Wellington Water

Assessment of Environmental Effects

Omāroro Reservoir Notice of Requirement (Alteration)

April 2020

Our water, our future.

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1 Introduction

This Notice of Requirement (NoR) is submitted by Wellington Water Limited on behalf of Wellington City Council (WCC) for an alteration to the Omāroro Reservoir Designation (the Designation), which provides for the construction, operation and maintenance of the Omāroro Reservoir.

WCC is a Requiring Authority pursuant to section 166 of the Resource Management Act.

The NoR has been prepared in accordance with section 181(3) of the RMA and proposes a minor adjustment to the Designation boundary to allow for works to take place where they cannot be contained within the existing Designation footprint. These works comprise:

- Works to strengthen the existing access from Dorking Road to allow emergency and infrequent vehicle access to the reservoir once constructed
- Construction of two buried flow meter chambers and one buried control valve chamber and realignment of the existing water mains
- Relocation of the existing stormwater inlet

This NoR also provides for changes to Designation Conditions 1 and 33 b) and proposes the addition of a new condition, as follows:

- Variation of Designation Condition 1 (DC.1) to update the wording of this Condition to refer to the documents within this alteration.
- Variation of Designation Condition 33 b) (DC.33 b)) to allow for construction works to encroach within 5m of the Waitangi Stream tributary. These construction works include the construction of chambers and stormwater inlet (referred to above) and the construction access route.
- Addition of a new condition to secure compliance with the recommended methodology set out in the Tree Protection Methodology prepared by Arb Innovations Ltd (dated February 2020), to mitigate the potential effects of the works on the totara tree on Dorking Road.

The purpose of this report is to describe of the proposed alterations required to allow the construction, operation and maintenance of the reservoir and provide an assessment of the effects on the environment.

1.1 Requiring Authority/Applicant

1.1.1 Wellington City Council

WCC is a Requiring Authority pursuant to section 166 of the RMA.

WCC provides core services to meet the needs of Wellington residents including:

- Water, wastewater, stormwater and transport network infrastructure
- Waste collection and disposal
- Libraries, museums, reserves and other recreational facilities and community amenities.

A current area of focus for WCC is on making infrastructure more resilient, both in an operational sense and improving the ability to cope with environmental shocks such as earthquakes and the impact of climate change.

WCC has financial responsibility for all water related infrastructure assets and asset development programmes within Wellington City, including the Omāroro Reservoir.

1.1.2 Wellington Water Limited

Established in 2014, WWL's role is to manage drinking water, wastewater, and stormwater services on behalf of six councils, including WCC. Ownership of the assets remains with the councils.

Although WCC is the Requiring Authority and consent holder and has overall financial responsibility for this Project, WCC has delegated to WWL, as a council-controlled organisation, the development of the Project including consultation and preparation of this Assessment of Environmental Effects.

WWL will also be responsible for the construction, operation, and maintenance of the Omāroro Reservoir on behalf of WCC.

2 Background and Site Description

2.1 Site Location

The Omāroro Reservoir Designation is located within the Prince of Wales Park. The legal description of the land within the Designation is Part Lot 2 DP 10337.

Prince of Wales Park is located in the Wellington Town Belt in the Brooklyn Hills, Wellington. The park is bordered by the suburbs of Mount Cook, Brooklyn, Vogeltown, and Newtown, with the Renouf Tennis Centre to the north and Macalister Park further to the south. The Wellington CBD lies to the north and northeast.

The Omāroro Reservoir, when constructed, will sit in a spur that generally slopes down from Dorking Road to a rounded knoll at the reservoir site and down again to the Prince of Wales Park playing fields. There are two playing fields that have been levelled along the toe of the spur: the upper field, which is accessed off Rolleston and Hargreaves Streets, and the lower field, which is accessed from Salisbury Terrace. There are no built facilities on the upper field, but there is an existing pavilion building on the lower field that include changing rooms. In addition, the Scottish Harriers clubrooms and a public car parking area are situated to the south of the lower field. The location of the reservoir location and playing fields is shown on the figure below:

Figure 1: Site location plan

2.2 Existing Environment

The existing environment comprises the Wellington Town Belt, which protects a large, predominantly natural, open-space environment with a huge range of benefits to Wellington City. It is highly valued by the community for its contribution to landscape and amenity values.

The Brooklyn Hills area of the Town Belt forms a complex series of gullies and spurs, modified in places to provide sports fields and other recreational facilities. The Prince of Wales Park includes an open spur with panoramic views across Wellington Harbour and Mt Victoria. The Prince of Wales Park and surroundings do not form part of any identified outstanding natural feature or landscape.

The Wellington Town Belt is managed under the Wellington Town Belt Act 2016 and Wellington Town Belt Management Plan 2018.

The vegetation within and surrounding the Designation includes a combination of gorse and bracken, planted and regenerating native shrubs, and areas of mature pohutukawa, eucalypts and pine.

Two streams are partially located within the Designation, the Papawai Stream and a tributary of the Waitangi Stream. Both have perennial flows and aquatic fauna. The tributary of the Waitangi Stream is of key relevance to this NoR application. This tributary flows down a gully to the west of the Designation and is perennial in its lower reaches near the upper playing field but reduces to intermittent pools upstream and eventually becomes ephemeral close to the southern end of the Designation.

Two Prince of Wales playing field areas are also located within the Designation. These were previously used for organised/formal and casual/informal recreation activities, primarily during the summer months (due to a lack of lighting). They are allocated for stockpiling and to facilitate construction works under the Designation. Following the completion of the Omāroro Reservoir construction works, both fields will be reinstated.

2.3 Omāroro Reservoir Designation

The existing Omāroro Reservoir Designation was decided on 8 May 2018 and authorised the construction, operation and maintenance of a 35,000m^3 water supply reservoir within the Prince of Wales Park, Mount Cook, Wellington. The reservoir is required to service the Wellington Low Level Water Supply Zone, which provides potable water to approximately 70,000 residents and a range of significant commercial, industrial and critical community facilities. The Omāroro Reservoir will significantly expand water supply within this Zone to provide for:

- Network management and maintenance
- Operational resilience
- Disaster resilience
- Growth and well-being

The Preliminary Design Report submitted with the original Notice of Requirement for the Designation includes details of the reservoir structure and design, which will be refined through the detailed design process. The preliminary design comprises a reservoir structure with a capacity of 35,000m^3, a footprint of 3,800m^2 (reservoir) / 4,000m^2 (reservoir and pipe tunnel), an internal diameter of 67m and a total height of 15.5m. The design also includes high and low pressure inlets, outlets, overflow, scour, and a ducted air vent.

The reservoir has been designed to be completely buried, with the exception of two small access hatches on the roof of the reservoir and a 2.5m by 2.5m doorway and 10m wide service access area to the reservoir's buried service and pipe tunnel. The pipe tunnel will allow access to pipework and will include electrical switchboards and instrumentation and control equipment.

Following construction of the reservoir, the site will be restored with landscaping, planting and reinstatement of tracks, pathways and playing fields.

Management of environmental effects during the construction of the reservoir is secured by the Designation Conditions, which require the preparation of a number of management plans to be certified by WCC and/or Greater Wellington Regional Council (GWRC). These plans include:

- Construction Management Plan (CMP)
- Earthworks Management Plan (EMP)
- Construction Traffic Management Plan (CTMP)
- Site Specific Traffic Management Plan (SSTMP)
- Construction Noise and Vibration Management Plan (CNVMP)
- Landscape and Ecology Management Plan (LEMP)
- Playing Fields Management Plan (PFMP)

3 Proposed Designation Alterations

The approved preliminary design arrangement for the Reservoir was set out within the Preliminary Design Report submitted with the original NoR.

The alterations proposed in this NoR do not materially alter the preliminary design of the main reservoir structure, and are limited to the works set out below. A minor alteration to the Designation boundary is proposed to incorporate these works:

- Dorking Road Access (Section 3.1)
    - Works to strengthen the existing access from Dorking Road to allow emergency and infrequent vehicle access to the reservoir once constructed
- Rolleston Street Pipework and Valve Chambers (Section 3.2)
    - Construction of two buried flow meter chambers and one buried control valve chamber and realignment of the existing water mains
- Stormwater Inlet (Section 3.3)
    - Relocation of the existing stormwater inlet

This application also proposes changes to Designation Conditions 1 and 33 b) and the addition of a new condition, as follows:

- Variation of Designation Condition 1 (DC.1) to update the wording of this Condition to refer to the documents within this alteration (Section 3.4)
- Variation of Designation Condition 33 b) (DC.33 b)) to allow for construction works to encroach within 5m of the Waitangi Stream tributary. These construction works include the construction of chambers and stormwater inlet (referred to above) and the construction access route (Section 3.5)
- Addition of a new condition to secure compliance with the recommended arboricultural methodology to mitigate the potential effects on the totara tree on Dorking Road (Section 3.6)

3.1 Dorking Road Access

WWL, who will operate the reservoir on behalf of WCC, requires vehicle access to the roof of the reservoir, once constructed, for emergency activities and infrequent maintenance activities. This vehicle access would be for a mobile crane to lower large or heavy equipment into the reservoir and trucks for delivering this equipment.

It is anticipated that access will only be rarely required in the following instances:

- Post-earthquake inspection of the reservoir
- Emergency chemical dosing to disinfect stored water on an as needed basis
- High-level cleaning of the reservoir. This is envisaged to occur very occasionally (anticipated to be at most once every 10 years) as and when required

3.1.1 Proposed Works

In order to allow for vehicle access to the reservoir roof, it is necessary to strengthen and widen the existing access at the end of Dorking Road, where this adjoins the Prince of Wales Park.

The proposed works consist of a timber pole retaining wall with compacted hardfill material, topsoil and grass to form a widening of the existing access suitable for vehicle access.

Construction access for this work is to be from Dorking Road. The expected plant for this work would include an excavator, a small drilling rig for installation of the timber poles, trucks for deliveries of materials and removal of rubbish and site clearance materials, lifting equipment such as a hiab or a small crane and concrete trucks for delivery of concrete.

The work would be expected to start with clearing of the existing planting and removal of any existing topsoil over the footprint of the widening, including a working space on the outer side of the retaining wall. This would be cleared and stripped using an excavator and removed from site by truck. Holes would be bored to the founding depth for the timber pole retaining wall using a small drilling rig. A small amount of concrete will then be placed at the base of the excavated holes as a founding for the timber poles. These poles would then be placed in the holes, braced in position and concrete would then be placed around the poles to secure them in the drilled holes.

The cleared ground surface behind the new wall will be benched by excavator to provide level surfaces for placing the compacted backfill material onto. After the concrete has gained strength, rough sawn timbers will be placed against the poles to retain the backfill. Backfill will be placed in layers including a subsoil drain in filter material near the base of the fill. The layers of backfill will be compacted as required and finished with a layer of topsoil. Reinstatement will include sowing with grass and planting.

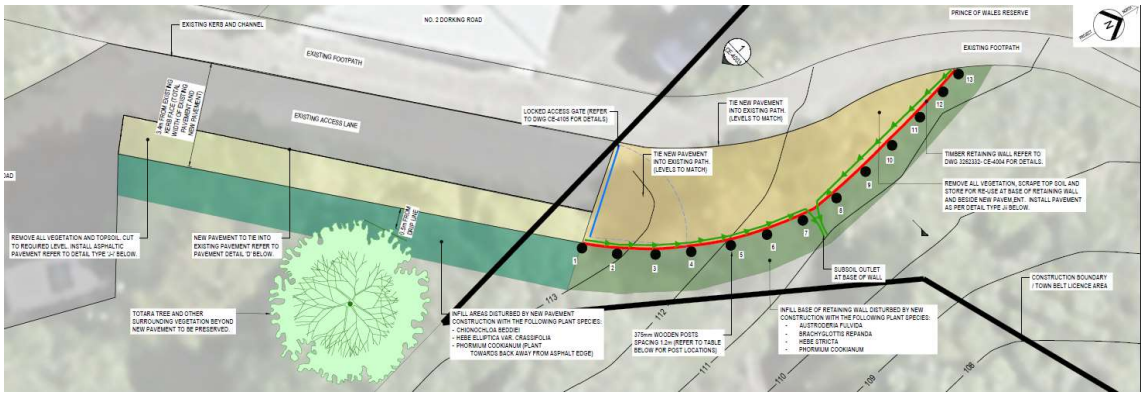

Figure 2: Proposed works on Dorking Road

3.2 Rolleston Street Pipework and Valve Chambers

As part of the reservoir construction and to connect the reservoir to the water supply network it is proposed to realign existing water mains on the reservoir's north side and install two buried flow meter chambers and one buried control valve chamber. This infrastructure will improve the functionality of the reservoir and pipe network and allow connection to the wider network. This work was always envisaged as part of the reservoir construction; however, the location of the proposed chambers has now been amended following an assessment of alterative locations (set out in further detail below).

3.2.1 Proposed Works

The construction works will involve typical pipeline construction, including temporary decommissioning of the existing pipelines, draining of pipes, trench excavation and removal of old pipes, new pipe installation, construction of concrete valve chambers, trench backfilling, and recommissioning of the pipelines.

Construction plant will include an excavator, trucks for transporting materials onto site and removal of rubbish and excavated material, concrete trucks, and compaction equipment. Access will be from the Omāroro Reservoir construction site.

Some preparatory work will be required before these pipework modifications take place, including installing a cross connection on the lower playing field and completing other pipe works off site in public roads. The initial will involve clearance of the pipe route and chamber sites to provide access for earthworks and construction activity to physically locate the pipes and determine the water network connection point.

Each pipe will be modified separately, leaving one of the pipes in operation at all times. The first pipe to be modified will be the Low Level Zone direct supply pipe (the northern pipe). This will be temporarily decommissioned by shutting appropriate valves in the network and draining to stormwater via a hydrant. Then the existing pipe will be removed as part of excavating a trench for the new pipe construction. An excavator will excavate the trench and material will be removed by truck. The new pipe including valves, bends and other fittings will be placed on bedding material that is placed in the base of the trench, and concrete thrust blocks constructed as required. The trench excavation will be locally widened at the new valve chamber locations and thrust block locations. Concrete trucks will be required to supply concrete to the site for the valve chambers and thrust blocks construction. The valve chambers are expected to be constructed in two halves, one half with each pipe.

After the first pipe is installed, it will be pressure tested and disinfected before being put into operation. Once this is back in operation, the second pipe will be modified in a similar manner and the second half of the valve chambers constructed. Trench backfilling will be completed using the specified material, and reinstated using topsoil, grass and planting as specified. The proposed ground level will be as detailed on the Longitudinal Section 3262332-NA-2011.

3.3 Relocation of the Stormwater Inlet

The existing stormwater pipe which runs to the west of the upper playing field is being replaced (as part of the works consented under the original NoR). The NoR preliminary design anticipated that the new stormwater pipe would connect to a stormwater inlet in a similar position to the existing inlet on the Waitangi Stream tributary (although the NoR Conditions acknowledge that detailed design of the inlet was to be developed). In order to provide separation from the proposed works to the pipework and valve chambers (detailed in Section 3.2) it is necessary to extend the proposed stormwater pipe and relocate the stormwater inlet approximately 3m upstream of its existing position.

3.3.1 Proposed Works

The replacement stormwater pipe will be extended by approximately 3m further upstream. Once the new stormwater pipe has been installed, the stormwater inlet will be put in place.

An area will be cut to a minimum of 100mm depth into the existing stream bed, larger than the footprint of the new wingwall. This will then be lined with Geotextile Bidim A29 or similar and then

filled with compacted hardfill to a suitable level for the installation of the wingwall. A Hynds WW0600L wingwall will be lowered into place using a crane. The preformed hole in the headwall will be knocked out and the wingwall fitted into the end of the new pipe and the gap between the headwall and pipe will be filled up using an epoxy mortar.

Rock Rip Rap of d50 150mm size will be placed immediately upstream and hard against the wingwall to prevent any undermining erosion. A lockable hinged grill will then be installed onto the wingwall. A debris arrestor will be installed at the entrance to the inlet to catch any debris and avoid blockage within the stormwater pipe. The debris arrestor grill will have 10cm spacing between the bars, which GWRC's Senior Environmental Scientist has advised is appropriate to allow for fish passage. Backfill will be placed around the back and sides of the wing wall to cover the exposed pipe and back of the wingwall.

Topsoil will then be paced over the backfill and the area will be planted as specified in the Landscape and Ecology Management Plan and with the additional planting (described in Section 3.3.3).

While the works to the stormwater pipe and inlet are undertaken, the Waitangi Stream tributary will be dammed and pumped to the nearest manhole, to the east of the stream. It is anticipated that the works to install the new pipework will take between 3-4 days. The alterations proposed within this application are limited to a small extension to the pipe (approx. 3m) and the installation of a new stormwater inlet.

3.3.2 Maintenance

Routine inspections and maintenance of the stormwater inlet will take place on an ongoing basis. Maintenance of the inlet will include clearing any debris caught within the debris arrestor by hand. It is not anticipated that there will be large amounts of debris due to the small catchment area.

3.3.3 Proposed Planting

The consented planting along the Waitangi Stream Tributary comprises 'enrichment planting of current seral vegetation with potential canopy species'. This enrichment planting consists of tall growing native canopy trees widely spaced along the stream, that over time grow above the smaller growing trees and give a wider range of species in the area. The four species used within this enrichment planting are tawa, kahikatea, pukatea and nikau.

As part of this application, additional planting is proposed, which comprises dense planting of fast-growing riparian tree species that would rapidly provide a closed canopy over the stream. The purpose of this canopy is to shade out existing weeds and enhance the stream habitat. It is proposed that this dense planting would extend from the new stormwater inlet upstream for approximately 30m, which is to the point where there is a complete native canopy.

The proposed planting comprises:

- Carex - a single row of plants planted immediately beside the stream with 0.5m between each plant. This equates to a total of 120 plants. These grasses will overhang the waterway.
- Seral trees with bulking plants – a double row of plants with 1m between each plant. This equates to 120 plants. These small trees and large shrubs will be planted behind the Carex, to form a vegetation mass that will overtop and shade out the weeds; creating a similar environment that is found further up the stream. Close planting densities will ensure a dense canopy cover in a relatively short period. Where there is vegetation already growing in the proposed planting area, plants will be reallocated to adjoining open areas on the west bank of Waitangi Stream.

- Enrichment trees – a single row of tall growing canopy species spaced with approximately 5m between each tree will be planted amongst the Seral trees. This equates to a total of 12 trees. These slow, tall growing trees will ultimately grow through the smaller trees and shrubs to form a large canopy at upper levels and give a wider range of species for the area in the long term.

Full details of the planting and management of the trees are set out in the attached Ecological Memorandum (Appendix D).

3.4 Proposed Change to Condition DC.1

It is proposed to amend Designation Condition 1 (DC.1) as follows (insertions are underlined):

a) Except as modified by the conditions below, and subject to final design and Outline Plan(s), the Project shall be undertaken in general accordance with the information provided by the Requiring Authority in the Notice of Requirement and supporting documents being:

   i. AEE Report, dated 15 September 2017

   ii. Notice of Requirement Update, dated 29 January 2018

   iii. <u>AEE Report, dated 24 April 2020</u>

b) Where there is conflict between the documents listed above and these designation conditions, these conditions shall prevail.

3.5 Proposed Change to Condition DC.33 b)

Designation Condition 33 (DC.33) specifies the information required to be included within the Landscape and Ecology Management Plan. DC.33 part b) includes reference to a 5m buffer to the Waitangi Stream tributary, as follows:

> *Confirmation of an appropriate buffer between the earthworks and waterways including confirmation of waterway location by longitudinal and cross-section survey. In the case of the Papawai Stream the buffer shall be no less than 10m on the stream's west bank (hillside). In the case of the Waitangi Stream Tributary, to the west of the project site, no buffer shall be less than 5m.*

As detailed on drawings 3262332-CE-1101: General Arrangement Plan and 3262332-CE-1103: Waitangi Stream works within buffer zone, the proposed location of the valve and flow chambers, relocated stormwater inlet and the construction access (and associated earthworks) encroach within 5m of the Waitangi Stream tributary. The requirement for these works has been set out in Section 3.1-3.3.

In order to allow for the amended buffer to be less than 5m wide, it is proposed to amend Condition DC.33 b) to state:

> *Confirmation of an appropriate buffer between the earthworks and waterways including confirmation of waterway location by longitudinal and cross-section survey. In the case of the Papawai Stream the buffer shall be no less than 10m on the stream's west bank (hillside). In the case of the Waitangi Stream Tributary, to the west of the project site, no buffer shall be less than 5m, <u>unless otherwise agreed by Wellington City Council CMO.</u>*

3.6 Proposed Arboricultural Condition

An Arboricultural Report has been prepared by Arb Innovations Ltd and is included at Appendix E. The report addresses the Podocarpus Totara tree which is located at the end of Dorking Road and provides a recommended works methodology to mitigate the potential effects on the tree (See Section 4.2.1 for details).

In order to secure the recommended methodology, the following condition is proposed. This is adapted from the WCC standard tree protection condition, and reflects the fact that the Arboricultural Report has already been prepared:

> *Prior to any works commencing on the site a Council-approved consulting arborist (Project Arborist) must be engaged by the applicant.*
>
> *Construction shall be undertaken in accordance with the Tree Protection Methodology prepared by Arb Innovations Ltd (dated February 2020) including the implementation of a Tree Protection Zone (TPZ) around the Podocarpus Totara tree located on Dorking Road.*
>
> *On completion of work the Project Arborist shall, at their discretion, sign off the work and provide a brief account of the project to the Council Arborist and Compliance Officer that documents;*
>
> - *Photographs showing stages of any work within the RPA*
> - *Effects of work on the trees*
> - *Remedial works required*
>
> *Tree Protection Zone (TPZ)*
>
> - *The TPZ shall be fenced as indicated in the Tree Protection Methodology prepared by Arb Innovations Ltd.*
> - *Any work within the TPZ is at the discretion of Project Arborist and shall be done in accordance with the Tree Protection Methodology prepared by Arb Innovations Ltd.*
> - *All vehicles, structures, building materials and debris associated with construction must not be stored within the Tree Protection Zone, unless prior approval from the Project Arborist or Council's Compliance Monitoring Officer (in liaison with the Council's Arboricultural Officer) has been obtained.*
>
> *Excavations within the TPZ*
>
> - *All excavations which are to take place in the TPZ shall be done so in accordance with the Tree Protection Methodology prepared by Arb Innovations Ltd and to the satisfaction of the Project Arborist.*

4 Assessment of Environmental Effects

4.1 Ecology

Ecology Memorandums have been prepared to address each aspect of the proposed works (Dorking Road works, stormwater inlet relocation and encroachment into the Waitangi Stream tributary buffer) which are included at Appendices B, C and D.

4.1.1 Dorking Road Access

For the proposed works on Dorking Road, the Memorandum (Appendix B) concludes that the existing vegetation to be affected is considered to have low ecological value and similar, or better, vegetation is prominent throughout Prince of Wales Park and the Wellington Town Belt. The magnitude of loss is identified as negligible.

4.1.2 Rolleston Street Chambers and relocation of Stormwater Inlet

A Memorandum addressing the relocation of the stormwater inlet (required to accommodate the valve and flow chambers) and an updated addendum to this Memorandum providing further clarification on proposed planting is provided at Appendix D. A draft of these documents has been reviewed by GWRC's Senior Environmental Scientist and WCC's Biodiversity Specialist and Parks Team and the proposals have been discussed at a site visit and conference call (further details are provided in the Consultation section). The advice received has been incorporated into the proposed design of the new stormwater inlet and planting (Section 3.3).

Ecological Assessment (2017)

The Memorandum reviewed the conclusions of the Ecological Assessment (2017) carried out for the original Notice of Requirement for the Designation (NoR). This assessment considered the significance of the Waitangi Stream tributary and concluded that it did not meet the criteria for significance under Schedule F1 as it was not a habitat for threatened or at-risk fish species or more than six migratory indigenous fish species and it did not have a high macro-invertebrate community index. The ecological value of the stream was considered to be moderate due to the fact it is one of a few fragments of daylighted stream in this area.

Ecological Condition

A Rapid Physical Habitat Assessment (RPHA) was undertaken on 19th February 2020 for the Waitangi Stream Tributary. The RPHA provided an overall habitat condition score of 34/100 indicating that in this location that stream is of poor condition and quality. The stream channel is choked with dense *Tradescantia* which causes extensive silt accumulation. The stream bed is therefore covered by thick silt which limits habitat diversity and fish habitat is limited by minimal surface flows, although there is a high likelihood that koura (freshwater crayfish) inhabit the Waitangi Stream tributary. The Ecology Memorandum concludes that the potion of the stream which will be affected by the proposed relocation of the stormwater inlet has low ecological value. Full details of the RPHA are provided within the Ecology Memorandum.

Ecological Effects

The proposal will result in the permanent loss of approximately 3m of existing streambed and approximately 2m of bed through clearance of vegetation and installation of rip rap. The permanent loss of the stream equates to a loss of approximately 2% of the remaining daylighted length of this waterway (which comprises 140m in total). The Ecology Memorandum concludes that:

- The temporary impact of construction works will have negligible magnitude of effect on the stream. Given the identified low ecological value of this part of the stream the overall ecological impact is assessed to be low.
- The permanent loss of 3m of the stream will have a low magnitude of effect on the stream. Given the low ecological value of the stream the overall ecological impact is assessed to be low. In addition, further planting can further remedy the ecological effects.

Recommendations

The Ecological Memorandum recommends the following actions to avoid, minimise and remedy potential adverse effects:

- Best practice construction methodology should be used to reduce the impact on the stream environment, including reducing the footprint of the works as much as possible and carrying out excavation in an upstream manner to protect the remaining streambed.
- Additional planting is recommended, over and above the enrichment planting specified within the Landscape and Ecology Management Plan (LEMP). This planting should include dense native vegetation which will provide shading over the stream channel which will, in time, reduce encroachment by *Tradescantia*. This will encourage flushing of muds and silts currently choking the stream bed, allowing gravel into the lower reaches which will create better and more complex habitat opportunities. This work will be secured through the LEMP.
- Exposed soil should be stabilised by grassing immediately following works to minimise erosion.

The following approach is proposed in order to secure the recommended actions:

Construction Management Plan

A Construction Management Plan (CMP) is required under Designation Condition D.C 11, which requires the certification of the CMP by WCC prior to the commencement of any construction works. The CMP will include all work within the Designation boundary. The methodology for the proposed works within this application will be included within the CMP.

Landscape Ecology Management Plan

A Landscape Ecology Management Plan (LEMP) is required under Designation Condition D.C 32. It is proposed that the proposed planting specified in Section 3.3.3 is incorporated into the LEMP. A Draft LEMP has previously been circulated to WCC for comment. The Ecology Memorandum included at Appendix D proposes changes to the Draft LEMP so that this includes site auditing requirements for the Waitangi Stream Tributary habitat and details of the additional planting. This text will be incorporated within the final LEMP which will be submitted to WCC for certification pursuant to Condition D.C 32.

Technical Planting Specification

A Technical Specification for the planting is included within the Ecology Memorandum at Appendix D which provides details of site preparation, plant propagation and planting. Compliance with this Technical Specification will be secured by Condition D.C 1, which requires works to be undertaken in general accordance with the information submitted within this Assessment of Environmental Effects.

Stabilisation of Exposed Soil

The stabilisation of exposed soil as soon as practicable will be secured by the Erosion and Sediment Control Plan (see Section 4.5 below for details), which is required by Condition 8 of GWRC resource consent (ref: WGN180065 [35008], [35009] and [35010]).

Given the conclusions within the Ecological Memorandum at Appendix D, the actual and potential ecological effects of the proposed stormwater inlet are considered to be no more than minor.

4.1.3 Waitangi Stream tributary buffer

The potential ecological effects of encroaching into the Waitangi Stream tributary buffer (chambers, construction access and stormwater inlet) have been assessed. The Memorandum (Appendix C) concludes that the existing vegetation to be affected within the buffer is considered to have low ecological value and the overall ecological effect of the loss of the vegetation is considered to be negligible. It is noted that the buffering function of the vegetation will be adversely affected and this loss needs to be minimised in the first instance by careful site management. Any unavoidable loss then needs to be replaced by revegetation, which will be secured by LEMP (as required by Condition D.C 32). As long as careful site management procedures are followed in accordance with the Planting Technical Specification in Appendix D and any vegetation lost is replaced, there are not expected to be any adverse ecological effects of any lasting nature within the Waitangi Stream tributary buffer zone resulting from these works.

Ecology Conclusion

In conclusion, the Ecology Memorandums conclude that the proposed works will have an overall low level of effect due to the low ecological value of the Waitangi Stream tributary and existing vegetation at the top of Dorking Road, the temporary nature of the works and the mitigation measures (revegetation) which will be secured by the Construction Management Plan (required by Condition D.C 11 and Landscape and Ecology Management Plan (required by Condition D.C 32). The overall potential ecological effects of the proposed alterations are therefore considered to be no more than minor.

4.2 Arboricultural

4.2.1 Dorking Road Access

An Arboricultural Report has been prepared by Arb Innovations and is included at Appendix E. The report addresses the Podocarpus Totara tree which is located at the end of Dorking Road. The Report concludes that the totara tree is in a healthy state and fair condition. To ensure the protection of the tree throughout the works to Dorking Road it is proposed to implement a Tree Protection Zone around the tree. All activities within this zone will be monitored by a qualified arborist and certain activities, including the storage of materials and machinery movement not associated with the proposed works, will be prohibited. The Report provides a recommended works methodology to mitigate the potential effects on the tree which includes using non-destructive excavation methods.

The Applicant is happy to volunteer that this works methodology is secured by Condition (as detailed in Section 3). It is considered that with the implementation of this mitigation, the potential effects on the totara tree will be less than minor.

4.3 Traffic

4.3.1 Dorking Road Access

A Traffic Assessment has been undertaken for the proposed works at the top of Dorking Road and is attached as Appendix F.

The assessment concludes that the proposed work will generate construction traffic movements related to the delivery and removal of materials to the site and the transportation of site personnel. All vehicles will access the site via Washington Avenue, Asquith Terrace and Dorking Road. It has been estimated that eleven trucks (22 movements) will use this access route during the construction period. The trucks accessing the site will be 8m (axel length) rigid trucks and will be a combination of concrete, tipper and flatbed trucks. Most truck movements will involve a single visit to the site on a single day. The most intensive period of truck activity will be during the importing of fill material, which will take two days and involve five trucks (10 movements). Other vehicular movements will be minimal, involving site operatives travel to and from the site.

Swept path analysis has been undertaken for 8m rigid trucks accessing the site which shows that the trucks can be accommodated on Dorking Road and Asquith Terrace. The small number of truck movements, short duration of required truck access, along with the demonstration of a managed suitable access route will result in less than minor transportation effects on the transportation network.

The management of the construction vehicle movements associated with these works will be included within the Construction Traffic Management Plan which is required by Designation Condition D.C 22.

With regard to emergency access, swept path analysis has also been undertaken for the emergency crane access which demonstrates that access can be accommodated on Dorking Road and Asquith Terrace.

When crane access is required, WWL would follow the statutory processes for emergency or planned works within the road corridor and employ temporary traffic management on Dorking Road. This would be under approval from WCC as the road controlling authority.

The temporary nature of the effects associated with crane access will mean that these potential effects on the transportation network will be less than minor.

4.4 Landscape and Visual

The landscape and visual effects of the Omāroro Reservoir were assessed in detail in the original NoR application and were considered to be temporary adverse during construction and neutral following completion of the construction works. The proposed amendments will have minimal additional landscape and visual effects for the following reasons:

- The works at the top of Dorking Road are partially within the road reserve, which is already developed.
- The works within the Town Belt adjoining Dorking Road are localised in a small area, and the new pavement surface will be grass seeded as shown in drawing 3262332-CE-4003 to minimise the long-term visual impact. This grass seeding will be included within the LEMP, which is required by Condition D.C 32.

- The valve and flow chambers at the top of Rolleston Street will be buried, with only the access for chamber maintenance required to be located above ground. The ground level will be raised to accommodate the burial of the chambers. The difference in existing ground level to proposed ground level varies along the longitudinal section but is only approximately 500mm at the point of greatest variance.
- The works will be undertaken in accordance with the Landscape and Ecology Management Plan which will provide details of final planting and slope treatments.

In summary, the potential landscape and visual effect of the proposed alterations are less than minor when considered in the context of the original Designation and the wider works for the Omāroro Reservoir.

4.5 Erosion and Sediment Control

A Draft Erosion and Sediment Control Plan was submitted with the original NoR application which set out an overview of the erosion and sediment control measures to be implemented during construction. These included perimeter controls around the edge of the playing fields, sediment retention ponds, stabilised site entrances, progressive stabilisation and monitoring of discharges.

A final Erosion and Sediment Control Plan (ESCP) is required to be submitted under Condition 8 of the GWRC resource consent (ref: WGN180065 [35008], [35009] and [35010]). An Earthworks Management Plan is required to be submitted under Designation Condition 18 which will give effect to the final ESCP.

The measures set out within the Draft ESCP previously submitted and the final ESCP which is required by Condition 8 will apply to the proposed works and ensure that these are managed appropriately. The potential erosion and sediment control effects of the proposed alteration are therefore considered to be less than minor.

4.6 Cultural and Heritage

A Cultural Impact Assessment was submitted with the original NoR. This assessment concluded that there was no need for archaeological examination of the site, but an Accidental Discovery Protocol should be put in place prior to the commencement of construction and the site should be blessed by Port Nicholson Block Settlement Trust.

In accordance with these recommendations, the preparation of an Accidental Discovery Protocol in consultation with Port Nicholson Block Settlement Trust and Te Rūnanga o Toa Rangātira Inc was secured by Designation Condition 43.

The blessing by Port Nicholson Block Settlement Trust took place on 9th April 2019.

The proposed works will accord with the Accidental Discovery Protocol and the cultural and heritage effects are considered to be less than minor.

4.7 Residential amenity

The potential effects on residential amenity from noise associated with the construction works was assessed in detail within the Construction Noise Assessment which was submitted with the original NoR. A Construction Noise and Vibration Management Plan (CNVMP) is required by Designation Condition 11 which will include mitigation measures to minimise and manage noise effects including:

- A restriction on working hours for heavy vehicles related to earthworks moving to and from the site to between 0900-1500 weekdays and 0730-1800 Saturdays
- Guidance on loading of trucks – selection of loading and unloading locations where possible away from sensitive receivers and avoiding dumping material from height
- Maintenance of construction equipment to minimise noise
- Maintenance of the surface of Rolleston Street to minimise vibration
- Consideration of alternatives to tonal reversing alarms
- Consideration of use of noise barriers where they may be effective
- Guidance on minimising construction traffic noise such as limited speed and prohibiting engine braking
- Means to address vibration concerns such as vibration monitoring and the potential for pre-construction surveys of the closest buildings.

The additional works proposed as part of this alteration will be managed in accordance with the CNVMP which will ensure that appropriate noise mitigation is put in place.

It is estimated that the works at the top of Dorking Road will be completed within approximately one month. The proposed works are limited in nature and will be managed in accordance with the CNVMP. It is therefore considered that the effect of these additional works on residential amenity is less than minor.

The works at the top of Rolleston Street are more substantial than those at the end of Dorking Road, however the works are located to the west of the Designation boundary, set back further from the residential properties on Rolleston Street than if they were inside the boundary. When considered in the context of the overall reservoir works, with the appropriate management and mitigation measures in place the effect of the proposed additional works on residential amenity is less than minor.

5 Statutory Assessment

Section 181 of the RMA states:

1) *A requiring authority that is responsible for a designation may at any time give notice to the territorial authority of its requirement to alter the designation.*

2) *Subject to subsection (3), sections 168 to 179 shall, with all necessary modifications, apply to a requirement referred to in subsection (1) as if it were a requirement for a new designation.*

3) *A territorial may at any time alter a designation in its district plan or a requirement in its proposed district plan if-*

    a. *the alteration-*

        i. *involves no more than a minor change to the effects on the environment associated with the use or proposed use of land or any water concerned; or*

        ii. *involves only minor changes or adjustments to the boundaries of the designation or requirement; and*

    b. *written notice of the proposed alteration has been given to every owner or occupier of the land directly affected and those owners or occupiers agree with the alteration; and*

    c. *both the territorial authority and the requiring authority agree with the alteration*

4) *And sections 168 to 179 and 198AA to 198AD shall not apply to any such alteration.*

    This section shall apply, with all necessary modifications, to a requirement by a territorial authority to alter its own designation or requirement within its own district.

The revised design involves no more than a minor change to the effects on the environment (s181(3)(a)(i)).

The existing Designation area is 3.937ha and the proposed is 3.980ha. The proposed change to the Designation boundary adds approximately 0.043ha of land to the designation – a change of approximately 0.1%. This is considered to be minor thus meeting s181(3)(a)(ii).

All land within the current designation and the land proposed to be added to the designation is owned by WCC thus meeting s181(3)(b). There are no other parties directly affected by the alteration.

If WCC agree to the proposed alteration, then sections 168 to 179 and 198AA to 198AD of the RMA, which outline the processes to be followed in processing a Notice of Requirement, need not apply and the application can be processed on a non-notified basis.

6 Consultation

The land directly affected by the Designation is owned by WCC. The nearest residential properties are located on Dorking Road. WWL has engaged with local residents through the Community Reference Group, GWRC and WCC Parks team as discussed below.

6.1 Local Community

The local community have been consulted on the proposed amendments to the Designation and Town Belt Licence.

Community Reference Group

The Omāroro Reservoir Community Reference Group (CRG) was established in accordance with Licence Condition L.C 38 of the Town Belt Act Licence for the Omāroro Reservoir. The purpose of the CRG is to provide a platform for information to be shared with the community.

Engagement with the CRG about the proposals included a presentation on 12th March, attended by members of the WWL team (including the Boffa Miskell ecology team). In addition, a site visit was held with Friends of the Wellington Town Belt and the Papawai Stream Group on 10th March. Three written responses have been received following this consultation which are included at Appendix G. These responses are summarised below:

Papawai Stream Group

- Concern that ecological state of the Waitangi Stream tributary will be degraded, specifically by the loss of 3m of open stream.
- Request that any losses are off-set
- Concern that the values ascribed to the stream in the original Ecological Assessment (prepared by Boffa Miskell, dated 8th Sept 2017) have been underestimated as the assessment used a Physical Habitat Assessment (PHA) rather than a Stream Ecological Valuation (SEV).
- Request for the application to be peer reviewed by an ecological professional

Friends of Wellington Town Belt

- Support concerns raised by the Papawai Stream Group
- Request that alternative options for emergency access are considered, including helicopter access

Submission from a local resident

- Oppose the proposals and support concerns raised by other submissions
- Request for clarification on why the requirement for vehicle access to the roof of the reservoir was not considered within the original NoR
- Query whether there is an intention to use Dorking Road for construction access

Response to Community Reference Group

Alternative approaches

At the CRG meeting of 12th March, members were interested in the alternative approaches which had been considered for the valve chambers and pipework, Waitangi Stream tributary stormwater inlet and the Dorking Road access. This is reflected within their responses.

While a formal assessment of alternatives is not required under Section 181(3), details of the options considered, as discussed with CRG, are set out below:

Rolleston Street valve chambers and pipework

Several options and configurations for the location of the valve and flowmeter chambers were reviewed, although the final location is constrained by the fact the chambers need to be located to be able to connect to both the Omāroro Reservoir and the pipes from the Bell Road Reservoir. The options considered different groupings of valves and flowmeters to optimise space. Access to the chambers is required, therefore the option to fully bury the chambers was not considered to be practical.

Within Playing Fields

The option of locating the chambers within the upper playing fields was considered, however this was discounted due to the potential to injure sports field users should they fall or trip onto the chamber access hatch.

Adjacent to the Playing Fields

The option to locate the chambers at various locations on the steep bank on the southern edge of the upper playing field was considered. This option resulted in the requirement for a large cut into the slope. This option resulted in constrained maintenance access to the chamber and involved extensive earthworks at the slope face that would also be visually intrusive.

In addition to the above, locating the chambers in proximity to the construction works for the reservoir was not considered to be practical, as access to the chambers would be constrained by the construction access road and other construction activities.

North of the Waitangi Stream tributary

The third location considered was to the north of the Waitangi Stream tributary. This option is located outside of the upper playing field. This option would require earthworks to partially bury the chambers, although these would not be as extensive as the option considered above. The top of the chambers would remain exposed, providing access for maintenance.

The proposed option which is the subject of this application is considered to be the preferred option as it will not impact upon users of the playing fields, will allow access for maintenance of the chambers and will result in a smaller volume of earthworks and visual impact than would occur should the chambers be located on the steep slope adjacent to the playing field.

Waitangi Stream tributary stormwater inlet

The relocation of the stormwater inlet is required to accommodate the preferred location of the valve chambers and pipework (as detailed above). Retaining the inlet in its existing location is not feasible.

The option of potentially relocating the inlet a reduced distance upstream was considered, however this required a larger headwall to address the change in ground level which is required as part of the

works to install the chambers. The headwall would have a visual impact and due to the height of the drop it would require a safety barrier to ensure that people using the path are not at risk of falling into the stream. This barrier would be contrary to WCC's position which seeks to reduce structures within the Town Belt.

Relocating the inlet at a reduced distance upstream would also result in the inlet being located directly adjacent to the new valve chamber. A separation distance from the chamber to the inlet is preferred to mitigate the potential effects on the Waitangi Stream tributary from chamber maintenance activities.

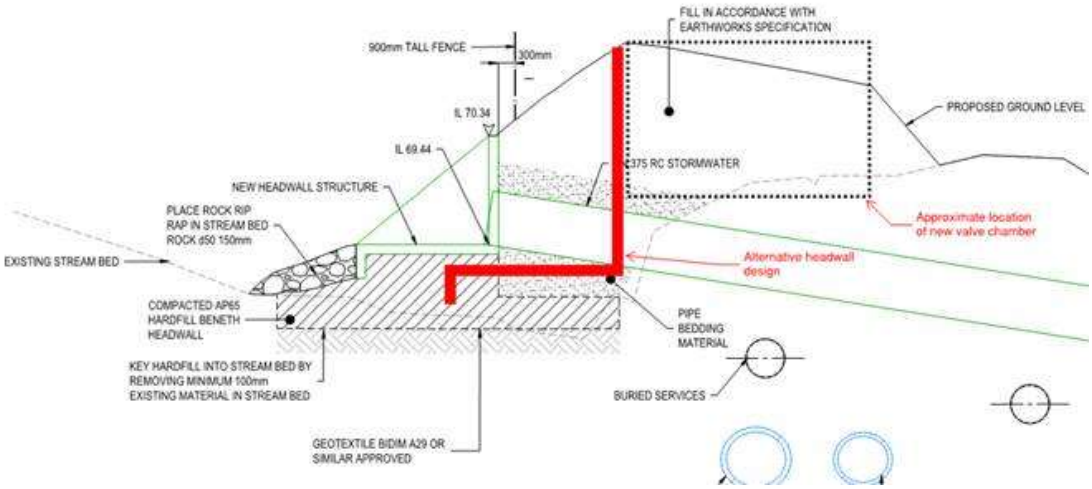

Figure 3: Alternative headwall location

The proposed location for the stormwater inlet is considered to be the best option as it will ensure that there is an appropriate separation between the stormwater inlet and the valve chambers and will require a smaller, less intrusive headwall structure.

Emergency access to the reservoir

Three options were considered to provide vehicle access to the roof of the reservoir. The first option was to extend the existing access to the reservoir tunnel entrance from Rolleston Street around the north eastern face of the reservoir to the roof, the second was to provide access from Dorking Road (as is currently proposed) and the third was access via helicopter.

Rolleston Street access

The provision of a 4m wide access track starting from the entrance to the reservoir service tunnel and going round the north eastern face of the reservoir was considered. This would allow mobile crane and truck access. Due to the vertical height difference between tunnel level and reservoir roof level (approximately 20m), this track would be around 100m long at a grade of 1V:5H, or longer at flatter slopes.

This track would need to curve up around the north eastern side of the reservoir to achieve an appropriate access gradient for heavy vehicles and trucks. Due to the width of the track, the backfill slopes around the reservoir would either need to increase in length or be steepened up and require reinforcing or significant extra retaining structures around the tunnel entrance and along the length of the track.

This track would be a permanent visible feature on the reservoir's highly visible north eastern face which would also restrict the nature and extent of the planting on the reservoir slopes. This would be

contrary to the natural planted face of the reservoir and efforts to visually integrate the buried reservoir into the Town Belt landscape, which was recommended in the original NoR.

Dorking Road access

The second access option considered was from Dorking Road (which is the subject of this NoR), whereby access is provided from Dorking Road through the Prince of Wales Park along the route of an existing footpath to the reservoir roof.

While the proposed access requires some physical works (construction of a small retaining wall and minor vegetation clearance), the extent of the works is significantly less than that required under the Rolleston Street option (the works provide 30m of access rather than 100m).

The visual impact of the proposed works is significantly less than the Rolleston Street option, with works restricted to the road reserve (which is already developed) and only encroaching 15m into the Town Belt.

Helicopter access

Access via helicopter has been considered, however the helicopters available to hire in the Wellington regional generally have a weight capacity limit of under 1 tonne, which is too low to accommodate the equipment required for emergency maintenance (for example, a 12m reach scissor lift is approximately 2.8 tonnes). It is therefore considered that access via helicopter in an emergency situation is not a viable option.

After consideration of all options, the Dorking Road access option was identified as the preferred option involving less intrusive work within the Town Belt and very minor visual impact.

Additional CRG comments

In addition to comments requesting consideration of alternative options, the written responses from CRG raise queries about the assessment methodology, requirement for peer review and rationale for additional works. These are addressed within the response to the CRG (included at Appendix H) which was submitted to the Community Liaison Person on 20 April for distribution to CRG members and will uploaded on the CRG website. This response can be summarised as follows:

Waitangi Stream Tributary

With regard to the comments received about the Waitangi Stream Tributary, it is considered that concerns about the value of the stream and mitigation/off-setting are addressed in the Assessment of Environmental Effects (Section 4).

The methodology used within the original Ecological Assessment has been discussed with GWRC's Senior Environmental Scientist, who is comfortable that the Physical Habitat Assessment method was selected due to the small size of the stream.

It is considered that the requested peer review is not required, as the pre-application ecological review process has been robust, with consultation undertaken with GWRC's Senior Environmental Scientist and WCC's Biodiversity Specialist, as detailed below.

Dorking Road Access

One of the consultation responses requests further clarification on the requirement for access to the reservoir roof.

At the early stages of the reservoir design, the Preliminary Design Report prepared by CH2M Beca Ltd gave high level consideration to access for both regular reservoir maintenance and in an emergency.

The preliminary structural design work allowed for access inside the reservoir through the reservoir floor via the tunnel structure and also via access hatches into the reservoir roof. Following the issue of the Designation and Town Belt Licence, further detailed design work has been undertaken which has focused on achieving resilience for the reservoir in the event of an earthquake. In depth consideration has been given to all emergency situations which may arise, and this work has identified a requirement for vehicle and crane access to the roof level of the reservoir to lower equipment which is too large to fit through the tunnel access.

6.2 Dorking Road Residents

In addition to consultation with the CRG, WWL have engaged directly with the residents of nos. 2, 4 and 6 Dorking Road (the dwellings in closest proximity to the proposed works).

As detailed in Section 4 (notably Sections 4.3 (traffic) and 4.7 (residential amenity)), the potential effects associated with the proposed works on residents of Dorking Road are considered to be less than minor due to the limited nature of the works and associated construction traffic (a total of 22 vehicle movements) and the management procedures which will be set out within the Construction Traffic Management Plan, Construction Noise and Vibration Management Plan and Construction Management Plan (as required by existing Designation Conditions). We do not consider there to be any affected parties as a result of the proposed works.

Notwithstanding the above, as part of the engagement process residents of nos. 2, 4 and 6 Dorking Road were asked to demonstrate that they fully understood the proposed works and that they were comfortable with these by completing a written approval form (in the standard WCC template). Residents from all three properties have provided a signed form with comments (included at Appendix G). The comments received which relate directly to the proposals can be summarised as follows:

No. 4 Dorking Road

- Request that signage is installed to advise drivers that Dorking Road is not suitable for turning

No. 6 Dorking Road

- Request that removed vegetation is disposed of appropriately
- Request to plant as many native species as possible

For clarity: the written approval form is provided in Appendix G to show the consultation that has occurred. It is not provided as a Form 8A under the RMA as these parties are not considered to be adversely affected by the proposal for the reasons set out above.

Response to comments

With regard to the request for signage, this would be located within the road reserve and as such would be for WCC's Parking and Roads Team to consider and implement.

The requirement for appropriate vegetation removal and planting of native species is addressed within the Ecology Memorandum and Technical Planting Specification at Appendix D which sets out best practice methodology for vegetation clearance and confirms that native plants will be retained, and all proposed planting comprises native species.

6.3 Greater Wellington Regional Council

Consultation has occurred with GWRC. The draft Ecology Memorandum was issued for review and a conference call held on 30th March with GWRC's Senior Environmental Scientist and Resource Advisor (Compliance) and WCC's Parks Team.

The feedback received from GWRC's Senior Environmental Scientist is as follows:

- GWRC are comfortable with the Physical Habitat Assessment approach used to assess the condition of the stream and agree that the SEV assessment is not possible for this stream type.
- The results of the assessment correspond with a separate assessment undertaken by GWRC. While both assessments only found koura present, this does not mean that there are no other fish present (it just means they were not detected in this assessment). Species such as banded kokopu and eels are often present in similar urban streams.
- The proposed loss of 3m of urban stream is significant because there are only remnants of daylighted streams within Wellington. There is therefore a requirement for offsetting. GWRC are supportive of the proposed approach for additional planting and advised that this should account for the loss of 3m of stream.

6.3 Wellington City Council

Consultation has occurred with WCC relating to both the proposed relocation of the stormwater inlet and additional minor alterations to the Omāroro Reservoir Designation and Town Belt Licence.

Ongoing consultation has taken place with WCC as the proposals have been developed, including meetings held with WCC Parks Team and Planning Team on 24th May 2019 and 30th January 2020, and a site visit with WCC's Biodiversity Specialist on 23rd March 2020.

The feedback received from WCC to date is as follows:

- With regard to the stormwater inlet works and associated planting, WCC's Biodiversity Specialist is supportive of the proposed planting approach and has provided advice relating to suitable planting species. The proposed planting has incorporated these recommendations.
- WCC Parks Team have provided advice on the design of works, including confirmation that they would not support bollards within the Town Belt, request for the surface on Dorking Road to be grassed and advice on the design of the gate at the end of Dorking Road. This advice has been incorporated into the proposals.
- WCC Planning Team have provided procedural advice on this application, which has been followed.

7 Conclusion

This Notice of Requirement (NoR) is submitted by Wellington Water Limited on behalf of WCC for an alteration to the Omāroro Reservoir Designation, specifically to extend the Designation boundary to allow for works to take place where they cannot be contained within the existing Designation boundary. These works comprise:

- Works to strengthen the existing access from Dorking Road to allow emergency and infrequent vehicle access to the reservoir once constructed
- Construction of two buried flow meter chambers and one buried control valve chamber and realignment of the existing water mains
- Relocation of the existing stormwater inlet

This NoR also provides for changes to Designation Conditions 1 and 33 b) and proposes the addition of a new condition, as follows:

- Variation of Designation Condition 1 (DC.1) to update the wording of this Condition to refer to the documents within this alteration.
- Variation of Designation Condition 33 b) (DC.33 b)) to allow for construction works to encroach within 5m of the Waitangi Stream tributary. These construction works include the construction of chambers and stormwater inlet (referred to above) and the construction access route.
- Addition of a new condition to secure compliance with the recommended arboricultural methodology to mitigate the potential effects of the works on the totara tree on Dorking Road.

The purpose of this report is to describe of the proposed alterations required to allow the construction, operation and maintenance of the reservoir and provide an assessment of the effects on the environment.

Overall, the change in environmental effects has been assessed to be no more than minor and the addition of 0.043ha of area to the Designation footprint is minor. The NoR can therefore be considered under Section 181(3) of the RMA.

Appendix A: Drawings

Appendix B: Ecology Memorandum: Dorking Road

Appendix C: Ecology Memorandum: Buffer Encroachment

Appendix D: Ecology Memorandum: Rolleston Street Chambers and Stormwater Inlet Relocation

Wellington Water

Appendix E: Arboricultural Report

Appendix F: Transport Assessment

Appendix G: Consultation Responses

Appendix H: Response to CRG