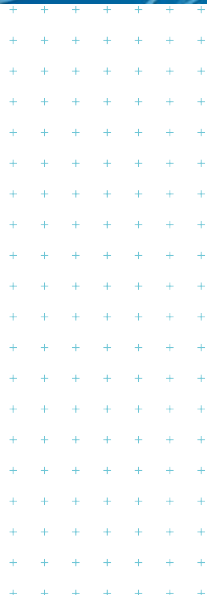


**Job Number**  
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## Document Control

Title: GLT Tawariki Street shaft site - Alteration to designation					
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September 2022	1	Draft for client review	R Signal-Ross	K Baverstock	K Baverstock
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Watercare Services Limited

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# 1 Introduction

## 1.1 Watercare and the Grey Lynn Tunnel

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'*.

The Grey Lynn Tunnel is a wastewater interceptor that runs from the Central Interceptor (CI) at Western Springs to Tawariki Street, Grey Lynn. This wastewater interceptor provides additional sewer capacity, reduces wet weather wastewater overflow discharges and enables future works to improve freshwater quality in central Auckland waterways. Resource consents for the Grey Lynn Tunnel and associated works were obtained from Auckland Council (AC) and the designation confirmed in 2019<sup>1</sup>.

Currently, the Grey Lynn Tunnel terminates at 44 – 48 Tawariki Street (the 'Tawariki Street Shaft Site'). This site is designated for the purpose of *'construction, operation, and maintenance of wastewater infrastructure'* and provides for two shafts, known as the primary and secondary shaft. The primary shaft is the termination site of the Grey Lynn Tunnel and will allow for the retrieval of the tunnel boring machine (TBM) and connections to the Tawariki Local Sewer and Orakei Main Sewer. The secondary shaft to be constructed at the Tawariki Street Shaft Site allows for the connection of future sewers from the Combined Sewers Overflow (CSO) network.

## 1.2 Overview of alteration to designation

Since designating the Tawariki Street shaft site, Watercare has purchased the adjacent property at 42 Tawariki Street. It is now proposed to shift the secondary shaft within this property to allow for more space at the construction site. As such, Watercare seeks to extend Designation 9468 to include 42 Tawariki Street and the road reserve in front of the property.

In addition, in the original Notice of Requirement (NOR) the secondary shaft was proposed to be constructed at least 2.5 years after the primary shaft. Watercare has now identified the potential to undertake the works concurrently for the two shaft sites and seeks to alter the designation to allow for this construction programme option.

## 1.3 Requiring authority and property details

<b>Requiring Authority</b>	Watercare Services Limited
<b>Owner of site</b>	42 Tawariki Street: Watercare Services Limited Road reserve: Auckland Transport
<b>Site address / map reference</b>	42 – 48 Tawariki Street, Auckland and Road Reserve
<b>Site area</b>	Total designation area: Approximately 2,920 m <sup>2</sup> Existing designation area: Approximately 2,220 m <sup>2</sup> Area of alteration: Approximately 700 m <sup>2</sup>
<b>Legal description</b>	Lot 37 Deposited Plan 38075
<b>Records of Title reference</b>	NA44C/1088 and Road Reserve immediately adjacent
<b>Council</b>	Auckland Council
<b>Plans</b>	Auckland Unitary Plan – Operative in Part (AUP)
<b>Designation ID</b>	9468

<sup>1</sup> Resource consent BUN60334952 and Designation 9468.

<b>Existing Consent Reference</b>	BUN60334952 WAT60334954
<b>Address for service during consent processing</b>	Tonkin & Taylor Ltd, PO Box 5271, Victoria Street West, Auckland 1142 Attention: Rachel Signal-Ross Phone: 09 352 2995 Email: rsignal-ross@tonkintaylor.co.nz
<b>Address for service during consent implementation and invoicing</b>	Watercare Services Ltd, 73 Remuera Road, Newmarket, Auckland Attention: Xenia Meier Phone: 021 574 585 Email: xenia.meier@water.co.nz

We attach copies of the relevant Records of Title in **Appendix A** and the existing designation in **Appendix B**.

This AEE report has been prepared on behalf of Watercare Services Limited to support an alteration to designation, and in accordance with the requirements of Part 8 of the RMA, in particular the requirements of sections 168, 171 and 181.

## 2 Environmental setting

### 2.1 Site location and description

The NoR relates to the site located at 42 – 48 Tawariki Street, Ponsonby, Auckland, as shown in Figure 2.1 below. This comprises the Tawariki Street shaft site designation area (Designation 9468) and 42 Tawariki Street (collectively referred to as ‘the site’). The existing designation partially extends into the road reserve to the south and the neighbouring school to the east (located at 183 Richmond Road).

A mix of land uses surround the site which include:

- Our Lady Perpetual Help Church and carpark to the north;
- School fields associated with Marist School and St Paul’s College to the east; and
- Residential properties to the south and west of the site.

As outlined above, 44 – 48 Tawariki Street are currently designated for the purpose of the construction, operation and maintenance of wastewater infrastructure. The dwellings on 44 – 48 Tawariki Street and 42 Tawariki Street have been removed.



Figure 2.1: Site location plan showing Designation 9468 in maroon and proposed extension in purple (Source: Auckland Council AUP Maps)

## 2.2 AUP zoning and overlays

The planning notations at the site inclusive of zoning are identified in **Table 2.1** below. 42 Tawariki St (along with 44-48 Tawariki St) is zoned Residential – Mixed Housing Urban under the AUP.

**Table 2.1: Zoning and planning notations**

Zoning / planning notations	Comment
<b>Auckland Unitary Plan Mapviewer</b>	
Residential - Mixed Housing Urban Zone	Applies to the entire site
Controls: Macroinvertebrate Community Index – Urban	Applies to the entire site
Designations – 9468: Construction, operation, and maintenance of wastewater infrastructure (Grey Lynn Tunnel), Watercare Services Ltd	Applies to 44 – 48 Tawariki Street, a section of the road reserve and neighbouring school. Watercare proposes to extend the designation to include 42 Tawariki Street and adjacent road reserve.

In addition to the above, the Auckland Council Geomap Viewer identifies a potential flood plain on 42 Tawariki St. Two minor overland flood paths are also mapped across 42 Tawariki St.

## 2.3 Archaeological and cultural heritage

No known archaeological or other historic heritage sites are located on or near the proposed works on Tawariki Street. The shaft site and the surrounding properties are not subject to the Historic Heritage overlay or the Sites and Places of Significance to Mana Whenua overlay under the AUP.

## 2.4 Road network

Tawariki Street is a cul-de-sac which runs in an east-west direction and connects to Parawai Crescent at its western end. It has a single traffic lane in either direction with on-street parking on both sides of the road. Pedestrian footpaths are also provided along the street.

Parawai Crescent runs in a general north-south direction and connects to Hukanui Crescent at its northern end and Richmond Road to the south. Similar to Tawariki Street, the nearby streets are residential in nature. The posted speed limit in the area is 50km/h.

### 3 Alteration to Designation

#### 3.1 Tawariki Street shaft site

The Grey Lynn Tunnel including the Tawariki Street site is subject to a suite of existing consents. In addition, Designation 9486 specifically provides for the construction of two shafts and associated infrastructure at 44 – 48 Tawariki Street. As set out in the original application, works at the shaft site will generally comprise:

- Site establishment, including vegetation removal, services relocations, site levelling and drainage works, establishment of erosion and sediment control measures, formation of construction access, establishment of site buildings and services; and construction of site perimeter fencing and noise mitigation barriers;
- Construction of the primary and secondary shafts;
- Dewatering of the shafts;
- Construction of two underground chambers and a grit trap; and
- Reinstatement on completion, including parking areas, landscape planting, an above-ground plant room (approximately 90 m<sup>2</sup> and 4 m high), and an air vent stack (up to 8 m in height).

The effects associated with construction activities and the long-term operation of infrastructure at the Tawariki Street site were considered through the previous application process. The primary shaft, underground chambers and grit trap as well as the plant room and air vent stack are contained within the existing designation and do not form part of this NoR.

This alteration to designation and associated assessment of effects is limited to the changes described below.

An application pursuant to Section 127 of the RMA 1991 for a change to the regional consent conditions has also been prepared and lodged with Auckland Council.

#### 3.2 Scope of alteration

##### 3.2.1 Extension of designation area

Since consenting and designating the Tawariki Street site, Watercare has purchased the property at 42 Tawariki Street. Watercare now proposes to relocate the secondary shaft to within this property to allow for more space at the construction site. As such, Watercare seeks to extend the area of Designation 9468 to include 42 Tawariki Street and a small area of the road reserve immediately in front of the property.

The secondary shaft is located approximately 20m to the west of its original location. The noise and vibration effects and landscape effects of the change in location of the secondary shaft are addressed in this AEE. Otherwise, there is no other change in effects associated with this alteration to the designation area and relocation of the secondary shaft beyond those already provided for through the existing designation.

The extension of the designation area comprises less than 17m of linear road frontage on the northern side of Tawariki Street. The removal of the single car on-road parking in this area, and in front of 40 Tawariki Street for the duration of the project, was provided for in the original application. As required by Condition 2.3, a parking plan will be developed in consultation with the owners of the specified properties, and the residential vehicle crossing will be reconstructed as required by Condition 5.2(k). Pedestrian access will be maintained as already required by Condition 5.2(e) and (f). No changes are proposed to construction traffic routes and trip generation assumptions that are outside the existing designated envelope. As required by Condition 1.2, the



extent of the designation will be reviewed following completion and commissioning of the project and those parts of the designation no longer required, including within the road reserve, will be reviewed in accordance with Section 182 of the RMA.

Other than the alteration to conditions identified in Section 3.4 below, no other changes are proposed. All other conditions of Designation 9468 will continue to apply to the existing designated area and will also apply to the additional area identified below which is the subject of this alteration.



Figure 3.1: Alteration to designation extent: Existing Designation 9468 extent in maroon and proposed extension in purple (Source: Auckland Council AUP Maps).

### 3.2.2 Construction programme

In the original NoR the secondary shaft was proposed to be constructed at least 2.5 years after the primary shaft. Since consenting and designating of the Grey Lynn Tunnel, Watercare has identified the potential to undertake the works concurrently for the two shafts. This would allow for efficiencies in construction and for future local connections to be made sooner. As the original application was based on the separate construction periods, Watercare now seeks to alter the designation to allow for the option of constructing the two shafts in the one construction period (noting construction may still occur across two separate construction periods as already provided for in the existing designation).

There is no change in effects associated with the option of constructing the shafts in the one construction period rather than across two separate construction periods. Rather the effects as already assessed will occur, albeit in a different and potentially more truncated overall timeframe

(due to the need to mobilise, establish and disestablish on site only once rather than twice). If the works occur in the one construction window, this may also result in a potential reduction in traffic movements for the same reason (i.e. efficiencies in construction including mobilising, establishing and disestablishing once rather than twice). In any case, the effects of the change in construction programme are within the envelope of effects considered through the original NoR and provided for in existing Designation 9468.



### 3.3 Requiring authority's objectives and alteration objectives

Section 171(1)(c) of the RMA requires regard to be had to “*whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought*”.

Watercare's project objectives for the Grey Lynn Tunnel are:

- To provide additional sewer network capacity for growth and development across the Auckland Isthmus;
- To reduce current wet weather wastewater overflow discharges, improving public health and environmental conditions; and
- To enable future works to further improve freshwater quality for the Grey Lynn catchment.

The alteration to the designation is necessary to achieve these objectives because it will:

- Enable the proposed works to be undertaken in a comprehensive and integrated manner across Watercare's landholdings, utilising the same conditions and management plans across the site;
- Provide Watercare with greater certainty to plan for the construction, operation and maintenance of the site in accordance with the designation.
- Provide Watercare with greater flexibility and allow it to carry out all necessary works at the Tawariki Street shaft site effectively and efficiently.

### 3.4 Change to designation conditions

To allow for the changes set out in Section 3.2 above, Watercare proposes to change the conditions of Designation 9468 as set out below.

#### 3.4.1 Condition 1.1

Condition 1.1 of Designation 9648 requires that the works be undertaken in accordance with the plans and reports submitted as part of the application. To allow the shafts to potentially be constructed in the one construction period and to allow for the use of 42 Tawariki Street, amendments to Condition 1.1 are proposed to refer to the information provided in this NoR.

Watercare also proposes to undertake some minor or administrative changes at the same time. Specifically:

- To amend the overarching condition 1.1 from ‘*in accordance with*’ to ‘*in general accordance with*’ to provide for some flexibility anticipated by the designation process (but currently lacking in the existing designation conditions).

This will allow for further refinements to the design and construction methodology to occur within scope of the designation, avoiding the need for multiple alterations to the designation to address minor changes to design or construction (noting such matters are appropriately addressed through Section 176A Outline Plan of Works requirements).

- To amend Condition 1.1 to clarify that the reports referenced are only relevant to the extent to which they relate to section 9(3) matters consistent with the scope of a designation.

Condition 1.1 refers to all of the reports provided with the original NoR and resource consent application. However, a designation can only regulate section 9(3) matters in the RMA, and it is inappropriate for a designation to seek to control all aspects of a development when some components are addressed in the resource consent process. To avoid Watercare potentially having to alter the designation for a regional consenting matter which bears no relevance to a

designation (but is nonetheless included within the designation conditions), Watercare proposes to amend Condition 1.1 to clarify that the reports referenced are only relevant to the extent to which they relate to section 9(3) matters. This will clarify the relationship between the two authorisations for the works to occur on Tawariki St.

Watercare's required drafting of Condition 1.1 is as follow (additions underlined, deletions ~~struck-through~~):

### ***Plans and Information***

*1.1 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 (as relevant to section 9(3) matters), including:*

*a) Assessment of Effects on the Environment, titled "Grey Lynn Tunnel – Notice of Requirement, Resource Consent Application and Assessment of Environmental Effects" prepared by Jacobs, dated February 2019.*

*b) Notice of Requirement and Assessment of Effects on the Environment, titled "Grey Lynn Tunnel – Alteration to Designation", prepared by Tonkin + Taylor Ltd, dated October 2022*

*c) Drawings as detailed below:*

*...*

*d) Technical Reports as detailed below:*

*...*

*Tawariki St Shaft site relocation: Noise and Vibration - Assessment of change in effects, prepared by Tonkin + Taylor Ltd, dated October 2022*

*e) Section 92 responses dated 18 April and 24 May 2019*

## **3.4.2 Construction noise and vibration conditions**

Designation conditions 3.1 to 3.9 set out the requirements for managing construction noise and vibration. Minor amendments are required to the construction vibration condition to remove reference to 42 Tawariki Street which is now owned by Watercare, and instead refer to the new immediate neighbours as a result of the shift in shaft location.

Watercare also proposes to undertake some further minor or administrative changes. Specifically, changes are proposed to rationalise the conditions and better relate the requirements of the conditions to potential effects on the environment as set out below.

### **3.4.2.1 Conditions 3.6 and 3.8**

Condition 3.6(a)-(g) sets out the matters to be addressed in the Construction Noise and Vibration Management Plan (CNVMP). Condition 3.6(b) requires a number of building condition reports to be prepared pre and post construction as part of the CNVMP, however this requirement applies regardless of the actual likelihood of damage from vibration.

Both the original vibration assessment prepared in support of the designation, and the updated assessment attached to this NoR conclude that for the majority of the works, construction vibration levels are likely to comply with vibration limit guidelines in the AUP, DIN 4150-3 and BS 5228-2. Furthermore, Condition 3.6 requires the CNVMP to set out measures to be adopted to meet the requirement of DIN 4150-3:1999.

On this basis, the requirement for mandatory building condition surveys is considered to be overly onerous and unnecessary where the works are expected to comply with the relevant AUP permitted activity standards which are designed to protect buildings and structures from damage.

Condition 3.8 allows for exceedances of DIN 4150-3 subject to certain criteria being met. Watercare proposes to amend the relevant parts of this condition such that the building condition surveys are tied to instances where the permitted vibration standards are expected to be exceeded.

Condition 3.8 currently requires written approval from neighbouring properties to exceed the standards. As discussed in the McMillen Jacobs assessment, whilst some vibrations may be just above the vibration limits set out in the AUP, low-level vibrations are generally considered acceptable and can be tolerated provided that prior warning and explanation of the drilling operations are provided to the residents. As such, requiring written approval for exceedances of a permitted activity standard is not considered to be appropriate. Instead, Watercare proposes to consult with adjacent properties, and offer building condition surveys to property owners where limits are expected to be exceeded.

Watercare's drafting of Conditions 3.6 to 3.8 is as follows (additions underlined, deletions ~~struck-through~~):

3.6 *Each CNVMP shall also describe measures adopted to meet the requirements of German Standard DIN4150-3:1999, and as a minimum shall address the following aspects with regard to construction vibration:*

- a) *vibration sources, including machinery, equipment and construction techniques to be used;*
- b) *subject to agreement with the landowner and occupier, preparation of building condition reports on 160-178 Surrey Crescent, the 490 and 510 Richmond Road and residences at 24, 26, 30, 2/20, 32, 34 and 38 Sackville Street' and 33, 35, 37, 39, 41 and 42-38 & 40 Tawariki Street prior to, and after completion of works (refer to Appendix 1, 3 Reference maps). **This requirement applies where the guideline vibration limits set out in DIN4150 are expected to be exceeded at these properties;***
- c) *use of building condition surveys to determine the sensitivity of the building(s) on the adjacent sites to ground movement in terms of the Line 1-3 criteria of the DIN standard **where the guideline vibration limits set out in DIN4150 are expected to be exceeded;***
- d) *identification of any particularly sensitive activities in the vicinity of the proposed works (e.g. commercial activity using sensitive equipment such as radiography or mass-spectrometry), along with the details of consultation with the land owners of the sites where the sensitive activities are located and any management measures that will be adopted based on this consultation;*
- e) *the consultation undertaken by the Requiring Authority with affected stakeholders to develop the proposed vibration management measures and any feedback received from those stakeholders, along with the vibration management measures that will be adopted based on this consultation;*
- f) *methods for monitoring and reporting on construction vibration; and*
- g) *methods for receiving and responding to complaints about construction vibration.*

3.7 Construction activities shall comply with the Guideline vibration limits set out in DIN 4150-3:1999 unless varied in accordance with Condition 3.8.

3.8 The Guideline vibration limits set out in DIN4150 must not be exceeded except where the Requiring Authority can demonstrate to the satisfaction of the Council:

- a) that the receiving building(s) are capable of withstanding higher levels of vibration and what the new vibration limit is. The investigation required to demonstrate this must include, subject to agreement with the landowner and occupier, an assessment of the building(s) by a suitably experienced and qualified structural engineer and a full pre-condition survey; and
- b) that the Requiring Authority has consulted with the building owner(s) and the outcome of that consultation, including any mitigation measures that will be applied based on this consultation, are reported to Council ~~obtained the written agreement of the building owner(s) that a higher limit may be applied.~~

The designation also contains a reference map for the building condition surveys required by Condition 3.6. An updated version of the reference map is required as shown below.



### 3.4.3 Landscape conditions

Minor amendments are required to the landscape conditions to remove reference to 42 Tawariki Street which is now owned by Watercare, and instead refer to the new immediate neighbours as a result of the shift in shaft location as follows:

*13.1 Prior to the commencement of any work on site, the Requiring Authority shall provide to the Council's Team Leader Compliance Monitoring Central for written certification, a finalised set of detailed landscape design drawings and supporting written documentation which have been prepared by a landscape architect. The purpose of the detailed landscape drawings and information is to demonstrate that adverse visual and amenity effects arising from the development of permanent features on the site are appropriately mitigated. Particular regard shall be had to:*

*a) Adverse visual effects on 33, 35, 37, 39, 41 and 38 & 40 42 Tawariki Street ...*

*13.2 The submitted information shall be generally consistent with the approved landscape concept plan(s) (prepared by Boffa Miskell dated April 2019) and shall include the design changes certified through consultation with 39 & 41 Tawariki Street; and at a minimum, shall include the following visual mitigation and planting maintenance measures:*

*...*

*b) Planting, including plant type and size, along the western and southern boundary to partially screen views from 38 & 40 42, 41, 39, 37 and 35 Tawariki Street and provide a vegetated backdrop (on site) for the above ground elements and buildings - specifically the futureproof-planned height of the air vent (8 metres);*

## 4 Assessment of effects of alteration to designation

### 4.1 Introduction

The following assessment identifies and assesses the types of effects that may arise from the proposed works. The scope of this assessment is limited to the change in effects from the alteration, and does not reassess the effects of the overall works itself.

This assessment also outlines the measures that Watercare proposes to avoid, remedy or mitigate any potential adverse effects on the environment.

The secondary shaft is located approximately 20m to the west of its original location. The noise and vibration effects and landscape effects of the change in location of the secondary shaft are addressed in this AEE. There is no other change in effects associated with this alteration to the designation area and relocation of the secondary shaft beyond those already provided for through the existing designation.

The works authorised by the existing designation will have a range of other actual and potential effects on the environment. These effects, including construction traffic<sup>2</sup> and erosion and sediment control, have not been reassessed in this alteration to designation as no changes are proposed in relation to these matters. This alteration to designation does not assess effects relating to regional consenting issues, as they sit outside of the matters to be considered and will be separately assessed and addressed through a s127 application.

It is important to note that Watercare already owns 42 Tawariki St and could undertake a number of activities as of right on the site, including demolition of the existing dwelling and construction of a drop shaft<sup>3</sup>. As such, some of the effects on surrounding landowners from this alteration to designation would be generally similar in nature to activities which could occur as of right as a permitted activity.

### 4.2 Positive effects

The works required within 42 Tawariki St 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; and,
- Enabling future works to further improve fresh water quality for the Grey Lynn catchment.

The CI main works will be 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 and wellbeing and for continued economic growth and development across Auckland. The wastewater network is fundamental to the health and operation of Auckland.

Specifically in relation to the alteration to designation, the additional site area will allow for a more manageable site layout and greater efficiency and flexibility for the project's construction activities and programme.

<sup>2</sup> No changes are proposed to construction traffic volumes, and the loss of on-street parking outside 42 Tawariki St was already provided for and assessed as part of the original Notice of Requirement.

<sup>3</sup> Permitted under AUP rule E26.2.3.1 (A57)

### 4.3 Noise effects

A Noise and Vibration Assessment has been prepared in support of this alteration to designation (Appendix D). In summary:

- No changes are proposed in relation to construction traffic noise and operational noise effects. Those noise effects have already been assessed and addressed through the original NoR and are not considered here.
- The construction methodology is not proposed to change. The same equipment and activities are expected to occur for the construction of the secondary shaft as detailed in the original NoR and supporting AEE and MDA noise and vibration assessment.
- The assessment determines that much of the construction activity proposed for the site will comply with the noise levels set by the designation.
- The most significant noise-generating activity would be sheet piling (if required) to support the shaft excavation. Whilst it is not yet known whether sheet piling will be required for the construction of the secondary shaft, the Noise and Vibration Assessment (Appendix D) has conservatively assessed the potential effects if it were to occur.
- In this instance, noise levels from sheet piling on 42 Tawariki Street are predicted to be higher for several receivers compared to the assessment in the original NoR due to sheet piling occurring closer to these properties (i.e. due to the secondary shaft being relocated approximately 20m to the west).
- While there are potentially changes in noise levels, the assessment of noise levels associated with sheet piling are a 'worst-case' scenario, given it is not yet known if sheet piling will occur, and if it does occur it will only be for a limited time, with lower noise levels associated with the majority of the construction period.
- These changes in noise level do not materially change the nature of the construction noise effects for the project. It was always anticipated that sheet piling would result in exceedances of the noise limits set in condition 3.2, and consequently the designation conditions provide for an Activity Specific Construction Noise Management Plan (ASCNMP) (Condition 3.5). Consultation with residents around timing and duration of sheet piling (if required) will be an important aspect of noise management, and will be a key consideration in the preparation of ASCNMP.

Overall, the change in noise effects associated with the relocated shaft site and altered construction programme are no more than minor. The noise effects are consistent with those originally assessed and will be appropriately addressed through noise management and mitigation measures required by the conditions of Designation 9468 including the CNVMP and ASCNMP.

### 4.4 Vibration effects

Construction of the secondary shaft and other associated works on the site will involve a range of potential vibration sources, such as pile driving, operation of cranes and other heavy vehicles, and excavation of the shaft. A Noise and Vibration Assessment has been prepared in support of this alteration to designation (Appendix D). In summary:

- Vibration effects will be temporary and vibration levels from most equipment are predicted to be well below the guideline limits in DIN 4150-3.
- Whilst it is not yet known whether sheet piling will be required for the construction of the secondary shaft, the Noise and Vibration Assessment has conservatively assessed the potential effects if it were to occur. If sheet piling is undertaken within 13 m of 38-40 Tawariki Street, it may exceed DIN 4150-3.



- As set out in Section 3, Watercare proposes to change Condition 3.6 to require building condition surveys where construction vibration is expected to exceed DIN 4150-3. Where sheet piling occurs within 13 m of 38-40 Tawariki Street it will require an assessment of the dwelling to ensure it can withstand a higher level of vibration, as per Condition 3.8(a), as well as consultation with the building owner(s) (revised Condition 3.8(b)).
- Condition 3.6 requires the Construction Noise and Vibration Management Plan to address measures to monitor and mitigate the effects of construction vibration.

Overall, the proposed conditions for managing the effects of construction vibration are considered to be appropriate, particularly given almost all of the works are expected to comply with DIN 4150-3. The vibration effects associated with the relocated shaft site are no more than minor and consistent with those originally assessed.

## 4.5 Landscape and visual effects

A Landscape and Visual Effects Assessment (LVEA) was prepared in support of the original Grey Lynn Tunnel NoR. The LVEA concluded that construction activities will have a minor temporary adverse visual and landscape effect on the immediate visual catchment (occupiers at 37 – 41 and 42 Tawariki Street), primarily due to the presence of a crane on site. The assessment concluded that there will be less than minor effects beyond the immediately neighbouring sites.

From a visual and landscape perspective, the nature of the activity will not change as a result of this alteration. The only change will be that the immediate visual catchment has shifted slightly (approx. 20m to the west), such that the properties in the immediate visual catchment will now include 35, 38 & 40 Tawariki Street (albeit the presence of a crane would already have been visible from these properties).

Tawariki Street is not subject to any character or landscape overlays in the AUP, and is zoned Mixed Housing Urban. This zone provides for reasonably high-intensity development, with up to three dwellings of up to three storeys permitted as of right on any site. As such, construction activity is an expected part of the environment.

Overall, the visual effects associated with the construction phase of the project have already been considered and provided for in the designation, and the only resulting change of this alteration to designation is a slight shift in the location of construction activities. On this basis we consider that the change in visual effects associated with this alteration to designation will be no more than minor.

Once complete, as set out in the original LVEA the infrastructure will constitute a minor element of the view from the adjacent properties and will not be dominant. The designation conditions as amended above will appropriately address the long term visual and amenity effects arising from the development of permanent features on the site. The long-term visual effects of the project will continue to be less than minor as set out in the original LVEA.

## 4.6 Stormwater and flooding effects

Works and infrastructure within floodplains or overland flow paths have the potential to exacerbate natural hazards if this is not managed or designed correctly with mitigation in place. 42 Tawariki Street is at the top of an indicative flood plain which drains to the west of the site. Works within the site are therefore unlikely to have any 'up-stream' flooding effects.

The permanent infrastructure to be constructed on the site will largely be underground, flush or close to flush with the ground. A retaining wall is proposed on the western boundary of the site, and a stormwater trench will be constructed alongside the wall. The drain will be appropriately sized and stormwater will be discharged from the site via the drain into the existing stormwater system.

More broadly, the Central Interceptor project will reduce flooding risk due to the increased capacity and conveyance of wastewater, ultimately reducing flooding risk.

The project works proposed for 42 Tawariki St are also anticipated to meet the permitted activity requirements of Rule E36.4.1 (A35) '*New structures and buildings designed to accommodate flood tolerant activities up to 100m<sup>2</sup> gross floor area within the 1 per cent annual exceedance probability (AEP) floodplain*'.

Overall, the stormwater and flooding effects of the alteration to designation to include 42 Tawariki Street are expected to be negligible and therefore less than minor.

## **4.7 Conclusion**

The noise and vibration effects and landscape effects of the change in location of the secondary shaft are addressed in this AEE. There is no other change in effects associated with this alteration to the designation area and relocation of the secondary shaft beyond those already provided for through the existing designation. The methodology for constructing the shaft will be the same as described in the original application, and no changes are proposed to the primary shaft, Grey Lynn Tunnel alignment or other on-site works.

Existing designation conditions relating to construction noise and vibration, and landscape and visual effects will also apply to the alteration to the designation. Subject to the minor changes to the conditions, as set out in Section 3, we consider that the change in effects associated with the relocated shaft site and altered construction programme are consistent with those originally assessed, and will be appropriately addressed through the implementation of the designation conditions and associated management plans.

The assessment set out above concludes that the effects from the relocated shaft site can be appropriately avoided, remedied and mitigated such that they are no more than minor.

## 5 Statutory assessment

This NoR to alter a designation has been prepared in accordance with the requirements of Section 181 of the RMA and relevant provisions, in particular sections 168 and 171.

Section 171 of the RMA sets out the matters to which a territorial authority must have regard to, subject to Part 2 of the RMA, when considering a NoR. These are:

- Any actual and potential effects on the environment of allowing the requirement, including any positive effects (refer Section 4 above).
- Any relevant provisions of a national policy statement, a regional policy statement or plan.
- If the requiring authority does not have sufficient interest in the land for undertaking the work, or if the works will have a significant adverse effect on the environment, whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work.
- Whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought (refer Section 3.3 above).
- Any other matter the territorial authority considers reasonably necessary in order to make a recommendation on the requirement.

The assessment under section 171(1) of the RMA is limited to the works proposed as part of the alteration. It does not include works or effects that are or could reasonably be generated by the existing designation.

### 5.1 Consideration of alternatives

Section 168A(3) requires the consent authority to consider whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the works if the requiring authority does not have an interest in the land sufficient for undertaking the work. The site at 42 Tawariki Street is owned by Watercare and as such, the consideration of alternatives is limited to Watercare's proposal to designate a small area of road reserve directly adjacent to 42 Tawariki Street. Alternatives are assessed as set out below.

**Table 5.1: Alternatives**

Alternative site, route or method	Comment
Expand site in a different direction	Discounted on basis that Watercare owns 42 Tawariki Street, so would not be an efficient use of resources to use other land.
Retain previously assessed secondary shaft location	As design has progressed, Watercare has determined that the previously designated site is challenging from a construction and health and safety perspective, and would impact on timeframes, delaying realisation of positives of project (i.e. improved water quality), and also additional expense.
Obtain separate district plan land use consent for works in the road reserve	If Watercare was to hold a district land use consent for part of the works, with the remainder subject to the designation, it could result in inconsistencies between conditions for different parts of the site.

The above is considered to represent an adequate consideration of alternatives taking into account the small additional area of road reserve which is located immediately adjacent to the existing designated section of road reserve and the Watercare-owned site. It represents a logical and

practical minor alteration to the designation boundary to provide for the works to occur in an efficient manner.

Furthermore the designation of the road reserve is for the duration of construction only. Existing consent conditions require that as soon as practicable following commissioning of the project, the Requiring Authority shall review the extent of the designated area and in consultation with Auckland Transport give notice to the Council in accordance with Section 182 of the RMA for the removal of those parts of the designation which are not required for the long-term operation and maintenance of the Project (Condition 1.2)

The alteration to designation will not have a significant adverse effect on the environment (as discussed in Section 4).

## **5.2 RMA Part 2 Assessment**

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, with sustainable management being defined in section 5(2) of the RMA.

The proposal is consistent with the overall purpose of the Act as summarised in Sections 5.2.1 to 5.2.3 below.

### **5.2.1 Section 5 – Purpose**

With regard to section 5 of the RMA, the Grey Lynn Tunnel, and wider CI project represents the sustainable use of natural and physical resources, providing a vital infrastructure service in a manner which avoids significant effects on the community and the natural environment. CI will provide additional capacity for the metropolitan wastewater network, supporting the intensification of the Auckland Isthmus. It will support the delivery of additional housing and business space for Auckland's residents, thereby enabling the community's economic and social wellbeing.

The Grey Lynn Tunnel and wider CI project will contribute to reducing the frequency of wastewater overflows helping improve the water quality of local watercourses. This will assist in the reducing the environmental footprint of the wastewater network and will assist in ongoing efforts to restore Cox's Creek and other urban streams. The alteration to designation will enable Watercare to efficiently deliver the project, contributing to the project objectives.

Watercare will continue to work with mana whenua, principally through its Kaitiaki Forum. The cultural values of freshwater are recognised by Watercare, and the CI and Grey Lynn Tunnel Project's reduction in wastewater overflows will assist efforts to restore the mauri of local freshwater resources.

Finally, Watercare has proposed a range of measures during both the construction and ongoing operation of the Grey Lynn Tunnel to address potential adverse effects, which have been incorporated into the conditions of Designation 9468. The use of construction management practices, such as erosion and sediment controls, will ensure that the construction phase will have no more than minor adverse effects.

### **5.2.2 Section 6 – Matters of National Importance and Section 7 - Other Matters**

Section 6 of the RMA sets out the matters of national importance that must be recognised and provided for to achieve the purpose of the Act. There are no matters of national importance of particular relevance to this minor alteration to designation (noting Section 6 matters were comprehensively addressed through the Grey Lynn Tunnel resource consent and designation process). Section 7 outlines other matters that must be given particular regard to in achieving the purpose of the RMA. Those that are relevant to this application include:

- a kaitiakitanga and (aa) the ethic of stewardship
- b the efficient use and development of natural and physical resources
- c the maintenance and enhancement of amenity values

With regard to section 7(a) and 7(aa), the alteration to designation will not compromise the ability of tāngata whenua to practice their role and activities as kaitiaki or the ethic of stewardship. More broadly CI and Grey Lynn Tunnel deliver significant benefits to improving water quality.

With regard to section 7(b), the proposed expansion to the designation will enable the proposed works to be undertaken in a comprehensive and integrated manner across Watercare's landholdings, utilising the same conditions and management plans across the site, and in an efficient manner. For these reasons, the alteration is considered to be an efficient use and development of natural and physical resources in the area.

In relation to sections 7(c), the works will maintain the amenity of the area. Watercare has proposed a range of measures during both the construction and ongoing operation to address potential adverse effects, which have been incorporated into the conditions of Designation 9468. The use of construction management practices, such as the Construction Noise and Vibration Management Plan, will ensure that the construction phase will have no more than minor adverse effects. Following completion of construction at Tawariki Street, landscaping required by the existing designation conditions will ensure amenity values are maintained.

Regarding section 7(f), the overall Project will deliver benefits to both the community and the natural environment, given its role in supporting urban intensification and reducing wastewater overflows. The alteration to designation supports the attainment of these benefits.

### 5.2.3 Section 8 – Treaty of Waitangi

Section 8 of the RMA requires that the principles of Te Tiriti o Waitangi are taken into account. These principles have been taken into account as part of the engagement process with mana whenua (as described in more detail in Section 6). Watercare has consulted and engaged with mana whenua throughout the CI and Grey Lynn Tunnel Project through its Kaitiaki Managers' Forum and continues to do so through the construction period including in relation to this alteration to designation.

## 5.3 NPS Urban Development 2020

The National Policy Statement on Urban Development 2020 (NPSUD) came into effect on 20 August 2020. Objective 1 of the NPSUD is to enable New Zealand to have well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future. The NPSUD is also focused on providing sufficient development capacity to meet the different needs of people and communities and integrating land use planning and infrastructure planning.

Plan Change 78 (PC78) was notified on 18 August 2022. PC78 responds to the government's National Policy Statement on Urban Development 2020 (amended in 2022) and requirements of the Resource Management Act.

One of the qualifying matters identified in PC78, which allows Council to reduce building density, is Water and Wastewater Constraints. Whilst no change to the zoning of the shaft site is proposed in PC78, much of the area surrounding the Tawariki Street shaft site is subject to the Water and Wastewater Constraint. PC78 proposes to change large areas of the wider catchment from Single House zone to a new Low Density Residential Zone. The Low Density Residential Zone reduces the level of development enabled by the Medium Density Residential Standards - the lack of capacity in the wastewater system in this area constrains up-zoning.

Once complete, the CI project will allow for added capacity across the wider wastewater network and directly benefits downstream areas, such as the Central Business District and Freemans Bay, allowing for future up-zoning to provide for urban intensification and addition development capacity.

## 5.4 NPS 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. Table 6.1 below provides an assessment against the relevant provisions of the NPS-FM. 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 as well as the social, economic and cultural well-being of communities

**Table 5.2: NPS-FM assessment**

Reference	Comment
<p>Objective (1) – The objective of this National Policy Statement is to ensure that natural and physical resources are managed in a way that priorities:</p> <p>d First, the health and well-being of water bodies and freshwater ecosystems;</p> <p>e Second, the health needs of people (such as drinking water); and</p> <p>f Third, the ability of people and communities to provide for their social, economic and cultural well-being, now and in the future.</p>	<p>The proposed works will be managed in a way that prioritises the health and well-being of water bodies (including groundwater) and freshwater ecosystems.</p> <p>The proposed works will provide an improvement to the wastewater network by reducing the potential for wastewater contamination in freshwater ecosystems as a result of future intensification and development.</p> <p>The proposed works form part of the CI project, which is a piece of regionally important wastewater infrastructure which enables people and communities to provide for their social, economic and cultural well-being, now and in the future.</p>
Policy 1 – Freshwater is managed in a way that gives effect to Te Mana o te Wai.	The proposed works will be undertaken in a manner that protects the health of freshwater and contributes to improved freshwater outcomes by reducing the risk of wastewater contamination as a result of development, thereby making a positive contribution to giving effect to Te Mana o te Wai.
Policy 2 - Tangata whenua are actively involved in freshwater management (including decision making processes), and Māori freshwater values are identified and provided for.	The site itself is not located in an area of significant cultural value or within a statutory acknowledgement area. Watercare continues to engage with mana whenua through their Kaitiaki Forum, providing opportunities for mana whenua involvement in freshwater management.
Policy 3 - Freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments.	<p>By addressing effects on water quality as a component of land use, the potential effects of the proposed activity are being considered in an integrated way.</p> <p>Policy 3 refers to the use and development of land on a whole-of-catchment basis. This application concerns the development of a wastewater sewer pipeline which will provide network capacity to enable future development to occur while</p>

Reference	Comment
	minimising the risk of wastewater overflows to freshwater ecosystems.
Policy 5 - Freshwater is managed through a National Objectives Framework to ensure that the health and well-being of degraded water bodies and freshwater ecosystems is improved, and the health and well-being of all other water bodies and freshwater ecosystems is maintained and (if communities choose) improved.	The CI project and Grey Lynn Tunnel will improve the health and wellbeing of waterbodies and freshwater ecosystems by reducing the risk of wastewater overflows to surface water as a result of future development. Therefore, the works will improve the resilience of the wastewater infrastructure and help maintain and improve the health and well-being of water bodies and freshwater ecosystem.
Policy 12 - The national target (as set out in Appendix 3) for water quality improvement is achieved.	CI will contribute to an improvement in water quality by reducing the risk of wastewater overflows to freshwater ecosystems as future development occurs. The proposed works will help contribute to the achievement of national targets for water quality by improving the resilience of wastewater infrastructure.
Policy 15 – 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 designated works (and associated alteration) relate to the construction of a local wastewater sewer pipeline which will reduce the risk of wastewater overflows to freshwater ecosystems as a result of future development. These works form a connecting part of the wider Central Interceptor project, which is a regionally important wastewater infrastructure upgrade that enables communities to provide for their social, economic and cultural wellbeing.

## 5.5 National Environmental Standards

### 5.5.1 NES Freshwater Regulations 2020

The NES-FW regulates activities that pose risks to the health of freshwater and freshwater ecosystems. The standards apply to activities in relation to farming activities, natural wetlands, instream structures and the reclamation of rivers. There are no applicable standards relevant to this application.

### 5.5.2 NES Soil Regulations 2011

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 site and surrounding land is residential. A Preliminary Site Investigation prepared as part of the original Grey Lynn Tunnel application concluded it is unlikely that a HAIL activity has been undertaken within the vicinity of the shaft site. Therefore, the NES Soil does not apply.

No other national environmental standards are relevant.

## 5.6 Auckland Unitary Plan

### 5.6.1 Policy assessment

An assessment against the relevant objectives and policies of the AUP is set out in Table 5.2 below.



**Table 5.3: Auckland Unitary Plan objectives and policies**

Reference	Comment
Chapter B3 – Infrastructure, transport and energy	
B3.2.1 Objective (4) – The functional and operational needs of infrastructure are recognised.	There is a functional and operational need for the proposed work to be located where they are in order to align with existing wastewater infrastructure and support future intensification.  The alteration to designation provides for more space for the construction of the shafts, enabling a more effective / efficient layout and design within the designation footprint.
B3.2.2 Policy (1) – Enable the efficient development, operation, maintenance and upgrading of infrastructure.	The alteration to designation provides for the efficient development of wastewater infrastructure on the site. The overall designated works which will provide for positive benefits in relation to reducing the risk of wastewater overflows to enable future development.
B3.2.2 Policy (8) – Avoid, remedy or mitigate the adverse effects from the construction, operation, maintenance or repair of infrastructure.	The construction methodology is designed to first avoid adverse effects where practicable. Where adverse effects cannot be avoided, the measures set out in the designation conditions and corresponding management plans will appropriately mitigate the adverse effects of the works.
Chapter B6 – Mana Whenua	
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.	Ongoing engagement is being undertaken with the relevant mana whenua to the CI project. This is detailed below in Section 6.2. This engagement has ensured that mana whenua values and relationship with the environment has been considered and factored into the Project.
Policy B6.3.2 (3) - Ensure that any assessment of environmental effects for an activity that may affect Mana Whenua values includes an appropriate assessment of adverse effects on those values	
Chapter E1 – Water quality and integrated management	
E1.2 Objective (3) – Stormwater and wastewater networks are managed to protect public health and safety and prevent or minimise adverse effects of contaminants on freshwater and coastal water quality.	The proposed works will be managed to protect public health and safety and minimises adverse effects of contaminants on freshwater by ensuring the risk of wastewater overflows are reduced as future development occurs.
E1.3 Policy (19) – Ensure wastewater networks are designed and operated to minimise wet weather overflows by:  a Requiring wastewater networks to be designed and constructed in accordance with recognised industry standards, including being sized to cater for the maximum probably development level of the area to be serviced;	The proposed works are for the purposes of extending the existing local network connection to CI in order to reduce wastewater overflows entering freshwater ecosystems.  The Grey Lynn Tunnel and secondary shaft will be designed and constructed in accordance with recognised industry standards and will be sized to accommodate for future growth in the area.

Reference	Comment
<p>b Requiring the management of connections to the wastewater network;</p> <p>c Requiring wastewater networks to be managed in accordance with a network operations plan including an overflow mitigation plan with clear requirements and timeframes; and</p> <p>d Designing and locating overflow points to minimise nuisance, damage, public health risk and adverse ecological effects.</p>	<p>The Grey Lynn Tunnel connection is designed and located to manage overflows to reduce the risk of wastewater overflows.</p>
<b>Chapter E25 – Noise and Vibration</b>	
E25.2 Objective (1) People are protected from unreasonable levels of noise and vibration	<p>A Construction Noise and Vibration Management Plan (CNVMP) will be implemented throughout the construction period to ensure that construction noise and vibration is managed to acceptable levels at the shaft site. Minor amendments to the conditions are proposed as part of this alteration to designation to appropriately mitigate effects on adjacent sites, due to the change in designation extent.</p> <p>Noisy construction works will also be concentrated during normal work hours to minimise disturbance, while regular communication with residents will be undertaken so that all parties are aware of potential disturbances.</p>
E25.2 Objective (2) The amenity values of residential zones are protected from unreasonable noise and vibration, particularly at night.	
E25.2 Objective (4) Construction activities that cannot meet noise and vibration standards are enabled while controlling duration, frequency and timing to manage adverse effects.	
E25.3 Policy (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.	
<p>E25.3 Policy (10) Avoid, remedy or mitigate the adverse effects of noise and vibration from construction, maintenance and demolition activities while having regard to:</p> <p>(a) the sensitivity of the receiving environment; and</p> <p>(b) the proposed duration and hours of operation of the activity; and</p> <p>(c) the practicability of complying with permitted noise and vibration standards.</p>	
<b>Chapter E26 – Infrastructure</b>	
E26.2.1 Objective (1) – The benefits of infrastructure are recognised	<p>CI including the Grey Lynn Tunnel will improve the resilience of the wastewater network and increase the capacity of the system to allow for future growth and development in the Auckland region. Furthermore, the Grey Lynn Tunnel will provide benefits in relation to reducing the risk of wastewater overflows entering freshwater ecosystems.</p>
E26.6.1 Objective (9) – The adverse effects of infrastructure are avoided, remedied or mitigated.	<p>The designation conditions (including the minor amendments set out in Section 3) and the relevant management plans will adequately avoid, remedy or mitigate adverse effects associated with the alteration to designation.</p>

Reference	Comment
<p>E26.2.2 Policy (1) – Recognise the social, economic and cultural and environmental benefits that infrastructure provides, including:</p> <p>...</p> <p>e Providing for public health and safety;</p> <p>...</p> <p>e Enabling growth and development;</p> <p>f Protecting and enhancing the environment</p>	<p>Grey Lynn Tunnel and the wider CI project will provide for a reduction in the risk of wastewater overflows, thereby providing social, economic, cultural and environmental benefits.</p> <p>Specifically, public health and safety will be provided for by reducing the risk of wastewater contamination. In addition the proposed works improve wastewater infrastructure, which enables future growth and development in the area. A reduction in wastewater overflows will also protect and enhance freshwater ecosystems.</p>
<b>Chapter E36 – Natural hazards and flooding</b>	
<p>E36.2 Objective (4) – Where infrastructure has a functional or operational need to be locate in a natural hazard area, the risk of adverse effects to other people, property, and the environment shall be assessed and significant adverse effects are sought first to be avoided or, if avoidance is not able to be totally achieved, the residual effects are otherwise mitigated to the extent practicable.</p>	<p>The proposed works on 42 Tawariki Street involve the installation of underground infrastructure (i.e. a wastewater pipeline) and a retaining wall and associated drain. The drain will be appropriately sized and stormwater will be discharged from the site via the drain into the street’s stormwater collection.</p> <p>The works have an operational need to be located in the floodplain, due to constraints on the construction layout of the site.</p> <p>There will be no adverse effects on flood risk as a result of the proposed works.</p>
<p>E36.3 Policy (35) – Allow for the operation, maintenance, upgrading and construction of infrastructure, in areas subject to natural hazards when:</p> <p>g Infrastructure is functionally or operationally required to locate in hazard areas or it is not reasonably practicable that it be located elsewhere.</p> <p>...</p> <p>In all flood hazard areas risks to people, property and the environment are mitigated to the extent practicable.</p>	
<b>H5 – Residential – Mixed Housing Urban Zone</b>	
<p>H5.5.2 Objective (4) - Non-residential activities provide for the community’s social, economic and cultural well-being, while being compatible with the scale and intensity of development anticipated by the zone so as to contribute to the amenity of the neighbourhood.</p>	<p>The designation contains a number of conditions which respond to the residential setting for the project including a range of measures to manage and/or mitigate the effects of the Project on the amenity and character of the surrounding area. This alteration to designation includes some minor amendments to the designation conditions to better mitigate the effects of the works as a result of the change to the designation boundary.</p> <p>The Project will support the social and economic wellbeing of the community by providing improved wastewater network capacity and making best use of existing wastewater infrastructure investment.</p>
<p>H5.3 Policy (10) - Recognise the functional and operational requirements of activities and development.</p> <p>(8) Provide for non-residential activities that:</p> <p>(a) support the social and economic well-being of the community;</p> <p>(b) are in keeping with the with the scale and intensity of development anticipated within the zone;</p> <p>(c) avoid, remedy or mitigate adverse effects on residential amenity;</p>	

### 5.6.2 Summary and discussion

Both the Regional Policy Statement and District Plan components of the AUP include a suite of objectives and policies that recognise the benefits of infrastructure and explicitly recognise the functional and operational needs of infrastructure. In particular, this alteration to designation responds to an operational need for space at the construction site, enabling a more effective and efficient layout and design. The objectives and policies set out an approach to managing the adverse effects of infrastructure on the environment, while providing for infrastructure and its associated benefits. This alteration to designation is supported and enabled by the relevant provisions in the AUP as they relate to infrastructure.

In particular, the wider CI and Grey Lynn Tunnel project is considered to be consistent with the RPS given its role in providing efficient and resilient infrastructure services to the community. The Project will ensure that adequate wastewater network capacity is provided in support of urban intensification and population growth, while also allowing for improvements in the overall environmental performance of the network given the Project's role in reducing wastewater overflows.

The AUP seeks to manage the effects of infrastructure on communities and the environment. The alteration to designation will result in changes to the immediate neighbours of the site, but the construction methodology and proposed activities are otherwise consistent with the original NOR. Existing designation conditions relating to construction noise and vibration, and landscape and visual effects will also apply to the alteration to the designation. Subject to the minor changes to the conditions, as set out in Section 3, we consider that the effects of the alteration to designation will be appropriately addressed through the implementation of the designation conditions and associated management plans, and as such is consistent with the policy direction in the Plan.

### 5.7 Other matters: Change to consent condition

Watercare currently holds a suite of resource consents for the construction of the Grey Lynn tunnel (inclusive of the shaft site at Tawariki Street). Specifically relevant to the proposed change to the secondary shaft location and construction programme is groundwater permit WAT60334954. Watercare is preparing a s127 application to vary condition 1.1 to refer to an updated groundwater and settlement assessment.

## **6 Consultation**

As part of the wider authorisation process for the Grey Lynn Tunnel including the Tawariki Street shaft site consents and designations, Watercare undertook extensive consultation with a broad range of stakeholders – including Mana Whenua, Local Boards and communities, Auckland Council, Auckland Transport and landowners.

In relation to this s127 application, Watercare has undertaken targeted consultation with the stakeholders identified below. A targeted approach to consultation was considered appropriate given the limited nature of the changes (i.e. moving the secondary shaft 20 m and potential change to construction phasing, with all other components of the proposal remaining unchanged).

### **6.1 Housing New Zealand/Kāinga Ora**

Kāinga Ora owns the surrounding properties including 38-40 Tawariki Street which will be the immediate neighbour as a result of shifting the secondary shaft to 42 Tawariki St. A meeting was held on 14 October 2022 to discuss the project and Kāinga Ora indicated there were no concerns with the proposal. Written approval discussions are under way, and a copy of the application is to be sent through.

Kāinga Ora also confirmed that the properties are currently tenanted. Kāinga Ora will facilitate Watercare's discussions with the occupiers of these dwellings.

### **6.2 Mana whenua**

Iwi have been engaged through a subset of Watercare's Mana Whenua Kaitiaki Managers' 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 specialists advice particularly in the areas of consent compliance, new consent applications and social outcomes, as well as reporting back to the Forum's Managers' Group. The relocation of the secondary shaft was added to the monthly agenda in April 2022. Te Akitai has expressed an interest in the application which will be provided to them once completed. Feedback will be provided to Council either directly or at their request.

### **6.3 Auckland Transport**

Watercare will be designating the road reserve outside 42 Tawariki Street for the Project. Watercare has met with Auckland Transport (AT) to discuss the proposed works and will continue to communicate with both the AT Consenting and Corridor Access Request (CAR) teams. AT will be involved during the preparation and implementation of any required Traffic Management Plan(s) for the Project.

Written approval discussions are under way. A meeting was held with AT on 27 September 2022, where AT indicated there were no concerns with the proposal. In summary, no changes are proposed to parking, construction traffic routes and trip generation assumptions that are outside the existing designated envelope. Other than the alteration to conditions identified in Section 3.4, no other changes are proposed / all other conditions of Designation 9468 will continue to apply.

## 7 Notification assessment

Section 169 of the RMA is relevant when a territorial authority is considering whether a NoR should be considered with or without notification. The following sections outline the requirements under the RMA for public and limited notification.

### 7.1 Public notification

In accordance with section 169 of the RMA, section 149ZCB applies when a territorial authority is considering whether a NoR should be considered with or without public notification. Section 149ZCE also applies when a territorial authority is deciding if adverse effects are likely to be more than minor. In accordance with this section of the RMA, the territorial authority must disregard any effects on persons who own or occupy the land over which the activity will occur or apply, or any land adjacent to that land. A territorial authority may also disregard an adverse effect of the activity if a rule permits an activity with that effect. Having regard to section 149ZCE and to the tests in section 149ZCB:

- a An assessment of effects on the environment is provided in Section 4 of this report. The adverse effects on the environment are assessed as no more than minor.
- b Watercare does not request public notification of the NoR.
- c There is no rule or national environmental standard that requires public notification of this application.
- d No special circumstances are considered to exist in relation to the NoR.

This NoR for an alteration to Designation 9468 therefore meets the tests of the RMA to be considered without public notification.

### 7.2 Limited notification

For a NoR that is not publicly notified, under section 149ZCC the territorial authority must give limited notification of the notice to any affected person. In deciding whether a person is adversely affected, under section 149ZCF(2)(a) the territorial authority may disregard an adverse effect of the NoR on the person if a rule permits an activity with that effect.

Section 149ZCF states that a territorial authority must consider a person to be an affected person if the adverse effects on the person are minor or more than minor (but not less than minor). A territorial authority must not consider a person affected if they have provided written approval for the NoR. Having regard to these requirements:

- The effects on the environment from the alteration to Designation 9468 are assessed as no more than minor.
- There are no affected protected customary rights group or affected customary marine title groups. The site is not subject to a statutory acknowledgement.
- There are no rules or national environmental standards that preclude limited notification of the notice.
- No special circumstances are considered to exist in relation to the NoR.

In accordance with Section 95E, for the purpose of determining limited notification of an application for a resource consent, a person is an affected person if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (but are not less than minor). However in accordance with subsection (3), a person is not an affected person if they have given their written approval for the proposed activity.

In terms of Section 95E, we note the following:

- The effects on the road network from the minor alteration to designation are assessed as less than minor. Watercare is engaging with Auckland Transport with a view to obtaining asset owner approval and ensuring the necessary Corridor Access Request (CAR) is in place.
- In terms of noise and vibration effects, the Noise and Vibration Assessment in Appendix D finds that most general construction activities and equipment are predicted to comply with the relevant noise and vibration limits.
- **Noise:** The original assessment set out in the MDA noise report indicated that sheet piling is likely to result in exceedances of the designation noise limits for houses in closest proximity to the works. Sheet piling (if required) will be carried out on an intermittent basis and for a relatively short duration.

The assessment in Appendix D shows the predicted levels are comparable to the MDA results for properties at similar distances. It was always anticipated that sheet piling (if it was required) would result in exceedances of the noise limits set in condition 3.2. This is not uncommon for this type of works close to residential receivers and is typically managed through a ASCNVMP as is provided for in the existing designation conditions. The assessment in Appendix D demonstrates that the alteration to designation does not materially change the nature of the construction noise effects for the project.

- **Vibration:** The original assessment set out in the McMillen Jacobs vibration report indicated that sheet piling (if this occurs) may result in exceedances of the designation limits for houses in close proximity to the works (< 15m). Consistent with this, the assessment in Appendix D indicates the vibration limit may be exceeded at the closest dwelling at a distance of 10m (but is predicted to comply at a distance of 13 m). If sheet piling is proposed within 13m of 40 Tawariki St, the conditions require Watercare to consult with the building owner, and subject to their agreement, undertake a building condition survey to determine the sensitivity of the building to construction vibration.

The change in noise and vibration effects associated with the relocated shaft site and potential change to the construction programme are consistent with those originally assessed and will be appropriately managed and mitigated through the existing condition of the designation.

On the basis of the assessment set out in Section 4 and summarised above, the effects on adjacent properties of the alteration to designation including the change in location of the secondary shaft (moving 20m to the west) are assessed as less than minor. Accordingly, this application can be processed on a non-notified basis.



## 8 Conclusion

This report has been prepared on behalf of Watercare Services Limited to seek an alteration of Designation 9468 in the Auckland Unitary Plan.

Currently, 44 – 48 Tawariki Street is designated for the purpose of '*construction, operation, and maintenance of wastewater infrastructure*' and provides for two shafts, known as the primary and secondary shaft. Since designating the Tawariki Street Shaft Site, Watercare has purchased the adjacent property at 42 Tawariki Street and proposes to shift the secondary shaft approximately 20m to the west within this property to allow for more space at the construction site. As such, Watercare seeks to extend Designation 9468 to include 42 Tawariki Street and the road reserve in front of the property.

In addition, in the original NoR the secondary shaft was proposed to be constructed at least 2.5 years after the primary shaft. Watercare has now identified the potential to undertake the works concurrently for the two shaft sites and seeks to alter the designation to allow for this construction programme option.

The effects associated with construction activities and the long-term operation of infrastructure at the Tawariki Street site were considered through the previous application process. This alteration to designation and associated assessment of effects is limited to the two changes described above. In summary:

- The alteration to the designation will have no more than minor effects on the environment.
- The works are reasonably necessary to achieve the objectives of the requiring authority, enabling Watercare to achieve its objective of providing additional sewer network capacity for growth and development across the Auckland Isthmus, and reducing wastewater overflow discharges, improving public health and environmental conditions.
- The alteration to the designation will enable the proposed works to be undertaken in a comprehensive and integrated manner across Watercare's landholdings, utilising the same conditions and management plans across the site; and will provide Watercare with greater flexibility and allow it to carry out all necessary works at the shaft site effectively and efficiently.
- The project is consistent with, and finds support from, the relevant provisions of the NPSUD, NPSFW and AUP and is consistent with Part 2 of the RMA.

## 9 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 Watercare will submit this report as part of a NoR and that Auckland Council as the consenting authority will use the report for the purpose of considering the NoR and making a recommendation.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:



.....  
Rachel Signal-Ross  
Senior Planner

Authorised for Tonkin & Taylor Ltd by:



.....  
Karen Baverstock  
Project Director

15-Nov-22

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## **Appendix A: Records of Title**

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**RECORD OF TITLE  
UNDER LAND TRANSFER ACT 2017  
FREEHOLD  
Search Copy**



  
R. W. Muir  
Registrar-General  
of Land

**Identifier** NA44C/1088  
**Land Registration District** North Auckland  
**Date Issued** 17 May 1979

**Prior References**

NA1810/58

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<b>Estate</b>	Fee Simple
<b>Area</b>	561 square metres more or less
<b>Legal Description</b>	Lot 37 Deposited Plan 38075

**Registered Owners**

Watercare Services Limited

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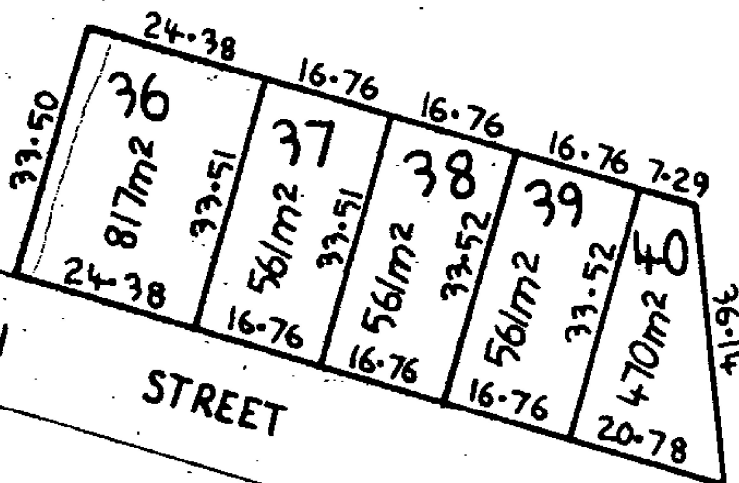
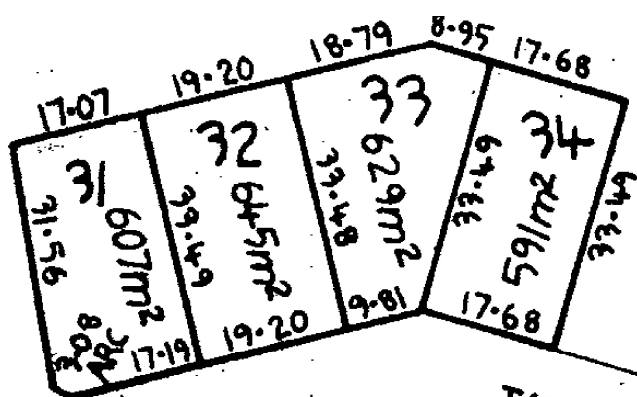
**Interests**

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

7442 Order in Council imposing Building Line Restriction

Subject to a drainage right over part created by Transfer C244461.2 - 6.3.1991 at 2.44 pm



TAWARIKI STREET



**RECORD OF TITLE  
UNDER LAND TRANSFER ACT 2017  
FREEHOLD  
Search Copy**



  
R. W. Muir  
Registrar-General  
of Land

**Identifier** NA44C/1089  
**Land Registration District** North Auckland  
**Date Issued** 17 May 1979

**Prior References**

NA1810/58

---

<b>Estate</b>	Fee Simple
<b>Area</b>	561 square metres more or less
<b>Legal Description</b>	Lot 38 Deposited Plan 38075

**Registered Owners**

Watercare Services Limited

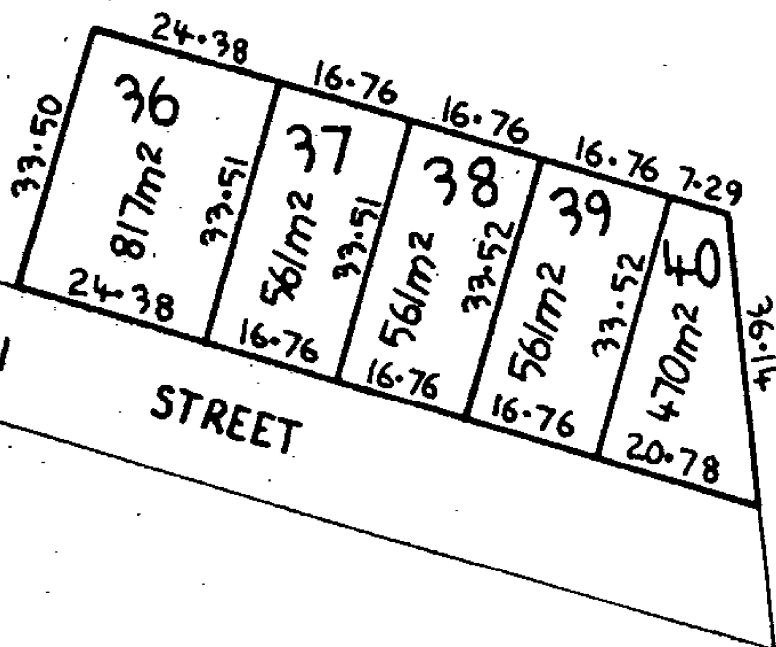
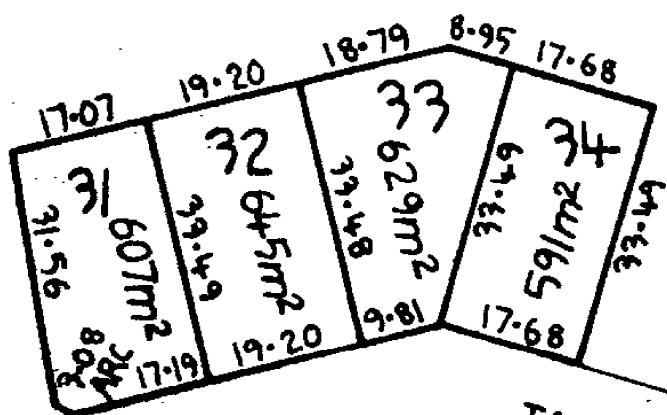
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**Interests**

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

7442 Order in Council imposing Building Line Restriction





**RECORD OF TITLE  
UNDER LAND TRANSFER ACT 2017  
FREEHOLD  
Search Copy**



  
R. W. Muir  
Registrar-General  
of Land

**Identifier** NA44C/1090  
**Land Registration District** North Auckland  
**Date Issued** 17 May 1979

**Prior References**

NA1810/58

---

<b>Estate</b>	Fee Simple
<b>Area</b>	561 square metres more or less
<b>Legal Description</b>	Lot 39 Deposited Plan 38075

**Registered Owners**

Watercare Services Limited

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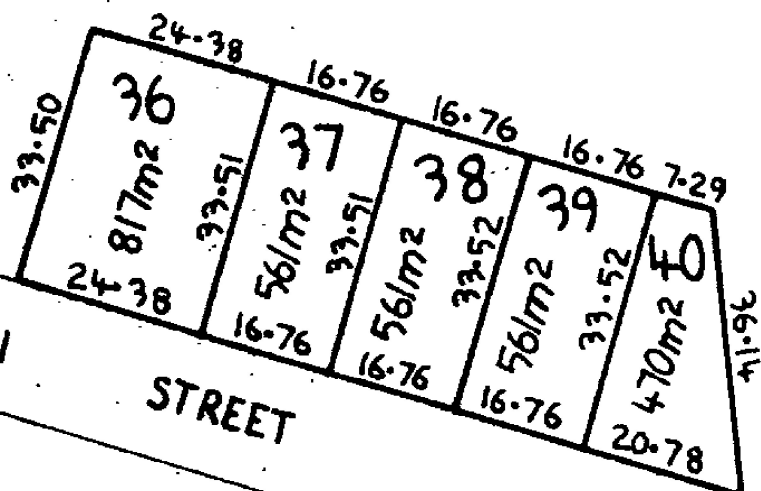
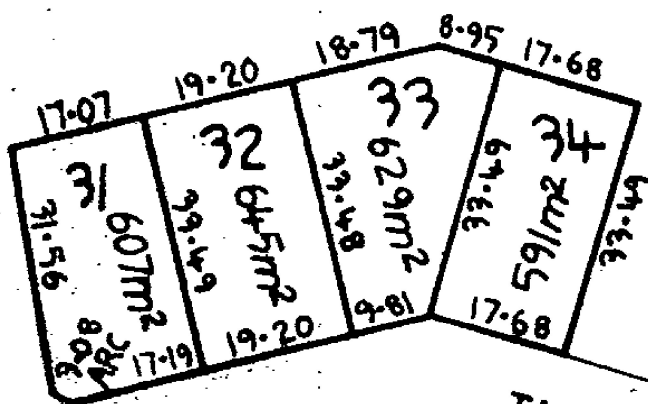
**Interests**

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

7442 Order in Council imposing Building Line Restriction





TAWARIKI STREET



**RECORD OF TITLE  
UNDER LAND TRANSFER ACT 2017  
FREEHOLD  
Search Copy**



  
R. W. Muir  
Registrar-General  
of Land

**Identifier** NA44C/1091  
**Land Registration District** North Auckland  
**Date Issued** 17 May 1979

**Prior References**

NA1810/58

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<b>Estate</b>	Fee Simple
<b>Area</b>	470 square metres more or less
<b>Legal Description</b>	Lot 40 Deposited Plan 38075

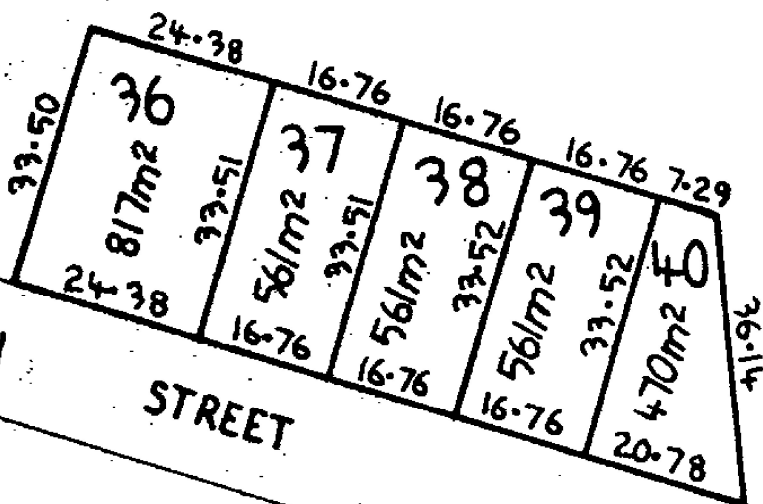
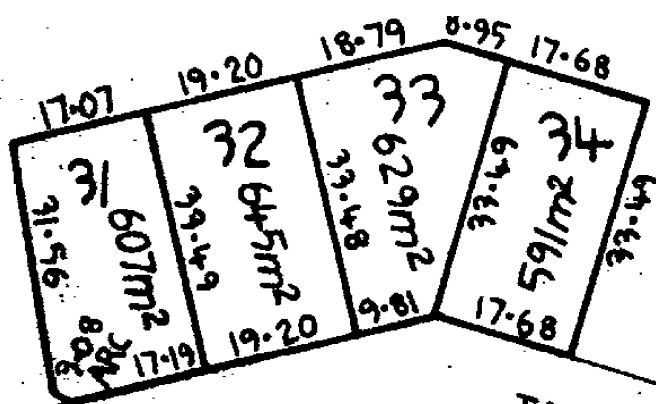
**Registered Owners**

Watercare Services Limited

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**Interests**

Subject to Part IV A Conservation Act 1987  
Subject to Section 11 Crown Minerals Act 1991  
7442 Building Line Restriction



TAWARIKI STREET

## **Appendix B: Existing designation**

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## 9468 Grey Lynn Tunnel

Designation Number	9468
Requiring Authority	Watercare Services Ltd
Location	44, 46, and 48 Tawariki Street, 183 Richmond Road, and Tawariki Street road reserve, Grey Lynn
Lapse Date	10 years from inclusion in the Auckland Unitary Plan, in accordance with section 184(1) of the RMA

## Purpose

Construction, operation, and maintenance of wastewater infrastructure.

## Conditions

### 1. General Conditions

1.1 Except as modified by the conditions below and subject to final design, the works shall be undertaken in accordance with the information provided by the Requiring Authority in the Notice of Requirement dated February 2019, and supporting documents being:

- a) Assessment of Effects on the Environment, titled "Grey Lynn Tunnel – Notice of Requirement, Resource Consent Application and Assessment of Environmental Effects" prepared by Jacobs, dated February 2019.
- b) Drawings as detailed below:
  - 'Land Requirement Plan Tawariki Street Shaft Site', Rev A by Jacobs, undated.
  - 'Grey Lynn Tunnel Western Springs to Tawariki Street Plan and Profile Sheet 1', Rev 0, by Watercare, dated 20 Feb 2019.
  - 'Grey Lynn Tunnel Western Springs to Tawariki Street Plan and Profile Sheet 2', Rev 0, by Watercare, dated 20 Feb 2019.
  - 'Grey Lynn Tunnel Western Springs to Tawariki Street Plan and Profile Sheet 1', Rev 0, by Watercare, dated 20 Feb 2019.
  - 'Grey Lynn Tunnel – Tawariki Street Site Plan', Rev 0, by Boffa Miskell, dated April 2019.
  - 'Grey Lynn Tunnel – Tawariki Street Fence Options, Rev 0, by Boffa Miskell, dated April 2019.
  - 'Grey Lynn Tunnel – Tawariki Street Section and Elevation Location Plan, Rev 0, by Boffa Miskell, dated April 2019.
  - 'Grey Lynn Tunnel – Tawariki Street Cross Sections, Rev 0, by Boffa Miskell, dated April 2019.
  - 'Grey Lynn Tunnel – Tawariki Street Retaining Wall Elevations, Rev 0, by Boffa Miskell, dated April 2019.
  - 'Grey Lynn Tunnel – Tawariki Street Panorama View from 39 Tawariki Street –

Following Site Reinstatement, Rev 0, by Boffa Miskell, dated April 2019.

- c) Technical Reports as detailed below:
- Ecological Assessment, prepared by Biosearches Group Ltd, dated 18 February 2019.
  - Archaeological and Historic Heritage Assessment, prepared by Clough & Associates Ltd, dated February 2019.
  - Traffic Impact Assessment, prepared by Commute, dated 21 February 2019.
  - Noise Assessment, prepared by Marshall Day Acoustics, 13 February 2019.
  - Vibration Assessment, prepared by McMillen Jacobs Associates, dated 21 December 2019.
  - Settlement Assessment, prepared by McMillen Jacobs Associates, dated 31 January 2018.
  - Contamination Report, prepared by AECOM, dated 21 February 2019.
  - Visual Impact and Landscape Assessment, prepared by Boffa Miskell Ltd, dated 20 February 2019.
  - Arborist Report, prepared by Greenscene NZ, dated 20 February 2019.
- d) Section 92 responses dated 18 April and 24 May 2019
- 1.2 As soon as practicable following completion of commissioning of the Project, the Requiring Authority shall, in consultation with the Council:
- a) review the extent of the area designated for the Project;
  - b) identify any areas of designated land that are no longer necessary for the ongoing operation, maintenance, renewal and protection of the Project and associated structures and activities;
  - c) identify, in consultation with Auckland Transport any areas of the designation within road reserve that are no longer necessary as the completed infrastructure is otherwise provided for and adequately protected by provisions of the Local Government (Auckland Council) Act 2009 and Utilities Access Act 2010;
  - d) give notice to the Council in accordance with Section 182 of the RMA for the removal of those parts of the designation identified in (b) and (c) above, which are not required for the long-term operation and maintenance of the Project; and
  - e) provide as-built plans to the Council's Team Leader, Compliance and Monitoring, Resource Consents.
- 1.3 A liaison person shall be appointed by the Requiring Authority 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 designation and construction work. The liaison person's name and contact details shall be advised to affected parties by the Requiring Authority. 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.

- 1.4 The designation shall lapse on the expiry of a period of 10 years after the date on which the last of any appeals on all consents and notices of requirement associated with the Project is withdrawn or determined, or, if no appeals are lodged, the date on which the notices of requirement are included in the AUP in accordance with section 184(1)(c) of the RMA, unless:

- a) it has been given effect before the end of that period; or
- b) the Council determines, on an application made within 3 months before the expiry of that period, that substantial progress or effort has been made towards giving effect to the designation and is continuing to be made; and fixes a longer period for the purposes of this subsection.

- 1.5 Except as provided for in Condition 1.6 below, the Requiring Authority shall submit an Outline Plan of Works (OPW) for the Project for each of the relevant Project stages in accordance with section 176A of the RMA.

- 1.6 An OPW need not be submitted if the Council has waived the requirement for an OPW in accordance with section 176A(2)(c) of the RMA.

- 1.7 The OPW shall include the following Management Plans, relevant to the stage of works sought for the Project:

- a) Construction Management Plan (CMP);
- b) Construction Traffic Management Plan;
- c) Communications Plan;
- d) Construction Noise and Vibration Management Plan (CNVMP); and
- e) Site Reinstatement Plan.

## **2. Construction Management**

- 2.1 The Requiring Authority shall prepare Construction Management Plans (CMP) for each of the relevant Project stages. The purpose of the CMP(s) 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 designation that relate to the matters referred to items (c) to (o) of Condition 2.2 below. The CMP(s) shall be submitted to the Council with the relevant OPW for the stage to which they relate.

- 2.2 The CMP(s) required by Condition 2.1 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 1.3, including their contact details (phone, postal address, email address);
- b) An outline construction programme;
- c) The proposed hours of work, including activities that may occur outside the typical working day hours;

- 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, site access for the contractors yard, 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 including removal of any unreasonable levels of dust (as determined by the Council's Team Leader Compliance Monitoring Central) deposited on any adjacent dwellings;
  - g) Procedures for ensuring that residents, road users and businesses 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 Condition 6.1;
  - i) Procedures for the management of works which directly affect or are located in close proximity to existing network utility services;
  - j) Procedures for responding to complaints about construction activities;
  - k) Procedures for the refuelling of plant and equipment;
  - l) A Construction Noise and Vibration Management Plan (CNVMP) containing measures to address the management of noise and vibration as identified in Condition 3.1;
  - m) Measures for the protection and management of trees as identified in Condition 10.1; and
  - n) Measures to address CPTED issues within and around the site; and
  - o) In relation to the owners of 39 and 41 Tawariki Street, a parking plan will be developed in consultation with the owners that provides parking for the owners of 39 and 41 Tawariki Street either on the road beside the properties or a reasonable alternative as agreed with the owners prior to the works commencing.
- 2.3 The CMP shall be implemented and maintained 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 in accordance with Condition 2.1.

### **3. Construction Noise and Vibration**

- 3.1 A Construction Noise and Vibration Management Plan (CNVMP) either as part of the CMP, or as a standalone plan, shall be prepared by a suitably qualified person, and shall be submitted to the Council with the OPW to which it relates. The purpose of the CNVMP is to provide a framework for the development and implementation of the Best Practicable Option ('BPO') for management of all construction noise and vibration effects and to define the procedures to be followed when full compliance with the construction noise and vibration standards of Conditions 3.2 to 3.9 are not met following adoption of the BPO.
- 3.2 Construction noise shall be measured and assessed in accordance with NZS6803:1999



Acoustics – Construction Noise, and shall comply with the following noise limits, unless varied in accordance with Condition 3.5:

Time and Day	Noise Limits	
	L <sub>Aeq</sub> dB	L <sub>Amax</sub> dB
Monday to Saturday 0730 – 1800	70	85
At All Other Times and Public Holidays	45	75

- 3.3 Construction works which exceed a level of L<sub>Aeq</sub> 45dB at the most exposed receiver(s) are restricted to between 0730 to 1800 on weekdays and Saturdays, with no noisy works permitted on Sundays and Public Holidays. Each CNVMP shall define which activities will comply with a limit of L<sub>Aeq</sub> 45dB and can therefore be undertaken outside of these hours in compliance with Condition 8.1.
- 3.4 Each CNVMP shall, in demonstrating compliance with Condition 3.2, as a minimum, address the following aspects with regard to construction noise:
- a description of noise sources, including machinery, equipment and construction techniques to be used;
  - predicted construction noise levels;
  - hours of operation, including times and days when noisy construction work would occur;
  - physical noise mitigation measures, including prohibiting the use of tonal reverse alarms, maintenance of access roads (to ensure they are smooth), acoustic screening around the site, plant selection and maintenance procedures, and site layout;
  - construction noise criteria for any specific areas and sensitive receivers such as schools, child care centres, medical or aged care facilities;
  - the identification of activities and locations that will require the design of specific noise mitigation measures;
  - the consultation undertaken by the Requiring Authority with affected stakeholders to develop the proposed noise management measures and any feedback received from those stakeholders, along with the noise management measures that will be adopted based on this consultation;
  - methods for monitoring and reporting on construction noise;
  - methods for receiving and responding to complaints about construction noise; and
  - construction operator training procedures.
- 3.5 Where a CNVMP predicts that noise levels from a particular activity will or will likely exceed the noise limits set out in Condition 3.2, or where noise measurements show that compliance is not being achieved, the Requiring Authority shall prepare and submit for the

certification of the Council an Activity Specific Construction Noise Management Plan (ASCNMP). The ASCNMP(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 ASCNMP(s) shall not commence until certification is received from the Council. If monitoring shows that levels specified in an ASCNMP are being exceeded, work generating the exceedance shall stop and not recommence until further mitigation is implemented in accordance with an amended ASCNMP certified by the Council.

In addition to the requirements of Condition 3.4, an ASCNMP must:

- a) describe the activity (including duration), plant and machinery that is expected not to comply with the noise limits in Condition 3.2;
- 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 3.2, including the effect of mitigation specified in 3.5(b);
- 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.

3.6 Each CNVMP shall also describe measures adopted to meet the requirements of German Standard DIN4150-3:1999, and as a minimum shall address the following aspects with regard to construction vibration:

- a) vibration sources, including machinery, equipment and construction techniques to be used;
- b) subject to agreement with the landowner and occupier, preparation of building condition reports on 160-178 Surrey Crescent, the 490 and 510 Richmond Road and residences at 24, 26 30, 2/20, 32, 34 and 38 Sackville Street' and 35, 37, 39, 41 and 42 Tawariki Street prior to, and after completion of works (refer to Appendix 1, 3 Reference maps);
- c) use of building condition surveys to determine the sensitivity of the building(s) on the adjacent sites to ground movement in terms of the Line 1-3 criteria of the DIN standard;
- d) identification of any particularly sensitive activities in the vicinity of the proposed works (e.g. commercial activity using sensitive equipment such as radiography or mass-spectrometry), along with the details of consultation with the land owners of the sites where the sensitive activities are located and any management measures that will be adopted based on this consultation;
- e) the consultation undertaken by the Requiring Authority with affected stakeholders to develop the proposed vibration management measures and any feedback received from those stakeholders, along with the vibration management measures that will be

adopted based on this consultation;

- f) methods for monitoring and reporting on construction vibration; and
  - g) methods for receiving and responding to complaints about construction vibration.
- 3.7 Construction activities shall comply with the Guideline vibration limits set out in DIN 4150-3:1999 unless varied in accordance with Condition 3.8.
- 3.8 The Guideline vibration limits set out in DIN4150 must not be exceeded except where the Requiring Authority can demonstrate to the satisfaction of the Council:
- a) that the receiving building(s) are capable of withstanding higher levels of vibration and what the new vibration limit is. The investigation required to demonstrate this must include an assessment of the building(s) by a suitably experienced and qualified structural engineer and a full pre-condition survey; and
  - b) that the Requiring Authority has obtained the written agreement of the building owner(s), that a higher limit may be applied.
- 3.9 Each CNVMP shall be implemented and maintained throughout the entire construction period. Each CNVMP shall be updated when necessary and any updated CNVMP shall be submitted to the Council in accordance with Condition 3.1.

#### 4. Operational Noise

- 4.1 The noise arising from any operational activities undertaken on the designated land, shall not exceed the following noise limits when measured at or within the boundary of any site zoned as follows:

Residential	
Time	Noise Limit*
0700-2200 hours	50 dB LAeq
2200-0700 hours	40 dB LAeq 75 dB LAmax
Special Purpose – School	
Time	Noise Limit
Monday to Saturday 0700-2200 hours	55 dB LAeq
Sunday 0900-1800 hours	
All other times	40 dB LAeq 75 dB LAmax
Business	
Time	Noise Limit
At all times	60 dB LAeq

*\*Notes:*

*(1) 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.*

*(2) 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.*

**5. Traffic Management**

- 5.1 A detailed Construction Traffic Management Plan (CTMP) or plans shall be prepared for the Project or relevant Project stage by a suitably qualified person, in consultation with Auckland Transport and St Pauls College, and submitted as part of the CMP. The purpose of the CTMP is to:
- a) Manage the road transport network for the duration of construction to manage congestion and minimise delays to road users;
  - b) Inform the public about traffic management on the road transport network for the duration of construction;
  - c) Protect public safety including the safe passage of pedestrians and cyclists;
  - d) Maintain pedestrian access to private property at all times;
  - e) Provide vehicle access to private property to the greatest extent possible; and
  - f) Manage traffic effects from construction yards on adjacent properties.
- 5.2 The CTMP(s) shall describe the measures that will be taken to avoid, remedy, or mitigate the traffic effects associated with construction of the Project or Project stage. In particular, the CTMP(s) shall describe:
- a) Traffic management measures to maintain traffic capacity, and safety, or minimise the impact on traffic capacity during weekdays and weekends;
  - b) Measures to ensure that Parawai Crescent is not used by heavy vehicles travelling to or from the site and that all heavy vehicles travelling to the site utilise a left turn only from Richmond Road into Mokau Street.
  - c) 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;
  - d) Methods to manage the effects of the delivery of construction material, plant and machinery;
  - e) Measures to maintain pedestrian access at all times and existing vehicle access to property where practicable, or to provide alternative access arrangements;
  - f) Measures to maintain pedestrian and cyclist movements and reduce the impact on mobility impaired users on roads and footpaths adjacent to the construction works. Such access shall be safe, clearly identifiable and seek to minimise significant detours;
  - g) 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;

- h) Measures to manage the proposed access to the site should the access be unable to cater for two- way traffic passing at the same time, and in particular to minimise reverse movements and blocking of the road;
  - i) The availability of on-street and off-street parking if the designated site is unable to accommodate all contractor parking. This shall include an assessment of available parking (if any) for contractors on street and identify measures to meet and/or reduce contractor parking demand for on-street parking;
  - j) Means for communicating options to site staff for travel to and from the work site including public transport, walking, cycling and carpooling, for the purpose of minimising demand for on-street parking generated by site staff;
  - k) Reconstruction of the residential vehicle crossings to Auckland Transport commercial vehicle crossing standards at 33 and 40 Tawariki Street to provide for heavy vehicle manoeuvring; and.
  - l) Methods to ensure public refuse collection can be maintained for all properties.
- 5.3 The CTMP(s) shall be consistent with the New Zealand Transport Agency Code of Practice for Temporary Traffic Management, which applies at the time of construction.
- 5.4 Any damage in the road corridor directly caused by heavy vehicles entering or exiting the site shall be repaired as within two weeks or within an alternative timeframe to be agreed with Auckland Transport.

## **6. Pedestrian Management**

- 6.1 Any temporary accessways shall be designed as far as practicable in accordance with CPTED (Crime Prevention Through Environmental Design) principles and provide appropriate lighting and signage where necessary.

## **7. Work within Road Reserve**

- 7.1 The Requiring Authority shall not require Auckland Transport or network utility operators with existing infrastructure within the road reserve to seek written consent under Section 176 of the RMA for on-going access, to enable works associated with the routine construction operation, maintenance, upgrade, replacement, urgent repairs and renewal works of existing assets. Furthermore, this exemption to s176 approval does not alleviate the need for Works Over approval from Watercare.
- 7.2 Works within transport corridors shall be undertaken in accordance with the National Code of Practice for Utility Operators' Access to Transport Corridors (November 2011), or any approved update of that code, unless otherwise agreed between the Requiring Authority and the Corridor Manager.

## **8. Construction Hours**

- 8.1 Construction hours shall be as follows, except where work is necessary outside the specified days or hours for the purposes specified in Condition 8.2 below.
- a) Tunnelling activities – 24 hours a day, 7 days a week operations for all tunnelling activities, including the main tunnel works and the link tunnels.

- b) General site activities – 7am to 6pm, Monday to Friday, 8am to 6pm Saturday.
- c) Truck movements – 7am to 6pm, Monday to Friday, 8am to 6pm Saturday. Truck movements shall be managed to avoid, as far as practicable, entering and exiting Mokau Street between 8:15am and 9:15am and 2:45pm and 3:45pm Monday to Friday during school term times for St Paul's College. and Marist School Herne Bay.

8.2 Purposes for which work may occur outside of the specified days or hours are:

- 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;
- 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 paragraphs (a) – (f), the Requiring Authority shall, within five working days of the commencement of such work, provide a report to Team Leader Compliance Monitoring Central detailing how the work was authorised under those paragraphs.

## 9. Community Information and Liaison

9.1 The Requiring Authority shall prepare a Communications Plan (CP) for the construction phase of the Project or for each Project stage and submit the plan in accordance with Condition 1.7. The CP shall set out:

- a) the method(s) of consultation and liaison with key stakeholders, including the Catholic Diocese of Auckland, and the owners/occupiers of neighbouring properties regarding the likely timing, duration and effects of works;
- 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;
- c) details of the consultation undertaken with the owners of 39 and 41 Tawariki Street in relation to the proposed landscaping of the site at 44 and 46 Tawariki.
- d) full contact details for the person appointed in accordance with Condition 1.3 to manage the public information system and be the point of contact for related enquiries; and
- e) the information required by Conditions 3.4(g) and (i) and 3.6(e) and (g).

## 10. Archaeology and Heritage

10.1 If any archaeological material, including human remains are exposed during site work then the Accidental Discovery Protocol according to Standard E12.6.1 of the Auckland Unitary Plan shall apply.

## 11. Site Reinstatement

11.1 Prior to commencement of works at all surface construction sites, or an alternative timeframe as agreed in writing with the Team Leader Compliance Monitoring Central, the Requiring Authority shall prepare a Reinstatement Plan for the site. The Reinstatement Plan shall be submitted to the Council in accordance with Condition 1.7. The Reinstatement Plan shall include:

- a) Any existing structures or features on the site to be protected during works or reinstated on completion of works.
- b) The location and design of permanent wastewater infrastructure including the design of lid structures and chamber covers including the associated contouring of ground.
- c) The location and design of permanent access to the wastewater infrastructure.
- d) Details of proposed landscaping and planting, including implementation and maintenance programmes.

And shall take into account the following matters:

- e) As far as practicable, permanent all-weather access for heavy vehicles shall minimise areas of new impermeable surfaces and, in open space areas, the use of grass cell, or similar, shall be preferred.
- f) The extent to which the buildings are appropriate to their context and minimise potential adverse effects on the amenity of the surroundings; including the use of visually recessive design, appropriate colours, textures, and modulation.
- g) the configuration of multiple surface elements to minimise their prominence and visual clutter;
- h) site configuration that maximises the use of Crime Prevention Through Environmental Design (CPTED) principles;
- i) The use of building materials which are sufficiently robust and minimise the potential for graffiti and vandalism;
- j) consultation with the owners of 39 and 41 Tawariki Street.

11.2 When contractors' yards or other temporary works areas are no longer required for any construction or operational purpose, site works, including site offices, storage and equipment sheds, fencing and hard stand areas shall be removed, and the area reinstated in accordance with Conditions 12.1.

## **12 Detailed Landscape Design Drawings, Maintenance Requirements and Implementation**

12.1 Prior to the commencement of any work on site, the Requiring Authority shall provide to the Council's Team Leader Compliance Monitoring Central, a finalised set of detailed landscape design drawings and supporting written documentation which have been prepared by a landscape architect. The purpose of the detailed landscape drawings and information is to demonstrate that adverse visual and amenity effects arising from the development of permanent features on the site are appropriately mitigated. Particular regard shall be had to:

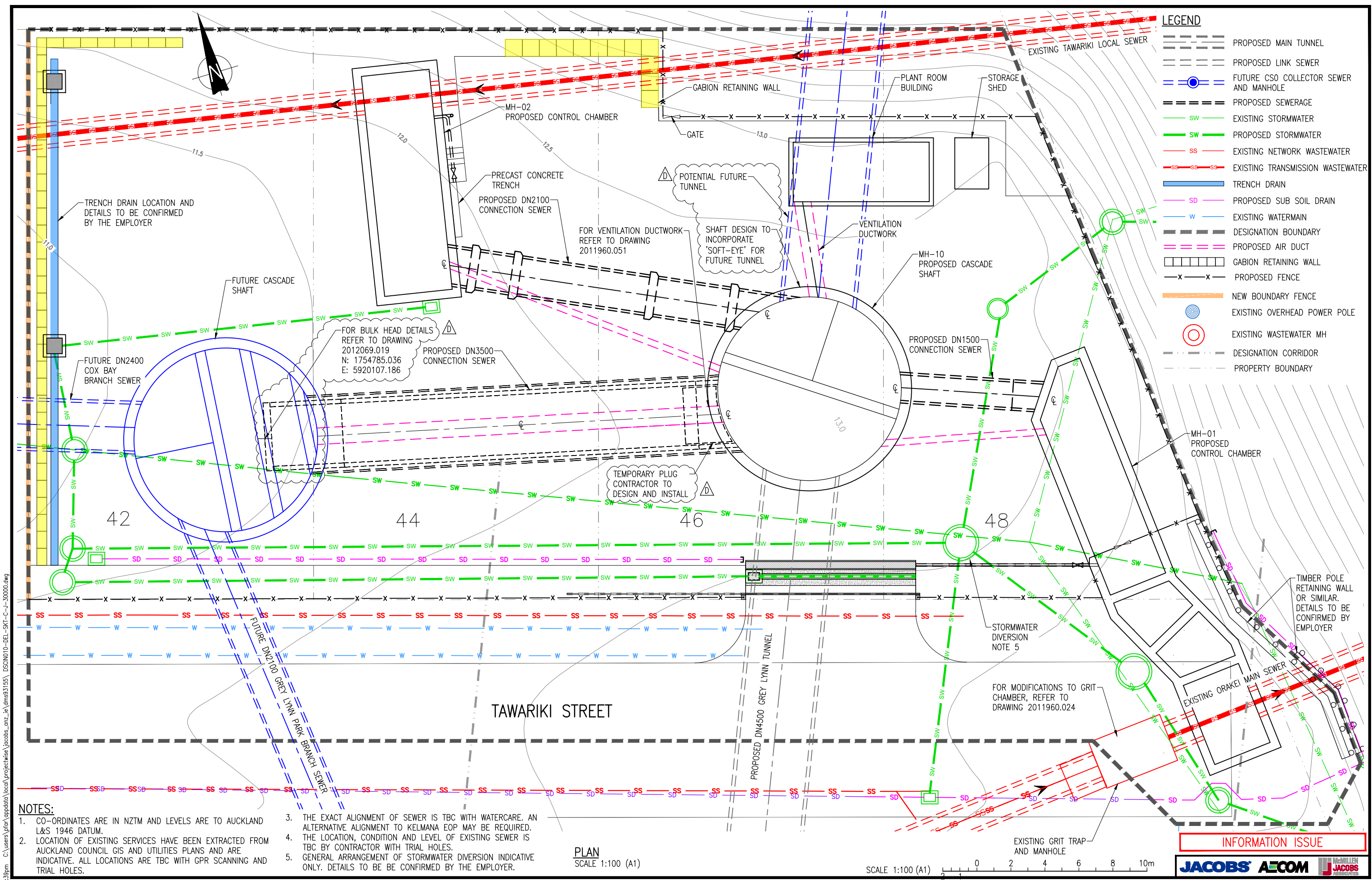
- a) Adverse visual effects on 35, 37, 39, 41 and 42 Tawariki Street;
- b) Adverse effects on the character of the Tawariki Street streetscape; and

- c) The planting at the western embankment on St Paul's College land (183 Richmond Road) to screen views from the east of the site
- 12.2 The submitted information shall be generally consistent with the approved landscape concept plan(s) (prepared by Boffa Miskell dated April 2019) and shall include the design changes certified through consultation with 39 & 41 Tawariki Street; and at a minimum, shall include the following visual mitigation and planting maintenance measures:
- a) Reinstatement planting on site, including plant type and size, within Tawariki Street road reserve and St Paul's College grounds;
  - b) Planting, including plant type and size, along the western and southern boundary to partially screen views from 42, 41, 39 and 37 Tawariki Street and provide a vegetated backdrop (on site) for the above ground elements and buildings - specifically the future-proof-planned height of the air vent (8 metres);
  - c) Provision of retaining walls, fences, lighting, signage and other structural landscape design elements of a design, material and colour that reflects the treatment of neighbouring residential dwellings.
  - d) A landscape maintenance plan (report) and related drawings and specifications for all aspects of the finalised landscape design covering a minimum for 3 years, including in relation to the following requirements: soil preparation, irrigation, watering, drainage, staking, mulching, tree pits and garden bed details, weed removal/spraying and pest control, plant replacement for all plants including specimen trees and climbers which are severely damaged or die for a period of, covering a minimum 3 years, inspection timeframes, contractor responsibilities and ongoing maintenance requirements after contractors approved maintenance period.
- 12.3 The landscape design shall be implemented within the next planting season after completion of works on site, retained and maintained for a minimum three (3) years in accordance with the implementation and maintenance programme, to the satisfaction of Council's Team Leader Monitoring (Central).



## Appendix C: Drawings

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C:\Users\p10a\appdata\local\projectwise\jacobson\proj\2022\06\22\TAWARIKI ST - CENTRAL INTERCEPTOR (DSCIN) 00 SITE GENERAL\DWG\20220622\TAWARIKI ST - CENTRAL INTERCEPTOR (DSCIN) 00 SITE GENERAL.dwg

**NOTES:**

1. CO-ORDINATES ARE IN NZTM AND LEVELS ARE TO AUCKLAND L&S 1946 DATUM.
2. LOCATION OF EXISTING SERVICES HAVE BEEN EXTRACTED FROM AUCKLAND COUNCIL GIS AND UTILITIES PLANS AND ARE INDICATIVE. ALL LOCATIONS ARE TBC WITH GPR SCANNING AND TRIAL HOLES.
3. THE EXACT ALIGNMENT OF SEWER IS TBC WITH WATERCARE. AN ALTERNATIVE ALIGNMENT TO KELMANA EOP MAY BE REQUIRED.
4. THE LOCATION, CONDITION AND LEVEL OF EXISTING SEWER IS TBC BY CONTRACTOR WITH TRIAL HOLES.
5. GENERAL ARRANGEMENT OF STORMWATER DIVERSION INDICATIVE ONLY. DETAILS TO BE CONFIRMED BY THE EMPLOYER.

PLAN  
SCALE 1:100 (A1)

INFORMATION ISSUE

**JACOBS AECOM**

ISSUE	DATE	AMENDMENT
D	06.07.22	INFORMATION ISSUE - REVISED AS INDICATED
C	30.06.22	INFORMATION ISSUE - SW AND RETAINING REVISED AS INDICATED
B	29.06.22	INFORMATION ISSUE - SCOPE OF ADIT UPDATED
A	21.06.22	INFORMATION ISSUE - CONCEPT SITE LAYOUT

**Watercare**

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**TAWARIKI ST - CENTRAL INTERCEPTOR (DSCIN)**

**00 SITE GENERAL**

**REDESIGNED SITE LAYOUT - CONCEPT LAYOUT**

CAD FILE	DSCIN010-DEL-SKT-C-J-30000.DWG
REF No.	2011960.012
SKETCH No.	
ORIGINAL SCALE A1	1:100
ISSUE	D
DSCIN010-DEL-SKT-C-J-30000	

## **Appendix D: Noise and vibration - Assessment of change in effects**

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# Grey Lynn Tunnel - Changes to the Tawariki Street Secondary Shaft

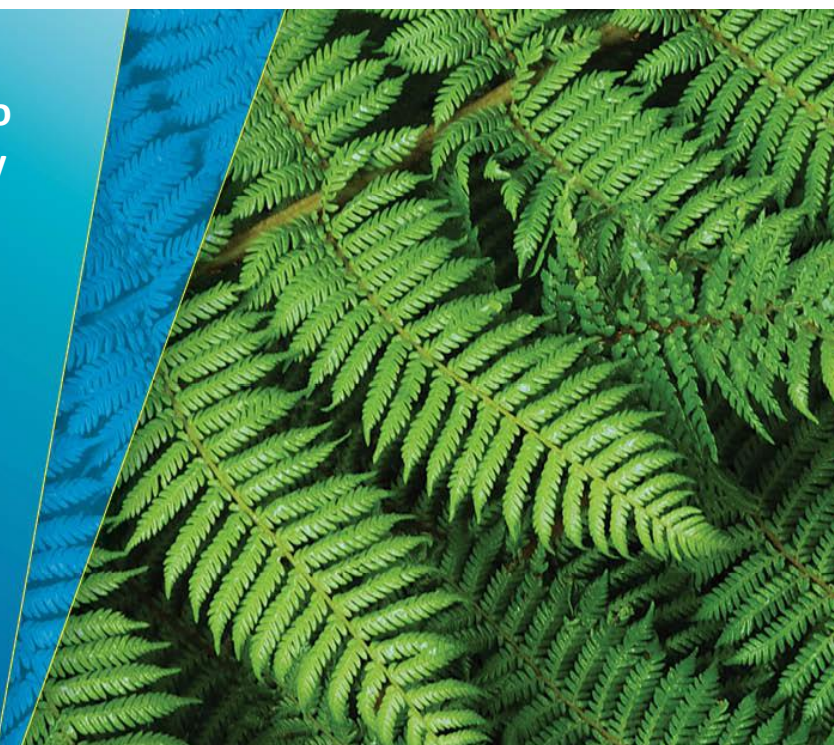
Noise and vibration - summary of change in effects

Prepared for  
Watercare Services Ltd

Prepared by  
Tonkin & Taylor Ltd

Date  
November 2022

Job Number  
30552.9090 v1



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## Document control

Title: Grey Lynn Tunnel - Changes to the Tawariki Street Secondary Shaft					
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by:
November 2022	1	Final for lodgement	LILE	DAHU / RJB	KLB

### Distribution:

Watercare Services Ltd

1 electronic copy

Tonkin & Taylor Ltd (FILE)

1 electronic copy

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# 1 Introduction

The Grey Lynn Tunnel has two shafts originally proposed to be located within 44-48 Tawariki Street, Grey Lynn, known as the primary and secondary shafts. The construction and operation of these shafts was assessed as part of the Grey Lynn Tunnel application, with a supporting noise assessment<sup>1</sup> prepared by Marshall Day Acoustics (MDA) and a vibration assessment<sup>2</sup> prepared by McMillen Jacobs Associates.

Watercare now proposes to move the secondary shaft to 42 Tawariki Street, adjacent to 44 Tawariki Street but outside the current designation. Tonkin & Taylor Limited (T+T) has been engaged by Watercare to assess the change in noise and vibration effects associated with moving the secondary shaft approximately 20m west from 44 to 42 Tawariki Street to support the alteration to the designation that will be required for the relocation of the secondary shaft.

## 1.1 Background

Resource consents for the Grey Lynn Tunnel, including regional consents for the Tawariki Street shafts, were obtained from Auckland Council in 2019. Designation 9468 for the shafts at Tawariki Street was confirmed at the same time. The designation allows for the construction, operation and maintenance of wastewater infrastructure. Two shafts, known as the primary and secondary shaft, will be constructed. The primary shaft is the termination site of the Grey Lynn Tunnel and will allow for the retrieval of the tunnel boring machine (TBM) and connections to the Tawariki Local Sewer and Orakei Main Sewer. The secondary shaft allows for the connection of future sewers from the Combined Sewers Overflow (CSO) network.

It was originally proposed to construct the secondary shaft at least 2.5 years after the primary shaft. Watercare has now identified the potential to undertake the works concurrently for the two shaft sites, allowing for efficiencies in construction and for future local connections to be made sooner. Additionally, since consenting and designating the Grey Lynn Tunnel, Watercare has purchased the property at 42 Tawariki Street. It is now proposed to shift the secondary shaft to within this property to allow for more space at the construction site.

## 1.2 Proposed changes

The proposed alteration to the designation to include 42 Tawariki Street is shown in Figure 1. The area of the proposed extension of the designation was occupied by a residential property which has been removed, and the road reserve immediately adjacent.

The existing designation extends into the road reserve to the south and the neighbouring school to the east. This will not change.

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<sup>1</sup> Marshall Day Acoustics. Grey Lynn Tunnel Assessment of noise effects. Rp 002 20180726 dated 13 February 2019

<sup>2</sup> McMillen Jacobs Associates. Grey Lynn Tunnel, Watercare Services Ltd. Vibration Assessment of Grey Lynn Tunnel and Tawariki Street Shafts. Rev 3, 5 April 2019





*Figure 1: Site location plan, showing designation 9468 (maroon) and proposed extension (purple). Source: Auckland Council AUP Maps*

42 Tawariki Street was considered in the original assessment as a noise sensitive receiver. When construction is undertaken on this site the adjacent property, 38 and 40 Tawariki Street (residential attached units), will now be the closest sensitive receivers. Residential properties to the south and west will also need to be considered, as well as the school building to the north.

In the original NoR the secondary shaft was proposed to be constructed at least 2.5 years after the primary shaft. Since consenting and designating of the Grey Lynn Tunnel, Watercare has identified the potential to undertake the works concurrently for the two shafts. This would allow for efficiencies in construction and for future local connections to be made sooner. As the original application was based on the separate construction periods, Watercare now seeks to alter the designation to allow for the option of constructing the two shafts in the one construction period (noting construction may still occur across two separate construction periods as already provided for in the existing designation).

For the purposes of this assessment, the change to be assessed is the construction of the secondary shaft in a new location (within 42 Tawariki Street) and potentially in the one construction period. No other changes are proposed; the methodology for constructing the shaft will be the same as was described in the original application (refer Section 1.3 below), and no changes are proposed to the primary shaft, Grey Lynn Tunnel alignment or other on-site works that would be outside the scope of the original application.



Operational noise is expected to be limited to emissions from the plant room and shaft ventilation system, as per the MDA assessment<sup>3</sup>. The location of these noise sources is not proposed to change, hence there will be no change in effects.

Similarly, no changes are proposed to construction traffic and associated traffic noise from that assessed in the original application and provided for under Designation 9468.

### **1.3 Construction methodology**

The Grey Lynn Tunnel Assessment of Environmental Effects (AEE) and MDA assessment detail the construction methodology of the primary and secondary shafts, which will remain the same. In summary:

- The secondary shaft construction is a 25 m deep drop shaft with an external diameter of approximately 10.2 m, and a sewer pipe constructed by pipe-jacking to connect the secondary shaft to the main shaft.
- The shaft will be excavated by conventional mechanical equipment (e.g. CAT 330 medium hydraulics excavator or similar) through overburden soils and East Coast Bay Formation ("ECBF") bedrock. Blasting will not be used. Bored piling or similar will be used.
- Permanent lining and interior shaft structures will be constructed of either cast-in-situ concrete, precast concrete, and potentially of other corrosion resistant materials. Sheet piling may be required as part of the construction (during shaft/chamber excavation).
- Shaft site construction activities are anticipated to occur between 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. Occasionally work may be required outside of these hours.

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<sup>3</sup> For operational noise from the above ground plant room, MDA predicted noise levels at surrounding dwellings are at least 2 dB below the night-time noise limit and therefore compliant with AUP-OP limits. There is no change to these components of the works.

## 2 Summary of previous noise and vibration assessments

### 2.1 Construction noise assessment

MDA assessed the potential noise levels (with and without mitigation) generated from construction activities at the shaft site.

Setback distances are provided in the MDA assessment for all anticipated equipment. Screening from site hoarding is assumed to provide 10 dB of attenuation for all sources except sheet piling, where the noise source is elevated, and screening is generally not practicable. The highest noise levels are predicted for sheet piling exceeding the daytime construction noise limit of 70 dB LAeq for 11 nearby properties by up to 14 dB (84 dB LAeq predicted at 41 Tawariki Street).

Mitigation and noise management measures are presented in the MDA assessment, including:

- Consultation and communication, particularly around higher noise activities.
- Timing of activities, such as avoiding noise from trucks queuing / idling prior to 7:30 am.
- Noise barriers.
- Avoidance of unnecessary noise including fitting of mufflers to trucks, maintenance of equipment and avoiding tonal reversing alarms.
- Implementation of a construction noise and vibration management plan (CNVMP).

MDA concludes that with management and mitigation measures in place, effects from construction noise can be acceptably managed.

We note that these recommendations have been incorporated into Designation 9468 conditions – namely conditions 3.1 to 3.9.

### 2.2 Vibration assessment

The assessment of vibration effects undertaken by McMillen Jacobs Associates identifies a range of potential vibration sources including pile driving, crane operation and installation, and the excavation of shaft spoil, all within proximity to existing residential properties. The assessment identifies that the greatest potential for vibration effects is from the use of the sheet pile vibratory hammer. Geological ground conditions are expected to attenuate vibration.

42 Tawariki Street (the closest receiver and the property now owned by Watercare) is 15 m from the secondary shaft site, while receivers on the other side of the road (35, 37, 39 and 41 Tawariki Street) are 20 - 40 m from the shaft. Worst case vibration levels are predicted in the McMillen Jacobs assessment at 15 m for different construction equipment. The assessment found that while the use of the sheet pile vibratory hammer will comply with the short-term standards of DIN 4150-3 at 42 Tawariki St, it would not comply with the long-term standards of DIN 4150-3 by up to 0.95mm/sec.

The Vibration Assessment concluded that vibration effects could be appropriately addressed through communication with affected residents, the use of a CNVMP, and avoiding night-time works between 6 pm and 7 am. Construction vibration is also required to comply with the relevant guideline limits except where specific requirements are met in relation to a building assessment and the written agreement of the building owner.

The vibration management and mitigation measures recommended in the McMillen Jacobs assessment have been incorporated into the designation conditions (in particular conditions 3.6 to 3.8).

### 3 Designation Conditions

The requirements relating to construction noise and vibration are set out in designation conditions 3.1 to 3.9.

The construction noise limits for the designation are set out in condition 3.2 and are reproduced below. The construction noise limits are slightly more stringent than the permitted activity levels for construction noise in the AUP-OP (i.e. no “shoulder period” in the early morning or evening). Watercare proposes that these limits would also apply to 42 Tawariki Street through the alteration to designation.

**Table 3.1: Construction noise levels for Designation 9468 (reproduced from Condition 3.2 of Designation 9468)**

Time and day	Noise limits	
	LAeq dB	LAmx dB
Monday to Saturday 7:30am – 6pm	70	85
At all other time and Public Holidays	45	75

Condition 3.5 provides for the preparation of an Activity Specific Construction Noise Management Plan (ASCNMP) where a particular activity is unable to meet the limits set out in Condition 3.2.

Construction vibration is required to comply with the guideline vibration limits set out in DIN 4150-3 (condition 3.7). An exception to this is allowed by condition 3.8 where the Requiring Authority can demonstrate to the satisfaction of the Council:

- That the receiving building(s) are capable of withstanding higher levels of vibration and what the new vibration limit is. The investigation required to demonstrate this must include an assessment of the building(s) by a suitably experienced and qualified structural engineer and a full pre-condition survey; and
- That the Requiring Authority has obtained the written agreement of the building owner(s), that a higher limit may be applied (noting that a change is sought to this condition to provide for consultation with the building owner).

The frequency dependent short-term vibration limits from DIN 4150-3 are shown in Figure 3.1 below, which are applicable to sheet piling. Other conditions in section 3 relate to the requirements for construction noise and vibration management plans.

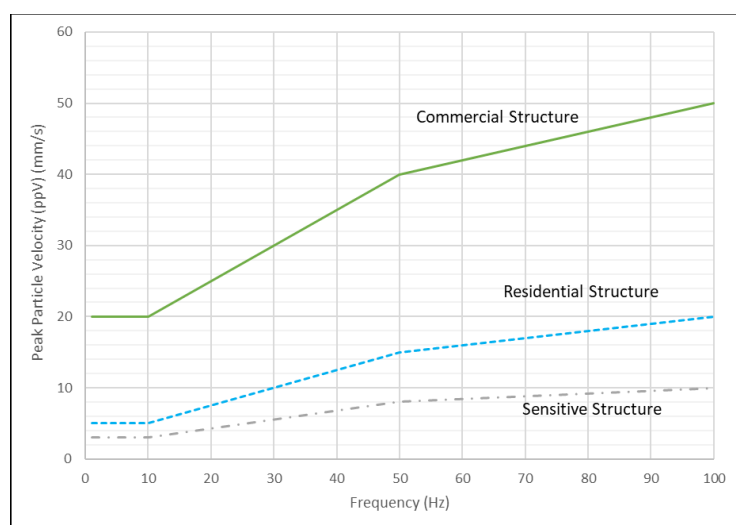


Figure 3.1: DIN 4150-3 short-term standard baseline curves

The original noise assessment considered receivers that are within 50 m of the designation. This extended to 36 Tawariki Street on the northern side of Tawariki Street, and 29 Tawariki Street on the southern side. The school building to the north was also included.

As the proposed works extend further to the west, additional noise and vibration sensitive receivers have been considered within 50 m of the works area. These receivers are identified in Table 4.1 below along with the distances to the nearest boundary of the works and to the nearest location of sheet piling. Where the distance is unchanged from the original assessment this is greyed out.

**Table 4.1: Distance of receivers from works**

Address / location	Zoning / usage	Approx. distance to works, m		Approx. distance to nearest sheet piling, m	
		MDA assessment	Proposed	MDA assessment*	Proposed
34 Tawariki Street	Residential / dwelling	NA	42	NA	47
36 Tawariki Street	Residential / dwelling	NA	26	NA	31
38 Tawariki Street	Residential / dwelling	30	12	40	17
40 Tawariki Street	Residential / dwelling	21	5	28	10
Marist Catholic School	Special purpose / School	40	40	50	50
25 Tawariki Street	Residential / dwelling	NA	49	NA	58
27 Tawariki Street	Residential / dwelling	NA	38	NA	46
29 Tawariki Street	Residential / dwelling	40	27	58	35
33 Tawariki Street	Residential / dwelling	27	23	47	28
35 Tawariki Street	Residential / dwelling	25	25	38	28
37 Tawariki Street	Residential / dwelling	25	25	35	35
39 Tawariki Street	Residential / dwelling	22	22	24	24
41 Tawariki Street	Residential / dwelling	20	20	22	22

\*Estimated from diagrams of modelling of sheet piling in Appendix G of MDA assessment

### 4.3 Predicted noise levels

Setback distances from equipment to meet 70 dB LAeq remain the same as in the MDA assessment. It is possible there may be some exceedances of the construction noise limits in Designation 9468 when works other than sheet piling take place close to the boundary with 38 and 40 Tawariki Street<sup>4</sup>. As provided for through the conditions of the designation, this can best be managed via the CNVMP.

As sheet piling (if required) is the most significant noise generating activity, the below assessment focuses on the potential noise levels associated with sheet piling in vicinity of the secondary shaft site. This provides a 'worst-case' assessment of the potential construction noise from constructing the secondary shaft within 42 Tawariki St. Predictions of noise levels from sheet piling are shown in Table 4.2 below. These predictions are based on the distances to works shown in Table 4.1 plus assumed screening from buildings for 34 and 36 Tawariki Street. It has also been assumed that the site hoarding will screen 40 Tawariki Street effectively due to its height and proximity to the house<sup>5</sup>. This is consistent with the MDA modelling.

<sup>4</sup> The MDA assessment identified potential exceedances for grout pumping, concrete truck and pump, and plate compactor where this occurs at a distance of 10 m from the façade of neighbouring dwellings.

<sup>5</sup> Site hoarding will be less effective as screening for 38 Tawariki St as the sheet piling noise source is elevated and the dwelling at 38 Tawariki St is set back from the hoarding.

**Table 4.2: Predicted façade noise levels from sheet piling**

Address / location	Predicted sound pressure level dB LAeq		Change in noise level dB
	MDA assessment	Proposed alteration to designation	
34 Tawariki Street*	NA	66	NA
36 Tawariki Street	73	79	+8
38 Tawariki Street	76	86	+10
40 Tawariki Street*	77	81	+4
Marist Catholic School	72	78	+6
25 Tawariki Street	NA	74	NA
27 Tawariki Street	NA	76	NA
29 Tawariki Street	72	79	+7
33 Tawariki Street	73	82	+9
35 Tawariki Street	76	82	+6
37 Tawariki Street	79	79	No change
39 Tawariki Street	82	82	No change
41 Tawariki Street	84	84	No change

\*Screening of -10dB assumed due to buildings / noise barrier

The largest change in noise levels is predicted at 29, 33, 36 and 38 Tawariki Street<sup>6</sup> with increases of 7-10 dB, due to closer proximity to sheet piling works associated with the secondary shaft (noting exceedances of the noise limits were already expected for these properties in the original MDA assessment as shown in Table 4.2 above). The predicted levels are comparable to the MDA results for properties at similar distances. The maximum noise level predicted from sheet piling is 86 dB LAeq at 38 Tawariki Street.

An external noise level of 86 dB LAeq would usually equate to an internal noise level 20-25 dB lower, i.e. 61-66 dB LAeq depending on the glazing and façade construction. This is a relatively high internal noise level in a residential environment but not uncommon for this type of works close to residential receivers and is typically managed through a ASCNMP as is provided for in the existing designation conditions. Sheet piling (if required) will be carried out on an intermittent basis and for a relatively short duration.

As demonstrated by Table 4.2, these changes in noise level do not materially change the nature of the construction noise effects for the project. It was always anticipated that sheet piling (if it was required) would result in exceedances of the noise limits set in condition 3.2, and consequently, the designation conditions provide for an ASCNMP. Consultation with residents around timing and duration of sheet piling will be an important aspect of noise management, and will be a key consideration in the preparation of ASCNMP.

There is no change in effects associated with the option of constructing the shafts in the one construction period rather than across two separate construction periods. As set out above, the construction methodology of the primary and secondary shafts will remain the same. The noise and vibration effects as already assessed will occur, albeit in a different and potentially more truncated

<sup>6</sup> Noise at 40 Tawariki Street is predicted to be less than at 36 and 38 Tawariki street as it is closer to screening, whereas 38 and 36 Tawariki Street are difficult to screen due to elevated noise source, so have higher predicted noise levels.

overall timeframe (due to the need to mobilise, establish and disestablish on site only once rather than twice).

Overall, we consider that the change in noise effects associated with the relocated shaft site and altered construction programme are consistent with those originally assessed.

#### **4.4 Noise management and mitigation**

Designation 9468 contains a number of conditions to manage construction noise effects, and these conditions will appropriately manage the effects of the construction of the secondary shaft on 42 (as opposed to 44) Tawariki Street. No additional conditions are considered necessary.

The MDA assessment recommended noise management and mitigation measures, which would be incorporated into a CNVMP. The measures are considered applicable to the current proposal, and should be incorporated into the CNVMP prepared in accordance with condition 3.4, such as noise barriers to screen neighbouring properties.

## 5 Change in vibration effects

The closest receiver to the proposed location for the secondary shaft is 40 Tawariki Street, at a distance of approximately 10 m. Vibration levels at 10 m have been predicted using the same methodology as the McMillen Jacobs assessment<sup>7</sup> and are shown in Table 5.1 below, with levels predicted at 15 m for comparison.

**Table 5.1: Summary of predicted vibration levels**

Equipment	Predicted vibration level mm/s PPV	
	15m from vibration source	10m from vibration source
120t crane	0.7	1.3
450t crane	0.8	1.5
320/330 excavator	0.5	0.9
Secant pile drill rig	0.4	0.7
Sheet piles vibratory hammer (20-50Hz)	6.0	10.9

As a result of the change in location of the shaft, the closest property will now be 40 Tawariki Street. Vibration levels from most equipment is predicted to be well below the guideline limits in DIN 4150-3 that are required to be met under the designation conditions. Whilst it is not yet known whether sheet piling will be required for the construction of the secondary shaft, we have conservatively assessed the potential effects if it were to occur. If required, the predicted vibration level from sheet piling at 10 m exceeds the DIN 4150-3 short-term limit at frequencies below 34 Hz. Vibration from sheet piling is predicted to comply with the DIN 4150-3 short-term limits at distances greater than 13 m (assuming operating frequency greater than 20 Hz).

Conditions 3.6 to 3.8 of the designation set out requirements for managing vibration. The conditions require preparation of a CNVMP to be prepared, setting out how the DIN 4150-3 standards will be met. Almost all construction activities proposed for the site will comply with DIN 4150-3, the only exception being sheet piling if it occurs within 13 m of 40 Tawariki St. If sheet piling is proposed within 13 m of 40 Tawariki St, the conditions will require Watercare to consult with the building owner, and subject to their agreement, undertake a building condition survey to determine the sensitivity of the building to construction vibration.

Condition 3.6(f) requires the CNVMP to detail methods for monitoring of construction vibration. We recommend that the CNVMP includes vibration monitoring when sheet piling occurs within 13 m of 40 Tawariki Street.

We note that Condition 3.6(b) allows for a condition survey of 42 Tawariki Street. Given the change in location for the secondary shaft, we suggest that this condition is updated to refer to 40 Tawariki Street instead. 33 Tawariki Street should also be provided with a building condition report if identified as an “at risk” building.

Overall, we consider that the change in vibration effects associated with the relocated shaft site are consistent with those originally assessed, with the key difference being the closest affected property will now be 40 Tawariki Street. Almost all construction activities proposed for the site will comply with DIN 4150-3, with the only exception being sheet piling if it occurs within 13 m of 40 Tawariki St.

<sup>7</sup> United States Federal Transit Administration (FTA). 2006. Transit Noise and Vibration Impact Assessment; FTA-VA-90-1003-06.



We consider that the conditions of the designation will appropriately manage the vibration effects of the project.

## 6 Summary

This report assesses the change in effects from noise and vibration due to the proposed concurrent construction of the primary and secondary shaft at the Tawariki Street shaft site, and the relocation of the secondary shaft to 42 Tawariki Street.

The construction methodology is not proposed to change. The same equipment and activities are expected to occur for the construction of the secondary shaft as detailed in the original AEE and MDA assessment. This report determines that much of the construction activity proposed for 42 Tawariki St will comply with the noise levels set by the designation.

It is important to note that this assessment represents a conservative approach in that it is based on noise from sheet piling. It is not yet known if sheet piling will be required for the construction of the secondary shaft within 42 Tawariki St. If sheet piling is required, noise levels are predicted to be higher for several receivers compared to the assessment in the original NOR due to sheet piling occurring closer to those properties. However these receivers were already expected to receive noise levels that exceeded the designation noise limits, and the changes in noise level do not materially change the nature of the construction noise effects for the project. It was always anticipated that sheet piling would result in exceedances of the noise limits set in condition 3.2, and consequently, the designation conditions provide for an ASCNMP (condition 3.5). Consultation with residents around timing and duration of sheet piling (if required) will be an important aspect of noise management, and will be a key consideration in the preparation of ASCNMP.

No additional measures beyond those already required by the existing conditions of the designation are considered necessary to appropriately manage the noise effects resulting from the change in shaft location and construction programme.

Vibration levels have been predicted from construction activities at 10 m, representative of 40 Tawariki Street (the closest receiver). Vibration levels from most equipment is predicted to be well below the guideline limits in DIN 4150-3 that are required to be met under the designation conditions. Whilst it is not yet known whether sheet piling will be required for the construction of the secondary shaft, we have conservatively assessed the potential effects if it were to occur. Vibration from sheet piling is predicted to exceed DIN 4150-3 limits when this is undertaken closer than 13 m (assuming operating frequency greater than 20 Hz).

Vibration monitoring is recommended when sheet piling is closer than 13 m from 40 Tawariki Street. Where vibrations are predicted to exceed DIN 4150-3, Watercare will be required to demonstrate that they have consulted with neighbouring properties and that the buildings and structures will withstand higher levels of vibration. The vibration mitigation and management measures in the designation conditions are considered appropriate to manage vibration effects from construction works.

## 7 Applicability

This report has been prepared for the exclusive use of our client Watercare Services Ltd, 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 alteration to designation and that the consenting authority will use this report for the purpose of assessing that application

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