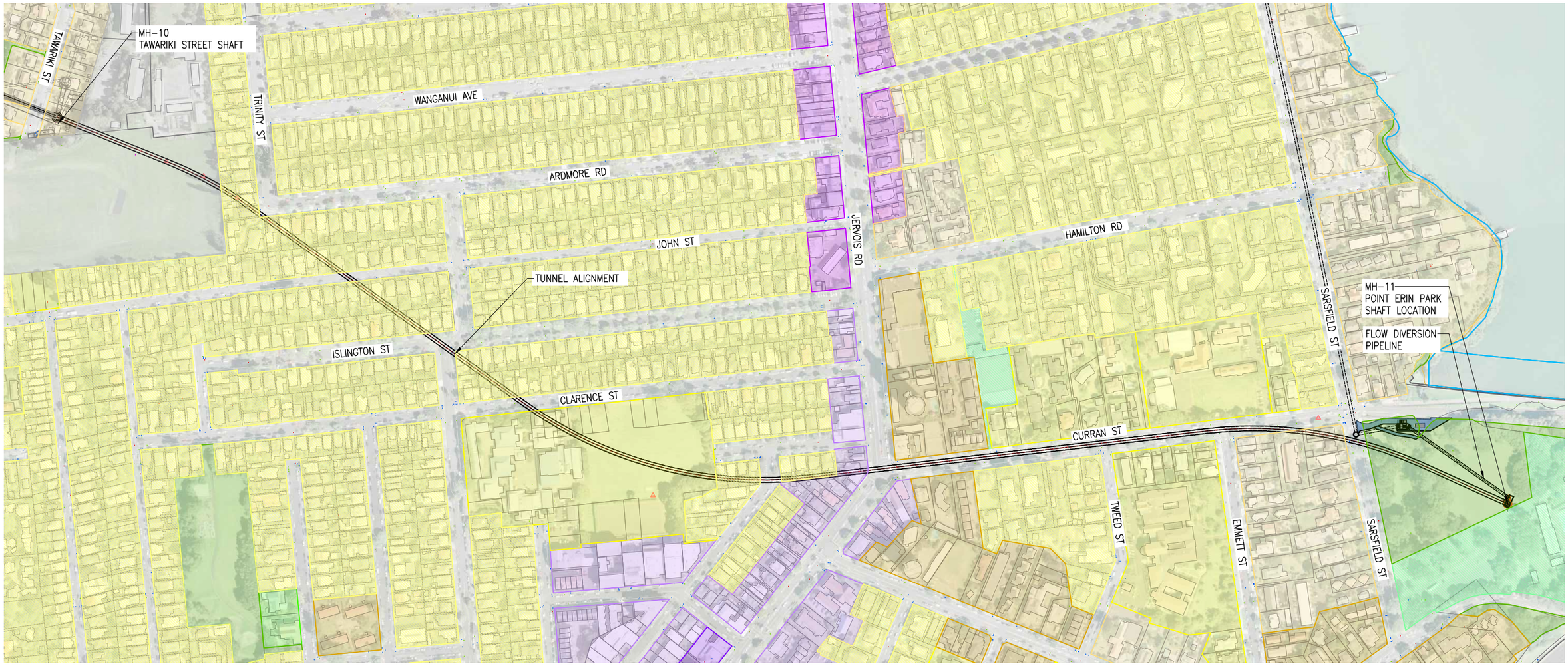
CAD FILE 2011933.007 DATE 02.02.23
ORIGINAL SCALE A1: AS SHOWN
CONTRACT No. 6661
REF. No. CI−STAT&PLAN
DWG. No. 2011933.007
ISSUE 2

LEGEND

- RESIDENTIAL – SINGLE HOUSE ZONE
- RESIDENTIAL – MIXED HOUSING SUBURBAN ZONE
- RESIDENTIAL – MIXED HOUSING URBAN ZONE
- RESIDENTIAL – TERRACE HOUSING AND APARTMENT BUILDINGS ZONE
- OPEN SPACE – INFORMATION RECREATION ZONE
- OPEN SPACE – SPORT AND ACTIVE RECREATION ZONE
- OPEN SPACE – COMMUNITY ZONE
- BUSINESS – NEIGHBORHOOD CENTER ZONE
- BUSINESS – MIXED USE ZONE
- BUSINESS – LOCAL CENTER ZONE
- SPECIAL PURPOSE ZONE

NOTES:

1. DESIGN AT CONCEPT STAGE AND SUBJECT TO CHANGE THROUGH DESIGN PROCESS.
2. TUNNEL ALIGNMENT SHOWN WITH 2.5m WIDE CORRIDOR EITHER SIDE OF PROPOSED ALIGNMENT.



PLAN
SCALE. 1:2000

SCALE 1:2000 (A1)
0 40 80 120 160 200m
40 20

CONSENT ISSUE

JACOBS AECOM McMILLEN JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
1	02.02.23	ISSUED FOR CONSENT APPLICATION	PJG	DJK

DESIGNED	AD	01.23
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DWG. CHECKED	PMF	01.23
PROJECT LEADER		
INFRAST'R APP'D		
	BY	DATE

OPERATIONS

INFRASTRUCTURE

Watercare

CENTRAL INTERCEPTOR (DSCIN)
82 GRAVITY SEWER INCLUDING MANHOLES
TAWARIKI ST TO POINT ERIN – AUCKLAND UNITARY PLAN ZONING

CAD FILE 2011933.008	DATE 02.02.23
ORIGINAL SCALE A1 1:2000	CONTRACT No. 6661
REF. No. CI–STAT&PLAN	ISSUE
DWG. No. 2011933.008	1

Plot Date: Feb 07, 2023 - 11:25am C:\pw_work\jacques.greyling@jacobs.com\dms8864\8\2011933.008.dwg

LEGEND

- NOTABLE TREES OVERLAY
- HISTORIC HERITAGE OVERLAY EXTENT OF PLACE (rcp/dp)
- SPECIAL CHARACTER AREAS OVERLAY RESIDENTAIL AND BUSINESS
- SITES AND PLACES OF SIGNIFICANCE TO MANA WHENUA OVERLAY (rcp/dp)
- DESIGNATIONS

SIGNIFICATION ECOLOGICAL AREAS OVERLAY

- TERRESTRIAL (rp/dp)

NOTES:

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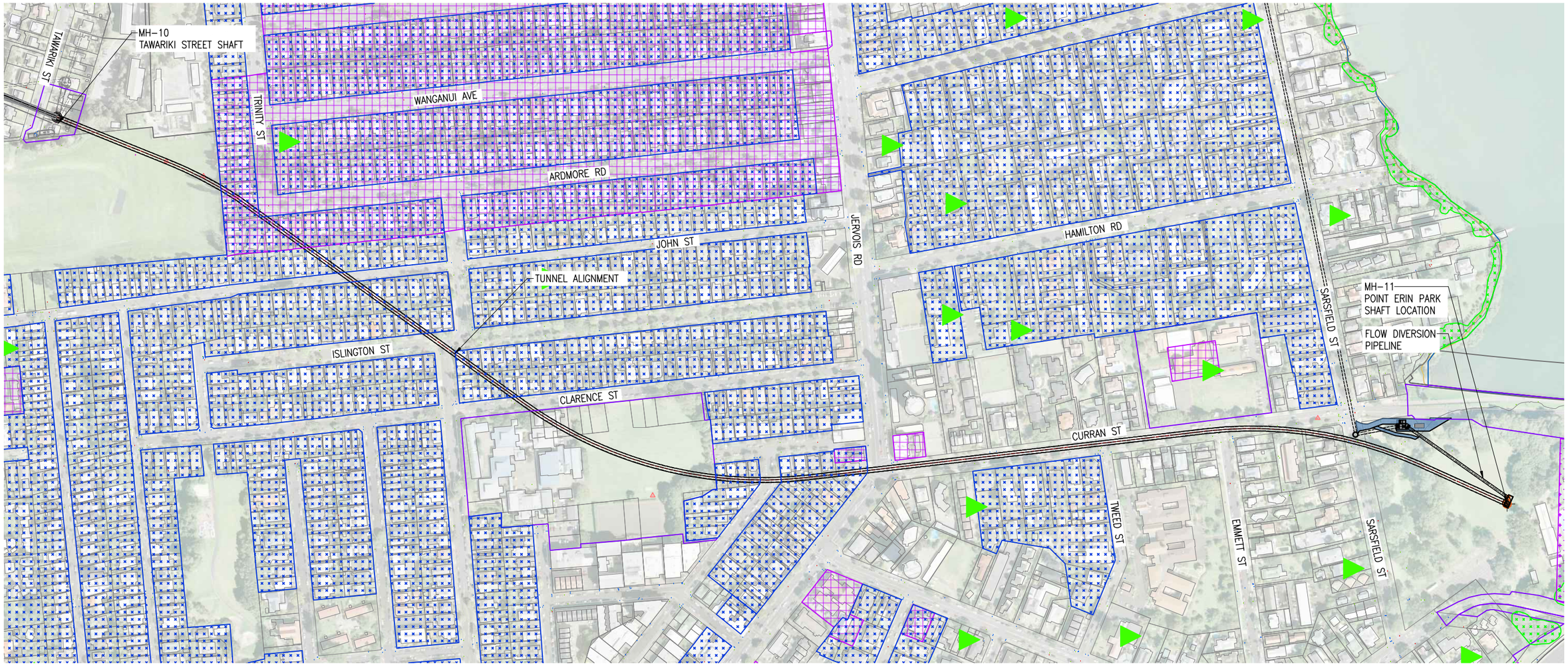

PLAN
SCALE. 1:2000

SCALE 1:2000 (A1)
0 40 80 120 160 200m
40 20

CONSENT ISSUE

JACOBS AECOM McMULLEN JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
1	02.02.23	ISSUED FOR CONSENT APPLICATION	PJG	DJK

DESIGNED	AD	01.23
DES. CHECKED	MBS	01.23
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DWG. CHECKED	PMF	01.23
PROJECT LEADER		
INFRAST'R APP'D		
	BY	DATE

OPERATIONS

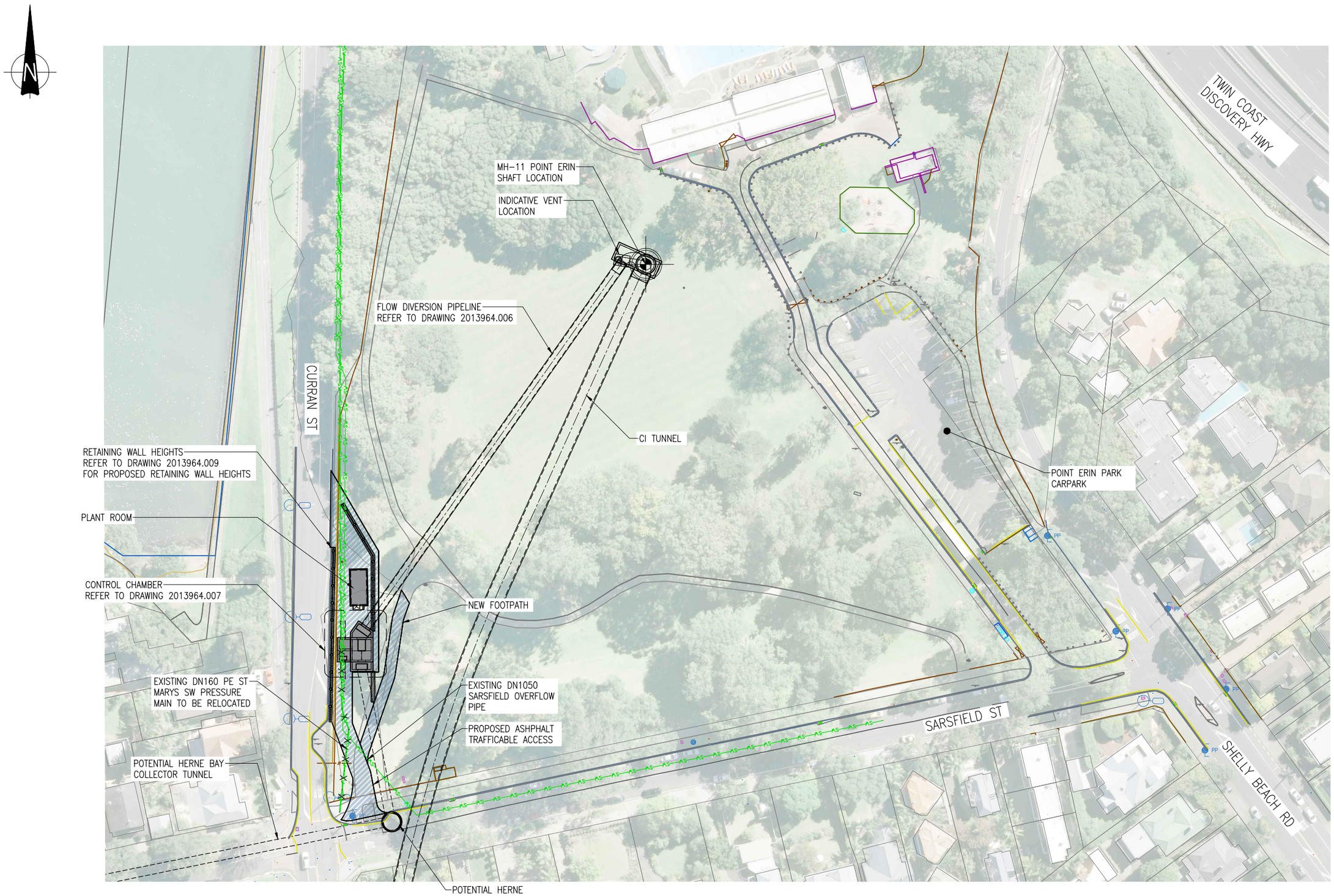
INFRASTRUCTURE

Watercare

CENTRAL INTERCEPTOR (DSCIN)
82 GRAVITY SEWER INCLUDING MANHOLES
TAWARIKI ST TO POINT ERIN – OTHER AUCKLAND UNITARY PLAN ZONING

CAD FILE 2011933.009	DATE 02.02.23
ORIGINAL SCALE A1 1:2000	CONTRACT No. 6661
REF. No. CI-STAT&PLAN	ISSUE
DWG. No. 2011933.009	1

Plot Date: Feb 07, 2023 - 11:29am C:\pw_work\jacques.greyling@jacobs.com\dms88648\2011933.009.dwg



PLAN
SCALE. 1:500

SCALE 1:500 (A1)

0 10 20 30 40 50m
10 8 6 4 2

CONSENT ISSUE

JACOBS AECOM McMILLEN JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
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INFRAST'R APP'D		
	BY	DATE

OPERATIONS

INFRASTRUCTURE

Watercare

POINT ERIN – CENTRAL INTERCEPTOR (DSCIN)
00 SITE GENERAL
PROPOSED SITE LAYOUT

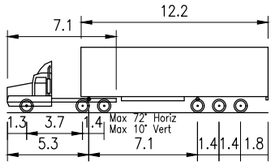
CAD FILE 2013964.002	DATE 02.02.23
ORIGINAL SCALE A1 1:500	CONTRACT No. 6661
REF. No. CI–STAT&PLAN	ISSUE
DWG. No. 2013964.002	2

Plot Date: Feb 07, 2023 - 10:26am C:\pw_work\jacques.greyling@jacobs.com\d0170591.2013964.002.dwg

PLAN
SCALE. 1:500

KEY

- MAIN CONSTRUCTION AREA
- SOUTH-WESTERN CONSTRUCTION AREA
- EXISTING DN160 PE ST MARYS SW PRESSURE MAIN
- EXISTING DN1050 SARSFIELD OVERFLOW PIPE



SEMI-TRAILER (TNZ GEN. MIN. DESIGN RADIUS)

OVERALL LENGTH	17.000m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.250m
MIN. BODY GROUND CLEARANCE	0.417m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	6.00s
WALL TO WALL TURNING RADIUS	10.000m

SCALE 1:500 (A1) 0 10 20 30 40 50m

CONSENT ISSUE

JACOBS AECOM MWH JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
2	02.02.23	ISSUED FOR CONSENT APPLICATION	PJG	DJK
1	21.12.22	ISSUED FOR CONSENT APPLICATION	PJG	

DESIGNED	AD	12.22
DES. CHECKED	MBS	12.22
DRAWN	PJG	12.22
DWG. CHECKED	PMF	12.22
PROJECT LEADER		
INFRAST'R APP'D		
BY		DATE

OPERATIONS

INFRASTRUCTURE

Watercare

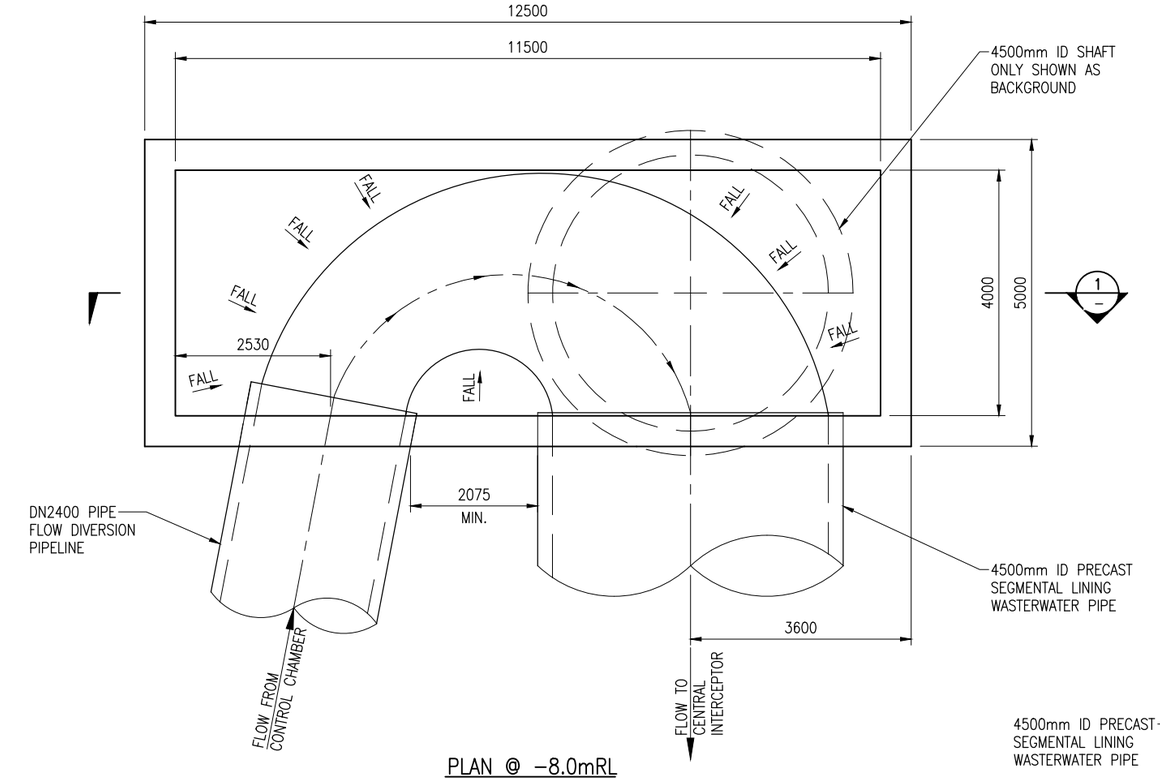
POINT ERIN - CENTRAL INTERCEPTOR (DSCIN)
00 SITE GENERAL
POINT ERIN SITE - CONSTRUCTON PHASE PLAN

CAD FILE 2013964.003	DATE 02.02.23
ORIGINAL SCALE A1 1:500	CONTRACT No. 6661
REF. No. CI-STAT&PLAN	ISSUE
DWG. No. 2013964.003	2

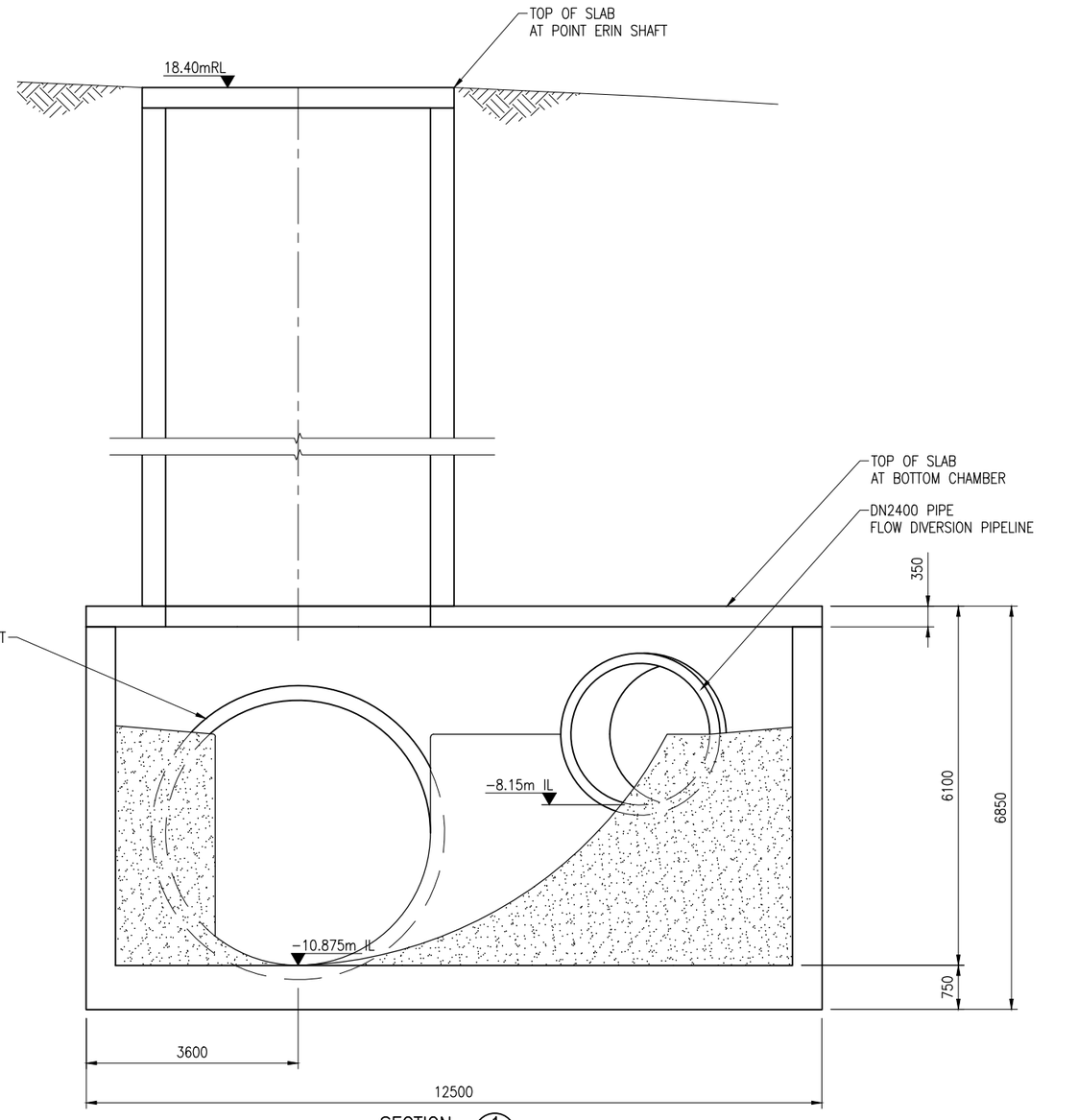
Plot Date: Feb 07, 2023 - 10:30am C:\pw_work\jacques.greyling@jacobs.com\d0127059\ 2013964.003.dwg

NOTES:

1. ALL DIMENSIONS AND LEVELS ARE NOMINAL AND SUBJECT TO CHANGE THROUGH DESIGN PHASE.



PLAN @ −8.0mRL
SCALE. 1:50



SECTION 1
SCALE.1:50

SCALE 1:50 (A1)
0 1 2 3 4 5m
1 0.5

CONSENT ISSUE

JACOBS AECOM M·MILLER JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
2	02.02.23	ISSUED FOR CONSENT APPLICATION	PJG	DJK
1	21.12.22	ISSUED FOR CONSENT APPLICATION	PJG	

DESIGNED	AD	12.22
DES. CHECKED	MBS	12.22
DRAWN	PJG	12.22
DWG. CHECKED	PMF	12.22
PROJECT LEADER		
INFRAST'R APP'D		
	BY	DATE

OPERATIONS

INFRASTRUCTURE

Watercare

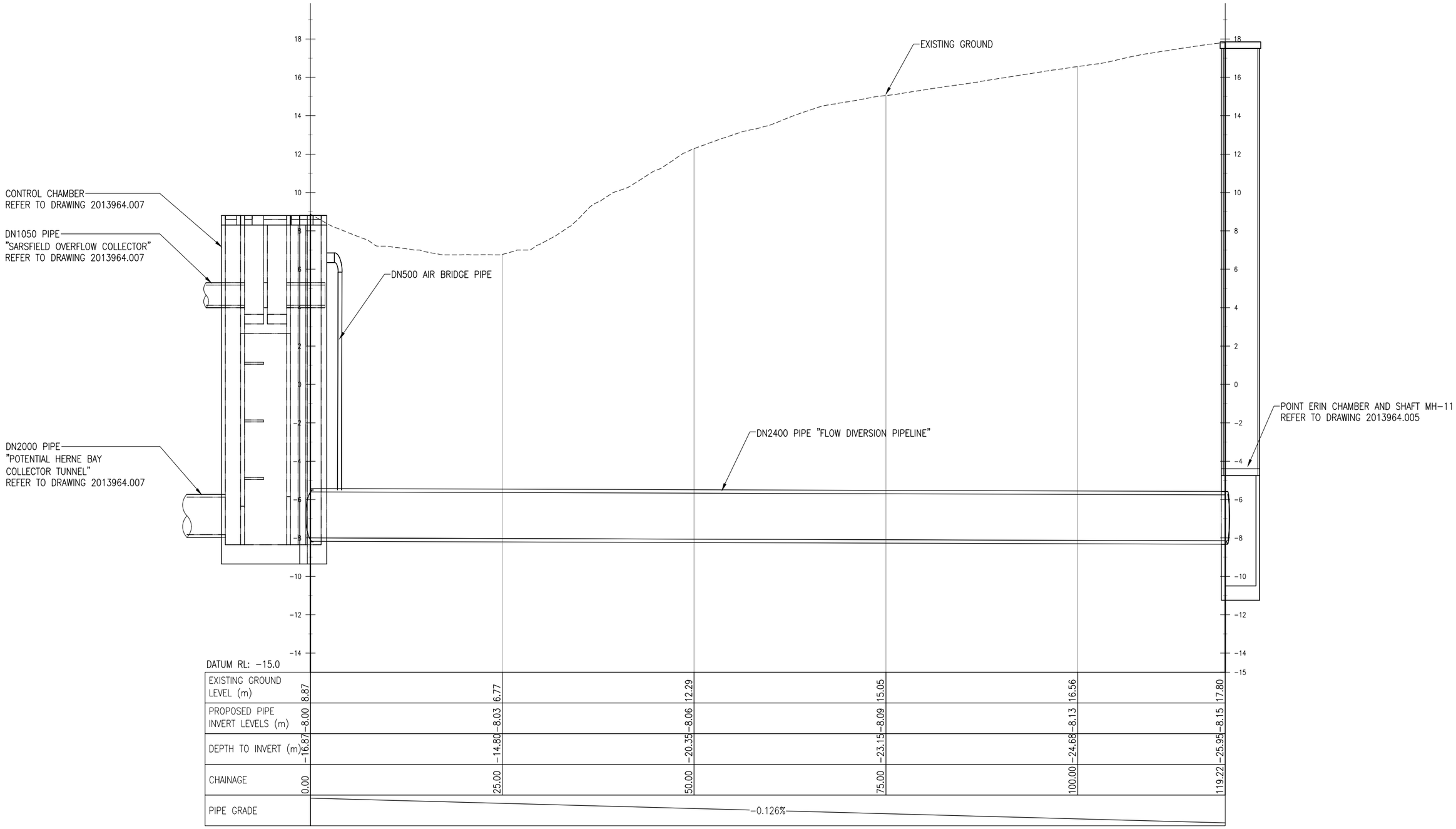
POINT ERIN – CENTRAL INTERCEPTOR (DSCIN)
82 GRAVITY SEWER INCLUDING MANHOLES
MH–11 SHAFT/TUNNEL CONNECTION PLAN AND SECTION

CAD FILE 2013964.005	DATE 02.02.23
ORIGINAL SCALE A1 1:50	CONTRACT No. 6661
REF. No. CI–STAT&PLAN	ISSUE
DWG. No. 2013964.005	2

Plot Date: Feb 07, 2023 - 10:13am C:\pw_work\jacques.greyling@jacobs.com\d0127059\2013964.005.dwg

NOTES:

1. ALL DIMENSIONS AND LEVELS ARE NOMINAL AND SUBJECT TO CHANGE THROUGH DESIGN PHASE.



DATUM RL: -15.0

EXISTING GROUND LEVEL (m)	8.87	6.77	12.29	15.05	16.56	17.80
PROPOSED PIPE INVERT LEVELS (m)	-8.00	-8.03	-8.06	-8.09	-8.13	-8.15
DEPTH TO INVERT (m)	-16.87	-14.80	-20.35	-23.15	-24.68	-25.95
CHAINAGE	0.00	25.00	50.00	75.00	100.00	119.22
PIPE GRADE	-0.126%					

POINT ERIN FLOW DIVERSION PIPELINE LONGITUDINAL SECTION

SCALE. 1:250(H) 1:100(V)

SCALE 1:100 (A1) 0 2 4 6 8 10m

SCALE 1:250 (A1) 0 5 10 15 20 25m

CONSENT ISSUE

JACOBS AECOM McMILLEN JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
2	02.02.23	ISSUED FOR CONSENT APPLICATION	PJG	DJK
1	21.12.22	ISSUED FOR CONSENT APPLICATION	PJG	

DESIGNED	AD	12.22
DES. CHECKED	MBS	12.22
DRAWN	PJG	12.22
DWG. CHECKED	PMF	12.22
PROJECT LEADER		
INFRAST'R APP'D		
	BY	DATE

OPERATIONS

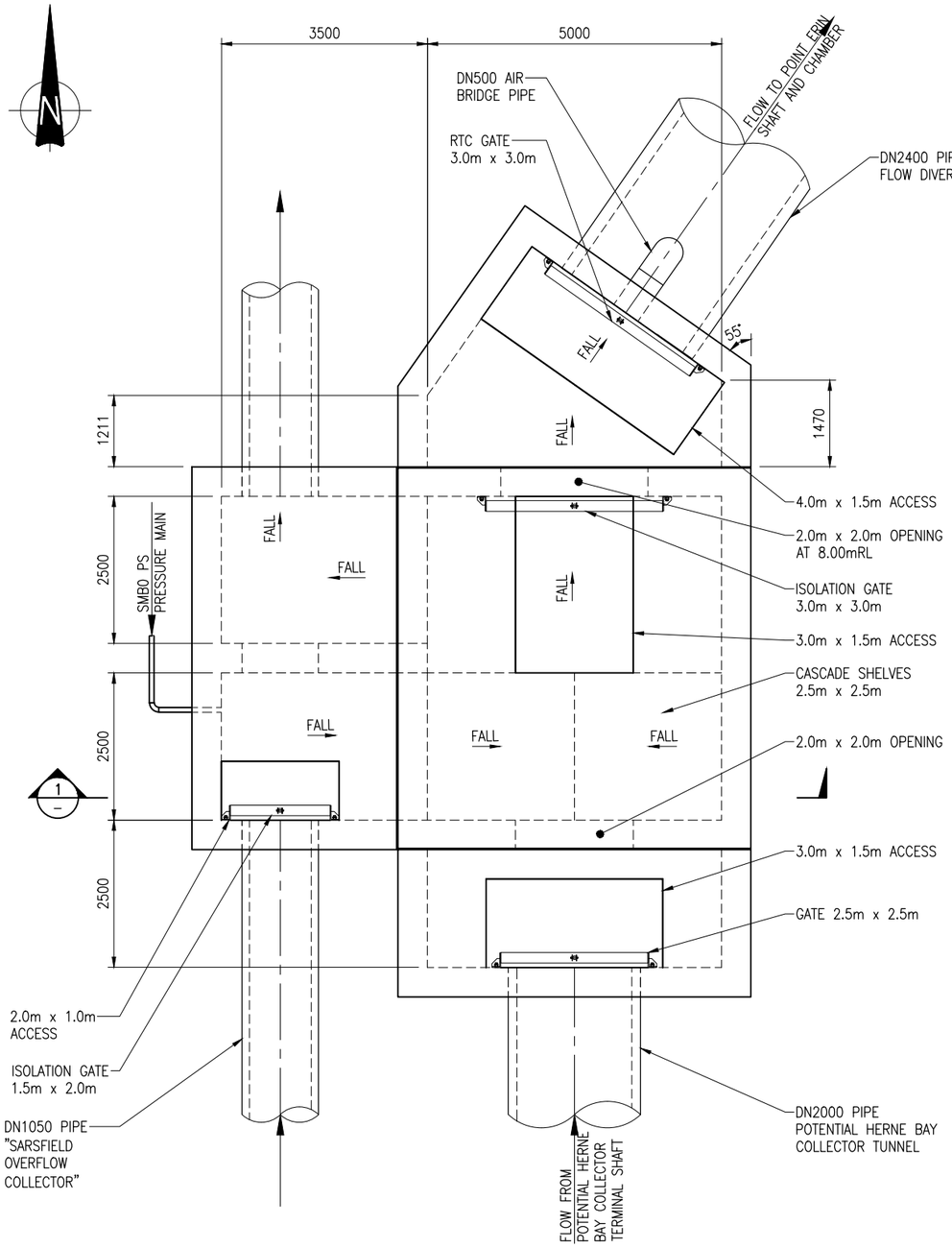
INFRASTRUCTURE

Watercare

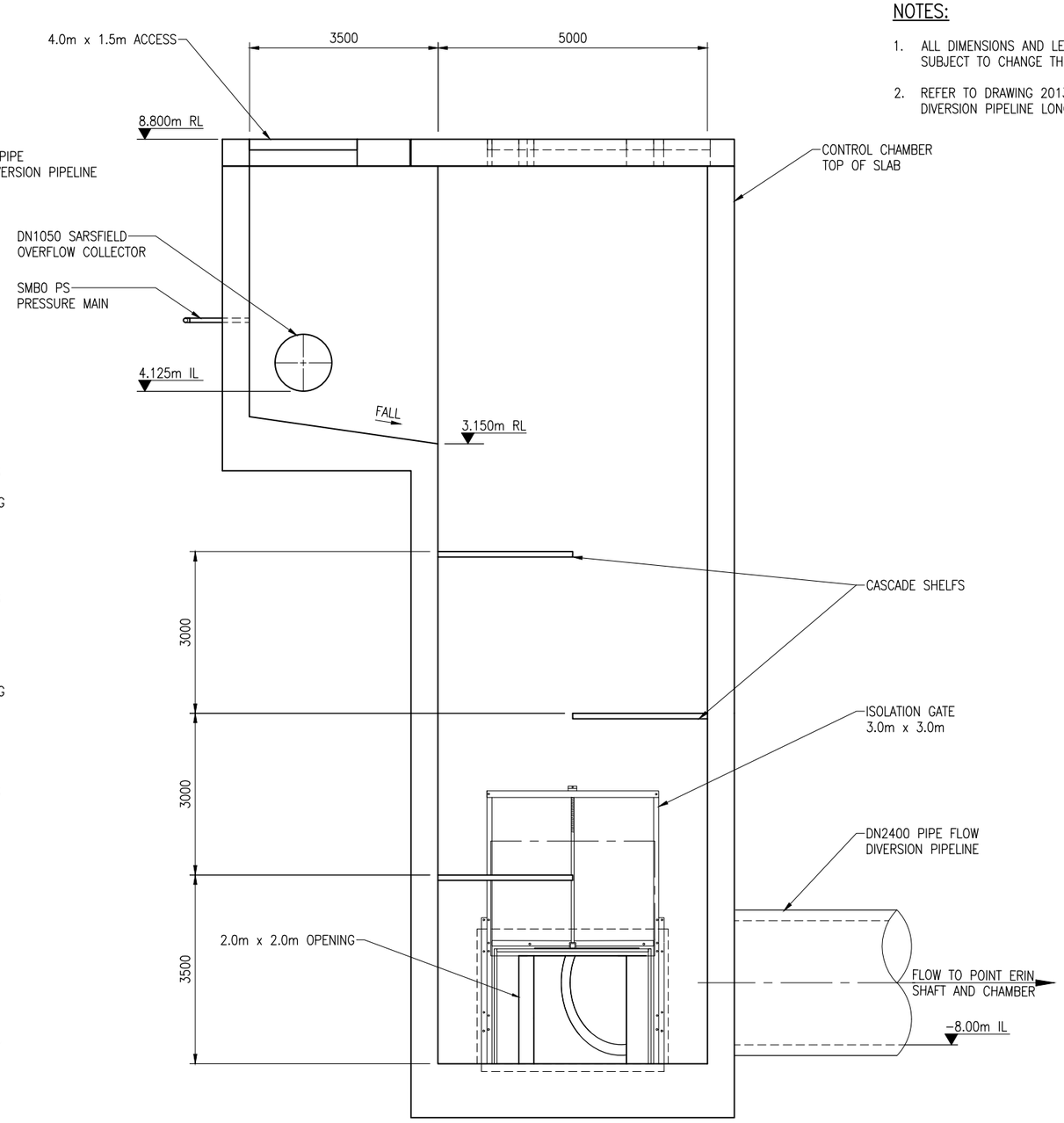
POINT ERIN – CENTRAL INTERCEPTOR (DSCIN)
82 GRAVITY SEWER INCLUDING MANHOLES
POINT ERIN FLOW DIVERSION PIPELINE LONGITUDINAL SECTION

CAD FILE 2013964.006	DATE 02.02.23
ORIGINAL SCALE A1 AS SHOWN	CONTRACT No. 6661
REF. No. CI-STAT&PLAN	ISSUE
DWG. No. 2013964.006	2

Plot Date: Feb 07, 2023 - 10:32am C:\pw_work\jacques.greyling@jacobs.com\d0170591.2013964.006.dwg



PLAN
SCALE. 1:50



SECTION 1 –
SCALE.1:50

SCALE 1:50 (A1) 0 1 2 3 4 5m / 1 0.5

NOTES:

1. ALL DIMENSIONS AND LEVELS ARE NOMINAL AND SUBJECT TO CHANGE THROUGH DESIGN PHASES.
2. REFER TO DRAWING 2013964.006 FOR POINT ERIN FLOW DIVERSION PIPELINE LONGITUDINAL SECTION.

CONSENT ISSUE

JACOBS AECOM McMILLEN JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
2	02.02.23	ISSUED FOR CONSENT APPLICATION	PJG	DJK
1	21.12.22	ISSUED FOR CONSENT APPLICATION	PJG	

DESIGNED	AD	12.22
DES. CHECKED	MBS	12.22
DRAWN	PJG	12.22
DWG. CHECKED	PMF	12.22
PROJECT LEADER		
INFRAST'R APP'D		
	BY	DATE

OPERATIONS

INFRASTRUCTURE

Watercare

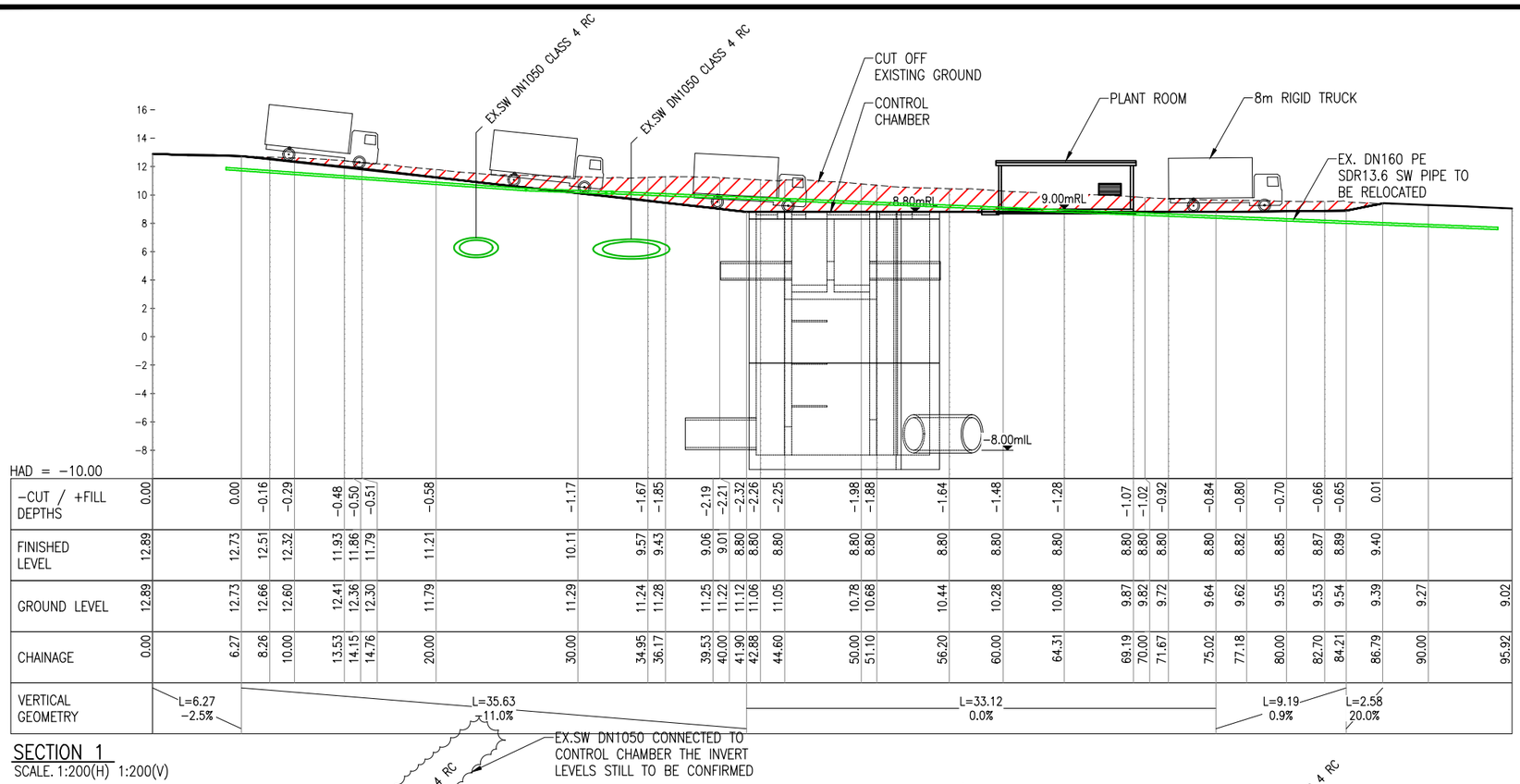
POINT ERIN – CENTRAL INTERCEPTOR (DSCIN)
82 GRAVITY SEWER INCLUDING MANHOLES
POINT ERIN CONTROL CHAMBER PLAN AND SECTIONS

CAD FILE 2013964.007	DATE 02.02.23
ORIGINAL SCALE A1 1:50	CONTRACT No. 6661
REF. No. CI–STAT&PLAN	ISSUE
DWG. No. 2013964.007	2

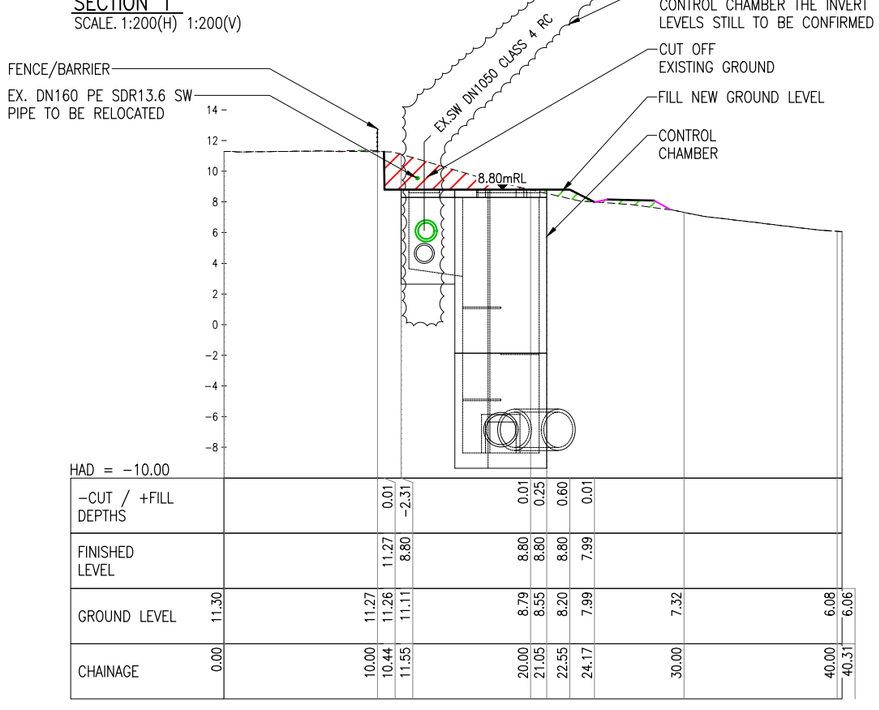
Plot Date: Feb 07, 2023 - 10:33am C:\pw_work\jacques.greyling@jacobs.com\d0127059\ 2013964.007.dwg

NOTES:

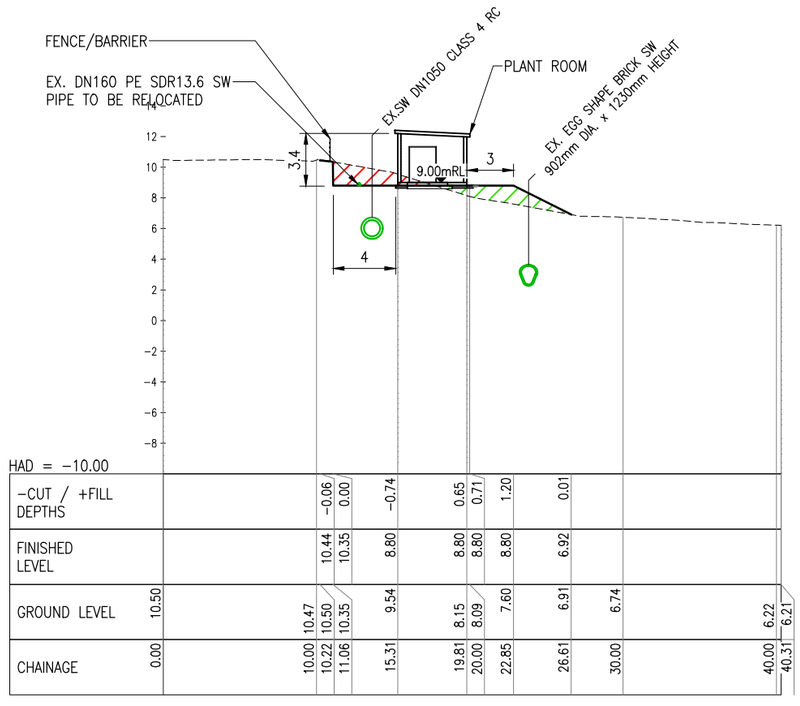
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING 2013964.008.



SECTION 1
SCALE. 1:200(H) 1:200(V)



SECTION 2
SCALE. 1:200(H) 1:200(V)



SECTION 3
SCALE. 1:200(H) 1:200(V)

SCALE 1:200 (A1) 0 4 8 12 16 20m

CONSENT ISSUE

JACOBS AECOM McMILLEN JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
1	02.02.23	ISSUED FOR CONSENT APPLICATION	PJG	DJK

DESIGNED	AD	01.23
DES. CHECKED	MBS	01.23
DRAWN	PJG	01.23
DWG. CHECKED		
PROJECT LEADER		
INFRAST'R APP'D		

OPERATIONS

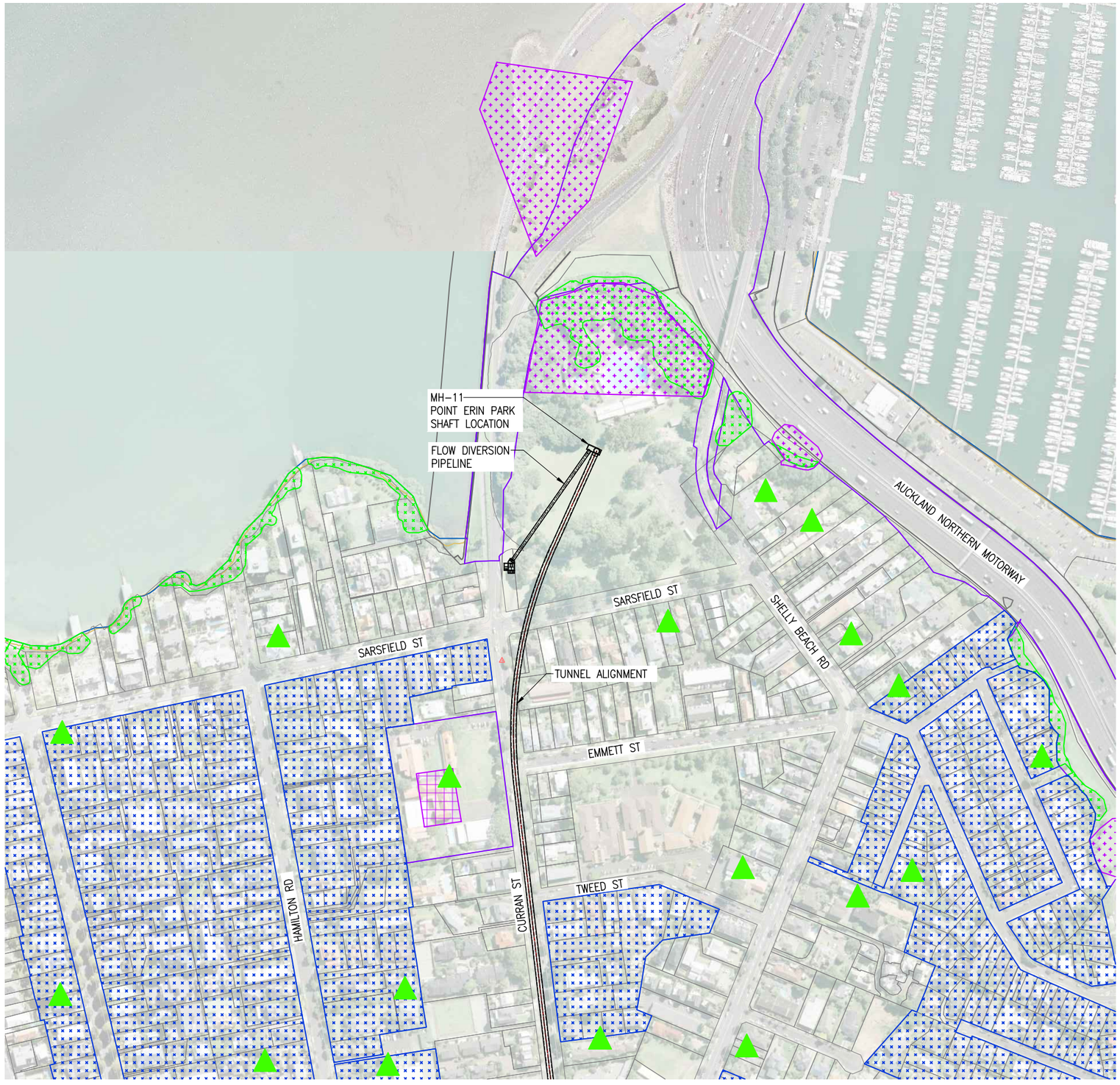
INFRASTRUCTURE

Watercare

POINT ERIN – CENTRAL INTERCEPTOR (DSCIN)
82 GRAVITY SEWER INCLUDING MANHOLES
POINT ERIN SITE – LONGITUDINAL SECTION AND CROSS SECTIONS

CAD FILE 2013964.009	DATE 02.02.23
ORIGINAL SCALE A1 1:200	CONTRACT No. 6661
REF. No. CI–STAT&PLAN	ISSUE
DWG. No. 2013964.009	1

Plot Date: Feb 07, 2023 - 10:51am C:\pw_work\jacques.greyling@jacobs.com\d0127059\ 2013964.009.dwg



PLAN
SCALE. 1:2000

NOTES:

1. DESIGN AT CONCEPT STAGE AND SUBJECT TO CHANGE THROUGH DESIGN PROCESS.
2. TUNNEL ALIGNMENT SHOWN WITH 2.5m WIDE CORRIDOR EITHER SIDE OF PROPOSED ALIGNMENT.

LEGEND

- NOTABLE TREES OVERLAY
- HISTORIC HERITAGE OVERLAY EXTENT OF PLACE (rcp/dp)
- SPECIAL CHARACTER AREAS OVERLAY RESIDENTAIL AND BUSINESS
- SITES AND PLACES OF SIGNIFICANCE TO MANA WHENUA OVERLAY (rcp/dp)
- DESIGNATIONS

SIGNIFICATION ECOLOGICAL AREAS OVERLAY

- TERRESTRIAL (rp/dp)

SCALE 1:2000 (A1)
0 40 80 120 160 200m
40 20

CONSENT ISSUE

JACOBS AECOM McMILLEN JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT	BY	APPD.
1	02.02.23	ISSUED FOR CONSENT APPLICATION	PJG	DJK

DESIGNED	AD	01.23
DES. CHECKED	MBS	01.23
DRAWN	PJG	01.23
DWG. CHECKED	PMF	01.23
PROJECT LEADER		
INFRAST'R APP'D		
	BY	DATE

OPERATIONS

INFRASTRUCTURE

Watercare

POINT ERIN – CENTRAL INTERCEPTOR (DSCIN)
82 GRAVITY SEWER INCLUDING MANHOLES
POINT ERIN – OTHER AUCKLAND UNITARY PLAN ZONING

CAD FILE 2013964.010	DATE 02.02.23
ORIGINAL SCALE A1 1:2000	CONTRACT No. 6661
REF. No. CI–STAT&PLAN	ISSUE
DWG. No. 2013964.010	1

Plot Date: Feb 03, 2023 - 12:49pm C:\pw_work\jacques.greyling@jacobs.com\d0127059\2013964.010.dwg

Appendix C Property details

C1 Tunnel alignment

C2 Certificates of Title for surface works in Point Erin Park

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

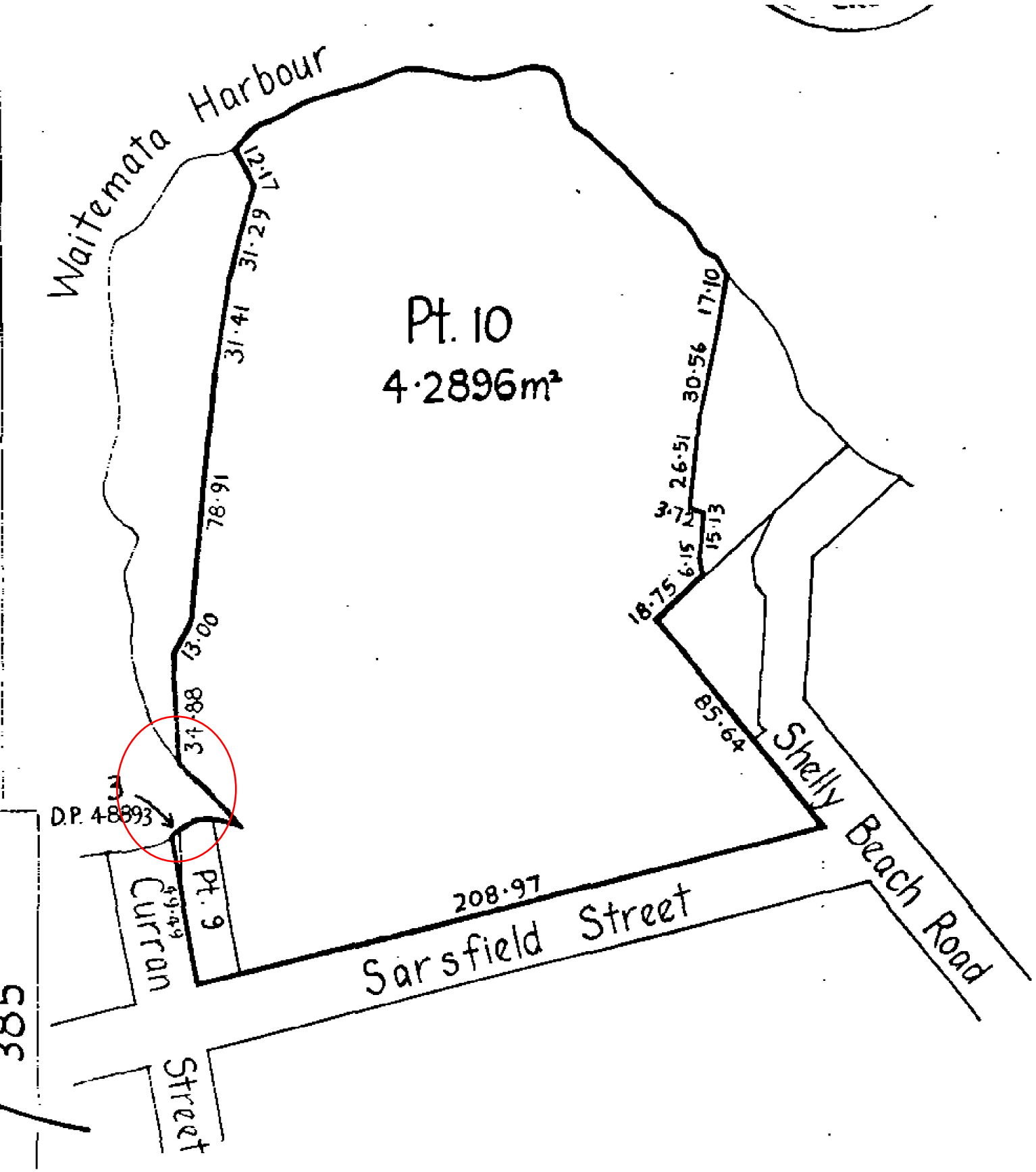
Identifier	**NA26B/385**
Land Registration District	**North Auckland**
Date Issued	23 May 1973

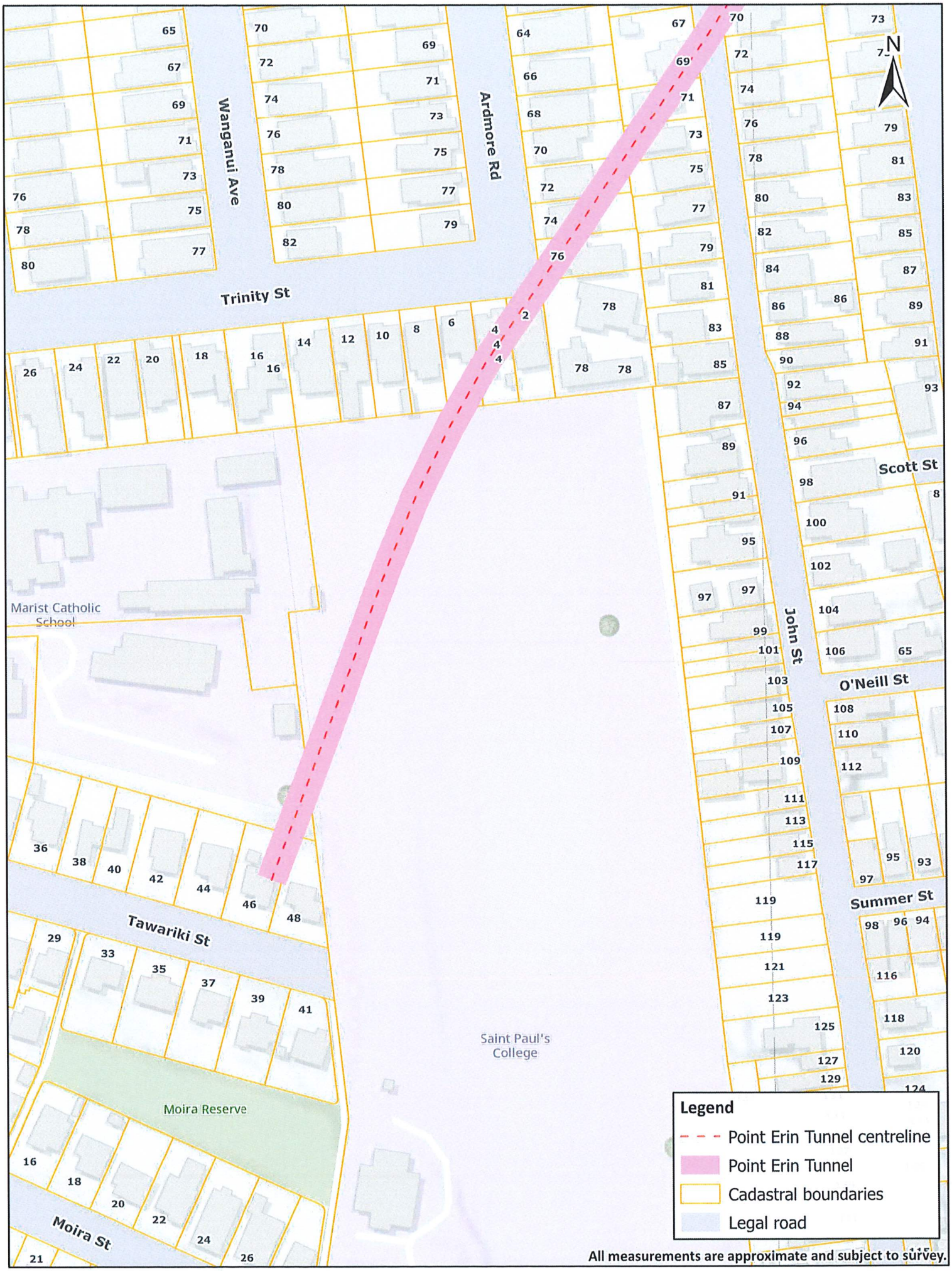
Prior References
NA46/181

Estate	Fee Simple
Area	4.2896 hectares more or less
Legal Description	Part Allotment 9-10 Section 8 Suburbs of Auckland, Part Deposited Plan 501 and Lot 3 Deposited Plan 48893

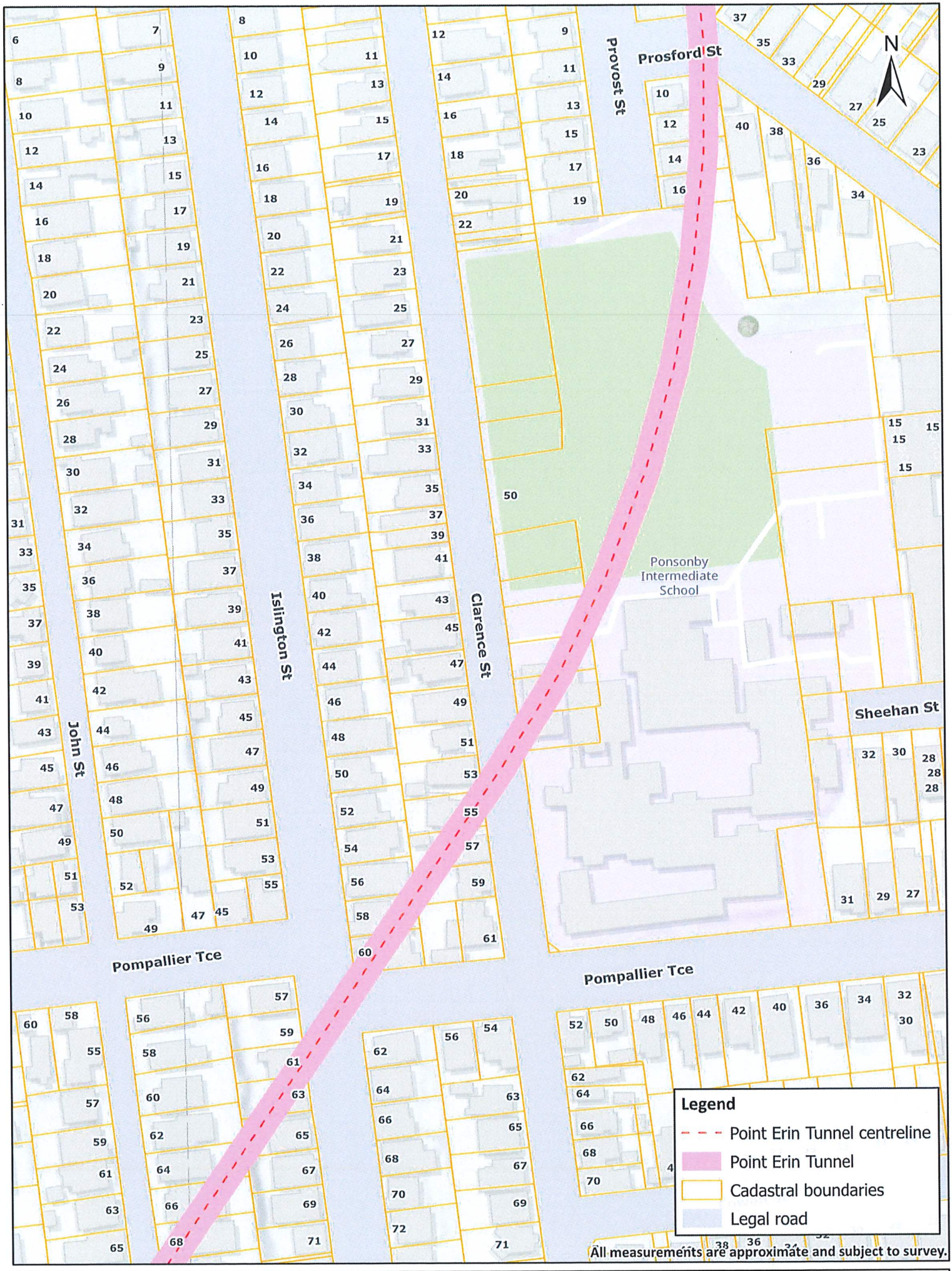
Registered Owners
Auckland Council

Interests

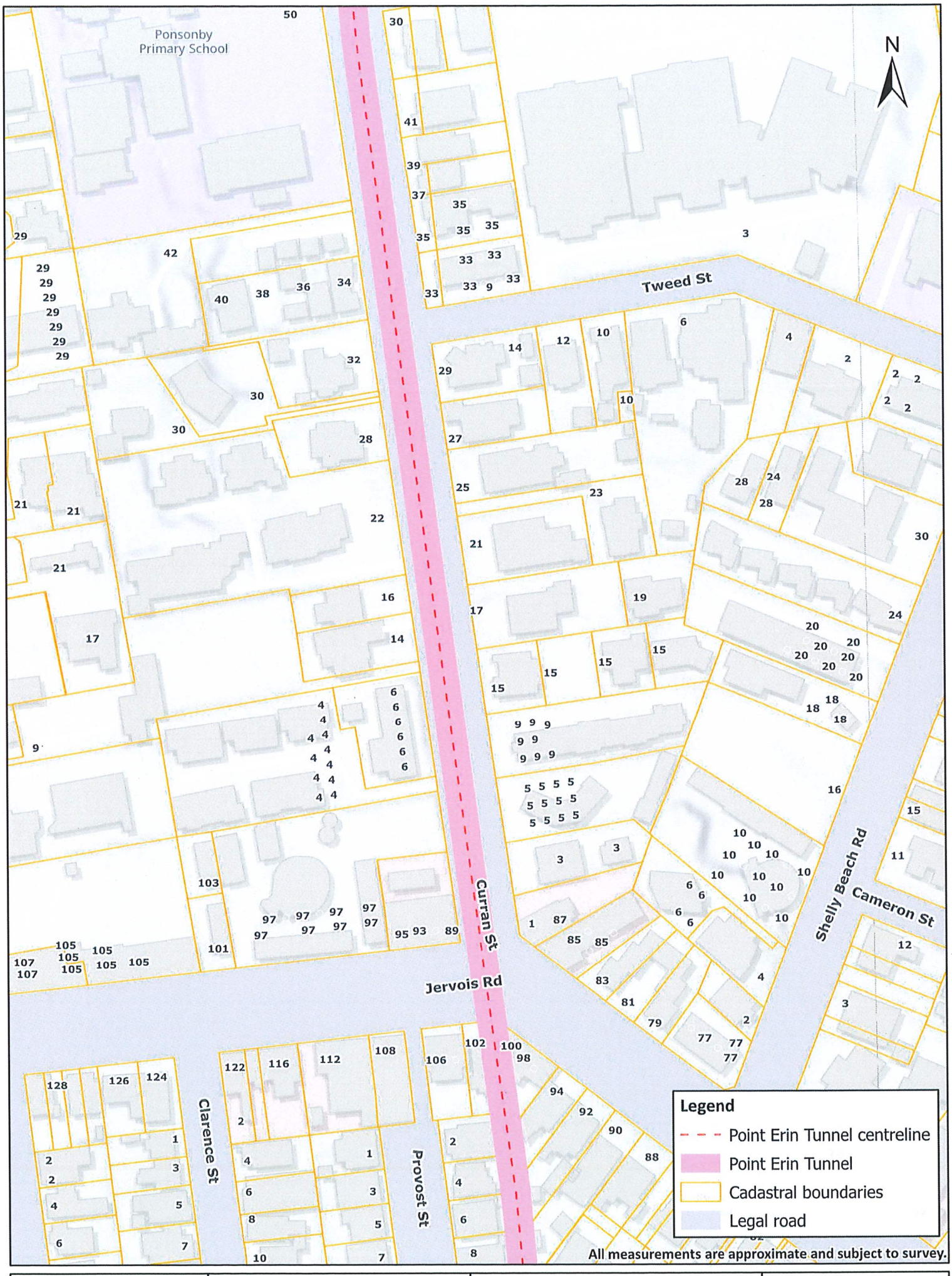

Waitemata Harbour
Pt. 10
4·2896m²
31·29
11·21
31·41
78·91
13·00
3·88
30·56
17·10
26·51
15·13
6·15
18·75
85·64
Shelly Beach Road
208·97
Sarsfield Street
D.P. 48893
Curran
Pt. 9
Street
385



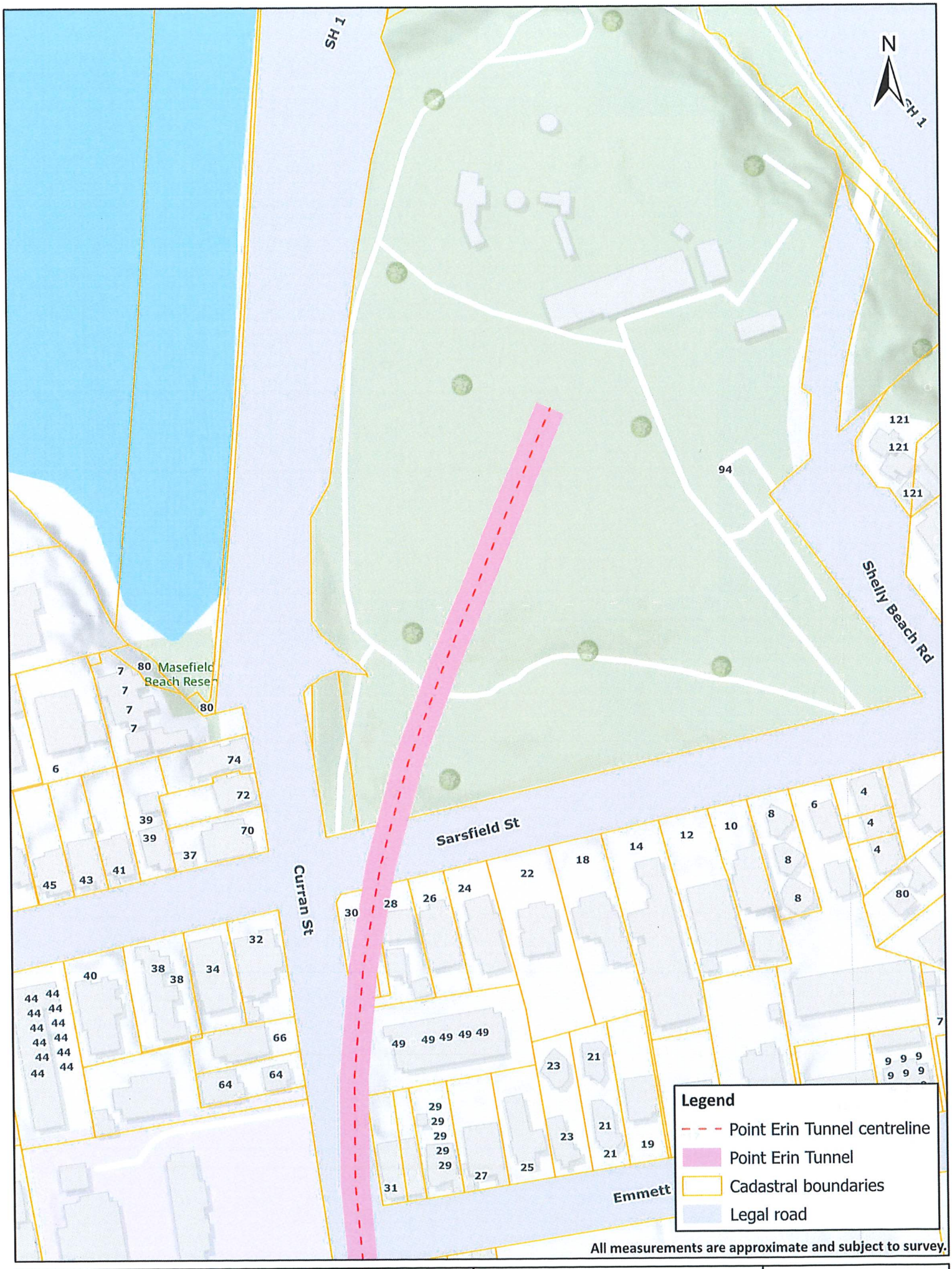
the propertygroup	Imagery sourced from: Esri World Imagery Property boundaries sourced from Land Information NZ. Crown Copyright reserved. Property boundaries accuracy: +/-1m in urban areas, +/-30m in rural areas. Coordinate System: NZGD 2000 New Zealand Transverse Mercator Datum: NZGD 2000 // This map was produced with ArcGIS Pro (Esri).	**Central Interceptor** Point Erin Extension				Watercare An Auckland Council Organisation
PREPARED BY Aaron Jeffries	DATE 13/12/2022	SHEET 1 OF 4	TPG REF 714405	A4 Scale 1:2,000	0 30 Metres	



the propertygroup	Imagery sourced from: Esri World Imagery Property boundaries sourced from Land Information NZ. Crown Copyright reserved. Property boundaries accuracy: +/-1m in urban areas, +/-30m in rural areas. Coordinate System: NZGD 2000 New Zealand Transverse Mercator Datum: NZGD 2000 // This map was produced with ArcGIS Pro (Esri).		**Central Interceptor** Point Erin Extension			Watercare An Auckland Council Organisation
PREPARED BY Aaron Jeffries	DATE 13/12/2022	SHEET 2 OF 4	TPG REF 714405	A4 Scale 1:2,000	0 30 Metres	



the propertygroup	Imagery sourced from: Esri World Imagery Property boundaries sourced from Land Information NZ. Crown Copyright reserved. Property boundaries accuracy: +/-1m in urban areas, +/-30m in rural areas. Coordinate System: NZGD 2000 New Zealand Transverse Mercator Datum: NZGD 2000 // This map was produced with ArcGIS Pro (Esri).	**Central Interceptor** Point Erin Extension				Watercare An Auckland Council Organisation
	PREPARED BY Aaron Jeffries	DATE 13/12/2022	SHEET 3 OF 4	TPG REF 714405	A4 Scale 1:2,000	0 30 Metres



the propertygroup	Imagery sourced from: Esri World Imagery Property boundaries sourced from Land Information NZ. Crown Copyright reserved. Property boundaries accuracy: +/-1m in urban areas, +/-30m in rural areas. Coordinate System: NZGD 2000 New Zealand Transverse Mercator Datum: NZGD 2000 // This map was produced with ArcGIS Pro (Esri).		**Central Interceptor** Point Erin Extension			Watercare An Auckland Council Organisation
PREPARED BY Aaron Jeffries	DATE 13/12/2022	SHEET 4 OF 4	TPG REF 714405	A4 Scale 1:2,000	0 30 Metres	

Properties along Point Erin Tunnel alignment

Address Number	Road Name	Suburb	Parcel ID	Record of Title	Estate description
70	Ardmore Road	Ponsonby	3981920	NA77D/884	Fee Simple, 1/1, Lot 36 Block I Deposited Plan 3730, 419 m2
72	Ardmore Road	Ponsonby	3400997	NA35B/574	Fee Simple, 1/1, Lot 37 Deposited Plan 3730, 419 m2
74	Ardmore Road	Ponsonby	3092491	NA137/104	Fee Simple, 1/1, Lot 38 Block 1 Deposited Plan 3661, 420 m2
76	Ardmore Road	Ponsonby	4310725	229248	Fee Simple, 1/1, Lot 1 Deposited Plan 356201, 471 m2
78	Ardmore Road	Ponsonby	3940640	NA92A/886	Fee Simple, 1/3, Lot 40 Block 1 Deposited Plan 3661, 1,368 m2 Leasehold, 1/1, Flat 2 Deposited Plan 154251
78	Ardmore Road	Ponsonby	4957368	898244	Fee Simple, 1/3, Lot 40 Block 1 Deposited Plan 3661, 1,368 m2 Leasehold, 1/1, Area 1 Deposited Plan 538485
78	Ardmore Road	Ponsonby	5012957	956804	Fee Simple, 1/3, Lot 40 Block 1 Deposited Plan 3661, 1,368 m2 Leasehold, 1/1, Area 3 Deposited Plan 552446
50	Clarence Street	Ponsonby	3951905	NA136D/577	Fee Simple, 1/1, Lot 4 Deposited Plan 208655, 20,606 m2
53	Clarence Street	Ponsonby	4015680	NA97B/993	Fee Simple, 1/1, Lot 27 of part Allotment 22 of Section 8 Suburbs of Auckland, 329 m2
55	Clarence Street	Ponsonby	3089242	NA586/188	Fee Simple, 1/1, Lot 28 of a subdivision of allotment 22 of Section 8 of the Suburbs of Auckland, 324 m2
57	Clarence Street	Ponsonby	3102104	NA586/133	Fee Simple, 1/1, Lot 29 Deeds Plan M (blue), 324 m2
59	Clarence Street	Ponsonby	3201648	NA586/164	Fee Simple, 1/1, Lot 30 of a subdivision of Allotment 22 of Section 8 of the Suburbs of Auckland, 324 m2
61	Clarence Street	Ponsonby	3132706	NA560/245	Fee Simple, 1/1, Lot 31 Subdivision of part Allotment 22 of Section 8 Suburbs of Auckland and Lot 32 Subdivision of part Allotment 22 of Section 8 Suburbs of Auckland, 544 m2
49	Curran Street	Herne Bay	3156504	NA25D/696	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat D Deposited Plan 70044, Carport 21 Deposited Plan 70044 and Storage Unit 30 Deposited Plan 70044
49	Curran Street	Herne Bay	3460202	NA100C/443	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat E Deposited Plan 70044, Carport 23 Deposited Plan 70044 and Storage Unit 29 Deposited Plan 70044
49	Curran Street	Herne Bay	2982036	NA25D/702	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat 1D Deposited Plan 70044, Carport 22 Deposited Plan 70044 and Storage Unit 35 Deposited Plan 70044

49	Curran Street	Herne Bay	2982065	NA25D/701	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat 1C Deposited Plan 70044, Carport 19 Deposited Plan 70044 and Storage Unit 34 Deposited Plan 70044
49	Curran Street	Herne Bay	3121952	NA25D/700	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat 1B Deposited Plan 70044, Carport 17 Deposited Plan 70044 and Storage Unit 33 Deposited Plan 70044
49	Curran Street	Herne Bay	2993093	NA25D/694	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat B Deposited Plan 70044, Carport 18 Deposited Plan 70044 and Storage Unit 13 Deposited Plan 70044
49	Curran Street	Herne Bay	2982587	NA25D/703	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat 1E Deposited Plan 70044, Carport 24 Deposited Plan 70044 and Storage Unit 36 Deposited Plan 70044
49	Curran Street	Herne Bay	2982519	NA25D/704	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat 1F Deposited Plan 70044, Carport 25 Deposited Plan 70044 and Storage Unit 37 Deposited Plan 70044
49	Curran Street	Herne Bay	3156535	NA25D/695	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat C Deposited Plan 70044, Carport 20 Deposited Plan 70044 and Storage Unit 12 Deposited Plan 70044
49	Curran Street	Herne Bay	3122224	NA25D/699	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat 1A Deposited Plan 70044, Carport 16 Deposited Plan 70044 and Storage Unit 32 Deposited Plan 70044
49	Curran Street	Herne Bay	3156566	NA25D/693	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat A Deposited Plan 70044, Carport 15 Deposited Plan 70044 and Storage Unit 14 Deposited Plan 70044
49	Curran Street	Herne Bay	3156478	NA25D/698	Fee Simple, 1/12, Lot 1 Deposited Plan 69192, 1,654 m2 Leasehold, 1/1, Flat F Deposited Plan 70044, Carport 26 Deposited Plan 70044 and Storage Unit 28 Deposited Plan 70044
31	Emmett Street	Herne Bay	3038126	NA547/103	Fee Simple, 1/1, Part Allotment 9-10 Section 8 Suburbs of Auckland, 556 m2
56	Islington Street	Ponsonby	3550648	NA204/180	Fee Simple, 1/1, Lot 63 Deposited Plan 7073, 297 m2
58	Islington Street	Ponsonby	3054906	NA1545/49	Fee Simple, 1/1, Lot 65 Deposited Plan 7073, 297 m2
59	Islington Street	Ponsonby	2978428	NA185/167	Fee Simple, 1/1, Lot 68 Deposited Plan 7073, 268 m2
60	Islington Street	Ponsonby	3427328	NA897/126	Fee Simple, 1/1, Lot 66 Deposited Plan 7073, 304 m2

61	Islington Street	Ponsonby	3194442	NA219/210	Fee Simple, 1/1, Lot 70 Deposited Plan 7073, 268 m2
63	Islington Street	Ponsonby	3034175	NA47A/1422	Fee Simple, 1/1, Lot 72 Deposited Plan 7073, 295 m2
65	Islington Street	Ponsonby	3124898	NA214/22	Fee Simple, 1/1, Lot 74 Deposited Plan 7073, 295 m2
67	Islington Street	Ponsonby	3235907	NA211/133	Fee Simple, 1/1, Lot 76 Deposited Plan 7073, 295 m2
90	Jervois Road	Ponsonby	3190611	NA510/19	Fee Simple, 1/1, Lot 63 Allotment 21 of Section Eight Suburbs of Auckland, 683 m2
92	Jervois Road	Ponsonby	3083902	NA579/22	Fee Simple, 1/1, Lot 64 Allotment 21 of Section 8 Suburbs of Auckland, 546 m2
94	Jervois Road	Ponsonby	3094100	NA510/20	Fee Simple, 1/1, Lot 65 Allotment 21 of Section 8 Suburbs of Auckland, 379 m2
98	Jervois Road	Ponsonby	3690458	NA51A/902	Fee Simple, 1/2, Lot 1 Deposited Plan 94745, 341 m2 Leasehold, 1/1, Flat 2 Deposited Plan 95093
98	Jervois Road	Ponsonby	3632299	NA51A/901	Fee Simple, 1/2, Lot 1 Deposited Plan 94745, 341 m2 Leasehold, 1/1, Flat 1 Deposited Plan 95093
102	Jervois Road	Herne Bay	3007947	NA67B/52	Fee Simple, 1/1, Lot 2 Deposited Plan 90715, 383 m2
62	John Street	Ponsonby	3051838	NA587/141	Fee Simple, 1/1, Lot 62 of a Subdivision of Part of Allotment 22 of Section 8 of the Suburbs of Auckland, 410 m2
64	John Street	Ponsonby	3123408	NA587/137	Fee Simple, 1/1, Lot 61 of a subdivision of part of allotment 22 of Section 8 of the Suburbs of Auckland, 410 m2
66	John Street	Ponsonby	3051833	NA587/142	Fee Simple, 1/1, Lot 60 of a Subdivision of Part of Allotment 22 of Section 8 of the Suburbs of Auckland, 410 m2
68	John Street	Ponsonby	3278081	NA26D/648	Fee Simple, 1/1, Lot 59 of a Subdivision of part of Allotment 22 Section 8 Suburbs of Auckland, 409 m2
69	John Street	Ponsonby	4755672	688092	Fee Simple, 1/1, Lot 1 Deposited Plan 484738, 682 m2
70	John Street	Ponsonby	3052758	NA587/144	Fee Simple, 1/1, Lot 58 of a Subdivision of Part of Allotment 22 of Section 8 of the Suburbs of Auckland, 410 m2
73	John Street	Ponsonby	3312371	NA12D/1178	Fee Simple, 1/4, Lot 41-42 Allotment 22 Section 8 Suburbs of Auckland, 610 m2 Leasehold, 1/1, Flat 4 Deposited Plan 52741
73	John Street	Ponsonby	3356117	NA21D/820	Fee Simple, 1/4, Lot 41-42 Allotment 22 Section 8 Suburbs of Auckland, 610 m2 Leasehold, 1/1, Flat 2 Deposited Plan 52741

73	John Street	Ponsonby	3616128	NA54D/997	Fee Simple, 1/4, Lot 41-42 Allotment 22 Section 8 Suburbs of Auckland, 610 m2 Leasehold, 1/1, Flat 3 Deposited Plan 52741
73	John Street	Ponsonby	2985436	NA21B/1478	Fee Simple, 1/4, Lot 41 Allotment 22 Section 8 and Lot 42 Allotment 22 Section 8 Suburbs of Auckland, 610 m2 Leasehold, 1/1, Flat 1 Deposited Plan 52741
75	John Street	Ponsonby	3123501	NA587/129	Fee Simple, 1/1, Lot 43 of a subdivision of part of allotment 22 of Section 8 Suburbs of Auckland, 336 m2
84	Kelmarna Avenue	Ponsonby	3184486	NA739/155	Fee Simple, 1/1, Part Allotment 27-28 Section 8 Suburbs of Auckland and Defined On Deposited Plan 29961, 5,418 m2
37	Prosford Street	Ponsonby	4582252	507298	Fee Simple, 1/1, Lot 1 Deposited Plan 427268, 346 m2
40	Prosford Street	Ponsonby	3139851	NA773/69	Fee Simple, 1/1, Part Lot 176 of Allotment 21 of Section 8 of the Suburbs of Auckland, 607 m2
2	Provost Street	Ponsonby	3202995	NA343/25	Fee Simple, 1/1, Lot 1 Deposited Plan 10247, 349 m2
4	Provost Street	Ponsonby	3061775	NA337/16	Fee Simple, 1/1, Lot 2 Deposited Plan 10247, 311 m2
6	Provost Street	Ponsonby	3071471	NA480/103	Fee Simple, 1/1, Lot 3 Deposited Plan 10247, 311 m2
8	Provost Street	Ponsonby	3261413	NA52D/1195	Fee Simple, 1/1, Lot 4 Deposited Plan 10247, 353 m2
10	Provost Street	Ponsonby	3155217	NA339/39	Fee Simple, 1/1, Lot 1 Deposited Plan 15406, 271 m2
12	Provost Street	Ponsonby	3242314	NA342/69	Fee Simple, 1/1, Lot 2 Deposited Plan 15406, 261 m2
14	Provost Street	Ponsonby	3070690	NA341/155	Fee Simple, 1/1, Lot 3 Deposited Plan 15406, 263 m2
16	Provost Street	Ponsonby	3069183	NA342/225	Fee Simple, 1/1, Lot 4 Deposited Plan 15406, 268 m2
183	Richmond Road	Grey Lynn	3202640	NA397/195	Fee Simple, 1/1, Lot 3 Deposited Plan 17191, 56,631 m2
28	Sarsfield Street	Herne Bay	4228159	146063	Fee Simple, 1/1, Lot 1 Deposited Plan 335655, 591 m2
30	Sarsfield Street	Herne Bay	3040728	NA547/108	Fee Simple, 1/1, Part Allotment 9-10 Section 8 Suburbs of Auckland, 481 m2
94	Shelly Beach Road	Westhaven	3061140	NA26B/385	Fee Simple, 1/1, Part Allotment 9-10 Section 8 Suburbs of Auckland, Part Deposited Plan 501 and Lot 3 Deposited Plan 48893, 42,896 m2
46	Tawariki Street	Ponsonby	3233783	NA44C/1090	Fee Simple, 1/1, Lot 39 Deposited Plan 38075, 561 m2
48	Tawariki Street	Ponsonby	3238581	NA44C/1091	Fee Simple, 1/1, Lot 40 Deposited Plan 38075, 470 m2
2	Trinity Street	Ponsonby	3466590	NA134/164	Fee Simple, 1/1, Lot 14 Block 5 Deposited Plan 3661, 427 m2
4	Trinity Street	Ponsonby	3232684	NA134/58	Fee Simple, 1/1, Lot 13 Block 5 Deposited Plan 3661, 427 m2
6	Trinity Street	Ponsonby	3693554	NA107B/851	Fee Simple, 1/1, Lot 12 Block 5 Deposited Plan 3661, 427 m2
8	Trinity Street	Ponsonby	3720105	NA115D/609	Fee Simple, 1/1, Lot 11 Block 5 Deposited Plan 3661, 427 m2

Appendix D Matters of discretion

Appendix D Restricted discretionary activity matters of discretion

Where particular activities in Tables 5.1 and 5.2 of the AEE are identified as restricted discretionary activities, the Council has restricted the exercise of its discretion to the matters identified in Table 1 below.

The assessment in Section 6 of this AEE incorporates these matters, noting that overall the application falls for consideration as a discretionary activity.

Table 1: Relevant matters of discretion – restricted discretionary activities

Rule reference	Matters of discretion	Addressed in:
Regional Plan [rp]		
E26.5.3.2 (A106) and (A107) – Earthworks [rp]	**E26.5.7.1** 1) all regional restricted discretionary activities [rp]: a) compliance with the standards; b) the design and suitability of erosion and sediment control measures to be implemented; c) adverse effects of land disturbance and sediment discharge on water bodies, particularly sensitive receiving environments; d) effects on cultural and spiritual values of Mana Whenua including water quality, preservation of wāhi tapu, and kaimoana gathering; e) the proportion of the catchment which is exposed; f) staging of works and progressive stabilisation; g) timing and duration of works; h) term of consent; i) potential effects on significant ecological and indigenous biodiversity values; j) the treatment of stockpiled materials on the site including requirements to remove material if it is not to be reused on the site; k) and information and monitoring requirements.	**The matters set out under 1) are addressed in Sections 4 and 6.12 of the AEE, the draft ESCP attached in Appendix H4 and the proposed conditions of consent.**
E7.4.1 (A28 and A20) – Groundwater dewatering and diversion [rp]	**E7.8.1** 1) General a) The effects on Mana Whenua values 6) Diversion of groundwater a) How the proposal will avoid, remedy or mitigate adverse effects: i. On the base flow of rivers and springs; ii. On levels and flows in wetlands; iii. On lake levels; iv. On existing lawful groundwater takes and diversions;	**Section 8.1 of the AEE. This will be further considered once the forthcoming CVAs are received.** **The matters set out under 6a) i) to iv) are not applicable.** **The matters set out under 6a) v) to xi)**

	v. On groundwater pressures, levels or flow paths and saline intrusion; vi. From ground settlement on existing buildings, structures and services including roads, pavements, power, gas, electricity, water mains, sewers and fibre optic cables; vii. arising from surface flooding including any increase in frequency or magnitude of flood events; viii. from cumulative effects that may arise from the scale, location and/or number of groundwater diversions in the same general area; ix. from the discharge of groundwater containing sediment or other contaminants; x. on any scheduled historic heritage place; and xi. on terrestrial and freshwater ecosystems and habitats. b) N/A c) Monitoring and reporting requirements incorporating, but not limited to: i. the measurement and recording of water levels and pressures; ii. the measurement and recording of the settlement of the ground, buildings, structures and services; iii. the measurement and recording of the movement of any retaining walls constructed as part of the excavation or trench; and iv. requiring the repair, as soon as practicable and at the cost of the consent holder, of any distress to buildings, structures or services caused by the groundwater diversion. d) The duration of the consent and the timing and nature of reviews of consent conditions; e) The requirement for and conditions of a financial contribution and/or bond; and f) The requirement for a monitoring and contingency plan or contingency and remedial action plan.	**addressed are covered in the Groundwater and Settlement Report contained in Appendix H5 and Section 6.14 of the AEE.** **The proposed monitoring and contingency plan required by the Conditions of Consent in Appendix A will address the matters set out in 6) c).** **The duration of dewatering is only for the construction period (2-3 years). A suite of key consent conditions, which have been informed by the CI conditions, are included in the application.** **The requirement for and conditions of a financial contribution are not applicable.** **A monitoring and contingency management plan is**

		proposed as a condition of consent.
E14.4.1 (A167) – Discharge to air from wastewater infrastructure [rp]	**E14.8.1** 1) For discharge of contaminants into air from all restricted discretionary activities: a) the matters in Policy E14.3(1); and E14.3(1) Manage the discharge of contaminants to air, including by having regard to the Auckland Ambient Air Quality Targets in Table E14.3.1, so that significant adverse effects on human health, including cumulative adverse effects, are avoided, and all other adverse effects are remedied or mitigated. a) location of site and activity; and b) site and plant layout. 12) For discharge of contaminants into air from waste processes: a) quantity, quality and type of discharge, including biological contaminants, and any effects arising from that discharge; a) sensitivity of receiving environment and separation distances between the activity and any sensitive land uses; b) N/A c) N/A d) N/A e) odour, dust, visible emissions and hazardous air pollutant mitigation measures; and f) management plans.	**The matters set out under 1) and 12) are addressed in Section 6.16 of the AEE, the Air Quality Assessment attached in Appendix H10 and the proposed conditions of consent.**

Rule reference	**Matters of discretion**	**Addressed:**
District Plan [dp]		
E26.5.3.1 (A97 and A97A) – Earthworks [dp]	**E26.5.7.1** 2) all district restricted discretionary activities [dp]: a) compliance with the standards; b) effects of noise, vibration, odour, dust, lighting and traffic on the surrounding environment; c) effects on the stability and safety of surrounding land, buildings and structures; d) effects on overland flow paths and flooding; e) protocol for the accidental discovery of kōiwi, archaeology and artefacts of Māori origin; f) the treatment of stockpiled materials on the site including requirements to remove material if it is not to be reused on the site; g) staging of works and progressive stabilisation; h) information and monitoring requirements; i) timing and duration of works;	**The matters set out under 1) are addressed in Sections 4 and 6.5 of the AEE, the draft ESCP attached in Appendix H4 and the proposed conditions of consent.**

Rule reference	Matters of discretion	Addressed:
District Plan [dp]		
	j) term of consent; k) N/A (outside of SEA / does not impact on significant ecological and indigenous biodiversity values); l) risk that may occur as a result of natural hazards; m) protection of or provision of network utilities and road networks. n) N/A (works do not encroach into riparian or coastal yards); and o) positive effects enabled through the land disturbance.	
E26.6.3.1 (A117) - Earthworks within a Special Character Areas overlay [dp]	**E26.6.7.1** 2) all district restricted discretionary activities [dp]: a) the matters set out in E26.5.7.1(2) – see row above; b) effects on the characteristics and qualities that contribute to the natural character and/or landscape values of the area; c) landscape, visual and amenity effects; d) modification to landform; e) Mana Whenua values; f) the mitigation of effects; and g) the necessity of the earthworks to provide for the functional and operational needs of infrastructure.	**Not applicable – the tunnel passes beneath the overlay and will not affect the overlay itself**
E25.4.1 (A2) Construction noise and vibration [dp]	**E25.8.1** 1) for noise and vibration: a) the effects on adjacent land uses particularly activities sensitive to noise; and b) measures to avoid, remedy or mitigate the adverse effects of noise.	**The matters set out under 1) are addressed in Section 6.10 of the AEE, the Noise and Vibration Assessment attached in Appendix H2 and the proposed conditions of consent.**
E27.4.1 (A5) Construction of a vehicle crossing	**E27.8.1** 12) construction or use of a vehicle crossing where a Vehicle Access Restriction applies under Standard E27.6.4.1(2) and Standard E27.6.4.1(3): a) adequacy for the site and the proposal; b) design and location of access; c) effects on pedestrian and streetscape amenity; and d) effects on the transport network.	**The matters set out under 12) are addressed in Section 6.11 of the AEE, the Construction Traffic Effects Assessment attached in Appendix H9 and the proposed conditions of consent.**
E26.4.3.1 Tree trimming and removal, and works within the root	**E26.4.7.1** 1) trees in roads and open space zones: a) for tree trimming or alteration not meeting Standard E26.4.5.1; i. the methods proposed to reduce any adverse effects; and	**The matters set out under 1) are addressed in Section 6.6 of the AEE, the Arboricultural Assessment attached in Appendix H7 and the proposed conditions of consent.**

Rule reference	Matters of discretion	Addressed:
District Plan [dp]		
zone, within Open Space zones [dp]	ii. the extent of the alteration of the tree or trees. b) for work within the protected root zone not otherwise provided for: i. the methods proposed to reduce any adverse effects of the works, including the depth of the works; and ii. the extent of area of the protected root zone or zones that is affected. c) tree alteration or removal of greater than 4m in height and trees 400mm in girth: i. the effect on the values of the tree or trees; and ii. any loss or reduction of amenity values provided by the tree or trees; iii. any mitigation proposed; and iv. the functional and operational requirements and benefits derived from infrastructure.	
E26.2.3 (A50) Proposed plant room and vent ancillary structures [dp]	**E26.2.7.1** 1) all restricted discretionary activities: a) functional and operational needs of, and benefits derived from, the infrastructure; b) visual effects; c) where located within a road, the operation and function of road network activities and effects on the amenity values of the streetscape; d) noise and vibration effects; e) odour effects; f) shadow flicker effects; and g) implications in terms of future planned urban development.	**The matters set out under 1) are addressed in the AEE, the various technical assessments attached Appendix H and the proposed conditions of consent.**
E36.4 (A56) Infrastructure within a floodplain and overland flow path [dp]	**E36.8.1** (18) Operation, maintenance, renewal, repair and minor infrastructure upgrading, of infrastructure in areas listed in the heading above that do not comply with Standard E36.6.1.13: a the functional and/or operational need to locate within the hazard area; 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; (ii) impacts on landscape values and public access associated with the proposed activity including a need for hard	**The matters set out under 18) are addressed in Section 2 and 6.15 of the AEE, the Flooding Memorandum attached in Appendix H10 and the proposed conditions of consent.**

Rule reference	Matters of discretion	Addressed:
District Plan [dp]		
	protection structures to be required to protect the utility from the natural hazard; (iii) the management or regulation of other people and property required to mitigate natural hazard risks resulting from the location of the infrastructure; (iv) the storage or use of hazardous substances in relation to the activity; (v) any exacerbation of an existing natural hazard or creation of a new natural hazard as a result of the structure; and (vi) the use of non-structural solutions instead of hard engineering solutions; and (vii) the ability to relocate or remove structures.	
E40.4.1 (A24) Temporary activities associated with construction that exceed 24-months duration	E40.8.1 (1) the effects from the noise, lighting, hours and duration of an activity; (2) the effects of the activity on traffic generation, parking, pedestrian safety and access; and (3) the effects of any disturbance to land, foreshore, seabed or vegetation associated with an activity.	**The matters are addressed in the AEE, the various technical assessments attached Appendix H and the proposed conditions of consent.**

Appendix E Permitted activity standard assessment

Appendix E Permitted Activity Standards Assessment

Where particular activities in Table 5.3 of the AEE are identified as permitted activities, the following provides an assessment against the relevant permitted activity standards.

Table 1: Permitted Activity Standard Assessment

Rule reference	Standard	Comment
E26.2.3.1 (A49) Underground pipelines and ancillary structures for the conveyance of water, wastewater and stormwater (including aboveground ancillary structures associated with underground pipelines) **E26.2.3.1 (A57)** Ventilation facilities, drop shafts and manholes	E26.2.5.1. Activities within roads and unformed roads in Table E26.2.3.1 Activity table (1) Temporary network utilities (2) Aboveground building area (3) Height (4) Electric vehicle charging stations (5) Minor infrastructure upgrading (6) Electricity transmission and distribution (Electric and magnetic fields) (7) Radio Frequency Fields (RF fields)	The Point Erin Tunnel is located entirely below ground. No applicable standards.
	E26.2.5.2. Activities within zones in Table E26.2.3.1 Activity table (1) Temporary network utilities (2) Building area (3) Height (4) Yards (5) Pole mounted transformers (6) Electricity transmission and distribution (Electric and magnetic fields) (7) Radio Frequency Fields (RF fields)	No applicable standards

Rule reference	Standard	Comment
	E26.2.5.3. Specific activities within zones in Table E26.2.3.1 (1) Minor infrastructure upgrading of network utilities (2) – (5) Substations and electricity storage facilities (6) – (11) Telecommunications (12) – (22) Electricity generation (23) Pipe and cable bridges (24) Underground pipelines for the conveyance of gas, water, wastewater and stormwater Any aboveground section of underground pipelines for the conveyance of gas, water, wastewater and stormwater must not exceed: (a) 25m continuous length of pipe that is aboveground in any one section; and (b) 300mm in diameter. (25) Amateur Radio Configurations (26) Electric vehicle charging stations	Standard E26.2.5.3 (24) is applicable to underground pipelines. There are no above ground sections of the proposed Point Erin Tunnel and therefore this standard is complied with. All other standards are not applicable.
E26.4.3.1 (A87) and (A91) Alteration or removal of any tree less than 4m in height and/or less than 400mm in girth, and works within the protected rootzone of street trees where less than 20% of the protected rootzone is disturbed.	E26.4.5.2. Trees in roads and open space zones - works within the protected root zone 1) For roots under 60mm: (a) excavation undertaken by hand digging or air spade or hydro vac or machine excavator within the protected root zone without direction and/or supervision of a qualified arborist. (i) the surface area of a single excavation shall not exceed 1m2 ; (ii) works involving root pruning must be less than 35mm in diameter at severance; (iii) works will disturb less than 10 per cent of the protected root zone; and (iv) any machine excavator must operate on top of paved surfaces and/or ground protection measures and must be fitted with a straight blade bucket. (b) excavation undertaken by hand digging or air spade or hydro vac or machine excavator within the protected root zone with direction and/or supervision of a qualified arborist:	Works are required within the protected root zone of Trees 3, 31 and 32. The encroachment into the AUP defined root zone does not exceed 20%, and clearances are sufficient where roots greater than 80 mm in diameter are highly unlikely to be encountered. There are no applicable standards for removal of trees less than 4m in height, or with a trunk girth less than 400mm.

Rule reference	Standard	Comment
	(i) works must not disturb more than 20 per cent of the protected root zone; (ii) works involving root pruning must not be on roots greater than 60mm in diameter at severance; and (iii) any machine excavator must operate on top of paved surfaces and/or ground protection measures and must be fitted with a straight blade bucket. (c) excavation undertaken by trenchless methods must not be undertaken at a depth less than 800mm below ground level, and does not require the direction or supervision of a qualified arborist; (d) replacement of structures kerbs, and hard surfaces must be done so that: (i) the removal of the surface is carried out without damage to any tree roots; and (ii) the machine excavator must operate on top of paved surfaces and/or ground protection measures and must be fitted with a straight blade bucket. (e) Standards E26.4.5.2(1)(a) - (d) above do not apply to any tree works undertaken inside infrastructure such as pipes and meter boxes. 2) For roots greater than 60mm but less than 80mm: (a) excavation undertaken by hand digging or air spade or hydro vac or machine excavator within the protected root zone with direction and/or supervision of a qualified arborist: (i) works must not disturb more than 20% of the protected root zone; (ii) works involving root pruning must not be on roots greater than 80mm in diameter at severance; (iii) any machine excavator must operate on top of paved surfaces and/or ground protection measures and must be fitted with a straight blade bucket; (b) Standard E26.4.5.2(2)(a) above do not apply to any tree works undertaken inside infrastructure such as pipes and meter boxes.	

Rule reference	Standard	Comment
E26.5.3.1 (A97) and (A97A) Earthworks outside of overlays, areas/volumes less than 2500 m^2 and 2500 m^3. NB: this is only applicable to the tunnelling portion of the works as areas and volumes at any one time will be less than 2500 m^2 and 2500 m^3, respectively, and the tunnel will be progressively stabilised (lined). Consent is sought for the works in Point Erin Park as per the AEE.	E26.5.5.1. Accidental discovery rule	The tunnel is wholly contained underground at depths where accidental discovery is not likely. Will comply.
	E26.5.5.2(9) [dp] Earthworks associated with the operation, repair, renewal, upgrading and maintenance of existing roads, will be undertaken within the legal road or the formation width of existing roads if this extends beyond the legal road width.	Not applicable
	E26.5.5.2(10) [dp] Land disturbed for the operation, renewal, repair, upgrading or maintenance of utilities outside the formation width of existing roads or abutments, or within an overland flow path, will be reinstated to the ground level prior to the works being undertaken as soon as practicable after completion of the works.	Not applicable – the tunnel is wholly contained underground.
	E26.5.5.2(11) [dp] Land disturbed for the operation, repair, renewal, upgrading or maintenance of utilities will be stabilised by re-vegetation, grassing or other suitable means as soon as practicable after completion of the works to avoid erosion and scouring.	Not applicable – the tunnel is wholly contained underground.
	E26.5.5.2(12) [dp] Land disturbance within Riparian Yards and Coastal Protection Yards are limited to…	Not applicable – the tunnel is wholly contained underground.
	E26.5.5.2(13) [dp] Works must not result in any instability of land or structures at or beyond the boundary of the property where the land disturbance occurs.	Complies - the tunnel is wholly contained underground and will be constructed in such a way that there is no instability of land or structures.
	E26.5.5.2(14) [dp] The land disturbance must not cause malfunction or result in damage to network utilities, or change the cover over network utilities so as to create the potential for damage or malfunction.	Complies – the construction of the tunnel will be done in such a way as to not cause malfunction or damage to other network utilities.
	E26.5.5.2(15) [dp] Access to public footpaths, berms, private properties, network utilities, or public reserves must not be obstructed unless that is necessary to undertake the works or prevent harm to the public.	Not applicable – the tunnel is wholly contained underground.
	E26.5.5.2(16) [dp] Only cleanfill material may be imported and utilised as part of the land disturbance.	Not applicable – no cleanfill is required for the tunnel construction.

Rule reference	Standard	Comment
	E26.5.5.2(17) – (24) [dp]	Not applicable – the tunnel is wholly contained underground.
E4.4.1 (A1) Discharge of water and/or contaminants from construction of any component of the wastewater network	E4.6.1 General standards (1) The discharge must not, after reasonable mixing, give rise to any of the following: (a) the production of any conspicuous oil or grease film, scum or foam, or floatable or suspended materials; (b) any conspicuous change in the colour or visual clarity; (c) any emission of objectionable odour; (d) the rendering of freshwater unsuitable for consumption by farm animals; (e) a change to the natural temperature of the receiving water by more than 3 degrees celsius; (f) a change in the natural pH of the water by more than 1pH unit; and (g) any significant adverse effect on aquatic life. (2) The discharge must not enter into any water supply catchment, or any areas identified in D8 Wetland Management Areas Overlay (excluding Wetland Management Area Number 450 Lake Pupuke), D5 Natural Lake Management Areas Overlay or D4 Natural Stream Management Areas Overlay… (3) The discharge must not cause erosion or scouring at the point of discharge or alter the natural course of the water body. (4) The discharge must not include washwater used for the external cleaning of a reticulated water supply system. (5) The discharge must be in accordance with best management practice to minimise the contaminants to the extent practicable.	Construction water discharged will be in accordance with best management practice, including GD05, to minimise contaminants to the extent practicable such that the discharges will not give rise to any of the effects identified in (a) – (g) nor will it cause erosion or scouring at the point of discharge. The discharges will not enter any water supply catchment, or any areas identified in D8 Wetland Management Areas Overlay (excluding Wetland Management Area Number 450 Lake Pupuke), D5 Natural Lake Management Areas Overlay or D4 Natural Stream Management Areas Overlay. The discharge is not washwater from the external cleaning of a reticulated water supply system.
E4.4.1 (A5) Discharge onto or into land and/or into water for the purpose of dewatering trenches or other excavations	E4.6.2.5 Discharge onto or into land and/or into water for the purpose of dewatering trenches or other excavations (1) The origin of the discharge must be limited to surface water and/or groundwater. (2) Appropriate sediment control measures must be implemented to ensure that the discharge does not result in any of the following:	The origin of the discharge will be limited to surface water and groundwater. Appropriate sediment control measures and best management practice will be implemented in accordance with GD05 so that the discharge will not result in any of those identified in (a) – (g).

Rule reference	Standard	Comment
	… Refer (a) to (g) above.	
E27.6.1 Trip generation	E27.6.1 (1) (b) 100 v/hr (any hour) for activities not specified in Table E27.6.1.1 requiring a controlled or restricted discretionary land use activity consent in the applicable zone where there are no requirements for an assessment of transport or trip generation effects. This standard does not apply to development activities provided for as permitted in the applicable zone.	Conservatively, the highest trip generating phases of the Project would result in a total of 58 trucks and 9 car per day which averages over a 10-hour working day at 6 - 7 vehicles per hour, or 1 vehicle every 9 minutes.
E36.4.1 (A35) New structures and buildings designed to accommodate flood tolerant activities up to 100 m^2 gross floor area within the 1 per cent annual exceedance probability (AEP) floodplain	No applicable standards	The plant room is a flood tolerant activity (infrastructure) less than 100 m2 partly located within the 1% AEP floodplain. No applicable standards.
E24.4.1(A1) Activities that comply with all the relevant permitted activity standards	E24.6.1 (1) Lighting limits must be measured and assessed in accordance with Standard AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting, except for building façade lighting that complies with Standard E244.6.1(10). In the event of any conflict between Standard AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting and the lighting standards set out below, the lighting standards set out below shall prevail.	Lighting will be measured and assessed in accordance with Standard AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting.
	E24.6.1 (2) Any calculation for the purposes of these standards must be based on a maintenance factor of 1.0 (i.e. no depreciation).	Noted / will comply.

Rule reference	Standard	Comment
	E24.6.1 (3) For the purposes of Standard E24.6.1(2) and Standard E24.6.1(9) the lighting category classification for each zone in Table E24.6.1.1 Lighting category classifications will apply. Where a development is located on a site which adjoins or is directly across a road from a different lighting category, the most sensitive classification of the two categories will apply	Noted / will comply.
	E24.6.1 (4) Where measurements of any illuminance above background levels from the use of artificial lighting cannot be made because the artificial lighting cannot be turned off, measurements may be made in areas of a similar nature that are not affected by the artificial lighting. The result of these measures may be used for determining the effect of the artificial lighting	Noted / will comply.
	E24.6.1 (5) For the purposes of these standards, the curfew time is 10pm - 7am and the pre-curfew time is 7am – 10pm.	Noted / will comply.
	E24.6.1 (6) The added illuminance from the use of any artificial lighting on any site must not exceed either: (a) the levels in Table E24.6.1.2 Horizontal and vertical illuminance at a boundary, when measured at the boundary of any adjacent site containing a lawfully established dwelling. The illuminance limit will apply horizontally and vertically at any point on the boundary and at any height; or (b) the vertical illuminance limits in Table E24.6.1.3 Vertical illuminance at a window, when measured or calculated at the windows of habitable rooms of a lawfully established dwelling.	The construction lighting will be designed to comply.
	E24.6.1 (7) Outdoor artificial lighting operating on any site between sunset and sunrise must not exceed the threshold increment limit stated in Table E24.6.1.4 Threshold increment, on any public road, calculated within each traffic lane in the direction of travel.	The construction lighting will be designed to comply.
	E24.6.1 (8) The exterior lighting on any property adjacent to land on which there is a dwelling must be selected, located, aimed, adjusted and/or screened to ensure that glare resulting from the lighting does not exceed the pre-curfew or curfew limits outlined in Table E24.6.1.5 Pre-curfew luminous intensity limits or Table E24.6.1.6 Curfew luminous intensity limits.	The construction lighting will be designed to comply.

Rule reference	Standard	Comment
	E24.6.1 (9) The average surface luminance measured in candelas per square metre (cd/m2) for an intentionally artificially lit building façade shall not exceed any one of the following: (a) 0 cd/m2 in lighting category 1; (b) 5 cd/m2 in lighting category 2; (c) 10 cd/m2 in lighting category 3; or (d) 25 cd/m2 in lighting category 4.	Not applicable.
	E24.6.1 (10) The limits may be determined by calculation or measurement in accordance with CIE 150:2003 Guide on the limitation of the effects of obtrusive light from outdoor lighting installations – International Commission on Illumination ISBN 3 901 906 19 3.	The construction lighting will be designed to comply.

Appendix F Relevant objectives and policies

Appendix F - Auckland Unitary Plan – Relevant objectives and policies

Table 1: Provisions related to the development and operation of infrastructure

RPS	Regional and District Plan
Objective B3.2.1 (1) Resilient, efficient and effective infrastructure **Objective B3.2.1 (2)** Benefits of infrastructure are recognised **Objective B3.2.1 (3) and Policy B3.2.2 (6)** Development, operation, maintenance, and upgrading of infrastructure is enabled while managing adverse effects on the quality of the environment, especially scheduled areas, amenity values and the health and safety of communities. **Objective B3.2.1 (4) and Policy B3.2.2 (3)** Recognise the functional and operational needs of infrastructure. **Objective B3.2.1 (5)** Infrastructure planning and land use planning are integrated to service growth efficiently. **Objective B3.2.1 (8) and Policy B3.2.2 (8)** The adverse effects of infrastructure are avoided, remedied or mitigated. **Policy B3.2.2 (1) and Policy B3.2.2 (6)** Enable efficient development, operation, maintenance and upgrading of infrastructure.	**Objective E26.2.1 (1)** Benefits of infrastructure are recognised. **Objective E26.2.1 (2)** The value of investment in infrastructure is recognised. **Objective E26.2.1 (3)** Safe, efficient and secure infrastructure is enabled. **Objective E26.2.1 (4)** Development, operation, maintenance, repair, replacement, renewal, upgrading and removal of infrastructure is enabled. **Objective E26.2.1 (5)** Resilience of infrastructure is improved and continuity of service is enabled. **Objective E26.2.1 (9) and Policy E26.2.2 (4)** The adverse effects of infrastructure are avoided, remedied or mitigated. Includes effect on: (a) health, well-being and safety of people and communities, including nuisance from noise, vibration, dust and odour emissions and light spill; (b) safe and efficient operation of other infrastructure; (c) amenity values of the streetscape and adjoining properties; (d) environment from temporary and ongoing discharges; (e) values for which a site has been scheduled or incorporated in an overlay. **Policy E26.2.2 (1)** Recognise the social, economic, cultural and environmental benefits that infrastructure provides. Includes: (a) enabling enhancement of the quality of life and standard of living for people and communities; (b) providing for public health and safety; (c) enabling the functioning of businesses; (d) enabling economic growth; (e) enabling growth and development; (f) protecting and enhancing the environment; (g) enabling the transportation of freight, goods, people; and (h) enabling interaction and communication. **Policy E26.2.2 (2)** Provide for the development, operation, maintenance, repair, upgrade and removal of infrastructure by recognising: (a) functional and operational needs; (b) location, route and design needs and constraints; (c) the complexity and interconnectedness of infrastructure services; (d) benefits of infrastructure to communities within Auckland and beyond; (e) Its role in servicing existing, consented and planned development. **Policy E26.2.2 (4)** Require the development, operation, maintenance, repair, upgrading and removal of infrastructure to avoid, remedy or mitigate adverse effects, including, on the: (a) health, well-being and safety of people and communities, including nuisance from noise, vibration, dust and odour emissions and light spill; (b) safe and efficient operation of other infrastructure; (c) amenity values of the streetscape and adjoining properties; (d) environment from temporary and ongoing discharges; and (e) values for which a site has been scheduled or incorporated in an overlay. **Policy E26.2.2 (5)** Consider the following matters when assessing the effects of infrastructure:

RPS	Regional and District Plan
	(a) the degree to which the environment has already been modified; (b) the nature, duration, timing and frequency of the adverse effects; (c) the impact on the network and levels of service if the work is not undertaken; (d) the need for the infrastructure in the context of the wider network; and (e) The benefits provided by the infrastructure to the communities within Auckland and beyond.

Table 2: Provisions related to Open Space zoning

District Plan - Open Space Zone
General: **Objective H7.2 (2)** The adverse effects of use and development of open space areas on residents, communities and the environment are avoided, remedied or mitigated. **Policy H7.3 (4))** Enable the construction operation, maintenance, repair and minor upgrading of infrastructure located on open spaces. **Informal Recreation Zone:** **Objective H7.5.2 (1)** The open and spacious character, amenity values and any historic, Mana Whenua, and natural values of the zone are maintained. **Objective H7.5.2 (2)** Informal recreation activities are the predominant use of the zone. **Objective H7.5.2 (3) and Policy H7.5.3 (4)** Buildings, structures and exclusive-use activities are limited to maintain public use and open space for informal recreation. **Policy H7.5.3 (2)** Maintain or enhance the natural character values of open spaces by retaining significant vegetation (where appropriate and practical) and through weed removal, new planting and landscaping. **Policy H7.5.3 (3)** Require development, including new buildings and structures, located near scheduled Sites or Places of Significance to Mana Whenua to recognise the relationship of Mana Whenua to the area. **Policy H7.5.3 (5)** Locate and design buildings and structures to complement the character, function and amenity values of the zone; maintain public accessibility, minimise areas for exclusive use and protect any natural or historic heritage values. **Active Sport and Recreation Zone:** **Objective H7.6.2 (1) and Policy H7.6.3 (1)** Sport and active recreation opportunities are provided for while avoiding or mitigating any significant adverse effects. **Policy H7.6.3 (4)** Design and locate buildings, structures and activities so that any adverse effects are managed to maintain a reasonable level of amenity value for nearby residents, communities and the surrounding environment.
District Plan - Trees in Open Space
Objective E16.2 (1) Trees in open space zones that contribute to cultural, amenity, landscape and ecological values are protected. **Objective E16.2 (2)** There is an increase in the quality and extent of tree cover in open space zones, particularly within areas identified for intensified living. **Policy E16.3 (2)** Manage trees within open space zones to protect their cultural, amenity, landscape and ecological values, while acknowledging that multiple uses occur in open space areas. **Policy E16.3 (3)** Encourage the use of indigenous trees and vegetation for planting within open space zones, where appropriate, to recognise and reflect cultural, amenity, landscape and ecological values.

Table 3: Provisions related to noise and vibration

District Plan
Objective E25.2 (1) People are protected from unreasonable levels of noise and vibration. **Objective E25.2 (2)** The amenity values of residential zones are protected from unreasonable noise and vibration, particularly at night. **Objective E25.2 (4)** Construction activities that cannot meet noise and vibration standards are enabled while controlling duration, frequency and timing to manage adverse effects. **Policy E25.2 (2)** Minimise, where practicable, noise and vibration at its source or on the site from which it is generated to mitigate adverse effects on adjacent sites. **Policy E25.2 (10)** Avoid, remedy or mitigate the adverse effects of noise and vibration from construction, maintenance and demolition activities while having regard to: (a) the sensitivity of the receiving environment; and (b) the proposed duration and hours of operation of the activity; and (c) the practicability of complying with permitted noise and vibration standards.

Table 4: Provisions related to the coastal environment

RPS	Regional Plan
Objective B8.3.1 (1) Use and development in the coastal environment are located in appropriate places and are of an appropriate form. **Policy B8.3.2 (4)** Require use and development in the coastal environment to avoid, remedy or mitigate adverse effects	**Objective E18.2 (1) and Objective E19.2 (1) and Policies E18.3 (3) and E19.3 (2)** Manage the effects of use and development in the coastal environment to avoid significant adverse effects, and avoid, remedy or mitigate other adverse effects, on the characteristics and qualities that contribute to the values of natural character, landscapes and features taking into account (key relevant matters): the location, scale and design of the proposed use or development; the temporary or permanent nature of any adverse effects; the functional or operational need for infrastructure to be located in a particular area.

Table 5: Provisions related to Mana Whenua

RPS	Regional Plan
Objective B6.2.1 (1), Objective B6.2.1 (2) and Policy B6.2.2 (1) The principles of the Treaty of Waitangi/Te Tiriti o Waitangi are recognised and provided for in the sustainable management of natural and physical resources (and enhances where possible). The principles of the Treaty are also recognised through Mana Whenua participation in resource management processes. **Objective B6.3.1 (1), Policy B6.3.2 (2) and Policy B6.3.2 (6)** Mana Whenua values, mātauranga and tikanga are properly reflected and accorded sufficient weight in resource management decision-making. **Objective B6.3.1 (2)** The mauri of, and the relationship of Mana Whenua with, natural and physical resources including freshwater, geothermal resources, land, air and coastal resources are enhanced overall. **Policy B6.3.2 (3)** Ensure that any assessment of	**Policy E2.3 (23)** Require proposals to divert groundwater to ensure that the proposal avoids, remedies or mitigates any adverse effects on scheduled sites and places of significance to Mana Whenua. **Policy E11.3 (3) and Policy E12.3 (4)** Manage the impact on Mana Whenua cultural heritage that is discovered undertaking land disturbance by: (a) requiring a protocol for the accidental discovery of kōiwi, archaeology and artefacts of Māori origin; (b) undertaking appropriate actions in accordance with mātauranga and tikanga Māori; and (c) undertaking appropriate measures to avoid adverse effects. Where adverse effects cannot be avoided, effects are remedied or mitigated. **Policy E12.3 (2)** Manage the amount of land being disturbed at any one time, to maintain the cultural

environmental effects for an activity that may affect Mana Whenua values includes an appropriate assessment of adverse effects on those values. **Objective B6.5.1 (1)** The tangible and intangible values of Mana Whenua cultural heritage are identified, protected and enhanced. **Policy B6.5.2 (1) and Policy B6.5.2 (6)** Protect Mana Whenua cultural and historic heritage sites and areas which are of significance to Mana Whenua. This includes any cultural heritage uncovered during subdivision, use and development **Policy B6.5.2 (8)** Encourage appropriate design, materials and techniques for infrastructure in areas of known historic settlement and occupation by the tūpuna of Mana Whenua.	and spiritual values of Mana Whenua in terms of land and water quality, preservation of wāhi tapu, and kaimoana gathering. **Objective H7.5.2 (1)** The Mana Whenua values of the zone are maintained. **Policy H7.5.3 (3)** Require development, including new buildings and structures, located near scheduled Sites or Places of Significance to Mana Whenua to recognise the relationship of Mana Whenua to the area.

Table 6: Provisions related to integrated water management and the wastewater network

RPS	Regional Plan
Policy B7.4.2 (10) Manage the adverse effects of wastewater discharges to freshwater and coastal water by: (b) progressively reducing the existing network overflows and associated adverse effects by – (ii) adopting the BPO for preventing or minimising the adverse effects of discharges from wastewater networks including works to reduce overflow frequencies and volumes.	**Objective E1.2 (3)** Stormwater and wastewater networks are managed to protect public health and safety and to prevent or minimise adverse effects of contaminants on freshwater and coastal water quality. **Policy E1.2 (21)** Progressively minimise the adverse effects of wet weather overflows from wastewater networks by: (a) adopting the best practicable option to reduce wet weather overflows to an average of no more than two events per discharge location per year in areas serviced by a separated wastewater network with priority for: (i) receiving environments that are used for public and contact recreation activities; (ii) receiving environments that are sensitive to the adverse effects of wastewater overflows; (iii) areas significant to Mana Whenua; or (iv) adopting the best practicable option to reduce wet weather overflows from the combined sewer network. (b) requiring the development and implementation of a network operations plan as part of any network discharge consent; and (c) adopting wastewater overflow response procedures.

RPS	Regional Plan
Objective B7.4.1 (6) Mana Whenua values, mātauranga and tikanga associated with coastal water, freshwater and geothermal water are recognised and provided for, including their traditional and cultural uses and values. **Policy B7.4.2 (8)** Minimise the loss of sediment from subdivision, use and development, and manage the discharge of sediment into freshwater and coastal water by requiring land disturbing activities to use industry best practice. **Policy B7.4.2 (9)** Manage stormwater by: requiring use and development to minimise the generation and discharge of contaminants and minimise adverse effects; adopting the BPO.	**Policy E1.3 (11)** Avoid as far as practicable, or otherwise minimise or mitigate adverse effects of stormwater diversions and discharges, having regard to: (a) the nature, quality, volume and peak flow of the stormwater runoff; (b) the sensitivity of freshwater systems and coastal waters; (c) the potential for the diversion and discharge to create or exacerbate flood risks; (d) options to manage stormwater on-site; (e) practical limitations in respect of the measures that can be applied; (f) the current state of receiving environments **Policy E1.3 (26)** Prevent or minimise the adverse effects from construction, maintenance, investigation and other activities on the quality of freshwater and coastal water. **Policy E2.3 (7)** Require all proposals to take and use groundwater from any aquifer to demonstrate that the taking: (a) is within the water availabilities and levels for the aquifer in Appendix 3 Aquifer water availabilities and levels, except in accordance with Policy E2.3(11); (b) will avoid, remedy or mitigate adverse effects on surface water flows; (c) will avoid, remedy or mitigate adverse effects on terrestrial and freshwater ecosystem habitat; (d) will not cause saltwater intrusion or any other contamination; (e) will not cause adverse interference effects on neighbouring bores; (h) the proposal avoids, remedies or mitigates any ground settlement that may cause distress to and buildings, structures or services. **Policy E2.3 (23)** Require proposals to divert groundwater to ensure that: (a) the proposal avoids, remedies or mitigates any adverse effects on scheduled historic heritage places and scheduled sites and places of significance to Mana Whenua and people and communities. (b) flooding is not caused or exacerbated; (c) monitoring has been incorporated where appropriate; (d) mitigation has been incorporated where appropriate

Table 7: Provisions related to air quality

RPS	Regional Plan
Objective B7.5.1 (3) Avoid, remedy or mitigate adverse effects from discharges of contaminants to air for the purpose of protecting human health, property and the environment. **Policy B7.5.2 (1)** Manage discharge of contaminants to air from use and development to: (a) avoid significant adverse effects on human health and reduce exposure to adverse air discharges;	**Objective E14.2 (4)** The operational requirements of light and heavy industry, other location-specific industry, infrastructure, rural activities and mineral extraction activities are recognised and provided for. **Policy E14.3 (2)** In zones, except for those zones and precincts subject to policies E14.3(3) to (5): (a) avoid offensive or objectionable effects from dust and odour discharges and remedy or mitigate all other adverse effects of dust and odour discharges; or (b) require adequate separation distance between use and development which discharges dust and odour to air and

(d) protect activities that are sensitive to the adverse effects of air discharges; (f) enable the operation and development of infrastructure, industrial activities and rural production activities that discharge contaminants into air, by providing for low air quality amenity in appropriate locations.	activities that are sensitive to adverse effects of dust and odour discharges, or both of the above. **Policy E14.3 (8)** Avoid, remedy or mitigate the adverse effects on air quality from discharges of contaminants into air by: (a) using the best practicable option for emission control and management practices that are appropriate to the scale of the discharge and potential adverse effects; (b) adopting a precautionary approach, where there is uncertainty and a risk of significant adverse effects or irreversible harm to the environment from air discharges.

Table 8: Provisions related to land disturbance

RPS	Regional Plan
Policy B3.2.2 (8) Avoid, remedy or mitigate the adverse effects from the construction, operation, maintenance or repair of infrastructure.	**Objective E11.2 (1), Objective E12.2 (1), Policy E11.3 (1) and Policy E12.3 (1)** Land disturbance is undertaken in a manner that protects the safety of people and avoids, remedies or mitigates adverse effects on the environment (including resources that have been scheduled in the Plan). **Objective E11.2 (2)** Sediment generation from land disturbance is minimised. **Policy E11.3 (2) and Policy E12.3 (2)** Manage land disturbance to: (a) retain soil and sediment on the land by the use of best practicable options for sediment and erosion control appropriate to the nature and scale of the activity; (b) manage the amount of land being disturbed at any one time to avoid, remedy or mitigate adverse effects (including but not limited to construction noise, vibration, odour, dust, lighting and traffic effects); (c) avoid, remedy or mitigate adverse effects on accidentally discovered sensitive material; and (d) maintain the cultural and spiritual values of Mana Whenua in terms of land and water quality, preservation of wāhi tapu, and kaimoana gathering. **Policy E11.3 (3)** and **Policy E12.3 (4)** Manage the impact on Mana Whenua cultural heritage that is discovered undertaking land disturbance by: (a) requiring a protocol for the accidental discovery of kōiwi, archaeology and artefacts of Māori origin; (b) undertaking appropriate actions in accordance with mātauranga and tikanga Māori; and (c) undertaking appropriate measures to avoid adverse effects. Where adverse effects cannot be avoided, effects are remedied or mitigated. **Policy E11.3 (4) and E12.3 (3)** Enable land disturbance necessary for a range of activities undertaken to provide for people and communities social, economic and cultural well-being, and their health and safety. **Policy E11.3 (5) and Policy E12.3 (5)** Design and implement earthworks with recognition of existing environmental site constraints and opportunities, specific engineering requirements, and implementation of integrated water principles. **Policy E11.3 (6) and E12.3 (6)** Require that earthworks are designed and undertaken in a manner that ensures the stability and safety of surrounding land, buildings and structures.

Table 9: Provisions related to transport

District Plan
Objective E27.2 (1) Land use and all modes of transport are integrated in a manner that enables: (b) the

District Plan
adverse effects of traffic generation on the transport network to be managed. **Objective E27.2 (4)** The provision of safe and efficient parking, loading and access is commensurate with the character, scale and intensity of the zone **Objective E27.2 (5)** Pedestrian safety and amenity along public footpaths is prioritised. **Policy E27.3 (20)** Require vehicle crossings and associated access to be designed and located to provide for safe, effective and efficient movement to and from sites and minimise potential conflicts between vehicles, pedestrians, and cyclists on the adjacent road network. **Policy E27.3 (21)** Restrict or manage vehicle access to and from sites adjacent to intersections, adjacent motorway interchanges, and on arterial roads, so that: • the location, number, and design of vehicle crossings and associated access provides for the efficient movement of people and goods on the road network; and • any adverse effect on the effective, efficient and safe operation of the motorway interchange and adjacent arterial roads arising from vehicle access adjacent to a motorway interchange is avoided, remedied or mitigated.

Table 10: Provisions related to natural hazards and flooding

RPS	Regional Plan
Policy B10.2.2 (7) Avoid or mitigate the effects of activities in areas subject to natural hazards **Policy B10.2.2 (5)** Manage use and development of land subject to natural hazards based on: the type and severity of potential events; the vulnerability of the activity; and the cumulative effects.	**Objective E36.2 (2)** Use and development in urban areas, only occurs where the risks of adverse effects from natural hazards to people, buildings, infrastructure and the environment are not increased overall and where practicable are reduced, taking into account the likely long term effects of climate change. **Objective E36.2 (4)** Where infrastructure has a functional or operational need to locate in a natural hazard area, the risk of adverse effects shall be assessed and significant adverse effects are sought to be avoided or mitigated to the extent practicable. **Objective E36.2 (5)** Use and development is managed to safely maintain the conveyance function of floodplains and overland flow paths. **Policy E36.3 (3) and Policy E36.3 (4)** As part of a risk assessment of proposals to use or develop land that is subject to natural hazards: • the type, frequency and scale of the natural hazard; • the type of activity being undertaken and its vulnerability to natural hazard events; • the consequences of a natural hazard event; • the potential effects on public safety and other property; (h) any exacerbation of an existing natural hazard risk or the emergence of natural hazard risks; (i) the ability to use non-structural solutions to avoid, remedy or mitigate hazards; (j) the design and construction of buildings and structures to mitigate the effects of natural hazards; (k) the effect of structures used to mitigate hazards on landscape values and public access; (l) site layout and management including access and exit during a natural hazard event; and (m)the duration of consent. **Policy E36.3 (15)** Enable buildings containing less vulnerable activities to locate in the 1 per cent annual exceedance probability (AEP) floodplains where that activity avoids, remedies or mitigates effects from flood hazards on other properties. **Policy E36.3 (21)** Ensure all development in the 1 per cent AEP floodplain does not increase adverse effects from flood hazards or increase flood depths and velocities to other properties. **Policy E36.3 (29) and Policy E36.3 (30)** Maintain the function of overland flow paths to convey stormwater runoff safely from a site to the receiving environment or require changes to overland flow paths to retain their

RPS	Regional Plan
	capacity to pass stormwater flows safely without causing damage to property or the environment.

Table 11: Provisions related to the historic heritage and special character area overlay

RPS	District Plan
Objective B5.2.1 (1) and Policy B5.2.2 (8) Significant historic heritage places and associated values are identified and protected from inappropriate subdivision, use and development. **Objective B5.3.1 (2) and Policy B5.3.2 (4)** The character and amenity values of identified special character areas are maintained and enhanced.	**Objective D18.2 (3) and Objective D17.2 (2)** The adverse effects of use and development on the identified special character values and historic heritage places are avoided, remedied or mitigated. **Policy D17.3 (25)** Enable the establishment of network utilities within scheduled historic heritage places where all of the following apply: there is a functional need or operational constraint that necessitates their location within a scheduled historic heritage place; significant adverse effects on the heritage values of the place are avoided where practicable; and other adverse effects are avoided, remedied or mitigated.

Table 12: Provisions related to contaminated land

RPS	Regional Plan
Objective B10.4.1 (1) Human health and the quality of air, land and water resources are protected by the identification, management and remediation of land that is contaminated. **Objective B10.4.1 (2)** Land which may be contaminated due to having supported contaminating land use activities in the past but has not been investigated will be identified as being potentially contaminated. **Objective B10.4.1 (3)** Manage or remediate land that is contaminated where (c) development or subdivision of land is proposed.	**Objective E30.2(1)** The discharge of contaminants from contaminated land into air, or into water, or onto or into land are managed to protect the environment and human health and to enable land to be used for suitable activities now and in the future. **Policy E30.3 (2)** Require any use or development of land containing elevated levels of contaminants resulting in discharges to air, land or water to manage or remediate the contamination to a level that: (a) allows contaminants to remain in the ground/groundwater, where it can be demonstrated that the level of residual contamination is not reasonably likely to pose a significant adverse effect on human health or the environment; and (b) avoids adverse effects on potable water supplies; and (c) avoids, remedies or mitigates significant adverse effects on ecological values, water quality, human health and amenity values; while taking into account all of the following: (d) the physical constraints of the site and operational practicalities; (e) the financial implications of the investigation, remediation, management and monitoring options; (f) the use of best practice contaminated land management, including the preparation and consideration of preliminary and detailed site investigations, remedial action plans, site validation reports and site management plans for the identification, monitoring and remediation of contaminated land; and (g) whether adequate measures are in place for the transport, disposal and tracking of contaminated soil and other contaminated material removed from a site to prevent adverse effects on the environment.

Appendix G Consultation records

27th January 2023

To whom it may concern,

The following letter is in support of Watercare's resource consent application for the Point Erin Central Interceptor tunnel extension. Healthy Waters does not make formal submissions on Watercare's consent applications, however given the significance of the project to joint water quality outcomes we would like to provide a written endorsement in support of the project application.

Watercare and Healthy Waters have worked together on stormwater and wastewater related matters since amalgamation in 2010 and this relationship and cooperation has continued to grow and become more productive.

The Central Interceptor Project has been a major step forward towards addressing some of our most significant combined stormwater and wastewater overflows in Auckland. However, in 2017 the Mayor posed a challenge to both Healthy Waters and Watercare to find a way to accelerate other works in the Western Isthmus from Hillsborough to St Marys Bay, to address long held public concerns over the effect of combined wastewater overflows.

A joint Healthy Waters and Watercare working group was established and together developed the Western Isthmus Water Quality Improvement Programme (WIWQIP), a cost effective timely and integrated infrastructure improvement programme to enable growth and reduce wet weather overflows, and thus improving water quality within our rivers and harbours. The Point Erin Central Interceptor tunnel extension represents a significant contribution from Watercare to the WIWQIP works that together with Healthy Waters St Mary's Bay storage tunnel will improve water quality within the Waitemata Harbour. Not only does the Pt Erin extension lead to direct, significant water quality improvement; it also significantly lowers the financial and delivery risks for the separation programme. It provides a degree of flexibility that will ultimately result in a more cost-effective separation programme that can be delivered with significantly less disruption.

For the avoidance of doubt, Healthy Waters confirms it is not an affected party and that effects of construction on its assets does not need to be considered by Council during the application process.

Healthy Waters supports Watercare's resource consent application for the Point Erin Tunnel Extension and looks forward to continuing the collaboration to achieve better water quality outcomes for the people of Auckland.

Yours sincerely,

Nicholas Vigar
Healthy Waters
Head of Planning Manager

Application for landowner approval

Land Advisory Services, Community Facilities

The following is to be completed for the assessment of the project by the Land Advisory team. If you do not provide the necessary information, your application may not be accepted for processing.
Each landowner approval application requires the support of the relevant local board prior to approval/decline by Land Advisory Services.

1. Applicant details

Name	Watercare Services Limited
Address	73 Remuera Road Remuera Auckland 1050
Mobile	
Email	xenia.meier@water.co.nz
Consultant details	Xenia Meier, Watercare Services Limited

2. Site details

Park name	Point Erin Park
Park address	94 Shelly Beach Road Westhaven Auckland
Legal description	Refer to Annexure A.

Lease number N/A Expiry date N/A

Resource consent number N/A Building consent number N/A

Have you previously applied for landowner approval for this site or a related project? Yes ☑ No ☐

If yes, please specify: Watercare has sought and obtained landowner approvals for various other works on the Central Interceptor project (but at other sites).

3. General application details

This application is for: (tick all of the boxes necessary to cover the proposal)

- [x] Installing a public facility or service over or on the park
- [ ] Installing a private utility or service over or on the park
- [x] Creating a new asset on the park
- [ ] Modifying an existing private / club / user group asset on the park
- [ ] Undertaking planting on a park / establishing a community garden on a park
- [ ] Plant or seed collection / research on a park
- [ ] Requesting an easement or right of way on a park
- [x] Requesting temporary access over a park
- [ ] Licence to occupy / mobile trading
- [ ] Other – please describe:

4. Project details

4.1 Detailed description of project *(please also include photos of the proposed works site to assist us with processing the application)*

Refer to Annexure B.

For example:

- What is the proposed project, where and why?
- How will you be gaining access through the reserve?
- How long will the reserve be occupied?
- What are the Health & Safety precautions?
- What are the tree protection measures?

4.2 What other options have you considered for this site? Why is this the chosen option?

Refer to Annexure C.

4.3 Have you provided the relevant supporting documents?

- [ ] Site plans
- [ ] Arborist report
- [ ] Iwi consultation
- [ ] Resource consent
- [ ] Asset owner approval
- [ ] Stormwater report
- [ ] Engineers report
- [ ] Planting and maintenance plan
- [ ] Building consent
- [x] Other. Please specify: See Annexure D.

4.4 How will the proposed works impact the park and the public?

Refer to Annexure B.

For example:

- Will any park trees be affected?
- Will public access in the park be restricted?
- Will earthworks be required in the park?
- What will the (temporary or permanent) visual effects on the park be? (i.e. appearance)?
- Will there be (temporary or permanent) damage to parkland or features?

4.5 Proposed mitigation for the works

Refer to Annexure B.

For example:

- How will damage to the park be minimised?
- How will the damage or effects be reinstated?
- Tree planting on the reserve?
- Visually permeable boundary fences?

4.6 Timing of works

Proposed physical works start date: Mid-2024

Proposed physical works end date: Mid-to late-2026

NB: Any physical works on parks must be carried out in accordance with the requirements of the Health and Safety at Work Act 2015. The applicant must ensure that any contractors undertaking works on council owned land comply with all necessary statutory and council Health and Safety standards.

FEES AND CHARGES

Visit the Landowner approvals page on the Auckland Council website for the schedule of fees and charges.

There is a 50 per cent reduction in all fees for:

- registered community groups
- incorporated societies
- charitable trusts.

5. Applicant's signature	Date
	19 December 2022

Please submit completed application form, along with relevant plans and your supporting documents, to:

landadvisors@aklc.govt.nz

ANNEXURE A

Legal description

Part Allotment 9-10 Section 8 Suburbs of Auckland, Part Deposited Plan 501 and Lot 3 Deposited Plan 48893.

ANNEXURE B

Description of the Project

The Project

The Project involves the construction, commissioning, operation and maintenance of a wastewater interceptor and associated activities at Point Erin Park in Herne Bay ("**Project**"). The Project can be broken down into two distinct parts:

- The wastewater interceptor tunnel
- The Point Erin shaft site (in Point Erin Park)

The Point Erin Tunnel will run from Tawariki Street, Grey Lynn to Point Erin Park, Herne Bay. The tunnel is located entirely below ground at depths ranging between 20m and 60m and will reach its shallowest point of 17m as it enters Point Erin Park where the terminal shaft is proposed to be located. There are no surface works required for the tunnel.

The Point Erin Shaft Site

The works at the Point Erin Shaft Site are proposed to occur in two discrete locations within the park:

- The terminal shaft and associated construction area is proposed to be located in the grassed area immediately to the south of the Point Erin Pools (referred to as the main construction area).
- The control chamber, plant room and associated construction area is proposed to be located towards the southwest corner of Point Erin Park near the intersection of Curran and Sarsfield Streets (referred to as the southwestern construction area).

The proposed layout for these activities is shown in the figure attached to this application.

The Project works within the abovementioned locations in Point Erin Park broadly comprise:

- The construction of the terminal shaft and removal of the CI Tunnel Boring Machine ("**TBM**").
- A terminal shaft venting arrangement (air intake and pressure release).
- The construction of a control chamber.
- Connections from the control chamber to the Sarsfield overflow collector and St Marys Bay pressure line, and the construction of a stub connection to facilitate a potential future wastewater connection.
- The construction of a plant room to house equipment to control the gates.
- Connections/adits between the terminal shaft, control chamber, vent and plant room, including a 2.5m diameter piped connection between the terminal shaft and control chamber.
- Earthworks of approximately 5,000 m^2 in total across the two construction areas (approx. 3,150m^2 in the grassed area to the south of the Point Erin Pools and approx. 1,880m^2 in the southwestern corner of the park).
- Tree works (pruning, works in the root zone, removal, relocation).
- Temporary works including retaining walls to create level working areas, site access and internal circulation, and contractor's site compound.
- Transport movements including delivery of plant and construction materials, removal of material excavated during the construction of the shaft and control chamber, and removal of the TBM.
- Park reinstatement and landscaping following completion of construction works.

The Project has been developed to a concept design stage. As it moves through the detailed design process and as construction methodology is confirmed, it is likely that some details will change but

remain within the envelope of effects which will be assessed and managed as part of the resource consent application intended to be lodged with Council on 7 February 2023.

Background context – the Central Interceptor Project

The Central Interceptor ("**CI**") project was granted resource consent in 2013 and construction commenced in 2019. Since this time, the CI project team has established all of the major CI construction sites along the main CI tunnel and link sewer alignments. Over half of the main CI tunnel has been completed (southern section), Link Sewer C is almost complete and most of the 17 shafts along the CI alignment have been built.

Works to date have included a number of sites located within public parks and reserves (eg Keith Hay Park, Western Springs, Miranda Reserve, Rawalpindi Reserve, Mt Albert War Memorial Reserve) and in close proximity to houses. Given the significant progress already made towards constructing the CI tunnel in Auckland, the activities and effects of construction are well understood. The CI project team's experience over the past three years has demonstrated that the effects associated with the construction of the CI tunnel and associated shafts (including those in Parks) can be successfully managed by the CI designation and resource consent conditions, and the suite of management plans approved by Council for the current construction sites.

The CI project team are preparing a comprehensive resource consent application for the Project which has been heavily informed by practical on-the-ground experience gained through the CI project to date, including directly comparable experience in relation to the type of works (tunnel and shaft) and location of works (in a park and in proximity to houses). This provides a solid 'real-world' basis for understanding the nature of activities proposed at Point Erin, the actual and potential effects of those activities, and how the effects are best managed and mitigated to cause the least disruption to surrounding residents and to minimise environmental effects. The impacts on Point Erin Park are intended to be managed as per the standard CI designation and resource consent conditions by the same contractor (Ghella-Abergeldie JV) ("**Contractor**").

Construction programme for Point Erin Park Shaft Site

The TBM is expected to arrive at Point Erin Park in May 2025. However, timeframes may change as the TBM progresses along the CI alignment. Ideally, construction works at Point Erin Park will commence at least 12 months prior to the expected arrival of the TBM at Point Erin (ie site establishment in the first half of 2024).

The CI terminal shaft construction is expected to occur over a 4-to-6-month period from around September 2024 to February 2025 potentially followed by a hiatus of a few months due to the time taken for the TBM to arrive at the shaft site. This will be followed by approximately 9 months of activity from May 2025 to February 2026 to remove the TBM and complete the internal structure of the main shaft. The chamber construction is anticipated to take appropriately 4 to 6 months (indicatively from around January 2025 to June 2025).

Overall construction works at Point Erin are expected to take approximately two to three years (around 2024 to 2026/potentially 2027), although it may take longer depending on the TBM's progress and other factors such as supply chains and resourcing. As indicated above, the shaft and chamber are likely to be constructed separately (although, there is the potential for some cross over in the construction programme with the programming of works determined by the Contractor).

The Project is expected to be completed mid to late 2026, with the northern section of CI including the Point Erin Tunnel expected to be commissioned in 2026/2027.

Construction hours

Construction hours at Point Erin Park are proposed to occur on the following general basis:

- Point Erin site construction activities – 7 am to 6 pm Monday to Friday, 8 am to 6 pm Saturday; and

- Truck movements – 7 am to 6 pm Monday to Friday, 8 am to 6 pm Saturday.

There may be occasions where it is necessary to undertake construction activities outside of usual hours, for example, provision to extend hours during summer daylight savings periods and under certain circumstances where it is necessary to complete an activity that has commenced to tie into the existing network, for delivery of large plant or machinery outside of standard working hours, and for emergency works. Concrete pours and deliveries will occur overnight and some activities at Point Erin will need to occur 24 hours a day, 7 days a week such as over-pumping and dewatering from the shaft and chamber (if required).

For works outside of normal hours, appropriate measures will be detailed in updates to the Project's Construction Management Plan and Construction Management Plan and Construction Noise and Vibration Management Plan which will be proposed as part of Watercare's resource consent application and will be implemented (as per current CI processes) to ensure that appropriate construction traffic, noise and vibration measures are employed.

Site establishment

Construction at the Point Erin Park Shaft Site will commence with site establishment works which generally involve the following activities:

- Establishment of the construction footprint (including tree survey and fencing off working area).
- Vegetation clearance within the agreed construction footprint, and site establishment of both the terminal shaft and control chamber sites.
- Services relocation.
- Site levelling and drainage works, including construction of temporary retaining walls.
- Installation of perimeter sediment and erosion control measures which will be provided as part of the resource consent application.
- Formation of construction access.
- Establishment of site buildings and services.
- Construction of site perimeter fencing and noise mitigation barriers (as required).

Tree removal / protection measures

Vegetation clearance within the construction footprint will be undertaken as part of site establishment works to create adequate space for the establishment of the contractor's site compound, parking, internal access and circulation, and laydown areas.

The construction footprint will be defined prior to commencement of works. Wherever possible, individual trees that do not conflict with construction will be retained. Trees that border the construction footprint will be assessed individually as required by the Project contractor and works arborist to determine appropriate tree protection measures required. Furthermore, Watercare proposes to include a condition of resource consent for the Project consistent with CI designation condition 10.3 requiring that in the detailed design of the permanent works and in the development of the construction site layout, all practicable measures will be taken to minimise the removal of mature native trees.

Retaining walls

Due to the varying contours on both construction work areas, earthworks will be required to level the ground to enable the formation of work platforms and access to a suitable width and gradient for plant and equipment access. Topsoil and any other material unsuitable for reuse will be stripped and disposed of off-site. Site levelling will be achieved through a mix of excavation and filling to form the construction area.

The size and design of temporary retaining walls required to form the flat construction areas will be determined by the Contractor. However, the height of the retaining walls will be minimised to the extent practicable whilst providing for a level construction area. Retaining walls are likely to be timber piles and removed (along with associated fill) at the completion of construction. However, this will be subject to detailed design of reinstatement.

Based on the existing slopes on site, retaining walls are anticipated to be required in the following areas:

- Along the western boundary and a small part of the southern boundary of the termination shaft construction area (approximately 2m in height); and
- Along the northern and eastern boundaries of the control chamber construction area in the southwestern corner of Point Erin Park (approximately 4m in height).

Temporary construction areas

Two temporary construction areas are proposed within Point Erin Park; a main construction area associated with construction of the terminal shaft (approx. 3,150m^2) and a secondary construction area associated with the control chamber in the south west corner (approx. 1,880m^2). These construction areas will be in place for the duration of works, which is anticipated to be two to three years. The size of the construction areas have been kept to the minimum practicable size to minimise the amount of vegetation clearance and temporary closure of open space areas whilst ensuring adequate space for an efficient and safe construction layout.

The construction areas will be fenced for site security and health and safety reasons. The nature of this fencing will be determined by the Contractor but is likely to comprise 1.8m temporary fencing, or 2.4m hoardings to provide visual and noise screening as required.

Park access during construction

Public access to areas of the park not required for construction will be maintained to the extent practicable. In particular, access will be maintained to the Point Erin Pools and playground unless otherwise agreed with the landowner. Where works impact on existing pedestrian or cycle ways, alternative temporary accessways will be provided. Temporary accessways will be designed (to the extent practicable) in accordance with CPTED principles (Crime Prevention Through Environmental Design), with appropriate lighting and signage as necessary. The existing pathway through the south-west corner of Point Erin Park will need to be diverted around the chamber construction area. This may be a formed temporary access or way-finding signs would be provided if alternative access cannot be provided without impacting other trees in that location.

Park re-instatement and landscaping

Once construction works are complete, the park will be reinstated and landscaped. Other than the plant room and air vent, all other infrastructure will be flush with or below ground level. Reinstatement works will generally involve replacing what was at the site prior to construction in a like-for-like manner. Watercare proposes to work with mana whenua, Auckland Council Parks, and the local board (subject to their interest) to determine the nature of the reinstatement works through a co-design process.

Consideration will be given to mana whenua and Auckland Council aspirations and plans, including those identified in any Local Board Plans and iwi management plans. At this stage it is considered that reinstatement works are broadly likely to include:

- Removal of construction yards, equipment, temporary retaining walls, and construction access not required for operation and maintenance access.
- Replacement of facilities that have been removed (eg footpaths and park furniture).
- Re-contouring and landscaping, which will comprise a mixture of grassed areas and tree planting (species mix and location to be determined through co-design process).

- The remainder of the park will be grassed and landscaped. Manholes and hatches will be at ground surface and secured from public entry.

Consideration will also be given to opportunities to enhance Point Erin Park including its existing recreation and landscape values (eg additional or alternative walkways, seating, appropriate recognition of cultural values, etc).

ANNEXURE C

Options considered

Site selection south-western construction area

The location of the control chamber is determined by the location of the existing infrastructure i.e. the St Mary's Bay pressure line and Sarsfield overflow collector. This location also facilitates future potential wastewater upgrades in the Herne Bay catchment.

Site selection main construction area

This site was selected to provide adequate space to safely and efficiently deliver the works as well as retrieve the Tunnel Boring Machine. While it would be less costly to locate this site adjacent to the control chamber, this option would necessitate the removal of additional mature trees in the south-western corner of the Park. The pool carpark was also considered but would be too constrained and require the closure of the public carpark for 2-3 years including the summers of 2024/25, 2025/26 and 2026/27.

ANNEXURE D

Supporting documents

Draft reports will be available at https://www.watercare.co.nz/Central-interceptor/Find-out-more/Central-Interceptor-consents by 16 January 2023.

KEY

- MAIN CONSTRUCTION AREA
- SOUTH-WESTERN CONSTRUCTION AREA

PLAN
SCALE. 1:500

SCALE 1:500 (A1) 0 10 20 30 40 50m (1 0.8 0.6 0.4 0.2)

SCALE 1:2500 (A1) 0 50 100 150 200 250m (50 25)

PRELIMINARY

FOR INFORMATION

JACOBS AECOM McMILLEN JACOBS ASSOCIATES

ISSUE	DATE	AMENDMENT
A		ISSUED FOR INFORMATION

Watercare

CENTRAL INTERCEPTOR (DSCIN)
POINT ERIN TERMINAL SHAFT AND NETWORK CONNECTIONS
PRELIMINARY CONSTRUCTION SITE LAYOUT

CAD FILE DSCIN-DEL-SKT-C-J-300010.DWG
REF No.
ORIGINAL SCALE A1
AS SHOWN
SKETCH No.
DSCIN-DEL-SKT-C-J-300015
ISSUE
A

Plot Date: Dec 09, 2022 - 2:39pm C:\pw_work\anthony.doherty@jacobs.com\dms519444\DSCIN-DEL-SKT-C-J-300010.dwg

Central Interceptor | Watercare

Watercare Services Limited
Private Bag 94010
Auckland 2241

www.watercare.co.nz
ciproject@water.co.nz
www.centralinterceptor.co.nz

Contractor project helpline
24 hours
0800 425 802

14 December 2022

Marist Catholic School, c/- The Roman Catholic Bishop of the Diocese of Auckland
0 Kelmarna Ave
Herne Bay
Auckland 1011

Dear Marist Catholic School, c/- The Roman Catholic Bishop of the Diocese of Auckland

Central Interceptor – Point Erin Extension Pipeline Works affecting 0 Kelmarna Ave Herne Bay Auckland 1011

Introduction

Commencing mid-2024, Watercare Services Limited (Watercare) will be constructing an extension of the Central Interceptor Project, being a new wastewater tunnel from Tawariki Street in Grey Lynn to a new shaft in Point Erin Park ("**Point Erin Tunnel**"). The intention of this Project is to substantially reduce wastewater overflows to inland waterways and beaches which will lead to cleaner environments in open spaces.

As the owner / occupier of a property that may be affected by the alignment, you have already received a letter dated 23 November 2022 containing information about the proposed Point Erin Tunnel. This informed you that your property is in the vicinity of the proposed tunnel construction corridor and that Watercare would shortly be sending you a pack with more detailed information regarding the route of the Point Erin Tunnel in relation to your property.

This letter contains that further information, inviting you to contact Watercare using either method at the end of this letter to set up a time where we can take you through the plans and any further information you require.

Point Erin Tunnel information

The Point Erin Tunnel is proposed to run from Tawariki Street, Grey Lynn to Point Erin Park, Herne Bay. The tunnel extension will ensure combined overflows are picked up and conveyed to Māngere Wastewater Treatment Plant for safe treatment, reducing overflows to the environment and improving the quality of waterways and swimmable beaches.

The tunnel will be located entirely below ground at depths ranging between 20m and 60m and will reach its shallowest point of 17m as it enters Point Erin Park where the terminal shaft is proposed to be located. There will be no surface works required for the construction of the tunnel itself, that is, all the work to construct the tunnel will take place below ground. More information about the Point Erin Tunnel along with plans and descriptions of the works can be obtained at www.watercare.co.nz and search 'pt erin'.

Potential impact on your property

The construction of the pipeline below your property will involve tunnelling with a TBM (tunnel boring machine) laying concrete segments behind it. The pipeline will pass beneath your property (as shown on the enclosed plan) at a depth of between approximately 20 and 60 metres below ground level. Based on the progress we have made to date with the Central Interceptor project, we do not expect that any vibration or noise will be felt at the surface or in your dwelling while this work is taking place.

The proposed works are expected to take place beneath your property for fewer than 48 hours and are currently expected to start in mid-2024. We will be in touch closer to the time to confirm more accurate dates and programme.

Written approval to proposal

If you are comfortable with the information provided, we will ask for your written approval to the Point Erin Tunnel proposal under the Resource Management Act 1991 ("**RMA**") and your written consent to the construction of the Point Erin Tunnel under the Local Government Act 2002 ("**LGA**"). You are able to give your written approval and/or written consent now, in the sections below, if you are comfortable with the information provided (see above for internet link on this).

Local Government Act 2002 approval

To ensure Watercare has the necessary rights to carry out the construction works under your property, as a public authority, Watercare needs either to obtain your written consent, or follow a process under legislation. You may give your written consent under section 181(3)(a) of the LGA (using the section below to be signed and returned to Watercare). If that written consent is not given, Watercare will need to follow that legislative process. This would likely be by way serving a formal notice to you, outlining the provisions and associated process under section 181 and Schedule 12 of the LGA. If we issue you with a formal notice under the LGA, you will have the right to object in writing to the proposed works.

The LGA also provides a process where any owner who believes their land has been "injuriously affected" by the works may seek compensation from Watercare in accordance with the Public Works Act 1981. However due to the depth of the pipeline, Watercare does not consider that these works will injuriously affect the land in any way.

If you are comfortable with the information provided and wish to give your written consent now under section 181(3)(a) of the LGA to the construction of the works for the Point Erin tunnel under your property, please sign below and return it in the envelope supplied with this letter or by email to Ciproject@water.co.nz.

I/we, (insert full name(s) of all [owners/occupiers]):

hereby give consent to the construction of the Point Erin Tunnel beneath the property at 0 Kelmarna Ave Herne Bay, Auckland 1011 and acknowledges they cannot withdraw or revoke that consent.

_____	_____
Signature	Signature
_____	_____
Signature	Signature

Resource Management Act 1991 approval

Watercare needs to apply for resource consent from Auckland Council. We intend to lodge the application in February 2023 and will request the application be publicly notified. Once it is notified by Council, this will allow the public an opportunity to submit on the proposal and attend a Council hearing date to be set. Following this hearing, Council will consider the resource consent application and decide whether to grant or decline consent.

However, if you are comfortable with the information provided and have no objection to the pipe being constructed under your property, please complete the written approval form enclosed with this letter and return it in the envelope supplied with this letter, or by email to Ciproject@water.co.nz. Please sign the plan and return it too, as acknowledgment that you have reviewed it.

Watercare will collate and provide these forms to Council, and Council will exclude your property when considering the actual or potential effects of the activity on your property in considering the resource consent application by Watercare.

Meeting invitation to discuss

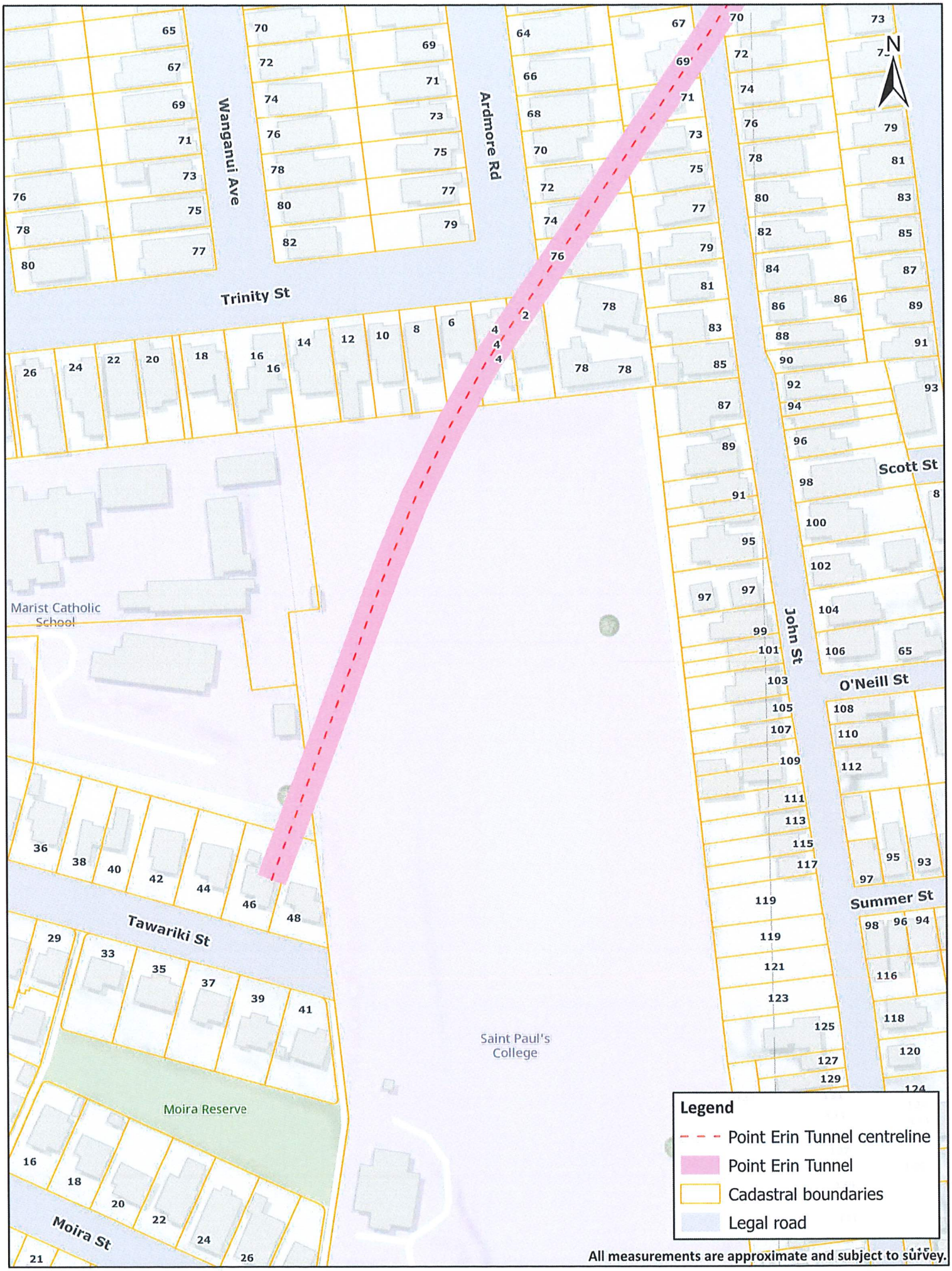
If you are not able to give your written approval at this time, we intend to visit the property in person in mid-January 2023. This is to confirm whether you require any additional information about the Point Erin Tunnel and to discuss any queries or concerns. As part of this visit, if you are comfortable with the information provided, we will ask for your written approval at this time.

Please let us know if there is a particular day or time that suits for us to come around to discuss the proposal. If you will be away in January 2023 or if you would prefer, we can also meet you via another platform of your choice (such as Zoom or Microsoft Teams). If you do not reside in the project area, we can meet you via a platform of your choice (such as Zoom or Microsoft Teams).

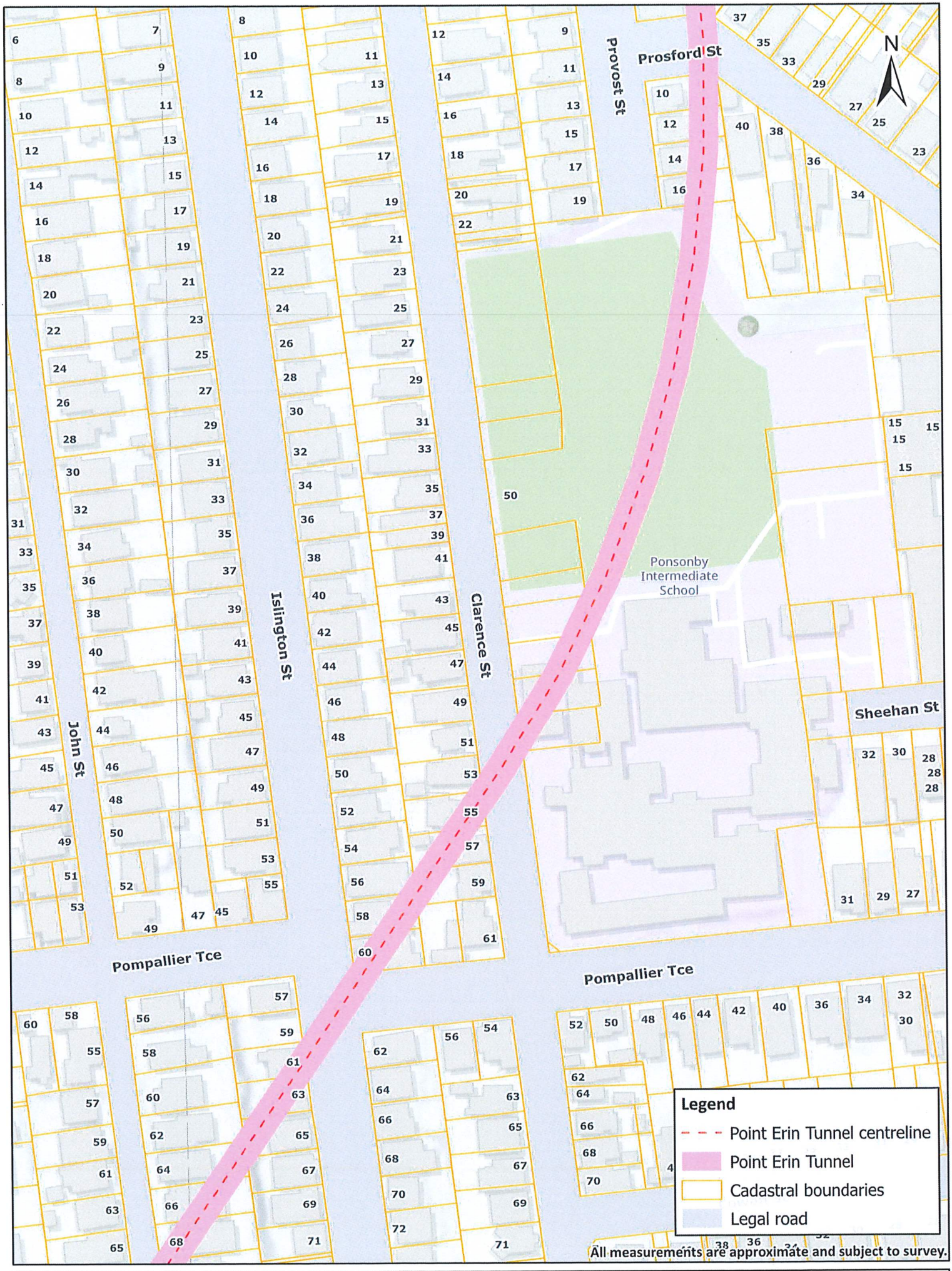
Whichever is your preference for meeting, please email ciproject@water.co.nz to arrange a date and time that best suits you.

Yours sincerely

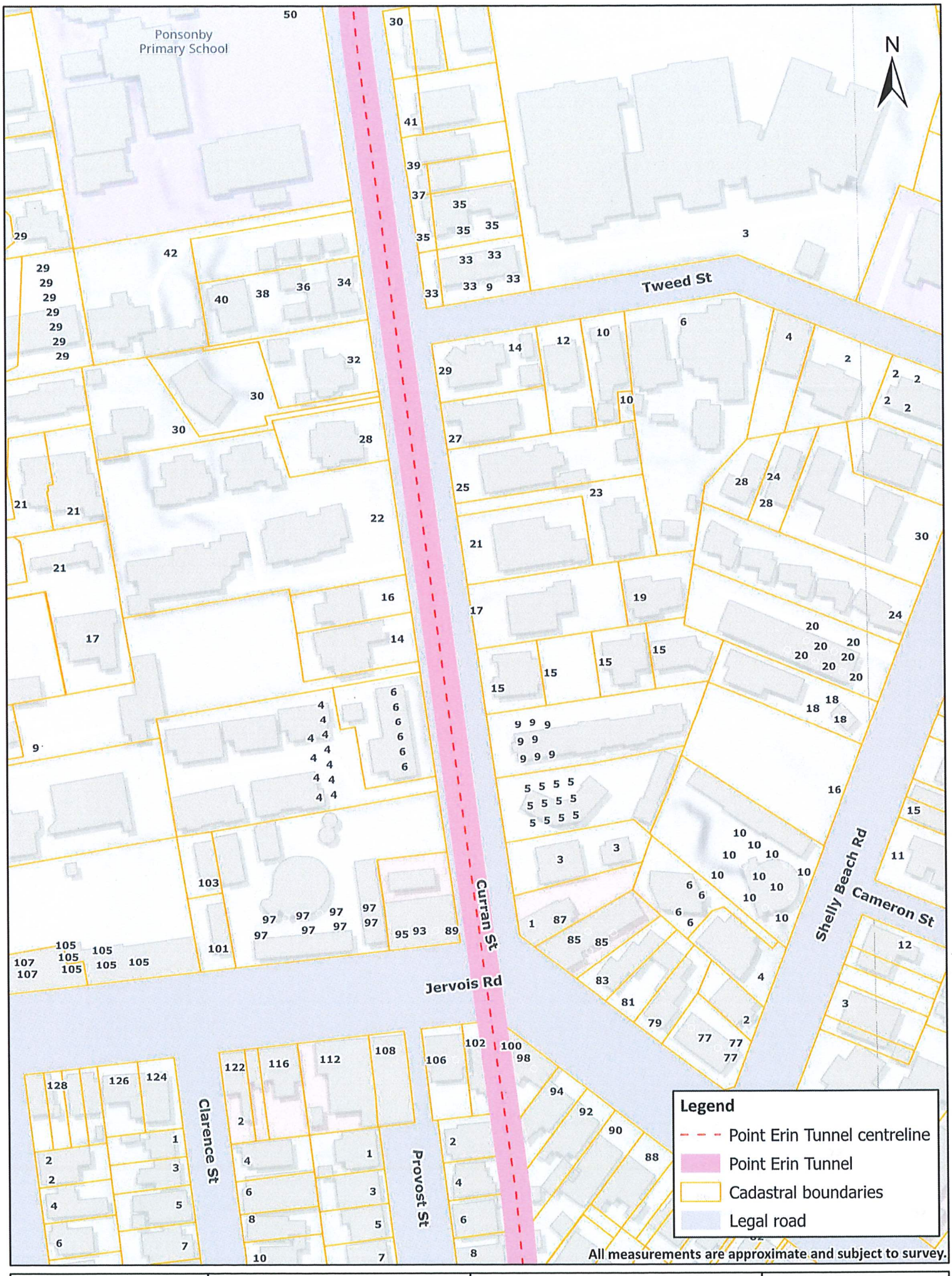
Central Interceptor project team
Watercare Services Limited



the propertygroup	Imagery sourced from: Esri World Imagery Property boundaries sourced from Land Information NZ. Crown Copyright reserved. Property boundaries accuracy: +/-1m in urban areas, +/-30m in rural areas. Coordinate System: NZGD 2000 New Zealand Transverse Mercator Datum: NZGD 2000 // This map was produced with ArcGIS Pro (Esri).	**Central Interceptor** Point Erin Extension				Watercare An Auckland Council Organisation
PREPARED BY Aaron Jeffries	DATE 13/12/2022	SHEET 1 OF 4	TPG REF 714405	A4 Scale 1:2,000	0 30 Metres	



the propertygroup	Imagery sourced from: Esri World Imagery Property boundaries sourced from Land Information NZ. Crown Copyright reserved. Property boundaries accuracy: +/-1m in urban areas, +/-30m in rural areas. Coordinate System: NZGD 2000 New Zealand Transverse Mercator Datum: NZGD 2000 // This map was produced with ArcGIS Pro (Esri).		**Central Interceptor** Point Erin Extension			Watercare An Auckland Council Organisation
PREPARED BY Aaron Jeffries	DATE 13/12/2022	SHEET 2 OF 4	TPG REF 714405	A4 Scale 1:2,000	0 30 Metres	



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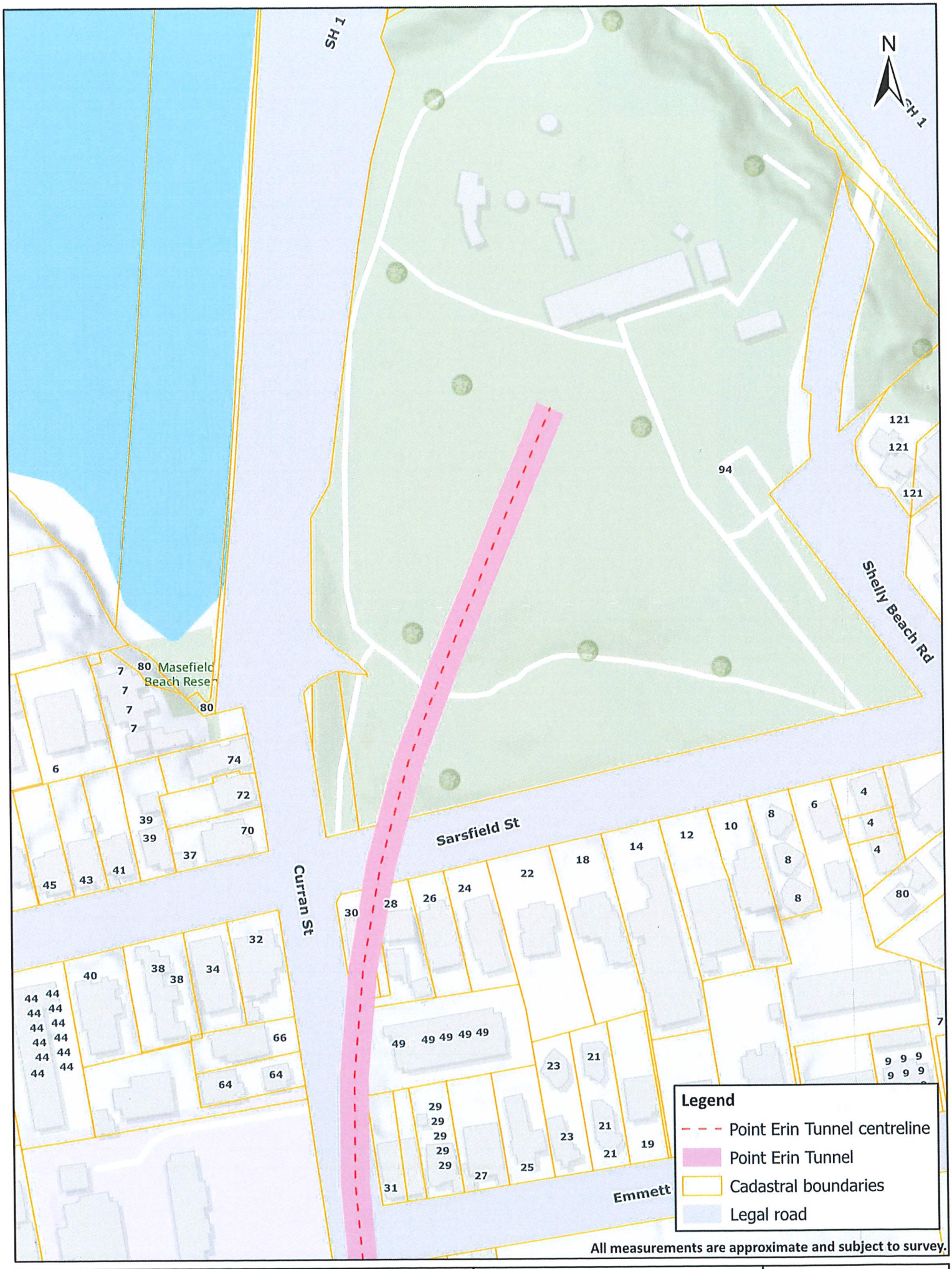
	PREPARED BY Aaron Jeffries	DATE 13/12/2022	SHEET 3 OF 4	TPG REF 714405	A4 Scale 1:2,000	0 30 Metres



the propertygroup	Imagery sourced from: Esri World Imagery Property boundaries sourced from Land Information NZ. Crown Copyright reserved. Property boundaries accuracy: +/-1m in urban areas, +/-30m in rural areas. Coordinate System: NZGD 2000 New Zealand Transverse Mercator Datum: NZGD 2000 // This map was produced with ArcGIS Pro (Esri).		**Central Interceptor** Point Erin Extension			Watercare An Auckland Council Organisation
PREPARED BY Aaron Jeffries	DATE 13/12/2022	SHEET 4 OF 4	TPG REF 714405	A4 Scale 1:2,000	0 30 Metres	

Written approval of affected persons

Auckland Council
Te Kaunihera o Tāmaki Makaurau

PART A (to be completed by applicant)

PART A – APPLICATION

Applicant(s) name: (*please write all names in full*)	Watercare Services Limited	
Address of proposed activity:	From Tawariki Street, Grey Lynn to Point Erin Park, Herne Bay	Consent number if known:

Brief description of proposed activity:

Watercare is proposing to extend the Central Interceptor wastewater conveyance and storage tunnel from Tawariki Street in Grey Lynn to a new terminal shaft in Point Erin Park. The Project involves the construction, commissioning, operation and maintenance of a wastewater interceptor tunnel and associated activities at Point Erin Park in Herne Bay

Plan references (including title, author and date):

Central Interceptor Point Erin Extension, The Property Group, 13/12/2022, Sheet 1, 2, 3 or 4 as relevant to the property pertaining to this written approval

Resource consent(s) being sought for (describe area(s) of non-compliance):

Earthworks, groundwater diversion and discharge, construction noise and vibration, tree trimming, removal and works within the rootzones within the Open Space zone, temporary vehicle crossing, infrastructure within a floodplain, diversion and discharge of stormwater, minor utility structure within the Open Space zone and discharge to air from wastewater infrastructure

PART B (to be completed by persons and/or organisations providing written approval)

PART B – AFFECTED PERSON(S)

		Tick if Owner	Tick if Occupier
Full name: (*in print*)		☐	☐
Full name: (*in print*)		☐	☐
Full name: (*in print*)		☐	☐
Address of affected property:	Postcode:		
Phone:	Mobile:		

PART B – AFFECTED PERSON(S) *(continued)*

I have authority to sign on behalf of all the other: (*tick one*)

☐ OWNER(S) ☐ OCCUPIER(S)

of the property. Please provide documentation proving this authority.

Please note: the approval of all the legal owners and the occupiers of the affected property may be necessary.

PART C (to be completed by persons and/or organisations providing written approval)

PART C – DECLARATION

✓ I/We have been given details of the proposal and plans to which I/we are giving written approval.

✓ I/We have signed each page of the plans in respect of this proposal. These need to accompany this form.

✓ I/We understand that by giving my/our written approval, the Council when considering the application cannot take account of any actual or potential effects of the activity on my/our property.

✓ Further, I/we understand that at any time before the determination of the application, I/we may give notice in writing to the Council that this approval is withdrawn.

Note: You should only sign below if you fully understand the proposal. If you require the resource consent process to be explained you can contact the Customer Service Team at the Council who can provide you with information.

Signature(s):		Date:	
Signature(s):		Date:	
Signature(s):		Date:	

PRIVACY INFORMATION

The council requires the information you have provided on this form to process your application under the RMA and to collect statistics. The council will hold and store the information, including all associated reports and attachments, on a public register. The details may also be made available to the public on the council's website. These details are collected to inform the general public and community groups about all consents which have been processed or issued through the council. If you would like to request access to, or correction of any details, please contact the council.

Appendix H Technical assessments

H1 Recreation Assessment

H2 Assessment of Noise and Vibration Effects

H3 Preliminary Site Investigation

H4 Draft Erosion and Sediment Control Plan

H5 Groundwater and Settlement Screening-level Assessment

H6 Landscape and Visual Effects Assessment

H7 Arboricultural Report

H8 Archaeological Assessment

H9 Integrated Traffic Assessment

H10 Flooding Memorandum

H11 Air Quality Assessment

www.tonkintaylor.co.nz