

# Waiheke Local Board Workshop Agenda

**Date of Workshop:** Wednesday 29 May 2024

**Time:** 10:30am

**Location:** Waiheke Local Board, 10 Belgium Street; MS Teams

Time	Workshop Item	Governance role	Purpose	Presenter(s)	Proposed Outcome(s)
10:30	Item 1 Local Board Portfolio Review <b>Attachment</b> Presentation	Keeping informed	Provide direction on preferred approach	Sophie Bell <i>Service &amp; Asset Planning Specialist</i>	Members are informed and engaged in the programme and have an opportunity to outline their priorities.
11:15	Item 2 Draft Local Board Agreement (LBA) 2024/25 discussion <b>Attachment</b> Presentation Draft LBA 24/25	Accountability to the public	Provide feedback on policy options	Janine Geddes <i>Acting Local Area Manager</i>  Audrey Gan <i>Lead Financial Advisor</i>	Members are informed to options for LBA 24/25 which will be adopted at the extraordinary meeting on 12 June.
11:45	Item 3 Te Huruhi Reserve catch-up	Keeping informed	Informal dissemination	Janine Geddes <i>Acting Local Area Manager</i>  Fiona Gregory <i>Community Broker</i>	Staff and members will discuss options for future management of the Te Huruhi Reserve.
12:45	Lunch Break				

Time	Workshop Item		Governance role	Purpose	Presenter(s)	Proposed Outcome(s)
13:15	Item 4	Water reuse opportunities for Oneroa wastewater treatment plant  <b>Attachment</b> Memo Technical Report	Oversight and monitoring	Provide direction on preferred approach	Ben Halliwell <i>Elected Member Relationship Advisor</i>  Arash Farjood <i>Strategic Planner</i>  Shannon Palmer <i>Recycled Water Manager</i>	Watercare staff will present further options for reusing the water produced by the wastewater treatment plant in Oneroa.

#### Governance Role

1. Accountability to the public
2. Engagement
3. Input to regional decision-making
4. Keeping informed
5. Local initiative / preparing for specific decisions
6. Oversight and monitoring
7. Setting direction / priorities / budget

#### Role of Workshop:

- (a) Workshops do not have decision-making authority.
- (b) Workshops are used to canvass issues, prepare local board members for upcoming decisions and to enable discussion between elected members and staff.
- (c) Workshops are not open to the public as decisions will be made at a formal, public local board business meeting.
- (d) Members are respectfully reminded of their Code of Conduct obligations with respect to conflicts of interest and confidentiality.
- (e) Workshops for groups of local boards can be held giving local boards the chance to work together on common interests or topics

# Waiheke Local Board Workshop Proceedings

Workshop record of the Waiheke Local Board held in person and via Teams on Wednesday 29 May 2024, commencing at 10:30am

Cath Handley (Chair)	Kylee Matthews (Deputy)	Bianca Ranson	Robin Tucker	Paul Walden
Present	Present	Present (Teams)	Present	Absent

Time	Workshop Item	Attendee(s)	Summary of Discussions
10:30	Local Board Portfolio Review  <b>Attachment Presentation</b>	Sophie Bell <i>Service &amp; Asset Planning Specialist</i>	<p>Members received an overview of the objectives and scope of the programme.</p> <p>Chair requested expedition of the asset review process for Waiheke, citing community needs and lack of funding. Staff will investigate this and report back in a month.</p> <p>Chair requested that members participate in the process of asset list collection to enable agency.</p> <p>Interim workshops on Waiheke for progress updates may be an option.</p>

Time	Workshop Item		Attendee(s)	Summary of Discussions
11:15	Item 2	Draft Local Board Agreement (LBA) 2024/25 discussion  <b>Attachment</b> Presentation Draft LBA 24/25	Janine Geddes <i>Acting Local Area Manager</i>  Audrey Gan <i>Lead Financial Advisor</i>	<p>Members were informed about options for LBA 24/25 which will be adopted at the extraordinary meeting on 12 June.</p> <p>Members queried the core performance measures in practice, in particular the condition of large assets (e.g. Te Ara Hura) and the lack of funding available to achieve the required maintenance of assets.</p> <p>Members requested condition details on the current asset state.</p> <p>Members queried the Sustainable Initiatives measure and requested addition of a descriptor note to clarify that only I&amp;ES programmes are included in the measure.</p>
11:45	Item 3	Te Huruhi Reserve catch-up	Janine Geddes <i>Acting Local Area Manager</i>  Fiona Gregory <i>Community Broker</i>	Staff and members discussed status and options for Te Huruhi Reserve.
12:45	Lunch break			
13:15	Item 4	Water reuse opportunities for Oneroa wastewater treatment plant  <b>Attachment</b> Memo Technical Report Presentation	Ben Halliwell <i>Elected Member Relationship Advisor, Watercare</i>  Brendan Dockery <i>Strategic Planner, Watercare</i>  Shannon Palmer <i>Recycled Water Manager, Watercare</i>  Emma Baker <i>Environmental Scientist, Watercare</i>	<p>Watercare presented further options for reusing the water produced by the wastewater treatment plant in Oneroa.</p> <p>Chair suggested additional use could be for road works. Requirement for resource consent for this usage to be investigated.</p> <p>Chair indicated preference for water reuse in public rather than private domain.</p>

# Local Board Portfolio Review

May/June 2024



# Overview

- We are reviewing every local board's service asset portfolio.
- The review will provide local boards with advice to support them with:
  - increased local board decision making
  - adjusting to financial allocations.



# Objectives

- Support implementation of the LTP 2024-2034 direction.
- Progress priorities and identify new opportunities.
- Manage underperforming and underutilised service assets.
- Support a shift from asset-dependant service delivery.
- Portfolios are safe, sustainable, affordable, and fit for purpose.



# Scope

## In scope

- Aquatic and leisure centres
- Arts and culture facilities
- Cemeteries (closed)
- Civic spaces
- Commercial and residential leases
- Community leases
- Community centres
- Destination parks
- Greenways and connection links
- Libraries
- Playgrounds
- Sports parks
- Suburban / neighbourhood / pocket parks
- Council venues for hire

## Provision influencers

- Botanic gardens
- Cemeteries (open)
- Corporate property
- Leased properties
- Maunga
- Regional parks
- Department of Conservation land and properties
- Watercare land and properties

## Out of scope

- Auckland Transport properties
- Coastal assets
- Collections
- Holiday parks
- Social housing
- Tātaki Auckland Unlimited properties





# Examples of opportunities for change

Partnerships	new or enhanced
Investment	to address under provision of services or to improve current assets
Integration of services	or co-location
Decommissioning assets	to relieve cost burden
Divestment	through the service property optimisation framework
Non-asset service delivery	to reduce cost and increase accessibility to services



# Process



**Longlist options**



**Development and delivery of Portfolio Plans**

**May 2024**

**June - October 2024**

**November-  
December 2024**

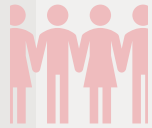
**February- April  
2025**

**July 2025 onwards**

# Assessment areas



Financial performance



Usage



Asset lifecycle



Accessibility



Growth



Environment and cultural heritage



Local board priorities



Provision



Strategic alignment



# Outputs

## Phase 1

- Presentation to local boards of opportunities for change

## Phase 2

- Delivery of changes
- Portfolio Plans

## Phase 3

- Implementation of Portfolio Plans

Opportunities for change will be implemented through local board decision making



## Next steps

- Workshop opportunities with all local boards during November and December 2024



**Pātai?**



# Local board agreement

Waiheke Local Board

29 May 2024





# LTP2024-2034 Road Map

2023

**Introduction**  
June - July

Late August

- Early LTP Strategic Direction discussions and facilitated workshops
- Mayor's introduction
- Process Overview and financial context
- Scene setting & strategic case change

**Political briefings**  
Oct to Nov

**Series of political workshops**

- Strategy and Policy
- Infrastructure Strategy
- Performance information overview
- Asset management 101
- Rates overview

**Mayoral proposal**  
Nov

Mayor sets out his proposal which includes issues he would like to consult on

**Political consideration & decision making**  
December

- Local board workshops and decision making for consultation content
- Workshops and meetings are held to discuss the Mayor's proposal
- Local boards meet to agree on content for consultation
- Consultation items are agreed

- Audit review:**
1. Consultation Document
  2. Supporting Information
  3. Feedback Form

**Finalise and adopt LTP 2024-2034**  
Jun

- Finalise Local boards agreements, budgets and LTP documentation
- Governing body will adopt the LTP 2024-2034 in late June

- Audit review:**  
Final documents
1. Volume 1
  2. Volume 2
  3. Volume 3

**Deliberations**  
Apr to May

- Local and regional workshops held to discuss consultation feedback
- Several workshops held to discuss budget issues, implications and trade offs

**Public Consultation**  
Mid Feb to Mid Mar

Formal public consultation will run from early February to late March. Feedback events will run during this time

**Adoption for consultation**  
February

Governing body meets to adopt a consultation document and supporting information

2024



# Workshop purpose and background

- To discuss and finalise the draft local board agreement 2024/2025
- The local board agreement is required as stated by the Local Government (Auckland Council) Act 2009 for each financial year
- The local board agreement has been drafted using the local board key priorities in the Long-term Plan consultation and previous Long-term Plan workshops (Performance measures, work programmes etc.)
- Next: local board agreement reported at the 12 June 2024 business meetings for approval



# Levels of Service / Performance Measures

## NEW CORE MEASURE:

### Māori Outcomes

Service level statement: We respond to the needs and aspirations of mana whenua and Māori communities

Performance measure: The number of local activities that deliver moderate to high outcomes for Māori as outlined in 'Kia Ora Tamaki Makaurau' (Council's Māori outcomes framework).

How it will be measured: against projects in your local board work programme – **Set baseline** in year one

## UPDATED CORE MEASURE:

### Asset component condition measures

Changes: update wording per below, and update target to reflect the wording. No changes to the assumptions in setting the targets.

The percentage of local community facility **asset** components that are **not** in poor or very poor condition

The percentage of local open space asset components that are **not** in poor or very poor condition





Next steps

LBA approved in business meeting  
on 12 June



Te Poari ā-Rohe o Waiheke

# Waiheke Local Board

He kōrero mai i te Heamana

## Message from the Chair

The Waiheke Local Board's key priorities for 2024/2025 are based on the new Local Board Plan 2023 which provides the vision and the framework for local board decisions.

Auckland Council's budget constraints will impact on our ability to progress many of our planned capital budget projects. We will focus on improvements to Tawaipareira Reserve including a new flying fox and landscaping. We'll also be progressing a consent for a replacement Rakino Hall and carrying out minor facility renewals. Unfortunately our track renewals programme can't be funded this year.

The local board's operating discretionary budget remains stable so we can continue with the many valuable community initiatives we support. This includes volunteer work, arts and culture, recreation, events, youth outcomes and strategic housing initiatives.

In partnership with our community and businesses, and, as budgets allow, we will deliver actions within our local Climate Action Plan. We will continue water quality improvement initiatives and support Electric Island's advocacy for Waiheke to be fossil-fuel free by 2030. Ecological restoration and pest management continue to be priorities. We will progress reforestation programmes and collaborate to help regenerate the Hauraki Gulf.

Resiliency and connectedness are essential to support our community, economy and infrastructure. The board is working closely with Auckland Emergency Management to support our community to prepare for, and recover from, emergencies.

Waiheke's rich cultural history is paramount. We will continue to build the relationship with Ngāti Pāoa and work with other mana whenua to help support their aspirations.

Progressing the Mātiatia Strategic Plan in partnership with Ngāti Pāoa remains the top infrastructure priority. Whilst we are awaiting confirmation of Auckland Transport funding it is critical that budget constraints do not impact long-delayed progress. Our 10-year Transport Plan provides direction for ongoing delivery of safer quality roading, footpaths and a cycling network, recognising Waiheke's character and water management needs.

We will focus on initiatives that help build our agreed identity as a sanctuary in the Hauraki Gulf, including working with Tātaki Auckland Unlimited to finalise and implement a Waiheke Destination Management Plan that must support and help sustain our community, environment and economy, and recognise Waiheke as an arts and recreation destination.

We will continue to advocate to council's Governing Body and central government for affordable and equitable ferry services, relevant housing policies, and for protection of our soundscapes.

Thank you for your ongoing support.

Ngā mihi,



Cath Handley, Chair, Waiheke Local Board

## Waiheke Local Board area



We are home to **100** parks and reserves, the Te Ara Hura **100** kilometre round-island walking track and the Whakanewha Regional Park with **270** hectares of bush, forest, beach and wetlands

More than **1 million** people visit Waiheke each year



### LEGEND

-  Local board office
-  Public open space (Unitary Plan)
-  Arterial road
-  Medium road

Waiheke Island is **19km long** with a surface area of **92km<sup>2</sup>** and **133km** of coastline and is home to the **Te Matuku Marine Reserve**

A population of **9,294** projected with **16%** of residents under 15 and **21%** over 65



Data sources: Council Growth model i11v6 (August 2020). Statistics New Zealand 2018 Census.

## Waiheke Local Board Plan 2023

The Waiheke Local Board Plan 2023 sets out the aspirations the local board has for the area. The outcomes in the Waiheke Local Board Plan are:

Ō Tātou Tāngata

### **Our People**

Waiheke residents have a strong sense of identity, connectedness and wellbeing which is enhanced through active community participation.

Tō Tātou Taiao

### **Our Environment**

We want to protect, maintain and enhance our unique islands' land, coastline, bush, wetland and marine environments for future generations.

Ō Tātou Waihanga me ō Tātou pākihi

### **Our Facilities and Open Spaces**

Our parks, reserves and beaches are enjoyed, respected and actively cared for by residents and visitors. Our community, arts and cultural facilities are well used and accessible.

Ō Tātou Wāhi

### **Our Places**

The special character and values of Waiheke and inner gulf islands are protected and enhanced in line with the draft Waiheke Area Plan and principles of Essentially Waiheke.

Tā Tātou Ōhanga

### **Our Economy**

Our Waiheke community has a strong, independent, entrepreneurial spirit and our natural taonga are protected and support sustainability and appropriate economic activities.

The local board agreement outlined in this document reflects how we plan to support these outcomes through agreed activities in the 2024/2025 financial year. In addition, each local board carries out responsibilities delegated by the Governing Body in accordance with the delegated power, and with the general priorities and preferences in the local board plan.

## Working with Māori

Delivering on Auckland Council's commitment to Māori at a local level is a priority for local boards. The council is committed to meeting its responsibilities under Te Tiriti o Waitangi / the Treaty of Waitangi and its broader statutory obligations to Māori.

To meet this commitment, the Waiheke Local Board Plan seeks to deliver outcomes for Māori. Initiatives that deliver Māori outcomes are those which support Māori identity and culture, advance Māori wellbeing and support Māori to participate in local decision-making as identified in the "Kia Ora Tāmaki Makaurau" framework. Examples of this include:

- Identifying opportunities to work together to build strong relationships with Mana Whenua and share information with Māori.
- Collaborating with iwi on initiatives that align with Māori aspirations such as environmental programmes and water quality projects.
- Working with mana whenua and mātāwaka to identify and respond to the needs and aspirations for local Māori with Māori-led initiatives that support social and economic outcomes.
- Encourage use of Mana Whenua design features in parks and facilities.
- Provide support for culturally significant events.

# Waiheke Local Board Agreement 2024/2025

## Planned operating and capital spend in 2024/2025

Key areas of spend	Community Services	Environmental Services	Planning Services	Governance	Total
Planned Operating Spend 2024/2025	\$5.5 million	\$140,000	\$0	\$907,000	\$6.5 million
Planned Capital Spend 2024/2025	\$1.1 million	\$0	\$0	\$0	\$1.1 million

## Priorities by activity area

Auckland Council's 2024/2025 funding priorities for local activities which contribute to key community outcomes in the Waiheke Local Board area are set out below under each local activity.

### Local Community Services

We support strong, diverse, and vibrant communities through libraries and literacy, arts and culture, parks, sport and recreation, and events delivered by a mix of council services, community group partnerships and volunteers.

Our annual budget to deliver these activities includes operating costs of \$5.5 million and capital investment of \$1.1 million.

The key initiatives we have planned for 2024/2025 include:

- delivering core council operational services, such as mowing, track and facility maintenance, and the library.
- initiatives that provide opportunities for community connectedness, capability and resilience.
- commencing the growing stage of the Waiheke Ngahere (Forest) Strategy to enhance biodiversity, increase canopy cover and improve Waiheke Island's carbon footprint.
- supporting community-led programmes in areas such as housing, sustainability and youth.
- providing opportunities to experience local arts, culture and events.

The local community services and key initiatives outlined above contribute towards achieving the following outcome/s in the Waiheke Local Board Plan:

- Outcome One: Ō Tātou Tāngata - Our People
- Outcome Three: Ō Tātou Waihanga me ō Tātou pākihi - Our Facilities and Open Spaces
- Outcome Four: Ō Tātou Wāhi - Our Places
- Outcome Five: Tā Tātou Ōhanga - Our Economy

### Levels of Service

We measure our performance against the following measures for each local priority. The level of service statement is in bold below.

Performance measure	Actual 2022/2023	Annual Plan Target 2023/2024	Long-term Plan Target 2024/2025
<b>Enable a range of choices to access community services and recreation opportunities</b>			
Number of visits to library facilities <sup>1</sup>	89,263	95,000	110,000

Percentage of time physical library services are accessible to the community	New Measure	New Measure	100%
Percentage of local community facility asset components that are not in poor or very poor condition	New Measure	New Measure	85%
<b>Provide opportunities for communities to lead and deliver their own initiatives</b>			
Number of partner organisations supported to sustain their governance capacity and capability	New Measure	New Measure	7
Number of partner organisations and groups funded to deliver placemaking activities	New Measure	New Measure	20
<b>Provide urban green spaces (local parks, paths and Ngahere) and access to the coast</b>			
Percentage of local parks, facilities and spaces meeting maintenance quality standards.	New Measure	New Measure	90%
Percentage of local open space asset components that are not in poor or very poor condition	New Measure	New Measure	98%
Number of trees planted in the Urban Ngahere programme	New Measure	New Measure	15

<sup>1</sup>In July 2023, Waiheke library became an integrated customer service site with council and AT Hop services, which has increased visitation numbers at this facility, and the 2024/2025 target has been increased to reflect this change.

## Local Planning and Development

Local planning and development include supporting local town centres and communities to thrive by developing town centre plans and development, supporting Business Improvement Districts (BIDs), and heritage plans and initiatives.

There are no Local Planning and Development initiatives planned for 2024/2025 for the Waiheke Local Board.

### Levels of Service

There is no performance measure for this activity.

## Local Environmental Management

We support healthy ecosystems and sustainability through local board-funded initiatives such as planting, pest control, stream and water quality enhancements, healthy homes, and waste minimisation projects.

Our annual operating budget to deliver these activities is \$140,000.

The key initiatives we have planned for 2024/2025 include:

- programmes which protect, restore, and enhance the island's natural environment
- working with our community and businesses to progress actions within the Waiheke Island Climate Action Plan
- encouraging circular economy and the re-use of materials.

The local environmental management activity and key initiatives outlined above contribute towards achieving the following outcome/s in the Waiheke Local Board Plan:



- Outcome Two: Tō Tātou Taiao - Our Environment
- Outcome Three: Ō Tātou Waihanga me ō Tātou pākihi - Our Facilities and Open Spaces
- Outcome Four: Ō Tātou Wāhi - Our Places

### Levels of Service

We measure our performance against the following measures for each local priority. The level of service statement is in bold below.

<b>Performance measure</b>	<b>Actual 2022/2023</b>	<b>Annual Plan Target 2023/2024</b>	<b>Long-term Plan Target 2024/2025</b>
<b>Protect, improve and minimise risks to the natural environments and cultural heritage</b>			
Number of participants in sustainable initiative programmes	New Measure	New Measure	185
Number of community groups supported in sustainable initiative programmes	New Measure	New Measure	1

### **Local Governance**

Activities in this group support the local board to engage with and represent their communities and make decisions on local activities. This support includes providing strategic advice, leadership of the preparation of local board plans, support in developing local board agreements, community engagement including relationships with mana whenua and Māori communities, and democracy and administrative support.

Our annual operating budget to deliver these activities is \$907,000.

### Levels of Service

We measure our performance against the following measures for each local priority. The level of service statement is in bold below.

<b>Performance measure</b>	<b>Actual 2022/2023</b>	<b>Annual Plan Target 2023/2024</b>	<b>Long-term Plan Target 2024/2025</b>
<b>Respond to the needs and aspirations of mana whenua and Māori communities</b>			
Number of local activities that deliver moderate to high outcomes for Māori as outlined in 'Kia Ora Tamaki Makaurau' (Council's Māori outcomes framework).	New measure	New measure	Set baseline

## Funding Impact Statement

This prospective funding impact statement has been prepared to meet the requirements of Section 21(5) of the Local Government (Auckland Council) Act 2009. It covers the year from 1 July 2024 to 30 June 2025 and outlines the council's sources of funding for local activities in this local board area and our plan to apply them.

\$000	Annual Plan 2023/2024	Long-term Plan 2024/2025
Financial year ending 30 June		
<b>Sources of operating funding:</b>		
General rates, UAGCs, rates penalties		
Targeted rates		
Subsidies and grants for operating purposes		
Fees and charges		
Local authorities fuel tax, fines, infringement fees and other receipts		
<b>Total operating funding</b>		
<b>Applications of operating funding:</b>		
Payment to staff and suppliers		
Finance costs		
Internal charges and overheads applied		
Other operating funding applications		
<b>Total applications of operating funding</b>		
<b>Surplus (deficit) of operating funding</b>		
<b>Sources of capital funding:</b>		
Subsidies and grants for capital expenditure		
Development and financial contributions		
Increase (decrease) in debt		
Gross proceeds from sale of assets		
Lump sum contributions		
Other dedicated capital funding		
<b>Total sources of capital funding</b>		
<b>Application of capital funding:</b>		
Capital expenditure:		
- to meet additional demand		
- to improve the level of service		
- to replace existing assets		
Increase (decrease) in reserves		
Increase (decrease) in investments		
<b>Total applications of capital funding</b>		
<b>Surplus (deficit) of capital funding</b>		
<b>Funding balance</b>		

## Appendix A: Advocacy initiatives

A key role of the local board is to advocate for initiatives that the local board may not have decision-making responsibility or funding for but recognise the value it will add to the local community.

The key initiatives that the local board advocated for as part of the long-term plan were:

Initiative	Description
<b>Equitable capital funding</b>	<p>The budget proposed for Waiheke under the central proposal is inequitable and insufficient.</p> <p>The proposed budget provides no opportunity to maintain and develop amenities for our community or visitors in line with our agreed plans and strategies.</p> <p>There is a significant historic infrastructure and facilities deficit on Waiheke. The previous and proposed budgets are not sufficient for the council or the local board to address this in the future.</p> <p>Waiheke's significant track network should be recognised as a valuable regional recreational asset for our community and visitors.</p> <p>Deferring works now will lead to significant future cost and potential failure of the Te Ara Hura track network - a major visitor drawcard for the Auckland region and considered by many as New Zealand's next Great Walk.</p> <p>Rakino Hall also requires resolution. This has been a longstanding issue for the board and the removal of budgets after many years of prioritising local budgets, is frustrating.</p>
<b>Increased decision-making</b>	<p>Increased decision-making and Local Board ownership over all council owned and operated assets on Waiheke to facilitate future asset development and enhanced community facilities for the community.</p> <p>Waiheke has significant capital investment projects that can't be considered as there is no way for Waiheke to invest or rationalise our property portfolio. We are unable to invest in even basic assets for our community e.g. toilets.</p>
<b>Stormwater management</b>	<p>Implementation of effective flood control by use of nature-based solutions, proactive stormwater maintenance and necessary capital investment.</p>
<b>Marine protection</b>	<p>Working with relevant authorities, partners, and mana whenua to support the implementation of marine protection strategies and eliminate the exotic Caulerpa from the Hauraki Gulf.</p>
<b>Retention of funding to deliver the Waiheke 10-year Transport Plan</b>	<p>In line with the Waiheke 10-year Transport Plan and the Memorandum of Understanding with Auckland Transport, the board requests retention of funding to deliver safer quality roading, footpaths and a cycling network to a standard consistent with the rest of Auckland (taking into account Waiheke's character). This includes safe school travel networks. Effective water management using water sensitive design techniques to cope with road run-off are also essential. The board also seeks a review of the criteria for transport infrastructure investment to ensure it takes account of populations, which substantially fluctuate due to visitor numbers. Extension of the New Zealand Cycle Trail through Waiheke continues to be a future aspiration.</p>

Initiative	Description
<b>Mātiatia Masterplan</b>	The board is progressing the development of a strategic plan for council-owned land at Mātiatia and requests that any future development is guided by this plan and appropriate funding is allocated within the Long-term Plan 2024-2034 (LTP) and continues to be allocated in the Regional Land Transport Plan 2024-2034 (RLTP), for both transport and non-transport infrastructure related priorities.
<b>Including Waiheke ferry services within the Public Transport Operation Model (PTOM) or its successor – Sustainable Public Transport Framework (SPTF)</b>	<p>Passenger ferry services from Mātiatia and Kennedy Point wharves need to be incorporated into the Public Transport Operation Model (PTOM) system to ensure resilience, equity and affordability. The matter is being actively pursued with the Governing Body, Auckland Transport and the Minister of Transport.</p> <p>Council agencies must support ferry service competition on routes by providing a level playing field across all dimensions within its control.</p>
<b>Visitor Levy</b>	The board seeks the support from the Governing Body to implement a visitor levy to help fund the costs to the council of visitor impacts.

## Appendix B: How to contact your Local Board

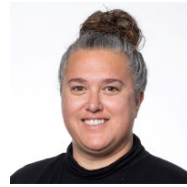
Local boards have been established to enable local representation and decision-making on behalf of local communities. You are encouraged to contact your elected members to have your say on matters that are important to your community.



**Cath Handley**  
**Chairperson**

m. 021 194 1787

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**Bianca Ranson**

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**Kylee Matthews**  
**Deputy Chairperson**

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**Robin Tucker**

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The board can be contacted on:

[waihekelocalboard@aucklandcouncil.govt.nz](mailto:waihekelocalboard@aucklandcouncil.govt.nz)

For general enquiries, assistance and information, phone 09 301 0101 any time or visit

[www.aucklandcouncil.govt.nz](http://www.aucklandcouncil.govt.nz)

Local board meetings, agendas and minutes are available on the Auckland Council website:

[www.aucklandcouncil.govt.nz](http://www.aucklandcouncil.govt.nz) > About council > Meetings and agendas

# Memorandum

To: Waiheke Local Board

From: Shannon Palmer – Recycled Water Manager  
Arash Farjood – Strategic Planner

Subject: Beneficial use of recycled water on Waiheke Island

Date: 22 May 2024

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## Purpose

1. In March 2023 as part of the engagement with the Local Board on the Waiheke Servicing Strategy, the Local Board indicated an interest in Watercare investigating options for water reuse from the facility. This memo contains a summary of potential reuse options and treated wastewater effluent water quality. This information will provide context for the ongoing discussion between Watercare and the Local Board.

## Summary

2. As a condition of consent and following initial discussions with the Local Board, Watercare is investigating options for reuse of the treated wastewater from the Owhanake wastewater treatment plant.
3. There is an absence of dedicated New Zealand standards for recycled water to in non-potable application however there are good overseas examples.
4. Three initial options being considered are: landscape irrigation, agricultural irrigation, and emergency use by Fire and Emergency.
5. Following discussion with the Local Board, Watercare will continue evaluating options.

## Context

6. Watercare Services Limited (Watercare) operates the Owhanake Wastewater Treatment Plant (WWTP) on Waiheke Island. This facility receives and treats wastewater flows from the Oneroa commercial area and Matiatia Wharf. Following treatment, wastewater effluent is discharged first to the Matiatia Wetland and in turn to the Matiatia Stream, and then ultimately to Matiatia Bay. Currently, the plant discharges an average of 40-50 m<sup>3</sup>/day and a peak of 90-100 m<sup>3</sup>/day (during summer months).
7. As a condition of the discharge consent for this facility, Watercare is required to investigate reuse options for treated wastewater. A high-level evaluation was last undertaken in 2023. A copy of the technical report is provided in Appendix 1.
8. An upgrade of the Owhanake WWTP was completed in 2020. The facility now incorporates modern tertiary treatment technology that produces high quality effluent suitable for non-potable reuse. A summary of effluent quality is provided in Appendix 2.
9. There is an absence of dedicated standards and guidelines in New Zealand to freely enable the use of recycled water for non-potable applications. However, Australia has

both national and state level recycled water guidelines against which water quality results for Owhanake WWTP have been benchmarked against. A summary of the guideline requirements used for benchmarking is provided in Appendix 3.

10. The Victorian guideline for water recycling outlines the minimum standards of biological treatment and pathogen reduction for defined categories of use. In addition to the minimum levels of treatment, additional site management controls may be needed depending on the specific use of recycled water. For the parameters that are monitored at Owhanake WWTP, treated wastewater quality meets the water quality requirements for Class A recycled water. Acceptable uses for Class A water include irrigation of public open spaces such as parks and sports fields where access is unrestricted, agricultural food production, firefighting, and general outdoor use.
11. The Queensland guideline for low exposure recycled water schemes provides guidance on the classes of recycled water and minimum onsite controls required for the five most common uses of recycled water. Recycled water providers will typically have to monitor for a range of parameters as part of their approval to operate however, E.coli is the key water quality parameter from a public health perspective and forms the basis of designating classes of recycled water. Owhanake WWTP treated wastewater effluent meets the requirements of Class A recycled water. Acceptable
12. Uses of Class A recycled water include municipal open space irrigation such as parks and sports fields, golf course irrigation, and irrigation of highly processes food crops and non-food crops.
13. The Australian guidelines for water recycling outline a framework for managing risks associated with recycled water use. While they do not dictate required levels of treatment or water quality criteria, they do provide indicative requirements for a range of recycled water uses. Owhanake WWTP treated wastewater meets the indicative requirements outlined for municipal and crop irrigation.
14. Based on this benchmarking, treated wastewater effluent from the Owhanake WWTP may be suitable for the potential uses identified in this report.
15. Watercare recognises the challenges posed to local water supplies during extended periods of dry weather, and the potential opportunity for recycled water to contribute to community resilience. Watercare aims to work alongside the Waiheke Local Board, Ngāti Paoa, and the community to further evaluate potential reuse opportunities.

## Discussion

16. Two potentially viable options for recycled water use on Waiheke Island were identified from the recent evaluation - landscape irrigation and agricultural irrigation. A third option not identified in the report, but potentially viable, is emergency use by the fire service. A brief overview on these options is provided below:
  - a. Landscape Irrigation - There are multiple options for land application via irrigation including public parks, the local golf course, and reforested land.
  - b. Agricultural Irrigation - Given the presence of numerous wineries on Waiheke Island, using non-potable recycled water for irrigation could make for an effective and efficient use of water resources in times of drought or when there is otherwise pressure on potable water supplies.
  - c. Emergency Use by Fire and Emergency New Zealand (FENZ) - Waiheke Island has two fire brigades, located in Oneroa and Onetangi respectively. If additional water was needed for firefighting capabilities, then there could be a potential

opportunity for recycled water to be utilized. Watercare is aware that FENZ uses a range of water sources of varying quality, in emergency situations, and pumps on firefighting appliances are filtered and backwashed to prevent issues caused by poor water quality being used. Watercare has approached FENZ to discuss this option further.

17. In any scenario where recycled water is discharged to land (or water), a resource consent would be needed. The consent would need to be specific to the location and application.
18. Reticulation of recycled water to the point of use would require considerable infrastructural investment, which would likely be cost prohibitive unless a significant user(s) were positioned near the Owhanake WWTP facility. Tankering recycled water to the point of use may be feasible if done infrequently or for short durations and in smaller volumes.
19. Nearby vineyards may require large volumes of water for irrigation or in winemaking, but regulations for winemaking may preclude the use of recycled water for either of these activities.

## Next Steps

20. Following discussion with the Local Board on these initial ideas, Watercare will continue to assess the feasibility of options. This will require assessment of the demand and of the quality of water required to manage potential human health and environmental risks.



## Appendix 1 – Owhanake WWTP Consent Review

Please see attached document.

## Appendix 2 - Water Quality Summary

Table 1: Summary of Owhanake WWTP Treated Wastewater Quality and Victoria and Queensland Class A Water Quality Requirements<sup>1</sup>

Parameter	Unit	Sample Count	Min	Max	Median	%ile <sup>2</sup>	Vic Class A	Qld Class A
E. coli	MPN/100mL	160	<1.6	120	<1.6	1.7	- <sup>3</sup>	10
Turbidity <sup>4</sup>	NTU	-	-	-	-	-	2	-
pH	pH	161	4.6	8.1	7.5	7.8	6 - 9	-
Biological Oxygen Demand (BOD)	mg/L O	39	<0.5	5.6	0.98	-	10	-
Total Suspended Solids (TSS)	mg/L	161	1.0	234	2.6	-	5	-

<sup>1</sup> Data range is from 1 January 2021 to 1 May 2024

<sup>2</sup> 90<sup>th</sup> percentile given for pH to reflect Victorian state guidelines and 95<sup>th</sup> percentile given for E. coli to reflect Queensland state guidelines

<sup>3</sup> Victorian Class A microbiological objectives are expressed as microbial log reduction targets based on a project specific Quantitative Microbial Risk Assessment (QMRA)

<sup>4</sup> Turbidity is not currently monitored at Owhanake WWTP, hence data was not available for benchmarking

## Appendix 3 – Australian Recycled Water Guideline Summaries

Table 2: Victoria guideline for water recycling classes of recycled water and corresponding standards for biological treatment and pathogen reduction

Class	Water quality objectives <sup>1,2</sup>	Treatment process	Range of uses
<b>A</b>	<p>Turbidity &lt; 2 NTU BOD &lt; 10 mg/L TSS &lt; 5 mg/L pH 6-9<sup>3</sup></p> <p>Microbiological criteria, expressed as microbial log reduction targets, are calculated from a QMRA</p>	Treatment process should be designed to achieve the required log reduction value	<p>Irrigation of public open spaces, such as parks and sports fields, where public access is unrestricted.</p> <p>Agricultural food production and irrigation.</p> <p>General outdoor use (car washing, dust suppression, construction, washdown).</p> <p>Firefighting, including hydrants and sprinkler systems.</p>
<b>B</b>	<p>E. coli &lt; 100 org/mL pH 6-9<sup>2</sup> BOD &lt; 20 mg/L TSS &lt; 30 mg/L</p>	Secondary treatment with pathogen reduction	<p>Agricultural irrigation (i.e. cattle grazing).</p> <p>Industrial (e.g. washdown water, cooling)</p>
<b>C</b>	<p>E. coli &lt; 1,000 org/100mL pH 6-9<sup>3</sup> BOD &lt; 20 mg/L TSS &lt; 30 mg/L</p>	Secondary treatment with pathogen reduction	<p>Urban irrigation with controlled public access.</p> <p>Industrial systems with no potential worker exposure.</p>

<sup>1</sup>Medians unless stated otherwise, medians to be determined over a rolling 12-month period

<sup>2</sup> Additional guidance on water quality criteria and controls for salts, nutrients, and toxicants should be sought from other state recycled water guideline documents

<sup>3</sup>pH range is 90<sup>th</sup> percentile.

(Adapted from Victorian guideline for water recycling, Environmental Protection Authority Victoria, Victoria State Government, 2021)

Table 3: Queensland guideline values for recycled water (for low exposure uses)

Class of recycled water	Guideline values
Class A+	Less than 1 E.coli cfu/100mL or less than 1 E.coli MPN/100mL in at least 95% of samples taken in the previous 12 months
Class A	Less than 10 E.coli cfu/100mL or less than 10 E.coli MPN/100mL in at least 95% of samples taken in the previous 12 months
Class B	Less than 100 E.coli cfu/100mL or less than 100 E.coli MPN/100mL in at least 95% of samples taken in the previous 12 months
Class C	Less than 1,000 E.coli cfu/100mL or less than 1,000 E.coli MPN/100mL in at least 95% of samples taken in the previous 12 months
Class D	Less than 10,000 E.coli cfu/100mL or less than 10,000 E.coli MPN/100mL in at least 95% of samples taken in the previous 12 months

(From Guideline for low-exposure recycled water schemes, Queensland Health, Queensland Government, n.d)

Table 4: Summary of Queensland guideline onsite control requirements (Queensland Health, Queensland Government, n.d)

Use	Class of recycled water	Onsite controls required
Municipal open space irrigation (e.g. parks and sports fields)	Class A+	Minimum on-site controls
	Class A	As above, plus spray drift control
	Class B	As above, plus restricted access during irrigation and until ground is dry
	Class C	As above, plus a buffer zone of 25m
Golf course irrigation	Class A+	Minimum on-site controls
	Class A	As above, plus spray drift control
	Class B	As above, plus restricted access during irrigation
	Class C	As above, plus a buffer zone of 25m
Irrigation of pasture and fodder crops	Class A+	Fodder must be allowed to try before supplying as feed. Minimum other controls
	Class A	As above, plus spray drift controls if public is nearby.
	Class B	As above, plus restricted access
	Class C	As above, plus buffer zones
Irrigation of highly processed food crops and non-food crops	Class A+	Minimum on-site controls
	Class A	As above, plus spray drift control
	Class B	As above, plus restricted access
	Class C	As above, plus allowing crops to dry
	Class D	As above, and to be used for non-food crops only

Table 5: Summary of Australian Guidelines for Water Recycling requirements<sup>1</sup>

Use	Log Reduction Targets (V, P, B) <sup>2</sup>	Treatment Process	Onsite Controls	Water Quality Objectives <sup>3</sup>
Municipal irrigation, unrestricted access	5.0, 3.5, 4.0	Advanced treatment including disinfection	None	TBD on case-by-case basis E.coli <1 cfu/100mL
Municipal irrigation, restricted access	N/A	Secondary treatment with disinfection	Restricted public access and at least one other mitigation (i.e. spray drift control, buffer zones)	BOD <20 mg/L TSS <30 mg/L Disinfection residual or UV dose E.coli <100 cfu/100mL
Landscape irrigation (trees, shrubs, gardens, etc.)	5.0, 3.5, 4.0	Secondary treatment	Combinations of micro-spray, drip irrigation, no public access	BOD <20 mg/L TSS <30 mg/L E.coli <1,000 cfu/100mL (if not disinfected)
Commercial food crops	6.0, 5.0, 5.0	Secondary treatment with disinfection	No public access and drip or subsurface irrigation, or if spray irrigation then 25-30m buffer to nearest public access point	BOD <20 mg/L TSS <30 mg/L Disinfection residual or UV dose E.coli <100 cfu/100mL
Non-food crops, trees, turf, woodlots, flowers	5.0, 3.5, 4.0	Secondary treatment	No public access and drip irrigation, or if spray irrigation then no public access and 25-30m buffer zone to nearest public access	E.coli <10,000 cfu/100mL

<sup>1</sup>Guidelines are inherently risk-based, summary table provided is indicative to give examples that align with the guidelines.

<sup>2</sup>V = Enteric virus, P = Enteric protozoa, B = Enteric protozoa

<sup>3</sup>Medians for all objectives, except e. coli which is a mean value. BOD and SS are used as indications of secondary treatment effectiveness

(Natural Resource Management Ministerial Council, Environment Protection and Heritage Council, Australian Health Ministers' Conference, 2006)

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# Owhanake WWTP Consent Review

Beneficial Reuse Technical Report

**Watercare Services Limited**

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Table 2: Owhanake WWTP annual effluent quality analysis

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Table 4: Owhanake WWTP annual daily flowrate analysis (2018 – 2023)

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# 1 Introduction

## 1.1 Background and Purpose

Waiheke Island is a picturesque island located in the Hauraki Gulf, just off the coast of Auckland, New Zealand. The main industry on Waiheke Island is tourism and wineries. While the Waiheke's population stands at approximately 9,500 residents, this number experiences seasonal fluctuations, particularly during the vibrant summer months when tourists flock to its shores. Water management on Waiheke Island is a local responsibility, with many homes collecting rainwater in cisterns. Water delivery services become more active in dry summers to meet increased demand. For sewage disposal, except for the Oneroa sewage district, which directs wastewater to the Owhanake Wastewater Treatment Plant (WWTP), every residence and relevant business follows the requirement to install a septic tank and septic field as mandated by building consent rules. The Owhanake WWTP discharge its tertiary treated effluent into the natural Matiatia wetland, contributing to the island's responsible wastewater management before it flows into Matiatia Bay.

Watercare Services Limited (WSL) operates the Owhanake WWTP under the resource consent (Permit No. 37282) which allows Watercare to discharge tertiary treated domestic wastewater into the upper Matiatia Wetland. Maximum discharge rates of 80 m<sup>3</sup>/day and 250 m<sup>3</sup>/day are authorised from Plant A and Plant B respectively (Plant A has been de-commissioned since 2019). A copy of resource consent Permit No. 37282 is attached as Appendix A.

Condition 40 of the Permit states the Consent Holder is to actively perform investigations of potential non-potable reuse of the treated effluent from the Treatment Plant (during the summer season in particular), which is to occur every 2-years unless agreed by the manager of the local council that an investigation is not necessary within a particular year. The investigation shall be independent and include details such as the following:

- Possible reuse options for treated wastewater.
- Quality of the treated effluent that is available for reuse.
- The demand of reuse for treated wastewater.
- The costs and economics associated with reusing treated wastewater.
- Health and safety risks.
- Additional treatment required for safe reuse of wastewater.
- Regulatory requirement for reuse of treated wastewater.
- The feasibility of re-use storage tanks.

The purpose of this report is to evaluate any previous efforts and plans made on the reuse of treated wastewater, as well as any other potential methods, based on the effluent qualities, volume production rate, and health risks involved in the process. Potential treated wastewater reuse recommendations will be provided along with any additional treatment/process required. Qualitative costs and economics associated with various reuse opportunities are also discussed in this report. However, no cost estimates are made, pending further service strategy development and associated optioneering and design work.

## 1.2 New Zealand & International Effluent Reuse Standards

New Zealand currently lacks clear rules for safely reusing treated wastewater for purposes like watering parks and sports fields. The Ministry of Health (MoH) doesn't have a regulatory role in this matter, and New Zealand often looks to international sources for guidance. The only existing standard in New Zealand dates to 1992 and covers microbial rules for irrigating sewage effluent. There's also reference to these guidelines in the New Zealand Guidelines for Utilization of Sewage Effluent Land from 2000, which also mention the World Health Organization (WHO) guidelines when using sewage effluent for irrigation.<sup>1</sup>

Internationally, there are various standards and guidelines for reusing treated wastewater. Some of these include the WHO, United States Environmental Protection Agency (US EPA), Israel, European Union, and the Australian Guidelines for Water Recycling (AGWR). While most of these focus on agricultural irrigation, they can also be applied to other non-drinking purposes.

The WHO recommends microbial quality limits of  $\leq 1,000$  E. coli for plants and gardens and a stricter  $\leq 200$  E. coli for sports fields and areas where the public might have direct contact. It also sets limits for intestinal nematodes. The AGWR is often seen as a good reference, especially for urban non-potable uses like sports grounds and golf course irrigation<sup>2</sup>, aligning with WHO guidelines and international best practices.

## 2 Beneficial Reuse Options

### 2.1 Key Driving Forces

Before the implementation of a treated wastewater recycling plan, there is the need to understand the key drivers behind a water recycling plan. While this is not the focus of this report, the reasons for an effluent reuse plan can be summarised as below:

#### 1. Water scarcity & community feedback:

The idea of reusing treated effluent is valuable when considering where the Waiheke Island communities reside, as it is located on a remote island separated from the main Auckland region. Due to this, water is a valuable resource and is often required to be used conservatively. Any water reuse opportunities would be especially beneficial during drought seasons such as the one that occurred in late 2019, which has greatly affected the Waiheke Island community. Being able to use recycled water may improve the resilience against future droughts and reinforce water security on the island. In addition, the local communities on the Waiheke Island have also voiced their support on the subject during previous communication with Auckland Council.

#### 2. Watercare's Sustainability Policy:

Faced with increasing demand for water, Watercare is committed to seek ways to minimise environmental impacts and provide community. Development of beneficial reuse plans for Owhanake WWTP will be consistent with the policy and associated servicing strategy.

### 2.2 Beneficial Reuse Option Consideration

In 2003, an initial treated wastewater reuse investigation was carried out by City Design which considered a variety of options. Some options were preferred over others due to the limiting factors of the treated wastewater, such as the effluent quality as well as the volume production rate. It is however worth mentioning that since the commissioning of Plant B, effluent qualities across the board have seen a noticeable amount of improvement, hence the previously considered reuse options can be summarised as below may be re-evaluated.

<sup>1</sup> ESR Review of international wastewater reuse standards and guidelines.

<sup>2</sup> Mangawhai Community Wastewater Treatment Plant: Effluent Reuse Discussion Document: Golf Course Irrigation (2020).

## 2.2.1 Previously investigated Ground Irrigation

Ground irrigation has been one of the most attractive categories of effluent reuse. However, it is important to mention that with the application of agricultural or landscape irrigation, monitoring of some wastewater parameters such as sodium adsorption ratio (SAR), Chloride, and some heavy metals may be required. The performance parameters mentioned are not frequently/actively monitored now. In addition, the site required for the irrigation purpose should also be well understood in terms of its soil characteristics, pasture/crop types, sensitivity to nutrient loading, moisture content, and any other relevant properties which may be adversely affected by the irrigation of treated wastewater. In addition to the environmental properties, and health & safety aspects such as the level of human exposure needs to be evaluated against the level of water quality produced to prevent compromises of public health. Currently, New Zealand does not have clear, nation-specific guidelines on the reuse of treated wastewater, especially when compared to other developed nations. While the Australian Guidelines for water recycling can serve as a valuable reference to assess the suitability of reusing treated wastewater and ensure that appropriate effluent qualities are met for specific reuse purposes, it's essential to note that compliance with these Australian guidelines does not guarantee automatic consent under New Zealand's regulatory framework.

The City Design investigation examined various options for reusing treated wastewater. Some methods were favoured due to the limitations of the treated wastewater quality and volume. Notably, since Plant B became operational, there has been a marked improvement in wastewater quality. Therefore, revisiting the reuse options that were considered previously should be reviewed.

The City Design investigation explored a variety of irrigation options. The summary of how each option was evaluated can be found in [Table 1](#):

**Table 1: Summary of the 2003 investigation on reuse opportunities by City Design <sup>3</sup>**

<b>Reuse option</b>	<b>Summary</b>
<b>Onsite irrigation</b>	<p>Use treated effluent for on-site landscaping and planting.</p> <p><b>- Advantages:</b></p> <ul style="list-style-type: none"> <li>- Low delivery cost due to proximity to WWTP.</li> <li>- Promotes healthy plant growth.</li> <li>- Supported by Auckland City Council (landowner).</li> </ul> <p><b>- Disadvantages:</b></p> <ul style="list-style-type: none"> <li>- Low demand (estimated at 25 m<sup>3</sup>/week for 500 plants).</li> <li>- Relies on rainfall-dependent control (manual or automated).</li> </ul>
<b>Waiheke Golf Club</b>	<p>Use treated effluent for summer golf course irrigation.</p> <p><b>- Advantage:</b></p> <ul style="list-style-type: none"> <li>- Watering during dry season.</li> </ul> <p><b>- Disadvantages:</b></p> <ul style="list-style-type: none"> <li>- High public access.</li> <li>- High delivery costs (10 km travel distance).</li> <li>- Limited delivery volume due to distance.</li> </ul>
<b>Whakanewha Regional Park</b>	<p>Use treated effluent for new park plantings during dry summer.</p> <ul style="list-style-type: none"> <li>- Similar to Waiheke Golf Club.</li> <li>- Limited delivery volume.</li> <li>- High delivery costs due to long travel distance.</li> </ul>

<sup>3</sup> Waiheke Wastewater Reuse: Initial Investigations of Options (City Design, 2003)

<b>Auckland City Parks (ACC Parks)</b>	Use treated effluent for Auckland City Parks (ACC). - Rejected due to: High public access in the area, high health and safety risks involved.
<b>Reforested Land</b>	- The Royal New Zealand Forest and Bird Society found this option unsuitable. - Reasons: Limited delivery access, unstable site profile, and potential soil nutrient issues.
<b>Matiatia</b>	WIL and Wharf development at Matiatia (largely complete at this stage). - <b>Advantages:</b> - High demand: Up to 80 m <sup>3</sup> /day. - Reduced reliance on groundwater and other water sources. - <b>Disadvantages:</b> - Large capital cost: Required for 1 km of reticulation. - Considered the most expensive reuse option.

According to the irrigation options analysis conducted by City Design, onsite irrigation and the Matiatia development were considered viable for further investigation. Other potential options with significant public access raised concerns about health and safety. It's important to note that the effluent quality has improved since City Design's 2003 investigation, likely due to the newly commissioned Plant B. This suggests that potential irrigation sites such as the ACC, Regional Park, and golf courses could be reconsidered based on the recent treatment performance. If effluent qualities are similar or identical to the Omaha WWTP which currently discharge its treated effluent to a nearby golf course for irrigation, it is likely that the Owhanake plant could consider similar actions. While it's true that international guidelines may not directly apply to New Zealand, they still hold value in the absence of specific local regulations. International guidelines, such as the AWRG, can serve as valuable references and benchmarks for assessing best practices in recycled water management. They offer insights and recommendations that can be adapted to suit New Zealand's unique circumstances and help ensure the responsible use of recycled water in irrigation of public spaces. Considering international guidelines can provide a foundation for informed decision-making until comprehensive local guidelines are developed.

## 2.2.2 Potentials for Using Treated Wastewater in Winemaking:

Given the presence of numerous wineries in the area, using treated wastewater for winemaking processes can be an eco-friendly and resource-efficient approach. However, it is essential to ensure that the wastewater meets quality standards and does not adversely affect wine production.

Using treated wastewater for winemaking processes can be an environmentally sustainable and cost-effective practice for wineries. Here are some options in which treated wastewater can be used in winemaking:

- **Irrigation:** Treated wastewater can be used for vineyard irrigation. This conserves freshwater resources and reduces the demand on local water supplies. However, it is crucial to ensure that the treated wastewater meets the required quality standards like that of agricultural irrigation standards and does not contain harmful substances that could affect the vines or the grapes.
- **Cleaning and Sanitisation:** Winemaking equipment and facilities require thorough cleaning and sanitization. According to the NZ Wine Standards Management Plan Code of Practice for Grape Wine (2011), clean water is defined as having E. coli <1 per 100ml and turbidity – must not exceed 5 NTU. Treated wastewater can be used to meet these standards, given that the water quality can be maintained with the on-site storage. This could effectively reduce the consumption of potable water.

- **Cooling:** Wineries often use water for cooling purposes during the fermentation and storage processes. Treated wastewater can be used for cooling, especially in systems that do not require high-purity water.
- **Landscaping:** Treated wastewater can be used for landscaping around the winery, which reduces the need for potable water for outdoor purposes.

### 2.2.3 Unlocking the Potential: Key Considerations Using Treated Wastewater in Winemaking.

- **Water Quality Testing and Compliance:** Conduct comprehensive water quality testing to ensure that the treated wastewater meets the specific requirements for winemaking. Assess parameters such as pH, turbidity, organic matter content, and nutrient levels (nitrogen and phosphorus) to determine the wastewater's suitability.
- **Winery-Specific Treatment:** Tailor the treatment process to the needs of wineries. Winemaking often requires water of a certain quality<sup>4</sup>, so consider additional treatment steps or filtration systems to meet those requirements.
- **Storage and Distribution:** Develop a robust storage and distribution system for the treated wastewater within the winery premises. Implement storage tanks and a network of pipes to ensure a consistent and reliable supply of water for winemaking processes.
- **Risk Assessment:** Conduct a risk assessment to identify potential contaminants in the treated wastewater that could affect the quality and safety of wine production. Implement measures to mitigate these risks, such as appropriate disinfection methods or the removal of specific contaminants.
- **Monitoring and Control:** Install monitoring systems to continuously track water quality parameters relevant to winemaking. Implement automated control systems to make real-time adjustments to water treatment and distribution as needed.
- **Regulatory Compliance:** Ensure compliance with local regulations and standards governing the use of treated wastewater in winemaking. Obtain any necessary permits or approvals.
- **Staff Training:** Train winery staff on the proper handling of treated wastewater, including safety procedures and best practices to prevent contamination.
- **Quality Assurance:** Establish a comprehensive quality assurance program to consistently produce high-quality wines using treated wastewater.
- **Public Relations and Transparency:** Communicate your commitment to sustainability and responsible water use to the public and consumers. Share information about the treatment process and the steps taken to ensure the safety and quality of the wine.
- **Continuous Improvement:** Regularly review and improve the wastewater treatment and reuse process to optimize resource efficiency and minimize environmental impact.

Using treated wastewater in winemaking can be a sustainable practice that conserves freshwater resources, reduces environmental impact, and contributes to resource efficiency. However, it requires careful planning, adherence to regulations, ongoing monitoring, and, notably, customer and consumer buy-in, which can be one of the biggest hurdles. Ensuring that customers and consumers understand the safety and quality of the final product is essential for the successful implementation of this sustainable practice.

## 2.3 Reuse Options vs Treatment Levels

Depending on the intended application of the treated wastewater, different levels of water quality parameters are required. Table 5 in the following section presents various categories of effluent reuse, along with examples, requirements, treatment levels, and their applicability at the Owhanake WWTP. The only relevant

<sup>4</sup> NZ Wine Standards Management Plan Code of Practice for Grape Wine (2011).

standard available in New Zealand is the Department of Health microbial guidelines for sewage effluent irrigation (Department of Public Health, 1992). As this guideline is outdated, the Australian guidelines (i.e. Australian Guidelines for Water Recycling) are considered for the purpose of this study, as they align with international best practices, particularly the WHO guidelines, and are most relevant for urban non-potable use, such as municipal purposes like sports ground and golf course irrigation.

## 2.4 Current Owhanake WWTP Effluent Quality

The Owhanake WWTP has been regularly monitoring the quality of its treated wastewater over the past 5 years. The results can be summarised by Table 2 and Table 3, along with data on daily influent and effluent volume flow in Table 4.

From the historical effluent quality data, it is observed that after 2019, there has been a noticeable improvement in various water quality parameters, this is especially evident in parameters such as E. coli, Soluble reactive phosphorous (SRP), Total Kjeldahl Nitrogen (TKN), Total phosphorus (TP), and Total suspended solids (TSS). This was due to the construction and commissioning of the new MBR plant, classified as “Plant B”, which has significantly improved the treatment performance of the Owhanake WWTP and hence the potential of wastewater recycling options.

Despite the lack of some monitoring parameters that may be required for specific beneficial reuse options (refer to Section 2.3.1), the information presented in Tables 1, 2 and 3 can still be evaluated for potential reuse requirements. After 2019, E. coli levels have been significantly improved, consistently below the current compliance limit (Refer to Table 1). At its current performance levels, the treated effluent from the Owhanake WWTP is likely to be suitable for the irrigation of non-public access sites, low-access parks, or even high access locations with minor treatment upgrades required to meet an international standard such as the Australian Guidelines for Water Recycling (AGWR). Between March to June in 2021, there was a period where the total nitrogen was above the consented limit without clear reasoning besides the speculation of a higher DO from blower turndown or potentially lower pH levels than usual. The recorded water quality parameters have remained lower than the consented limit for majority of the time in the past 4 years and has the potential for many ground irrigation purposes. It is unlikely that the Owhanake WWTP is required to undertake major treatment upgrades for the purpose of a treated wastewater reuse plan. With this said, if the produced effluent was to be reused, some period of storage is highly likely to occur, hence some level of further disinfection may be required to prevent pathogen levels from elevating in the stored water.

The Owhanake WWTP is designed to discharge up to 250 m<sup>3</sup>/day of wastewater, but the current annual average is only about 40-50 m<sup>3</sup>/day, peaking at 90-100 m<sup>3</sup>/day in the summer. These limited volumes likely hinder the development of a large-scale reuse scheme. However, community feedback from Auckland Council's Waiheke Area Plan reveals that the community prefers self-sufficiency and opposes extensive water and wastewater systems, including possibly using recycled water. They are particularly concerned about droughts and have shown interest in using recycled water during emergencies to reduce the demand for drinking water. The draft plan suggests a potential solution of allowing tankers to receive recycled water during emergencies, although further investigations are needed. In this context, the effluent from Owhanake WWTP is likely to serve as a supplementary water supply, aligning with community preferences.

Monitored parameters	E. coli	CBOD5	SRP	NO <sub>3</sub> -N	TKN	Ammonia (NH <sub>3</sub> + NH <sub>4</sub> )	TP	TSS
Consented standards <sup>5</sup>	cfu/100mL	mg/L	mg/L	mg/L N	mg/L	mg/L	mg/L P	mg/L
	<= 50	< 10	-		<15	< 2	< 2 (Nov – Apr) < 4 (May - Oct)	<10
<b>2018</b>	cfu/100mL	mg/L	mg/L	mg/L N	mg/L	mg/L	mg/L P	mg/L
Min	1.60	0.50	6.00	4.00	0.10	0.40	6.00	1.00
Mean	97.48	1.77	8.73	13.34	2.71	1.81	9.51	3.33
Median	3.30	1.35	8.90	12.00	1.75	0.69	9.90	2.20
10%	1.60	0.50	6.74	7.86	0.10	0.40	7.06	1.00
90%	24.00	2.85	11.00	20.40	6.10	4.60	12.00	5.84
Max	2300.00	6.40	11.00	24.00	8.20	6.80	12.00	20.00

### Plant A decommissioned and Plant B becomes operational after 2018

<b>2019</b>	cfu/100mL	mg/L	mg/L	mg/L N	mg/L	mg/L	mg/L P	mg/L
Min	1.60	0.50	0.52	0.06	0.10	0.40	0.57	1.00
Mean	7.97	1.36	2.26	16.97	5.56	4.79	2.84	3.16
Median	1.60	0.73	1.70	15.00	4.15	0.90	1.90	2.00
10%	1.60	0.50	0.76	0.55	0.40	0.40	0.86	1.00
90%	3.14	2.70	5.02	36.20	14.00	13.40	7.90	6.04
Max	300.00	9.20	7.00	53.40	25.00	27.00	8.70	15.00
<b>2020</b>	cfu/100mL	mg/L	mg/L	mg/L N	mg/L	mg/L	mg/L P	mg/L
Min	1.60	0.50	0.55	0.02	0.10	0.40	0.53	1.00
Mean	22.31	1.10	1.07	5.56	0.87	0.44	1.21	2.81
Median	1.60	0.63	1.07	0.57	0.82	0.40	1.20	2.20
10%	1.60	0.50	0.78	0.04	0.56	0.40	0.84	1.00
90%	1.63	2.25	1.45	10.05	1.34	0.40	1.62	5.70
Max	480.00	7.00	1.90	64.30	1.70	1.10	2.20	8.80
<b>2021</b>	cfu/100mL	mg/L	mg/L	mg/L N	mg/L	mg/L	mg/L P	mg/L
Min	1.60	0.50	0.38	0.02	0.46	0.40	0.37	1.00
Mean	2.36	1.07	1.23	6.47	0.93	0.41	1.37	3.31
Median	1.60	0.65	1.15	4.07	0.93	0.40	1.24	3.00
10%	1.60	0.50	0.47	0.25	0.68	0.40	0.55	1.40
90%	1.60	1.91	2.08	16.00	1.24	0.40	2.37	6.20
Max	25.00	4.40	3.14	27.30	1.86	0.57	3.27	10.00
<b>2022</b>	cfu/100mL	mg/L	mg/L	mg/L N	mg/L	mg/L	mg/L P	mg/L
Min	1.60	0.50	0.17	0.63	0.62	0.40	0.25	1.00
Mean	1.62	0.92	0.33	6.03	1.59	1.04	0.39	3.14
Median	1.60	0.67	0.31	6.06	0.89	0.40	0.36	2.80
10%	1.60	0.50	0.25	3.44	0.69	0.40	0.30	1.00
90%	1.70	1.60	0.46	8.05	2.00	1.19	0.54	5.44
Max	1.70	2.30	0.52	12.50	12.00	11.70	1.38	10.80
<b>2023</b>	cfu/100mL	mg/L	mg/L	mg/L N	mg/L	mg/L	mg/L P	mg/L
Min	1.60	0.50	0.21	0.02	0.63	0.40	0.22	1.00
Mean	9.04	0.94	0.37	4.39	1.03	0.63	0.43	2.92
Median	1.60	0.70	0.32	4.13	0.81	0.40	0.39	2.40
10%	1.60	0.50	0.25	0.97	0.68	0.40	0.27	1.00
90%	1.64	1.80	0.50	7.20	0.97	0.54	0.64	5.60
Max	120.00	2.00	0.92	10.10	5.33	5.08	1.04	5.80

Table 2: Owhanake WWTP annual effluent quality analysis<sup>6</sup>

<sup>5</sup> 2021-2022 Owhanake compliance report.

<sup>6</sup> Owhanake WWTP monitored data.

Table 3: Owhanake WWTP effluent quality analysis (2018 – 2023)<sup>6</sup>

	E. coli	CBOD5	SRP	NO <sub>3</sub> -N	TKN	Ammonia (NH <sub>3</sub> + NH <sub>4</sub> )	TP	TSS
<b>OVERALL (2018 - 2023)</b>	cfu/100mL	mg/L	mg/L	mg/L N	mg/L	mg/L	mg/L P	mg/L
<b>Min</b>	1.60	0.50	0.17	0.02	0.10	0.40	0.22	1.00
<b>Median</b>	17.78	1.17	1.91	8.78	2.20	1.61	2.18	3.10
<b>Mean</b>	1.60	0.69	0.95	5.90	0.94	0.40	1.05	2.40
<b>10%</b>	1.60	1.60	0.29	0.24	0.61	0.40	0.33	1.00
<b>90%</b>	3.30	3.30	6.60	22.40	5.36	4.02	7.58	5.80
<b>Max</b>	2300.00	9.20	11.00	64.30	25.00	27.00	13.00	20.00

Table 4: Owhanake WWTP annual daily flowrate analysis (2018 – 2023)<sup>6</sup>

m <sup>3</sup> /day	Overall (2018 - 2023)		2018		2019		2020		2021		2022		2023	
	*Infl	**Effl	Infl	Effl	Infl	Effl	Infl	Effl	Infl	Effl	Infl	Effl	Infl	Effl
<b>Min</b>	0.02	0	0	0	6.79	0	3.75	0	3.95	3.6	12.3	14.21	0.02	0.01
<b>Median</b>	30.99	32.91	29.92	29.92	32.54	31.96	28.5	32.53	25.2	28.31	31.16	36.02	36.66	43.32
<b>Mean</b>	31.67	34.27	32.83	32.83	33.56	32.49	28.59	32.37	25.78	29.29	33.97	39.01	37.5	42.87
<b>10%</b>	16.8	16.14	25.24	23.89	24.01	19.37	9.53	11.97	9.54	11.41	20.97	23.65	0.04	0.03
<b>90%</b>	46.01	53.56	47.02	47.83	44.41	47.93	44.06	51.86	42.05	49.96	50.54	57.84	54.65	70.23
<b>Max</b>	161.52	112.85	112.85	112.85	98.54	74.39	91.74	59.92	81.71	74.74	161.52	84.8	136.49	96.22
<b>Consented standard</b>	-		-	80	-	250	-	250	-	250	-	250	-	250

\*Influent  
\*\*Effluent



Table 5: Effluent Reuse Categories and Applicability at Owhanake WWTP

Reuse Category	Typical application	Requirements & difficulties	Treatment level required (AGWR where applicable) <sup>1</sup>	Consideration for Owhanake
Landscape Irrigation	ACC Golf Course Onsite Reforested Land	Pathogen control Dedicated storage (With Algae control) Irrigation flow control Aesthetics Nutrient loading limit Active monitoring of ground conditions	Secondary/tertiary, filtration (Membrane), and disinfection (UV)  Use of micro spray, drip irrigation, and minimising public access  <b>High public access:</b> To be case by case basis, E. coli to be < 1/mL.  <b>No public access:</b> BOD <20 mg/L <sup>d</sup> , SS <30 mg/L <sup>d</sup> , E. coli <100 cfu/100mL, with additional measures such as buffer zones, withholding periods, control of spray drift, can be increased to <1000 cfu/100mL.	Yes  Requires an assessment of volume demand as well as a suitable reuse frequency on the specific usage.  Health and safety risks needs to be identified, along with the appropriate level of treatment quality depending on environmental/health concerns.
Agricultural irrigation	Vineyard irrigation	Very high overall water quality (No health risks)	Clean water. Secondary, coagulation, filtration (Membrane), and disinfection (UV), E. coli <1 per 100ml. turbidity – must not exceed 5 NTU <sup>4</sup>	Unknown / Potential  Requires engagement with specific Vineyard owners for consent and planning.  Need to assess the specific level of potential direct exposure to fruits. Refer to further discussion in Section 3.2.
Industrial reuse (Excluding food processing)	Cooling water Washing Water	Corrosion Biological Fouling & Growth Scaling	To be determined on case-by-case basis, E. coli <100 per 100ml	No  There is a lack of industrial/commercial production plant to effectively make use of the treated water. Requires communication with potential user and reticulation which is expensive.

Nonportable urban uses	Firefighting Public toilet facilities	Pathogen reduction Aesthetics Dual distribution system	Secondary, coagulation, filtration (Membrane), and disinfection (UV) E. coli <1 per 100ml	No  Requires very high-water quality to ensure public safety and acceptance.  Reticulated systems would be highly expensive to implement due to the difficulties surrounding construction on the island.  Public has been historically against reticulated systems due to the disturbance of roads involved.
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## 3 Recommended Actions

The current resource consent (Permit No. 37282) requires Watercare to actively investigate the beneficial non portable reuse of the treated wastewater from the Owhanake WWTP, particularly during the summer period. The investigation is to occur at a two-years interval.

Efforts to explore the possibility of reusing treated wastewater have taken place, with notable assessments conducted in 2003 by City Design. However, despite these efforts, several factors have hindered the actual implementation of reuse opportunities. Currently, the treated wastewater is discharged at the Matiatia wetland. The main limitations for reusing the wastewater can be summarized as follows:

- **Public Health and Safety Concerns:** There are concerns about the health and safety of the public when using the treated wastewater for irrigation, especially in areas with high public access such as ACC parks and golf courses.
- **Low Production Rates and Seasonality in Demand:** The production rate of treated wastewater is low and varies depending on time, making it challenging to identify potential users that have suitable demand. In addition, the seasonality of any irrigation scheme will make water reuse a challenging practice.
- **Limited Industrial Demand:** The region lacks industrial sectors that can effectively utilise the treated effluent, reducing opportunities for industrial reuse.
- **Constructability Constraints:** Constructing wastewater pipelines for recycled water involves overcoming regulatory hurdles, addressing environmental issues, public acceptance, managing budgets, and ensuring technical expertise, safety, and maintenance planning.
- **Insufficient Regulatory Support:** While obtaining consents is possible, the main challenge lies in the fact that the current regulatory framework does not facilitate widespread recycled water usage.
- **High Operating Costs:** The ongoing cost of delivering treated wastewater to potential reuse sites is high, primarily due to the long distances between the WWTP and potential reuse site,.
- **Ground Stability and Soil Profile Concerns:** Some potential reuse sites have exhibited signs of soil instability, which may be further destabilised by the introduction of treated wastewater, including potential nutrient loading issues.

In summary, despite past investigations, various challenges and concerns have prevented the actual utilisation of treated wastewater for reuse, leading to its current practice of discharge at the Matiatia wetland.

### 3.1 Additional Assessments

The resource consent (Permit No. 37282) expires 15-years following the date the consent commences, which would be in December of 2027. Until expiration, the Owhanake WWTP is to actively investigate the viability of reuse options unless agreed by the Manager otherwise. As of current, the most viable and realistic reuse option falls under the category of landscape irrigation. This section aims to provide some initial steps which should be taken as part of the effluent reuse plan, this includes applicability assessment of volume demand, site of interest, costings, environmental factors, health and safety, and any other risks.

The Owhanake WWTP has made significant strides in enhancing water quality parameters, especially following the commissioning of the new MBR plant in 2019. This improvement has opened promising opportunities for treated wastewater reuse, particularly in ground irrigation. However, to ensure the safe and effective utilisation of this resource, it is essential to take the following recommended steps, which warrant further investigation and implementation:

#### 3.1.1 Recommended monitoring

To maintain the achieved water quality standards, it is imperative to consider the possibility of expanding our monitoring program beyond the currently monitored parameters. As part of future recycled water investigations, additional water quality monitoring may be required, which could encompass crucial parameters such as SAR, Chloride, and heavy metals. This approach will provide vital data for evaluating the suitability of wastewater for various reuse applications and identifying any deviations from desired quality standards. It's important to recognize that while a comprehensive monitoring program would be beneficial, its implementation should be considered in light of the associated costs and resource requirements.

### 3.1.2 Site-Specific Assessment

Before implementing wastewater reuse for ground irrigation, undertake a comprehensive site-specific assessment. This assessment should encompass an understanding of soil characteristics, the types of crops or pasture to be irrigated, and the land's sensitivity to nutrient loading and moisture content. Such an assessment is indispensable in ensuring that irrigation with treated wastewater does not negatively impact the land or its intended use. For any potential irrigation sites, in-depth assessment of the site's soil stability should also be carried out. If the site is available for public access, the site profile should be monitored closely to ensure the overall public safety. Depending on the size of the site, different sampling point should be included to understand the soil conditions holistically. This should also provide insight on whether the water used for irrigation would require additional treatment.

### 3.1.3 Health and Safety Evaluation

Thoroughly evaluate the potential for human exposure to treated wastewater during irrigation, particularly in areas with high public access (parks, golf courses). Ensure that the quality of water produced complies with health and safety standards to safeguard public health and prevent any compromises. Assessment and simulated scenarios should be carried out to understand the magnitude of impact, such as number of people affected and degree of the exposure, along with potential health risks.

### 3.1.4 Volume & Service Demand Assessment

Currently the Owhanake WWTP produces an average effluent of 40-50 m<sup>3</sup>/day and a peak of 90-100 m<sup>3</sup>/day (During summer months). This volume is considerably small and hence it'll be particularly useful to perform demand assessments based on the irrigation sites of interest. As the WWTP itself produces different volume of effluent depending on the time of the year, sites that are applicable for irrigation would also have varying levels of irrigation requirements throughout the year, which will determine other important factors such as the weather/soil condition. It is key to understanding the timing of low and high demands on site, so the WWTP can adequately manage effluent discharge and storage. The balance between appropriate discharge and reliable supply of service will be the main challenge in terms of providing for irrigation sites.

Although unlikely, if the effluent is reused in an industrial/commercial context, similar considerations are also required. For example, the intermittent nature of demand during shutdowns, operational hours, and frequency of use.

In considering future factors, it's important to note that any potential increase in effluent volume output is expected to have a limited impact, mainly confined to the summer season and contingent upon Auckland city's growth. This is primarily due to the historical context of Waiheke Island, which has witnessed minimal population growth. The highest wastewater production periods coincide with the summer months when tourism thrives on the island, leading to heightened wastewater production primarily from the hospitality and commercial sectors. It is worth emphasizing that the servicing strategy indicates minimal anticipated increases in wastewater flows, as the WWTP serves exclusively the Oneroa commercial area and the Matiatia Wharf. Moreover, the current consented limits are deemed adequate to accommodate the projected additional flows.

### 3.1.5 Costs & Economics Evaluation

Reusing treated effluent is expected to be cost-effective due to its low production volume. The primary expenses would involve operational costs for transporting the treated effluent, and the advantage lies in not requiring a new pipeline network. However, if a new distribution system is necessary, significant capital costs could arise, depending on the length and complexity of underground piping on Waiheke Island. There might also be capital expenses for building an onsite storage facility for excess water, especially if there isn't enough space at the current WWTP site. It's important to note that recycled water would likely be used primarily during severe droughts rather than relying on regular water tanking to ensure both sustainability and cost-effectiveness.

### **3.1.6 Reference Guidelines Consideration**

In the absence of clear New Zealand guidelines for treated wastewater reuse, consider referencing the Australian Guidelines for Water Recycling. These guidelines can offer invaluable insights and standards to guarantee that the effluent quality meets the specific requirements of reuse.

### **3.1.7 Chlorination for Storage**

In cases where there is a need to store the produced effluent for a period when immediate irrigation is not feasible, chlorination of stored water is likely necessary. This step will assist in preventing pathogen production, thereby ensuring the safety of the stored water.

### **3.1.8 Re-use Storage Tank Viability**

This is also likely a necessary implementation at the Owhanake WWTP if recycled water is to be utilized efficiently. In terms of its viability, the current plant layout already features a treated water tank for effluent reuse. Assuming this tank is sufficient in volume to meet the expected number of tankers, no additional tanks may be required. However, it's crucial to assess the adequacy of the existing storage tank's capacity based on the projected tanker demand. Additional tanks may be required depending on the volume demand of the irrigation site/usage purpose during peak periods when excess water from low-use periods would be necessary to meet the demand. The ease of implementing additional storage tanks would depend on the overall site layout, considering space availability and potential treatment upgrades required in the future. It is also worth mentioning that with the use of storage tanks, the stagnant water would likely require chlorination, as mentioned previously.

### **3.1.9 Continued Improvement of Reuse plan**

Although significant treatment upgrades may not be immediately required, it remains critical to continually explore opportunities for further improvements of the treatment process. The pursuit of sustainable practices and technological advancements should be driven by a commitment to minimising costs and operational demands, thus avoiding overengineering of the plants. This approach can potentially raise water quality standards and expand the range of reuse options in the future.

## **4 Conclusion**

Condition 40 of the current resource consent (Permit No. 37282) requires the active investigation of potential beneficial non potable reuse of treated wastewater. Unless specified by the Manager, this shall be carried out at a 2-year interval until the expiration of the current resource consent. This investigation has determined that based on the water quality produced in the recent years, the Owhanake WWTP should continue exploring potential reuse options within the ground irrigation category, notably landscaping of onsite, recreational fields (golf courses, parks), and potentially at one of the numerous vineyards on the island given the water quality is up to standard by international standards (For example the Australian water recycling guidelines). The consultation process with potential local users, such as wineries in the area, will be an essential step in determining the feasibility of wastewater recycling options for irrigation, as their input and collaboration will play a crucial role in achieving successful implementation. Successfully implementing a reuse plan would reduce the demand of freshwater usage on the island, which is a scarce and valuable resource.

# Appendix A

**AUCKLAND COUNCIL**

**RESOURCE CONSENT**

**PERMIT NO.: 37282**

**CONSENT HOLDER:** Watercare Services Limited  
**FILE REFERENCE:** 16549

**CONDITIONS OF CONSENT:**

**Duration of Consent:** This consent shall expire on 31 December of the year 15 years following the date the consent commences, unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991.

**Date of Lapsing** If it is not exercised, the Consent will lapse on 31 December of the year 5 years following the date it is granted.

**Purpose of Consent:** To authorise the discharge of tertiary treated domestic wastewater into the upper Matiatia wetland, in accordance with Section 15 (1a) of the Resource Management Act 1991.

**Site Location:** 61 Ocean View Road, Waiheke Island

**Legal Description of land:** Lot 37, DP 183455 and Lot 52 DP 183455 (Scenic Reserve)

**Territorial Authority:** Auckland City Council

**Map Reference:** NZMS 260 R11 889 893

**Quantity:** Plant A: Maximum discharge volume 80 cubic metres per day  
Plant B: Maximum discharge volume 250 cubic metres per day.

## DESIGN AND INSTALLATION CONDITIONS OF CONSENT:

1. The discharges of contaminants shall be carried out in accordance with the plans and information submitted with the application, including:

### Plant A:

- Report by City Design entitled "Owhanake Effluent Treatment Plant. Environmental Impact Assessment", dated November 1998.
- Further correspondence and attachments from City Design relating to the Owhanake Effluent Treatment Plan dated 6 April 1999, 28 January 1999, 22 December 1998, 11 November and 17 November 1998.
- In general accordance with the constructed wetland design concept indicated in the drawing by City Design titled "Amended Wetland Concept Design" dated September 2000.
- Correspondence from *aaEnvironmental* dated 20 January 2003 titled "Owhanake Discharge Permit Consent Variation [to Consent] 21865"

Specifically, the Plant A treatment system shall consist of at least the following key components (or equivalent or better):

Treatment Plant: Additional Primary Treatment (APT) Tank (following septic tank and effluent outlet filter treatment at source); a Recirculation Tank; a Recirculating Sand Filter; Carbon Filters on all vents; an Ultra-violet Disinfection Unit; a Constructed Subsurface Wetland and a Piped Diffuser Discharge Structure.

Matiatia Public Toilet: (2x) 14m<sup>3</sup> septic tanks and (1x) 11m<sup>3</sup> pump chamber including at least 7.8m<sup>3</sup> (18 hours) emergency storage

### Plant B:

- AA Environmental Ltd File titled "OWTP Resource Consent Application- Volume 1- TEXT" dated 26 November 2002 and updated December 2003.
- AA Environmental Ltd File titled "OWTP Resource Consent Application- Volume 2 – FIGURES" dated 26 November 2002 and updated December 2003.
- AA Environmental Ltd File titled "OWTP Resource Consent Application- Volume 3 – APPENDICES" dated 26 November 2002 and updated December 2003.
- Application from AA Environmental Ltd to Discharge Contaminants including AA Environmental Letter titled "OWTP Plant Upgrade", accompanying applications, dated 22 November 2002.
- Tonkin and Taylor Report titled "ACC OWTP Capacity Upgrade Options Report" dated March 2003.
- ACC Letter titled "OWTP Discharge Consent Application" concerning the overall context of wastewater treatment for Waiheke Island dated 4 June 2003, with



Report by Tonkin Taylor appended titled "Options for Effluent Disposal to the Matiatia Wetland".

- AA Environmental Section 92 response letter titled "OWTP Upgrade 022RC-ARC" addressing the 9 points raised in ARC request for additional information dated 11 February 2003, dated 16 June 2003.
- AA Environmental Letter titled "OWTP Plant Upgrade 022RC-ARC" dated 18 June 2003.
- AA Environmental Letter titled "OWTP Upgrade- Resource Consent Application" addressing 21 items from the draft NIWA review dated 14 July 2003.
- Tonkin & Taylor Letter titled "OWTP", detailing a topographical survey of OWTP site and Matiatia Wetland dated 7 October 2003 (by Tony Bryce).
- AA Environmental Section 92 response letter titled "OWTP Upgrade (Version 6)" dated 8 October 2003, addressing item 2 of ARC's request for additional information dated 29 July 2003.
- ACC Section 92 response titled "OWTP Section 92 request dated 29 January 2004" detailing consent compliance matters for Discharge Consent 26771 dated 15 March 2004 (by Gary Peters).
- Andrew Stewart Limited application titled "Metrowater Asset Management and Investments, Owhanake Wastewater Treatment Plant, s127 Application to Vary Conditions of Existing ARC Wastewater Discharge Consent (Permit No. 26771 & 27473) dated September 2009"

Specifically, the Plant B treatment system shall consist of at least the following key components (or equivalent or better):

- Secondary Treatment System (Activated Sludge and clarifier system or better approved by the Manager);
- Balance Tank;
- Sand Filters;
- Sludge Thickener;
- Carbon Filters on all vents (other than the sludge thickener which is to be vented to a biofilter);
- Ultra-violet Disinfection Unit;
- Constructed Subsurface Wetland with Piped Diffuser;
- Discharge Structure(s).

In the instance that one report contradicts another; the most recent information shall apply.

2. That Plant B is to be installed and fully operational before annual average dry weather flows exceed 35 m<sup>3</sup> per day.
3. Notwithstanding the provisions of condition 1 of this resource consent, the Consent Holder may submit for approval of The Manager an alternative biological nutrient removal wastewater treatment plant and alternative disinfection system to those described in the Applicant's proposal for application 27473 and other supporting documents.

#### **Discharge Volume**

4. The consent holder shall ensure that the maximum discharge volume does not exceed the following limits:
  - a) Plant A: 80 cubic metres per day
  - b) Plant B: 250 cubic metres per day.

#### **Additional works for Plant B**

5. That upon considering key new treatment system components for the upgrade of the plant capacity the Consent Holder shall specifically bear in mind and take proper account of the potential future requirement to reduce phosphorus concentrations in the treated wastewater prior to discharge.
6.
  - (a) That prior to the commissioning of the Plant B, the Consent Holder shall provide to the Manager's satisfaction the design details of the selected disinfection system equipment. The Consent Holder shall also provide to the Manager information from a suitably qualified wastewater engineer that verifies that the disinfection methodology, along with specified maintenance and monitoring procedures, will achieve a final effluent quality that will comply with the discharge standards specified in Conditions 34 and 35 of this consent.
  - (b) That if a UV disinfection system is used then the minimum level of disinfection shall be such that the wastewater receives a minimum UV dose, defined as the 10 minute average received UV light dose, of 45 milli-Watt seconds per square centimetre (mWs/cm<sup>2</sup>) prior to it entering the constructed wastewater wetland.
  - (c) That if an alternative disinfection system is used instead of UV, then the Consent Holder shall provide evidence to The Manager's satisfaction that the effectiveness of any such alternative system can be continuously monitored.
  - (d) That the disinfection system used shall meet at least the discharge quality limit in condition 36.
7. That prior to the commissioning of Plant B, the Consent Holder shall install an upgraded UV disinfection system approved under condition 9 below.

8. That prior to the commissioning of Plant B, the Consent Holder shall install outfall structures in the Matiatia wetland to disperse the wastewater discharge flow and to ensure that the discharge does not result in flooding or erosion effects on the respective tributaries. The outfall structures to be used shall be designed to improve wastewater distribution within the wetland, in particular by the use of multiple discharge points rather than a single discharge point on each structure. One of the structures shall be installed approximately 10m downstream of the existing outfall pipe. The design and installation of the structures shall be submitted to the Manager for approval prior to construction and once constructed the Consent Holder shall provide certification of the works to the Manager.

*Engineer's Certification and As-Built Plans for Each Stage of New Works*

9. The design and installation of all new system components shall be carried out under the supervision of a chartered professional engineer or other appropriately qualified person experienced in the design and installation of wastewater treatment systems. The supervising engineer/person shall inspect all the new works (as they are completed), and shall certify in writing to the Manager that all additional components of the wastewater treatment system have been designed, inspected and installed in accordance with standard engineering practice and with the plans provided pursuant to condition 1 and any other plans or specifications required by the conditions of consent. This certification shall be carried out within three months of the installation of Plant B.
10. Within three months of the commissioning of Plant B the consent holder shall submit an updated 'as-built' general plant layout plan for the upgraded treatment system to the Council with the certification required by condition 9, showing on the plan the location of all existing and new key components of the treatment system.

**Reticulation Works and New Connections:**

11. That the Consent Holder shall ensure that all septic tanks connected to the reticulation system are of appropriate capacity, are fitted with outlet filters, and are installed and maintained to prevent ingress of stormwater.
12. That the Consent Holder shall provide to the Manager, via the OWTP Annual Monitoring Report required by Condition 39, an updated summary of current and confirmed proposed new connections to the treatment plant sewerage system.
13. That the Consent Holder shall not accept any new connections to the treatment system where the primary treatment system at the source does not comply with the design and maintenance requirements for septic tank and outlet filters as specified in the Auckland Regional Council Technical Publication 58 "On-site Wastewater Systems: Design and Management Manual" (TP58, Third Edition 2004) as current at the time of connection or equivalent as approved in writing by the Manager.
14. That no trade, industrial, non-domestic or other strong (non-domestic type) wastes shall be accepted into the wastewater treatment plant without the written approval of the Manager. In this consent, "trade wastes"<sup>1</sup> refers to anything which is discharged from trade premises as defined in Section 489 of the Local Government Act 1974.

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<sup>1</sup> The Consent Holder is directed to refer to Advice Notes 14 and 15 concerning Trade Wastes.

15. That all primary treatment systems from which effluent is reticulated to the treatment plant shall be fitted with an effluent outlet filter that retains any particle of 3mm diameter or greater within the septic tank on the site that the wastewater is generated.

**Access Conditions:**

16. That the Consent Holder shall fence and clearly signpost the treatment plant and discharge points to discourage access by unauthorised personnel. The details of such action shall be agreed with the local Medical Officer of Health and submitted for approval by the Manager, prior to the exercising of this consent.
17. That this resource consent is granted by the Auckland Council subject to its servants or agents being permitted access to the relevant parts of the property at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or taking samples.

**Contingency Conditions:**

18. The Consent Holder shall ensure that 24 hours a day, seven days a week electronic monitoring systems are installed and maintained to operate in the event of any plant failure.
19. The Consent Holder shall ensure that the system is designed and maintained to ensure that wastewater can be retained within the system, above the alarm level, without overflow for a period of at least 24 hours and in accordance with the provisions in the Management Plan.
20. That a suitable area shall be reserved for the extension of the constructed wetland, should this become necessary and the extent of this reserve shall be specified in the Management Plan.
21. That the Consent Holder shall install and maintain signage along the upper and main sections of Matiatia Wetland, Matiatia stream and Matiatia Beach foreshore. The signage shall advise of the poor stream water quality and the sources potentially contributing to that poor quality. The signs shall be erected prior to the exercise of this consent, in such positions as to clearly notify users of the wetland and of the associated public walkway of the proximity of the effluent discharge and shall provide appropriate public health advice, as approved by the Medical Officer of Health, regarding the use of the wetland for recreation and gathering of food for consumption.
22. That in the event of wastewater being discharged from the treatment plant that has not received effective disinfection, the Consent Holder shall immediately supplement the signage required by condition 21 above with signs specifically advising of system malfunction and warning against collection of shellfish or contact recreation in the vicinity of the stream outlet, as a consequence of the discharge of poorly treated wastewater. Signage shall be maintained until at least 24 hours after such time that monitoring confirms compliance with the discharge quality consent conditions.
23. That the wording, language(s) and locations of all signs shall be to the satisfaction of the Manager, in consultation with the Medical Officer of Health.

### **Desludging Condition**

24. That the Consent Holder shall desludge the plant as required and that the sludge shall be thickened according to the standard in the Management Plan approved by the Manager. Waste sludge shall be disposed of off-site to an appropriate licensed waste treatment and disposal facility, in a manner that ensures that the sludge or runoff from the sludge does not enter any natural waters.

### **MANAGEMENT PLAN CONDITIONS**

25. The consent holder shall prepare a Management Plan for the wastewater treatment and discharge system to enable compliance with the conditions of this consent to ensure that any adverse effects on the environment are minimised. The Management Plan shall be in accordance with the conditions of this consent and shall cover the following:
- (a) Reticulated Area – detailing the current and proposed future reticulated area of the catchment;
  - (b) Plant Operation – specifications of the discharge regime which must cover how the discharge will be managed to ensure compliance with consent conditions;
  - (c) Inspection and Maintenance – outlining the practices and procedures with respect to inspection and maintenance to be adopted to ensure compliance with the conditions of consent, (including desludging of waste activated sludge for Plant B);
  - (d) Effluent and Receiving Environment Monitoring and Reporting – outlining the practices and procedures to be adopted with respect to monitoring and reporting to demonstrate on-going compliance with the conditions of consent; and
  - (e) Contingency Plans – outlining the practices and procedures to be adopted with respect to contingency and incident response planning in order to avoid non-compliance with conditions of consent.

The Management Plan shall be prepared under the supervision of an engineer or other person experienced in wastewater engineering for the wastewater treatment and disposal system and shall be submitted to the Council within three months of the commencement of this consent for the Manager's review and feedback.

26. The consent holder shall comply with the requirements of the Management Plan required by condition 25 once it has been approved. All subsequent significant updates to the plan throughout the term of this consent shall be submitted to the Manager for review.

## MONITORING CONDITIONS

### Flow Monitoring

27. That the Consent Holder shall continuously measure the wastewater flow into and out of the wastewater treatment plant. Meters shall be located to enable separate measures of the wastewater flows from the Oneroa commercial and residential area pump station(s) and from the Matiatia Wharf pump station(s), for flows from the wharf public toilets and from the WIL development and for the treated wastewater flow discharged to the natural wetland. Flow volumes shall be measured with meters capable of measuring to an accuracy of plus or minus 5 %. Where pump hours are used to meter flows, the pump flow time shall be regularly calibrated to consistently ensure an accuracy of plus or minus 5 % is achieved. The meters shall be installed in accordance with the manufacturer's specifications and shall be maintained in good working order at all times.
28. That all wastewater flows both into and out of the wastewater treatment plant are to be logged automatically. This data is to be recorded at such a frequency so as to ensure that the diurnal variations in wastewater flows can be determined and a daily 24 hour flow total determined. The data shall also be securely stored electronically for at least 2 years. All data collected pursuant to this condition shall be forwarded to the Manager quarterly as required by Condition 38.

### Discharge Quality

29. That the Consent Holder shall monitor water quality at the following locations:

**a. Primary Treated Influent into the Plant**

That samples shall be taken from the primary treated influent flow at the point it enters the Owhanake treatment plant at intervals as specified in the Management Plan, and the samples shall be analysed for the following parameters:

- 5-day carbonaceous Biochemical Oxygen Demand (cBOD<sub>5</sub>)
- Total Suspended Solids (TSS)
- Total Nitrogen (TN)
- Total Oxidised Nitrogen (NO<sub>3</sub>&NO<sub>2</sub>)
- Ammonia Nitrogen (NH<sub>3</sub>&NH<sub>4</sub>)
- Dissolved Reactive Phosphorus (DRP)
- Total Phosphorus (TP)
- Oil and Grease

**b. Effluent Post Secondary Treatment System and Post Disinfection Treatment, prior to Constructed Wetland**

*Turbidity (or equivalent) monitoring prior to disinfection system*

- (i) That effluent entering the disinfection treatment system shall be continuously monitored for turbidity or an alternative effluent quality parameter that indicates its suitability for effective disinfection. The monitoring system shall be connected to an automated alarm that is designed to activate in the event

that effluent quality requirements, as specified in the Management Plan, are exceeded in accordance with procedures the Management Plan.

*E. coli monitoring following disinfection system*

- (ii) That effluent samples shall be taken immediately following the discharge from the disinfection system and shall be analysed for *E. coli*. Samples shall be taken at twice weekly intervals, at the same time each sampling day, post-commissioning of any new key plant components or changes in flow regimes in excess of 25% increase in the average weekly flows compared to the average flows recorded in the previous month, until two week's full plant discharge quality compliance is achieved. At all other times, unless the frequency in condition 29(b)(iii) applies, sampling shall be undertaken weekly in summer<sup>2</sup> and fortnightly in winter<sup>3</sup>.

*Increased E. coli monitoring if elevated turbidity (or equivalent)*

- (iii) That in the event of the disinfection system influent quality in terms of turbidity (or an alternative parameter specified 29(b)(i) above) exceeding the quality trigger level and maximum non-compliance interval (minutes), as specified in the Management Plan for effective treatment, then the frequency of *E. coli* monitoring shall be increased to daily until both *E. coli* levels and turbidity are in compliance with this consent and the parameters specified in the Management Plan respectively.

*Increased wetland monitoring if E.coli elevated above 10,000cfu/100ml*

- (iv) That in the event of an *E. coli* exceedence of 10,000 cfu (or MPN) per 100ml, then monitoring shall be undertaken to assess the extent of impact of the discharge on the wetland. This shall involve full monitoring of the Receiving Water Quality in accordance with condition 29(d), which shall commence as soon as practicable following the exceeding result and at least within one week of the exceeding discharge flow.

**c. Treated Wastewater immediately prior to the Discharge into the Natural Wetland**

- (i) That samples of treated effluent shall be taken immediately prior to its discharge into the natural wetland. Samples shall be taken at weekly intervals at the same time each sampling day (This is site E2 on Site Sampling Plan.)
- (ii) That following four consecutive samples being in full compliance with the plant discharge quality standards specified in conditions 34, 35 and 36, then the frequency of analysis for that parameter only, may be decreased to monthly, and must return to weekly should the limit be exceeded again. This is except for analysis for *E. coli*, which shall be undertaken weekly in any event during the summer period 1 November to 30 April each year.
- (iii) That all the samples taken from this location shall be analysed for the following parameters:
- 5-day carbonaceous Biochemical Oxygen Demand (cBOD<sub>5</sub>)
  - Total Suspended Solids (TSS)
  - Total Nitrogen (TN)

<sup>2</sup> Summer is period November to April inclusive

<sup>3</sup> Winter is period May to October inclusive

- Total Oxidised Nitrogen (NO<sub>3</sub>&NO<sub>2</sub>)
  - Ammonia Nitrogen (NH<sub>3</sub>&NH<sub>4</sub>)
  - Dissolved Reactive Phosphorus (DRP)
  - Total Phosphorus (TP)
  - *E. coli*
  - Dissolved Oxygen
  - pH
  - Temperature
  - Conductivity
- (iv) That once Plant B has been commissioned, one sample per year of the surficial sediment in the unnamed tributary approximately 10 m downstream of the outfall structure shall be analysed for dissolved and total recoverable Trace Metals.
- (v) That should the *E. coli* levels in the discharge from the treatment plant be in excess of 126 MPN (or cfu)/100 ml based on single sample exceedence in the summer period between 1 December to 31 March, then the Consent Holder shall also immediately notify the Manager and the Medical Officer of Health of the exceedence, and undertake any precautionary actions specified by the Medical Officer of Health. The Consent Holder shall also re-sample all sites specified in condition 29(d) above, as soon as practicable and within one week of receipt of the exceeding sample result, and also analyse the samples for faecal coliforms.

**d. Receiving Water**

That samples shall be taken monthly of the receiving waters in tributaries to the upper Matiatia Wetland, the main wetland and the lower reaches of Matiatia Stream downstream of the wetlands, at least at the following locations. [These points were initially shown on plan titled "Sampling Points as Recommended by ARC Draft Resource Consent Conditions", dated 11 May 2004", with the draft conditions to the hearing and are required to be specified in the Management Plan]:

- (i) The western tributary, at least 10 metres upstream of the point of discharge; [W1]
  - (ii) The western tributary, downstream of the point of discharge prior to the confluence with the eastern tributary [W2];
  - (iii) The eastern tributary immediately upstream of the confluence with the western tributary; [W3]
  - (iv) The main wetland tributary, immediately downstream of the confluence of the western and eastern tributaries [W4];
  - (v) The main wetland tributary immediately upstream of the confluence with the stream that drains into Matiatia Bay; [W5]
  - (vi) The main wetland tributary immediately downstream of the confluence with the stream that drains into Matiatia Bay; [W6]
  - (vii) The stream that drains into Matiatia Bay, at least 20 metres upstream of the beach foreshore; [W7]
- AND Once the discharge location is extended to include a discharge into the eastern tributary;



- (viii) The eastern tributary, at least 10m upstream of the point of discharge.  
[W8]

That sampling shall be undertaken at the same time and day of each month at the precise sample site locations as shown on the plan and included in the Management Plan, unless the Manager approves other locations in writing at the request of the Consent Holder.

30. That the Consent Holder shall analyse all the samples collected in accordance with condition 29 above for the parameters specified in the respective conditions and with the minimum detection limits specified in Appendix 1.
31. That the Consent Holder shall maintain the photographic record established under consent 26771 of the sampling locations in the wetland and stream and expand it to include all sites specified in part (d) of condition 29. The purpose of the photographic record shall be to identify changes in vegetation at specified locations within the wetland and Matiatia stream. In addition to the photographic record the Consent Holder shall also record observations of algal and/or bacterial growths in the lower Matiatia Stream.
32. That the samples required by the Monitoring Program specified in Condition 29 to 33 shall be collected and analysed in accordance with the latest edition of the "Standard Methods for the Examination of Water and Wastewater", published by the American Public Health Association, the American Water Works Association and the Water Environment Federation, or equivalent as approved in writing by the Manager.
33. That the results obtained in accordance with Conditions 29 to 33 shall be recorded in a log book and a copy forwarded to the Manager quarterly with the flow records required by condition 27 and within one month the date the sample was taken.

#### **Discharge Quality Standards**

34. That the quality of the wastewater discharged from Plant A from the final point of the treatment process, immediately prior to its discharge into the natural wetland (as specified in condition 29(c)), shall comply with the following discharge standards:

5-day carbonaceous Biochemical	
Oxygen Demand (cBOD <sub>5</sub> )	better than <b>10 gO/m<sup>3</sup></b>
Total Suspended Solids (TSS)	better than <b>10 g/m<sup>3</sup></b>
Total Nitrogen (TN)	better than <b>30 gN/m<sup>3</sup></b>
Ammonia Nitrogen (NH <sub>3</sub> &NH <sub>4</sub> )	better than <b>2 gN/m<sup>3</sup></b>
Total Phosphorus (TP)	better than <b>7 gP/m<sup>3</sup></b>

35. That the quality of the wastewater discharged from Plant B from the final point of the treatment process, immediately prior to its discharge into the natural wetland (as specified in condition 29(c)), shall comply with the following standards:

5-day carbonaceous Biochemical	
Oxygen Demand (cBOD <sub>5</sub> )	better than <b>10 gO/m<sup>3</sup></b> ; and
Total Suspended Solids (TSS)	better than <b>10 g/m<sup>3</sup></b> .

Total Nitrogen <sup>4</sup>		better than 15 gN/m <sup>3</sup>
Ammonia Nitrogen		better than 2 gN/m <sup>3</sup>
Total Phosphorus	Summer <sup>5</sup>	better than 2 gP/m <sup>3</sup>
	Winter <sup>6</sup>	better than 4 gP/m <sup>3</sup>
Dissolved Oxygen		better than 5 g/m <sup>3</sup>
pH		6.0 - 9.0

36. That the *E. coli* levels in the effluent immediately following discharge from the disinfection treatment system shall not exceed 50 MPN (or cfu)/100ml.

### **Reporting**

#### *Non-Compliance Reporting*

37. That in the event of any sample having a contaminant quality that exceeds the limits specified in Conditions 34, 35 and 36 above, the following action shall be taken:
- The Manager shall be advised of the exceedence and its possible cause as soon as practicable after receipt of the result. The Consent Holder shall implement any modifications to the treatment system and sampling regime in accordance with response actions specified in the Management Plan, or, in the event of significant adverse effects, implement appropriate mitigation measures that the Manager and Consent Holder consider appropriate following consultation.
  - The Consent Holder shall ensure action is taken immediately to address and remedy the problem and advise the Manager immediately of actions taken.

#### *Quarterly Reporting*

38. The consent holder shall ensure that the results of the monitoring undertaken in accordance with conditions 27 and 28 (flow monitoring) and conditions 29 to 36 (discharge quality and discharge quality standards) are reported to the Manager quarterly within 20 working days of the period ending 31 December, 31 March, 30 June and 30 September each year.

#### *Annual Reporting*

39. The consent holder shall prepare an Annual Report and provide it to the Manager by 30 September each year. The Annual Report is to cover:
- A summary of the monthly sample results for the period up to 30 June each year (the first being due on the 30 June following the commencement of the consent);
  - An analysis and interpretation of all reporting data required by this consent for the past year;
  - The level of compliance with each monitoring consent condition, with recommendations and a timetable for rectifying any non-compliance;
  - General plant performance, including:

<sup>4</sup> Total Nitrogen is equivalent to the sum of Total Kjeldahl Nitrogen (TKN) and Total Oxidised Nitrogen (NO<sub>3</sub>&NO<sub>2</sub>)

<sup>5</sup> Summer is period November to April inclusive

<sup>6</sup> Winter is period May to October inclusive

- a. Any trends in changes in the discharge quality standards over time;
  - b. The performance and effectiveness of the UV unit (or alternative disinfection system);
  - c. The levels of indicator pathogenic microorganisms;
  - d. The effectiveness of total phosphorus removal and nutrient levels through the various seasons; and
  - e. Any trends indicated over recent years.
- v. Any trends and status of stormwater inflow and infiltration effects on total flow volumes and comment on flows during any peak storm events;
  - vi. A review of any changes in influent load to the plant and any corresponding changes in the ammoniacal nitrogen levels;
  - vii. A Receiving Environment Report compiling the results of the environmental monitoring required by conditions 29 to 33;
  - viii. Any key system maintenance and/or upgrade work completed within the prior year and proposed in the forthcoming year, and changes (if any) to the Management Plan required by condition 25;
  - ix. A review on the Plant's performance and improvements achieved in the past year;
  - x. An updated Register of any trade wastes connected to the plant, as required by condition 14;
  - xi. An update of the progress achieved in investigating the beneficial reuse of treated wastewater as required by Condition 40 below;
  - xii. Details of any complaints received in accordance with condition 42

Once Plant B is commissioned, copies of the report shall also be forwarded to the Manager and The Community and People of Waiheke Island Incorporated, or – in the event of that organisation ceasing to exist – Royal Forest and Bird Protection Society Inc. of New Zealand, Hauraki Gulf Islands Branch).

#### **REUSE CONDITIONS:**

40. That the Consent Holder shall actively undertake investigations into the beneficial *non potable* reuse of the treated wastewater generated from the system, particularly wastewater generated during the summer period from 1 November to 31 March each year. The investigations shall be undertaken two yearly, first within 6 months of the consent being exercised, and subsequently at two yearly intervals (unless agreed by the Manager that an investigation in that year is not necessary). The investigations shall be reported as part of the OWTP Annual Report required by condition 39 and shall involve the following:
- (1) That, the Consent Holder shall commission an independent investigation into reuse options for minimising the discharge of treated wastewater from the plant into the Owhanake wetland (particularly during summer). This shall include a detailed investigation of :
    - (a) Possible reuse options for treated wastewater
    - (b) The quality of the treated wastewater available for possible re-use
    - (c) The demand for reuse of treated wastewater

- (d) The costs/economics of reuse of treated wastewater;
  - (e) Possible health effects and risks
  - (f) Additional if any treatment required for safe reuse of wastewater
  - (g) The regulatory requirements for reuse of treated wastewater
  - (h) The feasibility of re-use storage tanks.
- (2) That the Consent Holder shall undertake public consultation in connection with the investigations required by clause (1) above;
41. That should the Consent Holder wish to pursue off-site reuse of the wastewater, the Consent Holder shall ensure the following:
- a) The treated wastewater disinfection system and the wastewater reticulation system design shall be in accordance with the specifications for wastewater re-use in Auckland Regional Council Technical Publication 58 "On-site Wastewater Systems: Design and Management Manual" (TP58) as current at the time of the installation, or equivalent as approved in writing by the Manager
  - b) The Consent Holder shall provide a completed report of the investigation in accordance with the details required by condition 40 above and the proposed reuse system design details to the Manager and to the Medical Officer of Health, for their review and approval at least two months before the new reticulation works need to commence.
  - c) The Consent Holder shall obtain prior written approval from the Medical Officer of Health and from the Manager, prior to commencing any reticulation or other associated works for re-use.

### **Complaints**

42. All complaints received by the consent holder about the discharges shall be logged immediately. The information shall include:
- a) the date, time, location and nature of the complaint;
  - b) name, phone number and address of the complainant unless the complainant wishes to remain anonymous;
  - c) action taken by WSL to remedy the problem;
  - d) any equipment failure and remedial action taken;
  - e) the weather conditions at the time of the complaint including estimates of wind direction, wind strength, temperature and cloud cover; and
  - f) the date and name of the person making the entry.

Details of any complaints received that affect the consent holder's ability to comply with the conditions of consent shall be provided to the Auckland Council within 24 hours of receipt of the complaint(s) or on the next working day.

## REVIEW CONDITION:

43. That the conditions of this consent (including any specified quantity) may be reviewed pursuant to section 128 of the Resource Management Act 1991, by the giving of notice pursuant to section 129 of the Act, in the year of 2005 and subsequently at yearly intervals thereafter commencing in the month of June of that year, for any of the following purposes:
- i) To vary the size or design of the treatment system in light of increased understanding of the system or further information, changed circumstances, or the results of monitoring; or
  - ii) To alter monitoring requirements in light of previous monitoring results and/or changed environmental conditions; or
  - iii) To require sediment sampling of wetland sediment and heavy metal analysis if elevated metal concentrations are identified in the discharge
  - iv) To deal with any significant adverse effect on the environment which may arise from the exercise of the consent and which was not apparent at the time of the granting of the consent; or
  - v) To require a Consent Holder to adopt the best practicable option to remove or reduce any adverse effect on the environment; or
  - vi) To deal with any adverse effect on the environment arising or potentially arising from the exercise of this consent, through altering or providing specific performance standards.

## ADVICE NOTES

1. *The Consent Holder is advised that in response to any request for Approvals required by the conditions of this consent, including Management Plan Approval and Approval of Off-site Reuse, the Manager will consider all information provided in accordance with that required by the respective condition of consent, and may seek a peer review and advice from an independent expert in wastewater treatment plant design and operation and/or in water quality impact assessments. The Consent Holder is advised that the Manager will be under no obligation to approve the proposal if s/he is not satisfied that all the provisions of the respective consent condition have been met. The Consent Holder is advised to allow at least 3 months for this assessment process.*
2. *The Consent Holder is advised that in accordance with AC's Schedule of Administrative Charges under Section 36 of the Resource Management Act 1991, the actual and reasonable costs of evaluating and approving any amendments to the design specifications, increased plant capacity, Management Plan, Reuse System Design Provisions in response to any Request for Approval, required by the conditions of this consent, will be payable by the Consent Holder to the AC as part of the cost of the administration and supervision of this consent. Such costs may include, staff time, expert peer review and advice and any analytical costs.*
3. *The Consent Holder is advised that in accordance with the AC's Schedule of Administrative Charges it will be required to pay to the Auckland Council any administrative charge fixed in accordance with s36(1) of the Resource Management Act 1991, or any additional charge required pursuant to s36(3) of the Resource Management Act 1991, payable in respect of this resource consent.*

4. *The Consent Holder is advised that the date of the commencement of this consent will be as determined by Section 116 of the RMA 1991, unless a later date is stated as a condition of this consent. The provisions of Section 116 of the RMA 1991 are summarised in the covering letter issued with this consent.*
5. *The Consent Holder is advised that pursuant to Section 125 of the Resource Management Act 1991, these resource consents lapse on the expiry of five years after the date of commencement, or on the date of any decision which will result in the site being used for any purpose other than for the development of a wastewater treatment system and which cannot be appealed further, whichever is the sooner, unless the consent is given effect to or other criteria contained within this section are met.*
6. *That in the event that the investigation outlined in Condition 40 above concludes that opportunities exist for economical and beneficial reuse of the treated wastewater from the system, the Consent Holder may make available for reuse by others, the surplus treated wastewater.*
7. *That for the avoidance of doubt, the Consent Holder shall be under no obligation under this consent to ensure that wastewater made available for reuse is in fact reused.*
8. *That the Consent Holder has indicated to the Consent Authority that it will prepare and distribute suitable education brochures to all parties connecting to the Oneroa reticulation network. Such brochures will describe the operation of the treatment plant and advise the best practicable methods of reducing wastewater flows. It is also recommended that the brochures should also specify types of products not suitable for discharge into the reticulation network and encourage the use of low phosphorous based cleaning chemicals.*
9. *That in the event contamination is identified in any samples required by condition 29(d) that the Consent Holder believes are due to upstream contamination beyond their control, the Consent Holder should also sample upstream to confirm this.*
10. *That the Consent Holder is advised to consult with Forest and Bird Protection Society with the purpose of facilitating the restoration programme of the Matiatia wetland, walking tracks and measures to control public access to certain areas.*
11. *That the Consent Holder is advised to actively investigate the option of disposal via an Ocean Outfall in future, should adverse effects be identified in the wetland limiting capacity for any further increase in flows and report findings of any investigations annually in the last OWTP Annual Report to the Works Committee (or equivalent), Auckland City Council, each year.*
12. *That the Consent Holder is advised that any pump stations are required to be installed in accordance with the relevant Council rules and provisions that are current at the time of construction.*
13. *The Consent Holder is advised to ensure that an experienced wastewater plant operator is available to routinely monitor plant performance and to respond at all times should there be any signs of poor performance.*
14. *The Consent Holder is advised to ensure a Trade Waste Bylaw is in place prior to allowing any trade waste to be discharged into the OWTP, other than domestic type wastewater, which includes wastewater from commercial premises such as cafes, restaurants and schools. Commercial (non-residential scale) laundry wastewater and*

wastewater containing hair salon chemicals are considered to constitute forms of trade waste. In the absence of any Trade Waste bylaw, the Consent Holder is advised to ensure all trade waste requirements are covered in each client's service contract.

15. The Consent Holder is advised to ensure that a Trade Waste Bylaw is in place prior to allowing any trade waste to be discharged into the OWTP.
16. The Consent Holder is advised to have regard to the turbidity limits specified in AC TP58 (Third Edition) and in Crities et al<sup>7</sup> when determining appropriate turbidity levels for effective UV treatment).
17. The Consent Holder is advised that the options for an Ocean Outfall for future disposal should be investigated if adverse effects be identified in the wetland limiting capacity for any further increase in flows.

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<sup>7</sup> R. Crities and G. Tchobanoglous, "Small and Decentralised Wastewater Management Systems" (1998)

## APPENDIX 1: PARAMETER DETECTION LIMITS

**Table One: Parameter Detection Limits**

Parameter	Detection Limits <sup>1</sup>	Units
pH	NA <sup>3</sup>	-
Dissolved Oxygen	NA	g/m <sup>3</sup>
Temperature	NA	°C
Conductivity	NA	MS/m
BOD	2	gO/m <sup>3</sup>
Suspended Solids	3	g/m <sup>3</sup>
E.coli	10	MPN or cfu/100 mL
Ammoniacal-N (Total ammonia)	0.01	gN/m <sup>3</sup>
Total Nitrogen	0.02	gN/m <sup>3</sup>
Total Phosphorus	0.01	gP/m <sup>3</sup>
Dissolved Reactive Phosphorus	0.01	gP/m <sup>3</sup>
Dissolved and total recoverable Trace Metals	As - 0.001 Cd - 0.0001 Cu - 0.0005 Cr - 0.0005 Pb - 0.0001 Zn - 0.001 Ni - 0.0005 Hg - 0.0001	g/m <sup>3</sup>
Organic Compounds <sup>2</sup>	PAH - <0.05 OCs - <0.01 PCBs - <0.01	mg/m <sup>3</sup>

Notes: 1 These detection limits apply unless other limits are approved in writing by the Manager

2 PAH = Polyaromatic hydrocarbons;

OCs = Organochlorine insecticides;

PCBs = Polychlorinated biphenyls.

3 NA = Not applicable



## DEFINITIONS

Average Dry Weather Flow (ADWF):	means average daily flow on days without rainfall, excluding flows on days with any rainfall of 10mm or greater and excluding the following day after rainfall had ceased.
ACRP:ALW:	Auckland Council Regional Plan: Air, Land and Water (Operative in Part)
ACRP:C:	means the Auckland Council Regional Plan Coastal
ACRPS:	means the Auckland Council Regional Policy Statement
AEE:	Assessment of Environmental Effects
BDO <sub>5</sub> :	Biochemical Oxygen Demand
<i>E. coli</i> :	means <i>Escherichia coli</i>
Manager:	means the Team Manager, Consents and Compliance – Water, Natural Resources and Specialist Input Unit, Resource Consents, Auckland Council or nominated Auckland Council staff acting on the Manager's behalf
NH <sub>4</sub> -N:	Ammonical Nitrogen
NZCPS:	means the New Zealand Coastal Policy Statement 2010
Oneroa Commercial Area:	means area within the immediate vicinity of the Oneroa reticulation area, as shown on Site Plan Figure 6 (19 November 2002) Vol. 2 of Application.
Plant A:	means sand filter type system serving flows of up to 80m <sup>3</sup> /day (existing system as at time of granting) as described in Condition 1
Plant B:	means activated sludge and clarifier type system (possible including biological nutrient removal treatment process) or better system serving flows up to 250m <sup>3</sup> /day as described in Condition 1
The Plant and OWTP::	means the Owhanake Wastewater Treatment Plant
TN:	Total Nitrogen
TSS:	Total Suspended Solids
The Council:	means the Auckland Council
WSL:	Watercare Services Ltd



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# Reuse Opportunities for Waiheke Island

Watercare Services Ltd

## Owhanake WWTP

- Receives flows from Oneroa commercial area and Matiatia Wharf
  - 34 m<sup>3</sup>/day average influent
- Upgraded in 2020 due to discharge quality and local growth
- Process include: flow buffering, fine screen compactor, anoxic and aeration tanks, membrane filtration, chemical dosing, UV disinfection
- Discharges treated effluent to Matiatia wetland
- Non-potable reuse opportunities for 1 Nov – 31 Mar



# Treated effluent

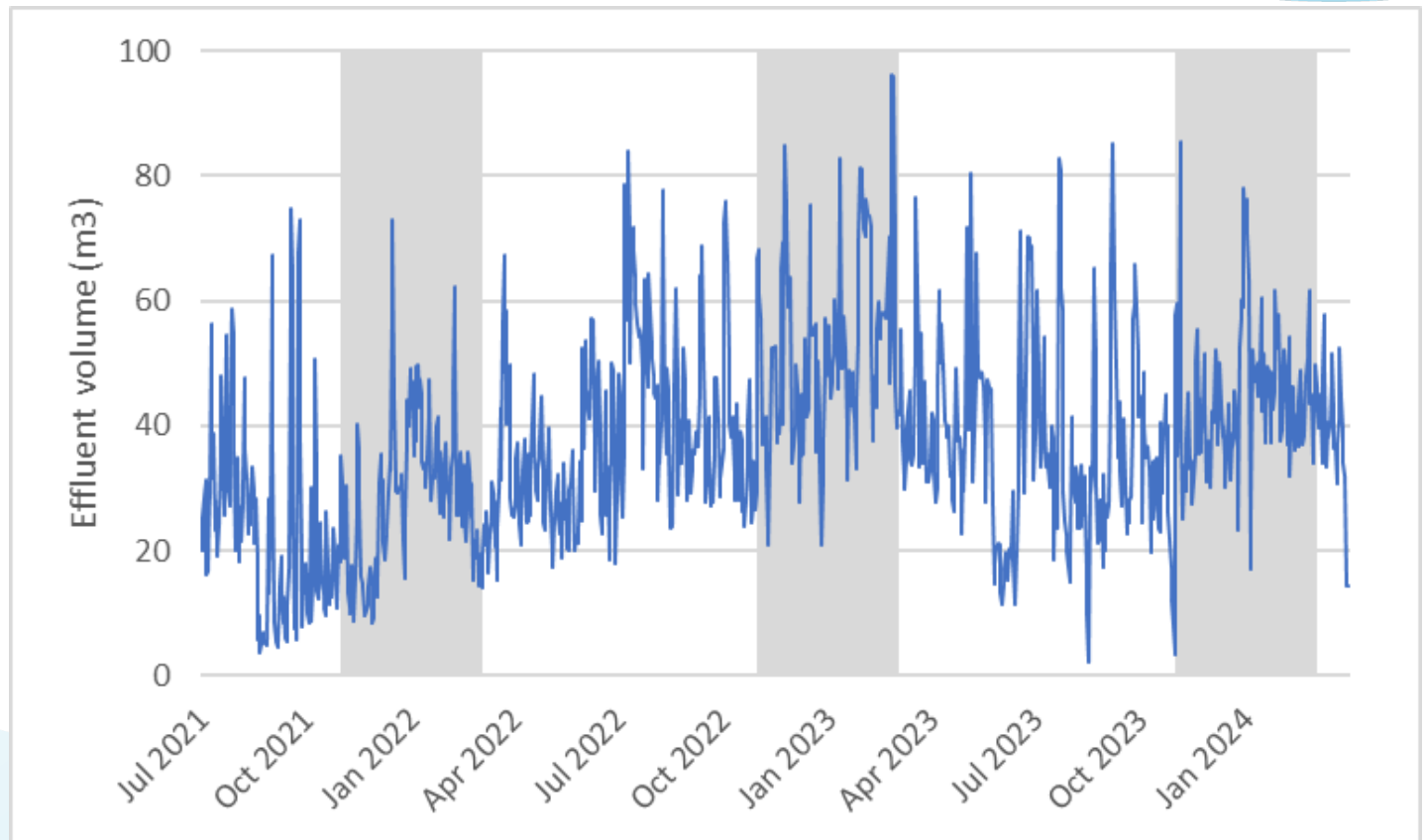
## Volume

Between July 2021 to March 2024:

- Average discharge of 38 m<sup>3</sup>/day
- Volume range 2 - 96 m<sup>3</sup>/day

In summer (Nov – Feb)

- Average discharge of 41 m<sup>3</sup>/day
- Volume range 8 – 96 m<sup>3</sup>/day



# Treated Wastewater Effluent

## Quality (2021 – 2024)

Parameter	Unit	No. Samples	Min	Max	Median
E.coli	MPN/100mL	160	<1.6	120	<1.6
pH	pH	161	4.6	8.1	7.5
BOD	mg/L O	39	<0.5	5.6	0.98
TSS	mg/L	161	1.0	234	2.6
Nitrogen	mg/L	157	0.45	68	6.2
Total phosphorus	mg/L	158	0.006	13.6	0.046

\*BOD, nitrogen taken post-constructed wetland

# Reuse Opportunities

Opportunity	Feasibility	Considerations
Agricultural irrigation (Vineyard irrigation)	Potentially	Resource consent required Perception Cost to reticulate recycled water Tanker delivery may be an option for short term or intermittent use Regulations for winemaking may preclude use for all/certain activities
Landscape irrigation (Public parks and reserves, regional park, golf course etc..)	Yes	Resource consent required Perception Cost to reticulate recycled water, and potentially to install/upgrade irrigation systems Tanker delivery may be an option for short term or intermittent use
Industrial reuse (Cooling water, washing water)	No	
Non-potable urban use (Firefighting, public toilet facilities)	No?	Resource consent may be required if not exempted by the provisions of the Fire and Emergency NZ Act or any other relevant legislation Storage required, with regular turnover Access



# Suitability for Reuse

Parameter	Unit	Australian	Victorian (Class A)	Queensland (Class A)	Requirements met?
E.coli	MPN/100mL	1	Project specific	10 <sup>2</sup>	Unknown/Yes
Turbidity	NTU	-	2	-	Unknown
pH	pH unit	-	6 - 9 <sup>1</sup>	-	Yes
Biological oxygen demand (BOD)	mg/L O	20	10	-	Yes
Total suspended solids (TSS)	mg/L	30	5	-	Yes

Limits based on medians unless otherwise specified

<sup>1</sup> Based on 95<sup>th</sup> percentile

<sup>2</sup> Based on 90<sup>th</sup> percentile