

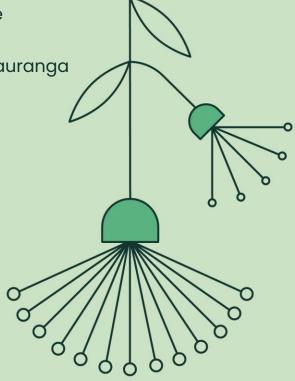
Mā tō tātou takiwā For our District

Projects and Monitoring Committee

Kōmiti Whakakaupapa me Aroturuki

PMC25-3

Friday, 15 August 2025, on conclusion of the Council meeting starting at 9.30am Council Chambers, 1484 Cameron Road, Tauranga



Projects and Monitoring Committee

Membership:

Chairperson	Cr Don Thwaites	
Deputy Chairperson	Cr Allan Sole	
Members	Cr Tracey Coxhead	
	Cr Grant Dally	
	Mayor James Denyer	
	Cr Murray Grainger	
	Cr Anne Henry	
	Cr Rodney Joyce	
	Cr Margaret Murray-Benge	
	Cr Laura Rae	
	Deputy Mayor John Scrimgeour	
	Cr Andy Wichers	
Quorum	Six (6)	
Frequency	Quarterly	

Role:

To monitor and review the progress of the Council's activities, projects and services.

Scope:

- To monitor the effectiveness of Council and agency service agreements / contracts.
- To monitor the implementation of Council's strategies, plans and policies, and projects as contained in the Long Term Plan or Annual Plan.
- To monitor agreements between Tauranga City Council and Western Bay of Plenty District Council and recommend to the respective Councils any changes to agreements, as appropriate.
- To monitor the on-going effectiveness of implemented joint projects, plans, strategies and policies with Tauranga City Council.
- To monitor performance against any Council approved joint contracts with Tauranga City Council and/or other entities.

- Monitor performance against the Priority One approved contract.
- Subject to agreed budgets and approved levels of service, make decisions to enable delivery of the operational and capital programme of Council.

Power to Act:

To make decisions to enable and enhance service delivery performance, in accordance with approved levels of service and subject to budgets set in the Long Term Plan or any subsequent Annual Plan.

Power to Recommend:

To make recommendations to Council and/or any Committee as it deems appropriate.

Power to sub-delegate:

The Committee may delegate any of its functions, duties or powers to a subcommittee, working group or other subordinate decision-making body, subject to the restrictions on its delegations and provided that any sub-delegation includes a statement of purpose and specification of task.

Notice is hereby given that a Projects and Monitoring Meeting will be held in the Council Chambers, 1484 Cameron Road, Tauranga on:
Friday, 15 August 2025 on conclusion of the Council meeting starting at 9.30am

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1 KARAKIA

Whakatau mai te wairua Whakawātea mai te hinengaro Whakarite mai te tinana Kia ea ai ngā mahi

Āе

Settle the spirit
Clear the mind
Prepare the body
To achieve what needs to be achieved.

2 PRESENT

- 3 IN ATTENDANCE
- 4 APOLOGIES
- 5 CONSIDERATION OF LATE ITEMS

6 DECLARATIONS OF INTEREST

Members are reminded of the need to be vigilant and to stand aside from decision making when a conflict arises between their role as an elected representative and any private or other external interest that they may have.

Yes

7 PUBLIC EXCLUDED ITEMS

8 PUBLIC FORUM

A period of up to 30 minutes is set aside for a public forum. Members of the public may attend to address the Board for up to five minutes on items that fall within the delegations of the Board provided the matters are not subject to legal proceedings, or to a process providing for the hearing of submissions. Speakers may be questioned through the Chairperson by members, but questions must be confined to obtaining information or clarification on matters raised by the speaker. The Chairperson has discretion in regard to time extensions.

Such presentations do not form part of the formal business of the meeting, a brief record will be kept of matters raised during any public forum section of the meeting with matters for action to be referred through the customer relationship management system as a service request, while those requiring further investigation will be referred to the Chief Executive.

9 PRESENTATIONS

9.1 PINNACLE PRIMARY HEALTH CARE LIMITED - WAIHĪ BEACH MEDICAL CENTRE RESERVE LEASE PROPOSAL

File Number: A6896469

Author: Rosa Leahy, Senior Governance Advisor

Authoriser: Robyn Garrett, Governance Manager

EXECUTIVE SUMMARY

Representatives from Pinnacle Primary Health Care Ltd. will be in attendance to present to the Committee on their proposal to lease part of Beach Road Reserve, Waihī Beach to operate a medical centre.

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10 REPORTS

10.1 PROPOSAL TO LEASE - PRIMARY HEALTH CARE LIMITED TO OPERATE A MEDICAL FACILITY AND TO RECLASSIFY PART OF BEACH ROAD RECREATION RESERVE (WAIHĪ BEACH) TO LOCAL PURPOSE RESERVE (MEDICAL FACILITY)

File Number: A6893563

Author: Joanne Hin, Legal Property Officer Reserves & Facilities

Authoriser: Peter Watson, Acting General Manager, Infrastructure Group

EXECUTIVE SUMMARY

Pinnacle Incorporated, a not-for-profit primary healthcare focused organisation have applied to Council to lease an area of approximately 1137m² in Beach Road Recreation Reserve to operate a medical centre to service the local Waihī Beach Community.

The proposed lease site, a portion of the Beach Road Recreation Reserve, which is currently classified 'Recreation', would need to be surveyed and reclassified 'Local Purpose Reserve (Medical Facility)'.

The Projects and Monitoring Committee is required to pass a resolution of its intent to grant a lease to Primary Health Care Limited and to reclassify the reserve prior to undertaking public consultation.

RECOMMENDATION

- 1. That the Legal Property Officer Reserves and Facilities report dated 15 August 2025 titled 'Proposal to Lease Primary Health Care Limited to operate a Medical Facility and to Reclassify Part of Beach Road Recreation Reserve (Waihī Beach) to Local Purpose Reserve (medical facility)' be received.
- That the report relates to an issue that is considered to be of low significance in terms of Council's Significance and Engagement Policy.
- 3. That the Projects and Monitoring Committee approve in principle the application by Primary Health Care Limited to lease an area of approximately 1137m2 on Beach Road Recreation Reserve (Waihī Beach) to locate and operate a medical facility.

AND

4. That if approved, the Projects and Monitoring Committee agrees in principle to the reclassification of the portion of Beach Road Recreation Reserve (Waihī Beach) as shown in this report from 'Recreation' to 'Local Purpose Reserve' (medical facility).

AND

5.a If approval in principle of item 3 and 4 above is given this approval must not construed by the applicant, as a guarantee that all other consents required by any

policy, by-law, regulation, or statute, will be forthcoming. The applicant is responsible for obtaining all consents at its own cost; and

5.b That staff be directed to publicly notify for a one month period of public consultation on the proposals above in terms of section 119 of the Reserves Act 1977.

OR

6. That the Projects and Monitoring Committee does not approve in principle the application by Primary Health Care Limited to lease an area of approximately 1137m2 on Beach Road Recreation Reserve (Waihī Beach) to locate and operate a medical facility.

BACKGROUND

The Pinnacle Group, a charitable organisation, have applied to Council to enter into a land lease over part of Beach Road Recreation Reserve (Attachment 1) to establish a medical facility to service the local area. The lease will be with one of the Pinnacle Group entities, Primary Health Care Limited.

The Pinnacle Group is a not-for-profit primary care focused organisation that manages the healthcare of nearly half a million people enrolled with 84 practices in Tairāwhiti, Taranaki, Rotorua, Taupō-Tūrangi, Thames-Coromandel and Waikato.

Attachment 2 outlines the group's background and proposal to meet the area's evolving healthcare needs, along with Attachment 3 - endorsements from Waihī Beach Community Board, St John, Waihī Beach Lifeguard Services Inc., and Athenree Nursing Home.

The current medical facility servicing Waihī Beach is located on a leased site at 47 Wilson Road, Waihī Beach, currently run by Primary Health Care Limited is no longer fit for purpose. Rather than invest back into the current building, construction of a purpose-built facility would be a better option to allow the organisation to meet modern healthcare standards along with current and future demand for its services.

Primary Health Care Limited do not have the means to acquire property in order to operate their health care centres. Therefore, a long-term public land lease meets their objective to allow their focus to remain on delivery of medical patient care.

Prior to a lease being granted, Council is required to consult with the public as per Sections 119 and 120 of the Reserves Act 1977. The public consultation period is required to be for a minimum one month period.

The term of the proposed lease has yet to be negotiated, however, in order to give security to the Primary Health Care Limited's investment, it is intended the lease term will be 17 years with a further renewal period of 15 years.

The Reserves Act 1977 permits a lease of up to 33 years.

OTHER CONSIDERATIONS

Council's Projects and Monitoring Committee at its meeting on 22 February 2023 considered a proposal to set up a community Mara Kai (Food Garden) at this site. The committee agreed in principle to the garden proposal and Council subsequently advertised its intention to grant a lease and sought public feedback. Although there were a number of submissions and objections received following the public consultation, the proposal did not proceed to the hearing phase and a final Council resolution on the matter of a lease.

Staff are seeking feedback from the group who proposed the Mara Kai (Food Garden) to see if they have any objection to the medical facility proposal. An update will be provided at the Projects and Monitoring Committee meeting.

SIGNIFICANCE AND ENGAGEMENT

The Local Government Act 2002 requires a formal assessment of the significance of matters and decision in this report against Council's Significance and Engagement Policy in order to guide decision on approaches of engagement and degree of options analysis. In making this formal assessment it is acknowledged that all reports have a high degree of importance to those affected by Council decisions.

In terms of the Significance and Engagement Policy this decision is considered to be of low significance because the Katikati - Waihī Beach Ward Reserve Management Plan makes provision for community buildings to be established on reserves as per Generic Policy 3 - Buildings and Structures, and there is a public consultation process that will provide the opportunity for interested parties to be involved.

ENGAGEMENT, CONSULTATION AND COMMUNICATION

Interested/Affected Parties		Completed Engagement/Consultation/Communication
Tangata When	ua	Local Iwi will be contacted for comment.
Adjoining owners	property	Will be contacted as an adjacent property owner.
General Public		If the Committee agree in principle to the proposal to lease, then a one-month period of public consultation will be undertaken, following which a report, including any submissions or objections will be brought back to Council for consideration prior to making a final decision.

ISSUES AND OPTIONS ASSESSMENT

Option A

That the Projects and Monitoring Committee approve in principle the application by Primary Health Care Limited to lease an area of approximately 1137m2 on Beach Road Recreation Reserve (Waihī Beach) to locate and operate a medical facility.

and

That if approved, the Projects and Monitoring Committee agrees in principle to the reclassification of the portion of Beach Road Recreation Reserve (Waihī Beach) as shown in this report from 'Recreation' to 'Local Purpose Reserve' (medical facility).

Assessment of advantages and disadvantages including impact on each of the four well-beings • Economic • Social

- Cultural
- Environmental

Advantages:

- Investment is made by the proposed Trust into a new facility.
- The Trust will then have its own facility and is not subject to potential commercial lease arrangements and high rental costs.
- Provides a fit for purpose medical facility for the community.
- Ensures a sustainable operating model that retains appropriate medical services for the Waihī Beach community

Disadvantages:

A small area of greenspace will be lost to the new facility.

There will be a change of activity in the area.

Costs (including present and future costs, direct, indirect and contingent costs).

All costs relating to the proposal will be met by the Primary Health Care Limited.

STATUTORY COMPLIANCE

The Reserves Act 1977 – Section 61, determines the requirements for community group type leases over local purpose reserves. Section 16 deals with classification of reserves.

Before entering into a lease and/or reclassifying any reserve, public notice shall be given in accordance with section 119, specifying the type of lease as per section 61, and classification type proposed, and shall give full consideration in accordance with section 120 to all objections against and submissions in relation to the proposal received pursuant to the said section 120.

To reclassify part of Beach Road Recreation Reserve, a survey will need to be undertaken, and a Gazette Notice issued. Reclassification of part of the reserve is required to ensure that the proposed activity aligns with the underlying reserves classification which is separate to the underlying zone in the District Plan.

FUNDING/BUDGET IMPLICATIONS

Budget Funding	Relevant Detail
Information	
N/A	All costs relating to the processing of the proposal are to be borne by the Primary Health Care Limited.
	The costs relative to the surveying of the proposed local purpose reserve and subsequent gazette notice will be met by the Primary Health Care Limited.

ATTACHMENTS

- 1. Site Plan of Proposed Medical Facility on Beach Road Recreation Reserve 🛭 🖼
- 2. Primary Health Care Limited Medical Facility Proposal 🛚 🖫
- 3. Endorsements 4





Waihi Beach Medical Centre Marine Avenue, Waihi Beach 3611

CONCEPT DESIGN - SITE PLAN 9/05/2025

DATE:

medispace building health



Western Bay District Council Private Bag 12803, Tauranga Mail Centre **Tauranga 3143**

Attention: Peter Watson

By email: peter.watson@westernbay.govt.nz

Tēnā koutou katoa

Kiingi Tūheitia Pōtatau Te Wherowhero VII ki te rangi. Te Kiingi o te Kotahitanga, Te Kiingi o te Maungārongo.

E rere ana ngā mihi maioha ki Te Arikinui Kuīni Ngā wai hono i te pō Pōtatau Te Wherowhero VIII ki te whenua, otirā ki Te Whare o Pōtatau, ki te whare Kāhui Ariki. Pai mārire ki a rātou katoa.

E haere tonu ana ngā mihi ki a rātou mā kua ngaro atu i te tirohanga kanohi. Moe mai rā koutou.

Hoki mai anō ki a tātou ngā waihotanga ake o rātou mā, tēnā koutou, tēnā koutou, tēnā tātou katoa.

1.0 | Introduction

Primary Health Care Ltd., (PHCL), on behalf of Waihi Beach Medical Centre (WBMC) submits this proposal for the Western Bay of Plenty District Council's consideration, seeking a collaborative partnership to develop a purpose-built medical centre for the Waihi Beach community.

This initiative proposes utilising Council-owned reserve land, located on Marine Avenue (within the Beach Road Recreation Reserve), supported by investment from the charitable organisation that operates WBMC, to locate, construct and equip the new facility.

This submission will demonstrate the significant socio-economic benefits this development offers the community and provide strategic rationale for the Council to favourably consider the proposed land partnership as the essential enabler for the initiative.

2.0 | Background

The Waihi Beach Medical Centre (WBMC), a vital healthcare provider for the expanding and diverse Waihi Beach population, faces increasing pressure to upgrade its facilities to meet the area's evolving healthcare needs and enhance operational efficiency amidst growing financial constraints.

Owned and operated by the not-for-profit Primary Health Care Limited (PHCL), WBMC is committed to reinvesting in primary care and delivering community-focused services, including support for the local marae and vulnerable individuals.

To achieve a sustainable and enduring solution, WBMC seeks a strategic partnership with the Western Bay of Plenty District Council for the semi-perpetual use of reserve land at Marine Parade, Waihi Beach. This collaboration is essential to enable the development of a modern medical centre that can effectively serve the community for years to come.



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1

The proposed development aims to:

- Address growing health care demand in Waihi Beach.
- Improve patient access, experience and outcomes.
- Improve attraction, education, well-being, productivity and retention of medical professionals.
- Ensure the long-term sustainability of healthcare services in Waihi Beach.
- Provide a health hub that can support the co-location of additional essential services for the community.
- Support greater emergency preparedness and resilience for this coastal community.

The initiative is supported by letters of endorsement from Waihi Beach Surf Lifesaving, Athenree Rest Home, Hato Hone St John and Otawhiwhi Marae. More broadly, there is strong support and recognition within the community around the need and urgency for improved medical facilities.

The proposed development would look to work in harmony with the neighbouring community, including potential future community gardens that may also be located within the reserve area.

3.0 | Reasons for the Urgent Need of a New Medical Practice Building:

- Current Facility Limitations: The existing building is outdated and no longer meets the
 requirements for efficient operations and a positive patient experience. The current facility
 is physically too small to accommodate modern healthcare delivery needs and lacks
 adequate air control systems, including heating and cooling. This negatively impacts service
 delivery and patient satisfaction.
- 2. **Rural GP Training Needs:** The current site lacks the necessary scale and facilities to support the training of Rural General Practitioners, an essential service with a growing and critical need throughout the Midlands region. This limitation hinders the development of future healthcare professionals who can support these more remote areas.
- 3. Financial Sustainability: Constructing a new, functional, and resilient medical practice with land costs included is financially unsustainable due to funding challenges and the charitable nature of the ownership model. A collaborative partnership with the Council, utilising public land with a nominal or forgiven rental, is the only viable path to realising this essential project.
- 4. Unique Community Role: The medical practice serves a unique and dynamic population that quadruples during the summer months, alongside consistent year-round demand from residents, local workers, and visitors. It provides essential free services to the local marae, supports the nearby Athenree aged-care home, and offers crucial after-hours care, preventing out-of-area travel for urgent medical needs. Furthermore, the Fire Service, St John Ambulance, Surf Lifesaving, and Plunket rely on the medical practice for vital support as first responders and community guardians.



4.0 | Proposed Partnership

What we are seeking:

- After consideration of submissions in support of the land being leased for medical centre
 purposes, Western Bay of Plenty District Council agree to lease a portion of the Beach Road
 Recreation Reserve at Marine Avenue, for the construction of a medical centre as outlined
 in the plans and graphical renders attached to this report; and,
- 2. The Western Bay of Plenty District Council will grant a lease to PHCL under a "Community Impact Partnership Agreement." This agreement will actively define shared objectives, developed collaboratively between the Council and PHCL, to directly support and enhance social and resilience outcomes for the Waihi Beach community, ensuring mutual understanding and tangible benefits for its residents; and,
- 3. A lease term of not less than 25 years, with one right of renewal, is granted to support the initial investment and provide ongoing certainty for the organisation and this community.

Why this partnership is necessary:

PHCL, as a not-for profit organisation, does not have the means or mandate to accumulate equity and invest in commercial enterprises or property ownership. The intention is for the Council to provide use of the land and for Pinnacle's entity to take a loan to fund the cost of building and equipping this new facility.

PHCL's primary purpose is to deliver and reinvest in front-line healthcare services, not to operate as a property investor. The organisation's financial model is designed to maximise community health outcomes, not commercial returns. This means the organisation operates on lean margins, and any surplus is reinvested directly into patient care, staffing, and service delivery.

The organisation is seeking the Council's support in being able to use reserve land through a long-term lease under a "Community Impact Partnership Agreement." This reflects the social value of the services provided and enables the use of public land for the good of the community.

The building itself would be funded by a loan secured by a separate Pinnacle entity with the capacity to borrow and invest in the construction of health infrastructure. PHCL would then lease the completed facility under fair terms and continue its not-for-profit operations.

This model has precedents in other parts of the country where public land and charitable operators like PHCL have partnered to deliver health and social infrastructure without the burden of commercial land acquisition costs.

PHCL is not asking the Council to subsidise a private business — rather, this not-for-profit entity is inviting them to partner in enabling access to quality healthcare for the people of Waihi Beach, now and into the future.



5.0 | Development Journey

The need for a new medical centre in Waihi Beach has long been recognised. Multiple past efforts have explored various sites around the area, and the reuse of the existing premises; however, one constant challenge has been the increasing costs of land in this area. The high costs of developing modern medical facilities mean that building and fitting out a centre, then having the additional land cost, makes the development financially unviable.

Similar solutions have been agreed

In 2015, the Western Bay of Plenty District Council approved a similar solution when the then Medical Centre Trust explored the use of land to the rear of the Waihi Beach Community Centre for similar purposes. That previous organisation was not able to go ahead with the development, and the opportunity to utilise the site was ultimately lost

What's happened since

In recent years, the medical sector has experienced significant change. Smaller practices have increasingly closed or merged with larger organisations, including many corporate providers, in order to sustain operations and continue serving their communities. To effectively address these challenges, the trust that operated Waihi Beach Medical Centre became part of PHCL, a charitable organisation with the scale and capacity to navigate this changing healthcare landscape.

Community-centric solution

PHCL has partnered with specialist health centre developers Medispace to design a centre tailored to the specific needs of the Waihi Beach community and optimised for the proposed site. Medispace brings significant expertise, having successfully delivered over 20 community healthcare facilities across New Zealand, including several in smaller communities similar to Waihi Beach.

This experience ensures a design and operating model that is functional and appropriate for this area.

Partnership is vital

The optimal solution identified for this community's healthcare needs is financially viable, but its realisation hinges on a property partnership with Western Bay of Plenty District Council. This collaboration, involving the use of Council-owned reserve land, is essential to overcome the financial barriers that have hindered previous development attempts.

Ultimately, this partnership will enable the delivery of a purpose-built medical centre, ensuring that the growing healthcare needs of Waihi Beach are met effectively and sustainably.



6.0 | Use of Reserve Land Criteria and Responses

6.1 | The need for the building to be located on reserve land.

Recognising the increasing financial barriers to independent development, including rising land and construction costs, PHCL has strategically explored various options to enhance its healthcare provision for the Waihi Beach community. However, none have been able to achieve financial sustainability due primarily to the high costs of land in this area.

This rigorous process has identified a partnership with the Council for the semi-perpetual use of reserve land located on Beach Street as the most effective and timely way to implement solutions that will enable the charitable organisation to address the community's evolving healthcare requirements.

6.2 | The scale of the proposed structure in relation to the reserve and its use.

The proposed medical centre building, associated parking, and landscaped surrounds will occupy approximately 30% of the reserve area. This careful site planning ensures that the majority of the green space remains available for ongoing community amenity. The medical centre's design is purpose-specific to this location, intentionally minimising its footprint and reflecting the character of the surrounding environment.

6.3 | The foreseeable need and demand for the facilities to be accommodated.

While the current medical centre continues to deliver important care to the community, it is increasingly constrained in its ability to meet growing demand and evolving infrastructure needs.

The proposed centre will be essential in supporting the existing 3,500 enrolled patients and ensuring healthcare provision for the dramatic seasonal population increase, which sees the community expand to over 16,000 inhabitants during peak summer.

6.4 | Potential for joint use of the facility.

The proposed facility, owned and operated by WBMC, will serve as the primary general medical practice for Waihi Beach. Its location adjacent to the Plunket rooms (also on reserve land) fosters opportunities for collaboration, especially in delivering post-natal care and immunisations. By integrating visiting services such as District Nurses and counselling, the Medical Centre will offer the community more convenient and coordinated healthcare.

The planned facility will feature a modern medical centre with dedicated patient consultation and treatment areas. Furthermore, co-locating complementary medical services within the new building can enhance the comprehensiveness and convenience of patient care.

The location and design will also ensure easy ambulance access for emergency response and immediate proximity to the established helicopter landing point within the reserve area to enable seamless helicopter transfers for critically ill patients, as referenced in the letter of support from Hato Hone St John.



6.5 | The siting, design, materials and colour of the proposed building or structure.

The proposed medical centre has been designed with careful consideration of its site and the surrounding environment. The building is positioned on the site to maximise views and maintain the finer-grain nature of the existing streetscape in this area. Its design and colour tones are specifically chosen to blend harmoniously with neighbouring properties.

The purpose-built development is designed to support effective patient care and includes a well-planned layout with triage areas, consultation rooms, waiting areas, clinical storage, and staff facilities. To ensure the facility meets current and future healthcare demands, it will be constructed using modular components that allow for adaptation and improvement.

6.6 | Buildings are energy and water-efficient, and stormwater is managed effectively.

PHCL is committed to strong environmental guardianship principles, and this is reflected in the proposed medical centre's design. The centre incorporates sustainability through energy conservation and water efficiency measures, a plan for effective stormwater management, and the potential for solar energy capture. Rainwater tanks will provide irrigation for vegetation on the site and may also have the potential to support any future community garden that may be developed adjacent to the proposed medical centre on reserve land.

6.7 | Applicant's financial position to properly construct and maintain the facility.

PHCL is the largest not-for-profit operator of general practice in New Zealand, delivering leadership and evolution in general practice management. PHCL is part of Pinnacle Ventures, within the Pinnacle Incorporated network. This group of not-for-profit, primary care-focused organisations collectively manages the healthcare of nearly half a million enrolled patients across over 85 practices in the Tairāwhiti, Taranaki, Rotorua, Taupō-Tūrangi, Thames-Coromandel, and Waikato regions.

Demonstrating its commitment to this project, PHCL would finance the development through a loan and ensure that ongoing operational and maintenance costs are covered by operating revenue. The organisation brings significant experience in managing property portfolios and is known for being a collaborative and responsible partner within the communities it serves.

6.8 | The conservation of open space, views, significant vegetation and landscape features.

The proposed development prioritises the conservation of open space, with approximately two-thirds of the reserve land remaining undeveloped for ongoing community amenity.

The single-level medical centre has been designed with careful consideration of its visual impact, maintaining a profile that aligns with neighbouring buildings. This design, combined with the building's footprint occupying only a portion of the site and its distance from adjacent properties, will have negligible effects on existing views or shading. The landscaping strategy focuses on integrating New Zealand native vegetation and other locally representative plant species, contributing to the area's biodiversity and reinforcing its natural coastal character.



6.9 | The effects of providing access to and parking for the proposed building or structure.

The proposed medical centre will be accessed via Marine Avenue, a low-traffic secondary street offering easier accessibility.

20 carparks would be required -, a mix of angled, street parks and some off-street parks to support peak season operational requirements and provisioning for the facility's role in any emergency response to support this community. This allocation considers the need for daily staff parking spaces, alongside the anticipated flow of patient vehicles, consistent with the clinic's appointment scheduling.

The proposed centre's central location ensures easy walking and cycling access for residents and those working in the area. To further encourage active transport, bike parking facilities will be provided, offering convenient alternatives to car use.

6.9.1 | Potential visual or physical effects of the building on neighbouring properties.

The proposed building, landscaping and carparking have been designed to blend well with the neighbourhood, being of single-storey construction and in keeping with Waihi Beach's coastal character. The development is anticipated to enhance the area aesthetically.

Sited away from the boundary and utilising low-pitched roofs, any shading to neighbouring properties is anticipated to be negligible.

Proposed construction methodology utilises low-impact screw piles, and pod-based construction which enables rapid fabrication and fitout. These measures significantly minimise disruption to neighbouring properties and mean the medical centre can begin delivering healthcare solutions to the Waihi Beach Community in the shortest possible time.

7.0 | Conclusion

The proposal by Primary Health Care Ltd. on behalf of Waihi Beach Medical Centre, outlines the need for a new, purpose-built medical centre in Waihi Beach. The submission emphasises that a collaborative partnership with the Western Bay of Plenty District Council, specifically through the use of Council-owned reserve land, is the optimal solution to address the escalating healthcare demands of the growing community. This development aims to secure the long-term sustainability of healthcare services, improve patient outcomes, and support the well-being of residents, visitors and healthcare professionals in the area.

The proposal details how the new medical centre will be designed to integrate with the local environment, ensure efficient use of resources, and provide accessible, comprehensive healthcare services. Ultimately, the partnership between PHCL and the Council is presented as a vital step towards delivering a much-needed healthcare facility that will serve the Waihi Beach community effectively for years to come.









Contacts:

Submitter

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M 0276877315

E mark.taylor@phcl.health.nz

Level 3, 711 Victoria Street, Hamilton 3204

Specialist Healthcare Developer Glenn Hoyle | General Manager Medispace Limited M 021849709 E glenn@medispace.co.nz

Waokauri Place, Māngere, Auckland 2022



From: Dani Simpson <<u>z</u>>

Sent: Thursday, 15 May 2025 1:52 pm

To: Mark Taylor (PHCL) <>

Cc: Wayne Stevenson < >; Heather Marie Guptill <>; Ross Goudie < >

Subject: RE: Waihi Beach Medical Centre

Dear Mark,

On behalf of the Waihi Beach Community Board, I am writing to acknowledge your recent approach regarding the proposal to expand the Waihi Beach Medical Centre onto reserve land owned by Council.

The Board recognises the vital role your practice plays in supporting the health and wellbeing of our community. We understand the significant constraints you are currently facing in your existing premises and appreciate the thorough efforts you have made to explore alternative options before bringing this proposal forward.

After careful consideration, the majority of Board members are supportive of your proposal to expand onto the reserve land, recognising the benefits this would bring to local residents in terms of enhanced medical services and accessibility. In addition, we understand you are interested in looking at a funding and implementation concept that board member Wayne Stevenson has raised with you. We look forward to discussing that with you in more detail to understand if there is a solution in that which is mutually beneficial to the medical centre and the Waihī Beach community.

We do acknowledge there are diverse views within our community and among Board members regarding the use of reserve land. In particular, one member expressed concern that a previous proposal to site elder housing on the same reserve was not supported by Council. While this does not diminish the Board's overall support for your project, we believe it is important to reflect the range of perspectives and the value placed on reserve land for various community needs.

We encourage ongoing dialogue with all stakeholders as you progress your plans, and we trust that the needs and aspirations of the wider community will continue to be considered as part of this process.

Thank you for your commitment to the health of Waihi Beach residents.

Regards

Dani

Dani Simpson Waihi Beach Community Board Chair

Ph 021 225 0012





To whom it may concern,

The Waihi Beach Medical Centre has been an integral and engaged part of the Waihi Beach community for many years. As the population of the community grows, and as the introduction of more retirement living is implemented, the demand for primary health services in the community is only increasing. With the nearest hospital being a 45-60minute drive away, there is an absolute and acute need for a fit for purpose, fully supported medical practice that has the ability to expand from its current size to appropriately cater for the community it serves.

Hato Hone St John Ambulance in the WBOP, would absolutely endorse and support the intended growth and construction of a new medical centre. Land is at a premium around the Waihi Beach area, and a site needs to be able to cater for the community it serves. I can see merit in a location such as the one proposed off Marine Ave for elderly community members to safely access a short distance from the new village location off Browns Drive.

Having previously been a member of the Waihi Beach community myself, I am also conscious that I did not often see high usage of the reserve area in question, and think that the proposal by Primary Health Care Ltd. to utilise this particular space is reasonable. It allows good access to the site for ambulances, and the nearby Brighton reserve is logistically helpful for rescue helicopters should one be required.

Kind regards,

Mat Delaney MStJ JP

Area Operations Manager – Western BOP

Central East District

HATO HONE ST JOHN

146, 17th Ave West, Tauranga, 3112 Ph: 0800 STJOHN



Mark Taylor Regional Business Manager Primary Health Care Limited Waihi Beach

Dear Mark

Thank you for your presentation regarding the proposed new medical centre and rural medical school. The Board of Waihi Beach Lifeguard Services Inc. endorses this project, as there is a significant need for these services in the Waihi Beach community.

The medical centre will continue providing localised, accessible medical support to the community, which is especially important given the high percentage of the retired population.

The visitor population can exceed 15,000 during the summer months. This increase can put pressure on resources such as lifeguarding, search and rescue, ambulances, and doctors. The medical centre would foster a collaborative relationship with emergency services and support the local emergency management plan.

Supporting the community's resilience. Having resources available in this small community will ensure our survival under adverse conditions. Past experiences with cyclones, a tornado, and severe flooding over the last four years have highlighted the resources necessary to support our emergency management plans.

We are surrounded by access-challenged roads such as the Karangahake Gorge, Katakati township/stream raising, Kamai and Pyes Pa roads that can flood from high rainfall incidents and have been closed numerous times.

The focus on all small communities is to be resilient, as there will be times when incidents are so severe in the wider region that support may not be coming. We need medical services in the Waihi Beach township to improve our resilience and safety.

Kind regards

Donna Pfefferle

Chair



Dear Council Members,



On behalf of Athenree Life Limited, Nursing Home, we fully support the proposed development of a new medical centre on reserve land in Beach Road, Waihi Beach.

Accessible healthcare is essential for the well-being of our residents and the wider community, and this new centre will provide vital services for those who need them most

Many of our residents rely on timely and quality healthcare, and we are grateful for the services Waihi Beach Medical centre currently provide. However, ensuring stability and expansion of medical care is crucial for long-term health outcomes for our residents. A new facility will allow continuity of care and ease of access for elderly and vulnerable clients.

We welcome further collaboration to ensure that this development serves our current and future residents in the best possible way.

We ask the council to approve this proposal, recognising the lasting benefits it will bring to our residents and the broader community.

Sincerely,

Carly Mangulabnan Athenree Life Limited 7 Marina Way, Athenree, 3177

Athenree Life • Cambridge Life • Eltham Care Rest Home • South Care Rest Home & Hospital • Steele Park Home soundcare.co.nz

10.2 TE PUNA ROAD/TE PUNA STATION ROAD INTERSECTION IMPROVEMENTS

File Number: A6879541

Author: Calum McLean, Director Transportation

Authoriser: Peter Watson, Acting General Manager, Infrastructure Group

EXECUTIVE SUMMARY

- Council is currently developing a project to improve the safety and efficiency of the Te Puna Road/Te Puna Station Road intersection by adding a right turn bay, regrading the eastern approach, and undertaking pavement rehabilitation. This initiative aims to support Council's plan to curb rat running and facilitate a heavy vehicle ban on Clarke Road.
- 2. Te Puna Industrial Limited (TPIL) were recently granted resource consent for an industrial development on Te Puna Station Road. The conditions of this consent require that TPIL construct the right turn bay should Council not.
- 3. Priority Te Puna have recently lodged an appeal against the decision to grant the consent.
- 4. Direction is sought on whether Council should temporarily cease delivery of the intersection improvement project until such time that:
 - a. the appeal has been heard by the Environment Court.
 - b. Te Puna Industrial Limited agree to fully fund all roading improvements conditioned in their resource consent.

RECOMMENDATION

- That the Transportation Director's report dated 15 August 2025 titled 'Te Puna Road/Te Puna Station Road Intersection Improvements' be received.
- That the report relates to an issue that is considered to be of (low) significance in terms of Council's Significance and Engagement Policy.
- 3. That the Project and Monitoring Committee approves Option A being that Council temporarily ceases delivery of the Te Puna Road/Te Puna Station Road intersection improvement project until such time that:
 - a. The Environment Court judicates on Priority Te Puna's appeal against the decision to grant resource consent for the TPIL development; and
 - b. Te Puna Industrial Limited agree to fully recompense Council for the cost of all roading improvements conditioned in their resource consent.

BACKGROUND

- 5. The Transportation team has engaged an engineering consultant to undertake site investigation and detailed design of improvements to the Te Puna Road/Te Puna Station Road intersection, being the addition of a right turn bay, lessening of the approach gradient for vehicles travelling west on Te Puna Station Road towards the intersection, and pavement rehabilitation of the first 110m of Te Puna Station Road (both lanes).
- 6. NZTA's Crash Analysis System records 6 crashes within the vicinity of intersection within the last 5 years. Other crashes may have occurred but not been reported.
- 7. The proposed improvements will address the community's concerns regarding the manoeuvrability of over-dimension vehicles through the intersection, and form part of Council's strategy to reduce 'rat running' between Snodgrass Road and Clarke Road.
- 8. In February 2024 Council's Projects and Monitoring Committee passed resolution PMC24-1.1 requiring "that staff investigate options to mitigate traffic concerns on Clarke Road as a matter of priority."
- 9. The provision of a right turn bay will help facilitate the introduction of a heavy vehicle ban on Clarke Road that Council is considering as part of the Traffic and Parking Enforcement Bylaw review currently underway.
- 10. A heavy vehicle ban cannot be implemented prior to completion of the intersection upgrade because it would have the effect of frustrating JMC Civil Contractors whose consent prohibits them from using the existing Te Puna Road/Te Puna Station Road Intersection for transporter operations and who are unable to use Te Puna Station Road to access SH2 since it was closed to vehicles in May 2023.
- 11. JMC is currently in a variation process and could apply to have this condition removed following the upgrade of the intersection.
- 12. In 2022 Te Puna Industrial Limited applied for consents from the Western Bay of Plenty District and Bay of Plenty Regional Councils to establish industrial yards and activities at their site at 297 Te Puna Station Road.
- 13. On Monday 7 July 2025 a hearing Panel of Independent Commissioners acting under delegated authority from both Councils decided to grant the applications.
- 14. Once operational the TPIL development is expected to generate 774 vehicles per day (vpd), or 1,609 Passenger Car Equivalents (PCE).
- 15. The current volume of traffic travelling through the intersection is estimated to be 3,300 vpd, 5.5% heavy vehicles, which equates to approximately 4500 PCE.
- 16. Once operational the TPIL development will account for approximately 26% of the total traffic volume through the intersection.

- 17. The consent includes conditions related to the Te Puna Road/Te Puna Station Road intersection which are reproduced below:
 - The activity must be carried out in general accordance with the following plans and reports, except where modified by conditions of this resource consent:

Document Title	Author	Reference/	Date
		Version	
Drawing A2314643.00-200 (path	Harrison Grierson	Revision A	17th April 2025
upgrades);	Consultants	(except Drawing	(except Drawing
And		D200 – Rev D	D200 - Rev A)
Drawings A2314643.00-212-219, or			
A2314643.00-212-222-229 related			
to the Te Puna Station Road/Te			
Puna Road proposed intersection			
upgrade			
Or			
Alternative Te Puna Road / Te			
Puna Station Road intersection			
upgrades (roading and paths,			
cycling safety infrastructure) to			
be delivered by WBOPDC (see			
condition 2 below).			

2. No fill required for site earthworks is permitted to be trucked to or from the site until such time as the proposed upgrade of the Te Puna Station Road/Te Puna Road intersection (roading and paths, cycling safety infrastructure by the consent holder, or directly by WBOPDC) has been upgraded in accordance with the conditions of this consent. Prior to completion of the intersection upgrade the consent holder may transfer material within the site or between 245 and (the site) 297 Te Puna Station Road by road.

Advice Note:

WBOPDC have committed to design and construct the upgrade to the intersection, with works anticipated to commence in October 2025 and conclude late January 2026.

- 3. In the event that WBOPDC has not awarded a contract for works to upgrade the Te Puna Road / Te Puna Station Road intersection (roading and paths, cycling safety infrastructure) prior to 1 November 2025 then the consent holder may undertake the upgrading of that intersection in accordance with the conditions of this consent.
- 18. The concept design prepared by Harrison Grierson (see attachment 1) proposes a new right turn bay but does not propose improvements to the approach from Te Puna Station Road which currently has average gradient 6% (1:17) but maximum gradient 15% (1:7).
- 19. The design currently being prepared by Council proposes both a new right turn bay and improvements to the approach to reduce the maximum gradient to 9% (1:11), which will make it easier for heavy vehicles to navigate the slope.

- 20. Council's design also proposes pavement rehabilitation of the first 110m of Te Puna Station Road (both lanes) because the pavement is reaching its end of life.
- 21. On 4 August 2025 Priority Te Puna lodged an appeal to the Environment Court against the commissioners' decision to grant the resource consent. Under Section 116 of the Resource Management Act 1991, the effect of this appeal is to nullify the consent until such time that the appeal has been determined by the Environment Court or withdrawn. At present, there is no indication from the Court regarding scheduling however appeals are typically decided within a timeframe of 6 to 12 months.
- 22. Direction is sought on whether Council should temporarily cease delivery of the intersection improvement project until such time that:
 - a. The appeal has been heard by the Environment Court.
 - b. Te Puna Industrial Limited agree to fully fund all roading improvements conditioned in their resource consent.

SIGNIFICANCE AND ENGAGEMENT

- 23. In terms of the Significance and Engagement Policy this decision is considered to be of **low** significance because it does not relate to:
 - · A significant alteration to a level of service,
 - A transfer of ownership of control of a strategic asset, and
 - It impacts only users of Te Puna Road and Te Puna Station Road, and
 - A special consultative procedure under the LGA is not required.

ENGAGEMENT, CONSULTATION AND COMMUNICATION

- 24. Elected members and staff attended a community meeting arranged by Priority Te Puna at the Te Puna Memorial Hall on Wednesday 23 July 2025.
- 25. Te Puna residents and ratepayers and representatives from Pirirakau Incorporated Society also attended.
- 26. Feedback from the Te Puna community was that TPIL should upgrade the intersection without any cost contribution from Council.

ISSUES AND OPTIONS ASSESSMENT

Option A (Recommended)

That Council temporarily ceases delivery of the Te Puna Road/Te Puna Station Road intersection improvement project until such time that:

- a. the Environment Court judicates on Priority Te Puna's appeal against the decision to consent the TPIL development; and
- b. Te Puna Industrial Limited agree to fully recompense Council for the cost of all roading improvements conditioned in their resource consent.

Assessment of advantages and disadvantages including impact on each of the four well-beings

- Economic
- Social
- Cultural
- Environmental

Advantages

- Less cost to Council
- Cost efficiencies achieved by including pavement renewal and approach regrading in the project scope.
- All desired improvements delivered.
- No uncertainty regarding future of the TPIL development.

<u>Disadvantages</u>

 Right turn bay unlikely to be installed prior to adoption of Traffic & Enforcement Bylaw.

Costs (including present and future costs, direct, indirect and contingent costs).

\$0.5M - \$1.0M

Option B

That Council ceases delivery of the Te Puna Road/Te Puna Station Road intersection improvement project. TPIL deliver the road improvements conditioned in their resource consent.

Assessment of advantages and disadvantages including impact on each of the four well-beings

- Economic
- Social
- Cultural
- Environmental

<u>Advantages</u>

- No cost to Council
- Decision likely to be positively perceived by the community.

<u>Disadvantages</u>

- No cost efficiencies.
- Right turn bay unlikely to be installed prior to adoption of Traffic & Enforcement Bylaw.

	Desired improvements will not be delivered.		
Costs (including present and future costs, direct, indirect and contingent costs).	Nil		
Ор	tion C		
That Council continues to deliver the Te Puna Road/Te Puna Station Road			
intersection improvement project without a cost contribution from TPIL and regardless of the outcome of the Priority Te Puna appeal.			
Assessment of advantages and	<u>Advantages</u>		
disadvantages including impact on each of the four well-beings • Economic	Cost efficiencies achieved by including pavement renewal and approach regrading in the project scope.		
SocialCulturalEnvironmental	Right turn bay will likely be installed prior to adoption of Traffic & Enforcement Bylaw.		
	<u>Disadvantages</u>		
	Greater cost to Council		
	Likely to be negatively perceived by the community		
Costs (including present and future costs, direct, indirect and contingent costs).	\$1.0M - \$1.5M		

STATUTORY COMPLIANCE

The recommendation meets:

- Local Government Act
- Land Transport Management Act
- Western Bay District Plan

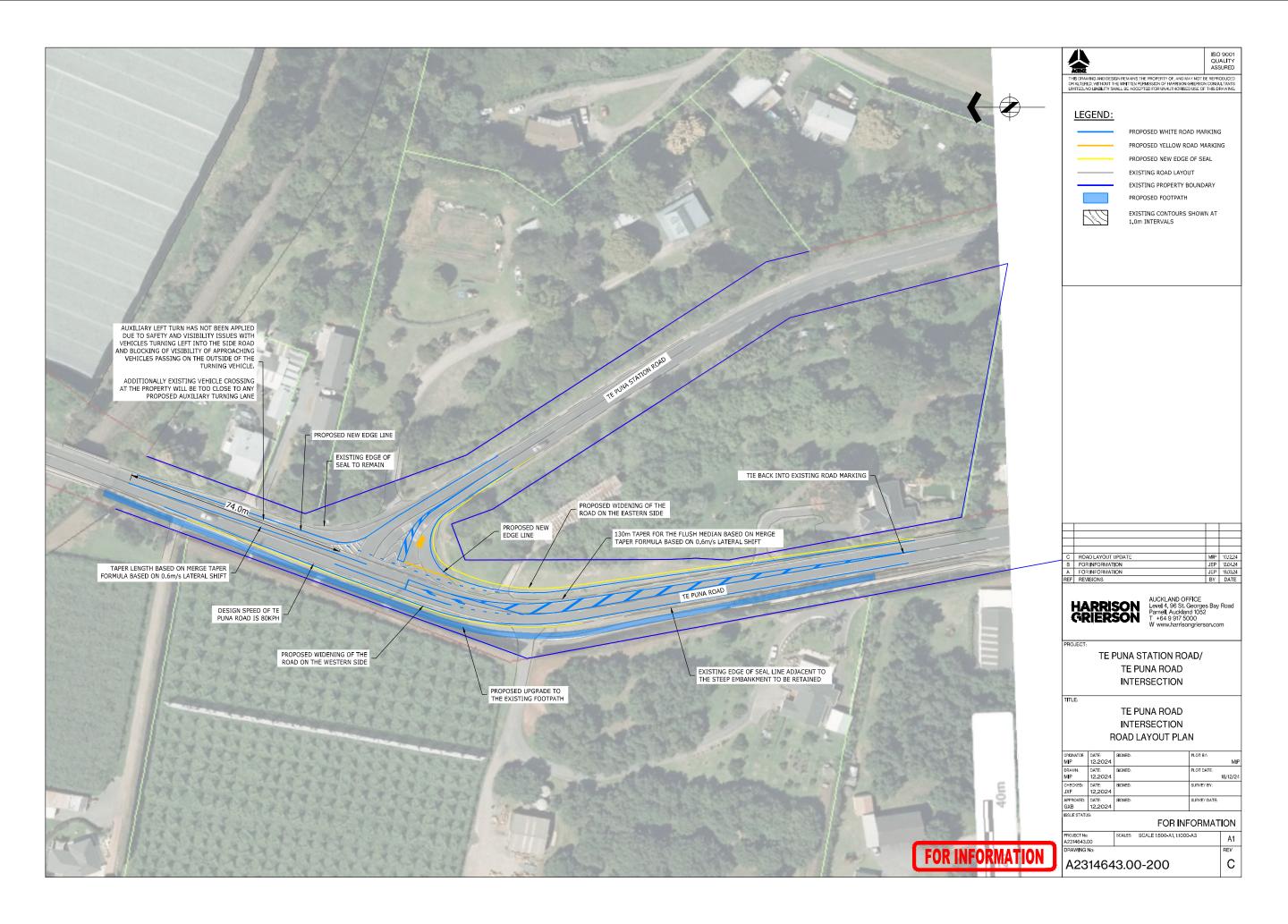
FUNDING/BUDGET IMPLICATIONS

Budget Funding	Relevant Detail	
Information		
400324	Low Cost Low Risk (for safety improvements)	
400214	Pavement Rehabilitation (Te Puna Station Road pavement only)	

ATTACHMENTS

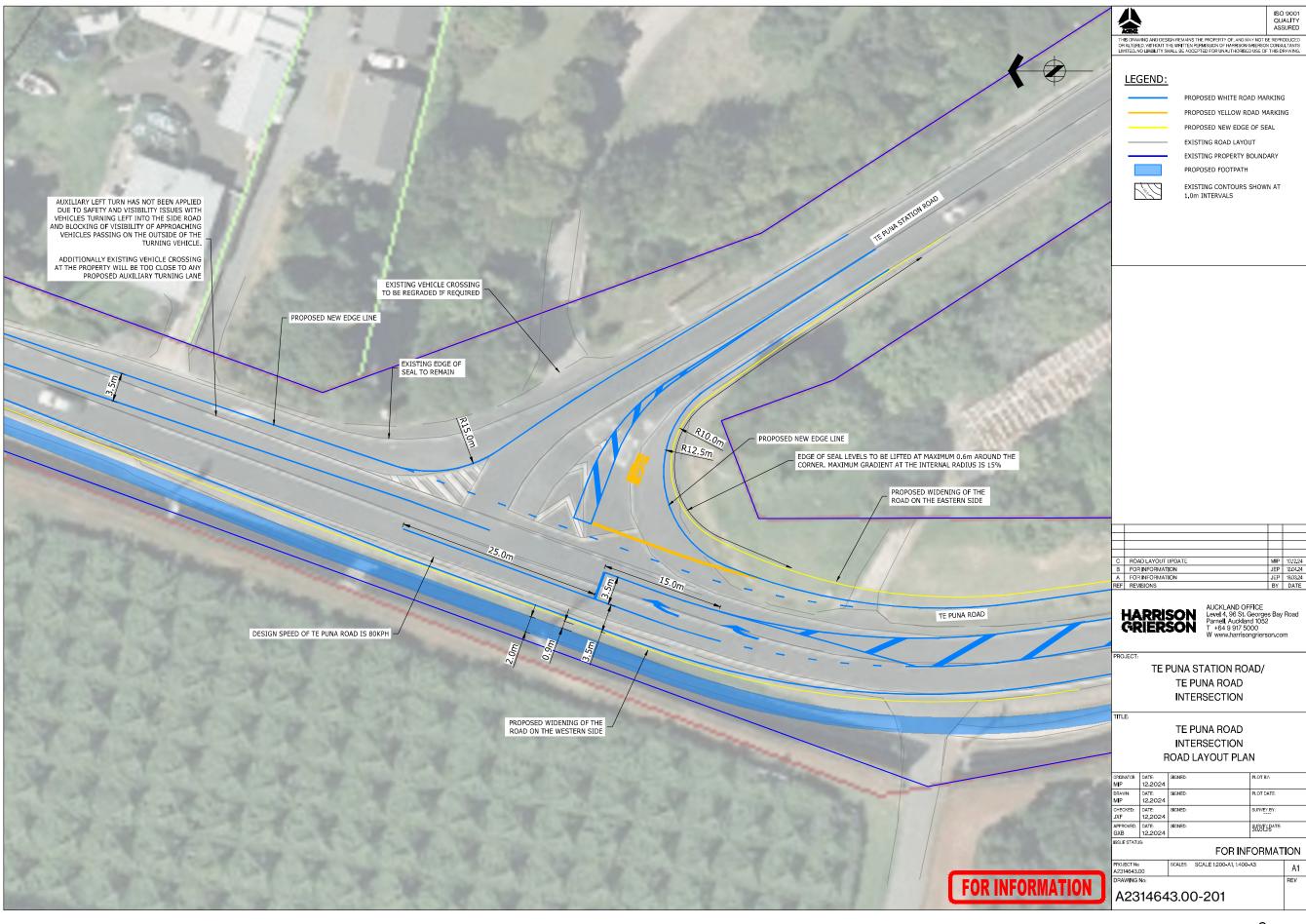
1. Harrison Grierson Te Puna Rd-Te Puna Station Rd Upgrade Concept Plans 🗓 🖼

Projects and Monitoring Meeting Agenda 15 August 2025



Item 10.2 - Attachment 1

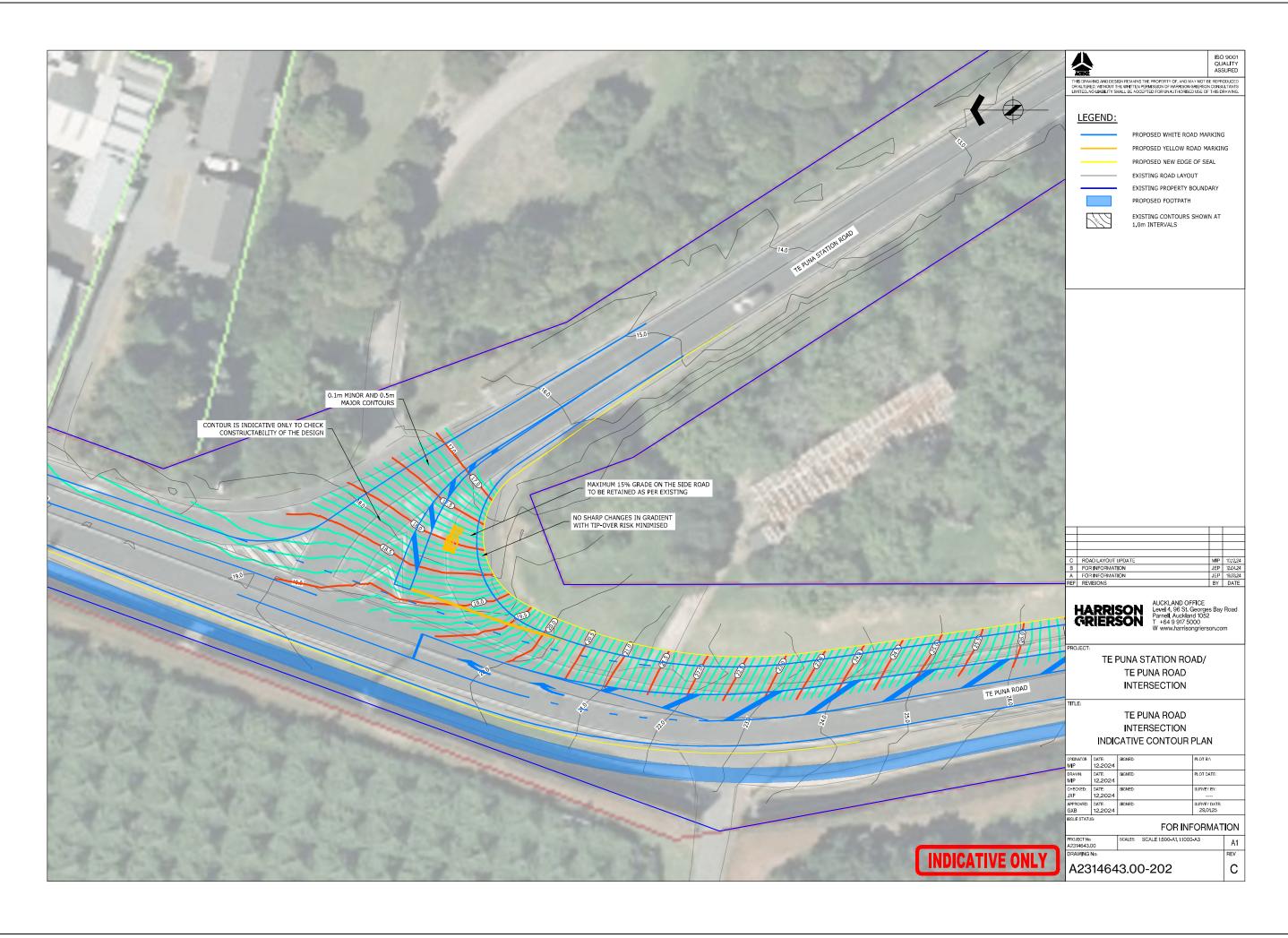
Projects and Monitoring Meeting Agenda



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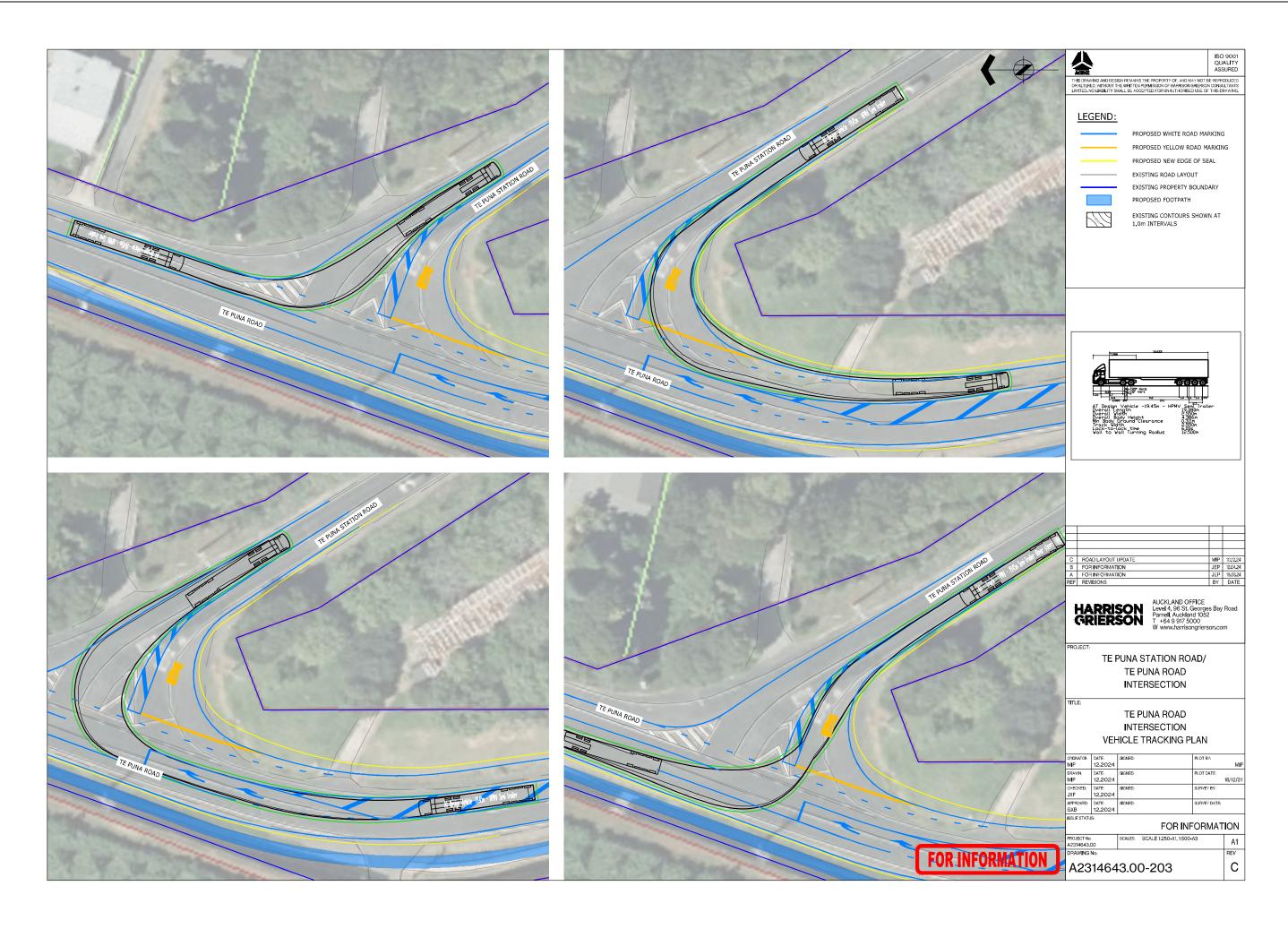
Item 10.2 - Attachment 1

Projects and Monitoring Meeting Agenda



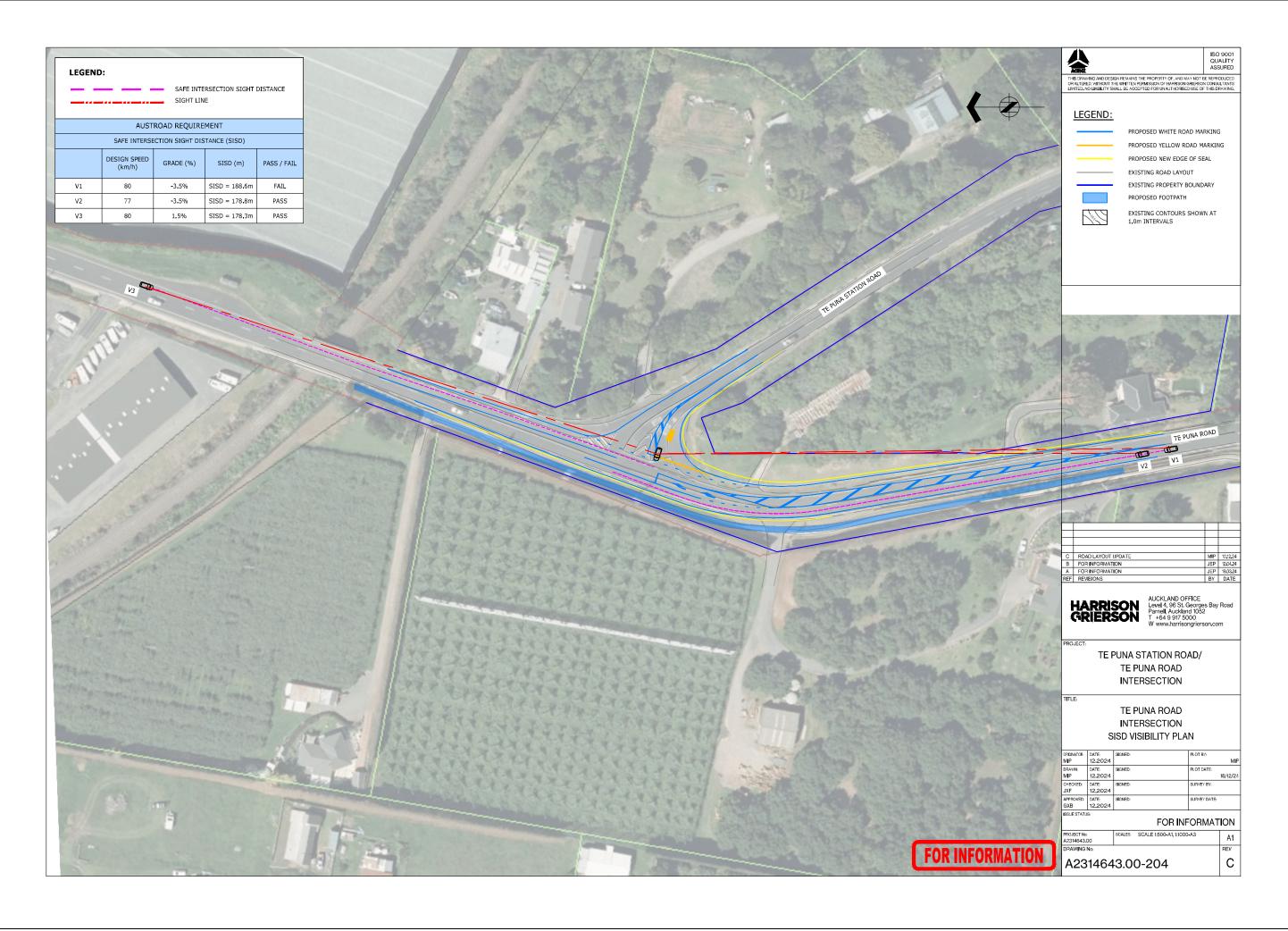
Item 10.2 - Attachment 1

Projects and Monitoring Meeting Agenda



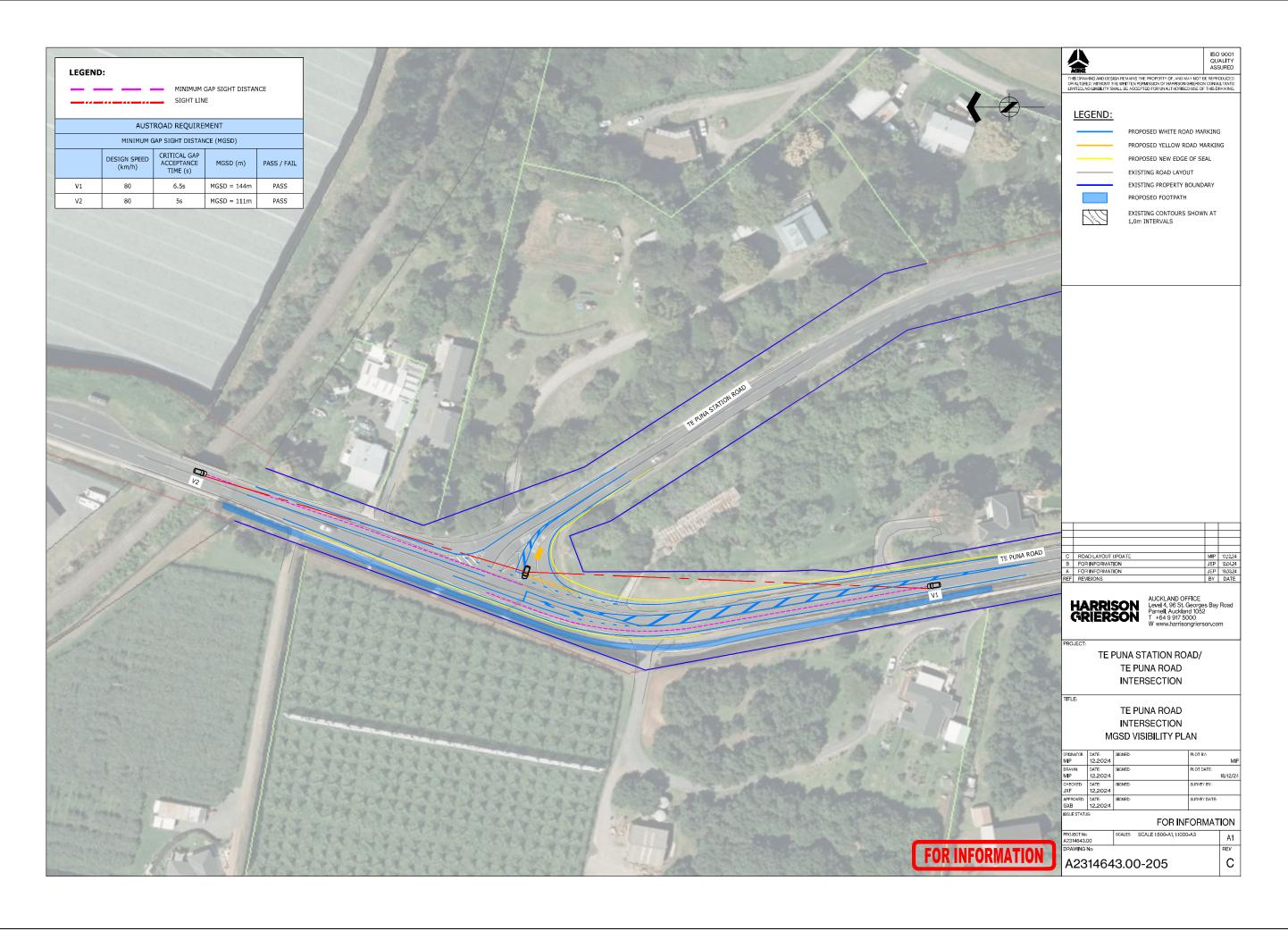
Item 10.2 - Attachment 1

Projects and Monitoring Meeting Agenda



Item 10.2 - Attachment 1

Projects and Monitoring Meeting Agenda



Item 10.2 - Attachment 1

10.3 KATIKATI WASTEWATER DISPOSAL FUTURE DIRECTION

File Number: A6828663

Author: Coral-Lee Ertel, Infrastructure Capital Delivery Manager

Authoriser: Peter Watson, Acting General Manager, Infrastructure Group

EXECUTIVE SUMMARY

Council is required to consider the recommendations from Te Ohu Waiora with regards to the preferred long-term disposal options for the Katikati Wastewater Treatment Plant (WWTP) and resolve accordingly. The following options are available to the Projects and Monitoring Committee and where appropriate the preferred option has been recommended.

Please note the following is a recommendation only. The Committee may resolve to:

- Adopt as recommended
- To modify
- Refer to another Committee
- To decline (giving reasons) and refer back to Te Ohu Waiora

RECOMMENDATION

- That the Infrastructure Capital Delivery Manager's report dated 15 August 2025 titled 'Katikati Wastewater Disposal Future Direction' be received.
- That the report relates to an issue that is considered to be of low significance in terms of Council's Significance and Engagement Policy.
- That the Project and Monitoring Committee endorses the Draft Katikati Wastewater Disposal Future Directions Report for submission to the Bay of Plenty Regional Council as per Resource Consent condition requirements requiring a report by 31 December 2026.
- 4. That the Project and Monitoring Committee directs staff to further develop the preferred option in readiness for public consultation.

BACKGROUND

 Western Bay of Plenty District Council has regional Resource Consents to operate the Katikati wastewater treatment plant and its outfall, including the discharge of treated wastewater. As part of these consents, the Council must set up Te Ohu Waiora, submit an Alternatives Investigation Report and provide a Future Directions Report by 31 December 2026.

- 2. Te Ohu Waiora is a group that includes members from Matakana hapū, Northern Ngai Te Rangi hapū and at least two Katikati community residents. This group gives advice on different upgrade options for the plant and oversees compliance monitoring.
- 3. Te Ohu Waiora was officially re-established at the end of 2024 and has been working on the Future Directions project, focusing on the following objectives and outcomes.

Table 1: Future Directions Objectives and Outcomes

Objectives (what we want to achieve)	Outcomes (what we will deliver)
Tangata whenua and the Katikati community have ongoing oversight	Te Ohu Waiora membership comprises tāngata whenua and community representatives.
of the Katikati wastewater treatment and disposal activity.	Te Ohu Waiora is formally established as an advisory group to the Projects and Monitoring Committee of Council.
Determine a preferred long term disposal option that considers the	Multi-criteria analysis is carried out to determine the best practicable option.
social, economic, environmental and cultural well-being of present and future communities. This includes alignment with Council's strategic	Assessment criteria consider social, economic, environmental and cultural effects over the life of the asset.
priorities and hapū cultural values and objectives.	Best practicable option is demonstrated in terms of environmental effects on receiving environment, financial implications and other alternatives (Section 131, Resource Management Act 1991).
Develop an implementation pathway for the preferred option which minimises the negative effects of the existing outfall's deteriorating performance.	Best practicable option considers ease of implementation or staged approach to reduce or eliminate reliance on existing outfall operation.
Develop a Future Directions Report which meets existing Resource Consent requirements and provides	Future Directions Report: - Meets Resource Consent requirements - Documents the methodology in determining best
an implementation pathway that is endorsed by Council, tāngata whenua and key stakeholders,	practicable option - Provides a basis with sufficient information for new Resource Consent or variation application - Provides an implementation pathway for the preferred option

4. The purpose of this report is to endorse the Katikati Wastewater Future Directions Report, following a Projects and Monitoring Committee workshop on 22 July 2025 and prior to submitting the report to the Bay of Plenty Regional Council.

FUTURE DIRECTIONS REPORT SUMMARY

- 5. The Katikati Wastewater Disposal Future Directions project was initiated to establish a sustainable structure for planning and implementing a long-term wastewater disposal solution for Katikati. The project engaged tangata whenua partners and key stakeholders (Te Ohu Waiora) to determine a preferred option for Council recommendation. The project also developed an implementation pathway to minimise the impact of the deteriorating outfall and prepared this report to meet discharge consent requirements and inform future Resource Consent processes.
- 6. The existing cross-harbour treated effluent pipeline is nearing the end of its useful life, necessitating a new effluent disposal method. After a thorough multi-criteria analysis (MCA), Option 1C, which involves the use of Membrane Bioreactor (MBR) technology and a new longer ocean outfall pipeline, was identified as the preferred option by Te Ohu Waiora. This option provides high-quality treatment, aligns with tangata whenua values in terms of protecting the harbour and offers long-term environmental benefits.
- 7. Engagement with tangata whenua has been a fundamental aspect of the project, with their perspectives fully integrated into the decision-making framework. Emphasis has been placed on the protection of streams and the harbour. Although the solution does not strictly adhere to tikanga, the outfall pipeline with enhanced treatment was deemed more suitable than land discharge under these circumstances. Further engagement will continue as the project moves into the consenting and design phases.

FUTURE DIRECTIONS REPORT STRUCTURE

- 8. This report provides a comprehensive record of the work undertaken by Te Ohu Waiora on the Katikati Wastewater Disposal Future Directions project. It begins with an introduction outlining the project's purpose, objectives and anticipated outcomes.
- 9. The report describes the existing wastewater system and discharge methods in Katikati, then details the methodology adopted throughout the project. It summarises the relevant legal and planning context, engagement efforts and the essential requirements for the wastewater treatment plant, including growth assumptions. The document also discusses the various options considered, presents a summary of the multi-criteria analysis used to evaluate these options and explores the cultural values significant to the project. Finally, it outlines the proposed implementation pathway with indicative timelines and concludes with key recommendations.
- 10. The following supporting information is appended to the report:
 - Attachment 1 Katikati Wastewater Disposal Future Directions Final Report v0.4, August 2025
 - Attachment 2 Resource Consent RM16-0206
 - Attachment 3 Legal and Planning Framework (Cooney Lees Morgan)

- Attachment 4 Engagement Plan
- Attachment 5 Technical Options Baseline Upgrade (Beca)
- Attachment 6 Options Summary and Comparison Tables (Beca)
- Attachment 7 Multi-Criteria Assessment Evaluation Results
- Attachment 8 High Level Outfall Pipeline Construction Methodologies
- Attachment 9 Summary of Planning Documents (WSP)

NEXT STEPS

11. The preferred option will potentially be consulted on with wider community and stakeholders along side development of the 2027-2037 Long Term Plan.

RECOMMENDATION FROM TE OHU WAIORA ON 9 JULY 2025

12. At its meeting on 9 July 2025, Te Ohu Waiora adopted the following resolution.

RESOLUTION TOW25-4.3

Moved: Member N Kuka

Seconded: Member Samuels-Hudson

- That the Project Manager's report dated 2 July 2025 titled 'Katikati Wastewater Disposal Future Directions – Implementation Pathway and Draft Future Directions', be received.
- 2. That the report relates to an issue that is considered to be of low significance in terms of Council's Significance and Engagement Policy.
- 3. That the draft Katikati Wastewater Disposal Future Directions Report is endorsed by Te Ohu Waiora for submission as a draft to the Western Bay of Plenty District Council Projects and Monitoring Committee, with the preferred option confirmed to be a new ocean outfall pipeline 500m longer than the existing pipeline, with a preference for discharge treatment Option 1C, a new membrane bioreactor.

SIGNIFICANCE AND ENGAGEMENT

- 13. The Local Government Act 2002 requires a formal assessment of the significance of matters and decision in this report against Council's Significance and Engagement Policy. In making this formal assessment there is no intention to assess the importance of this item to individuals, groups or agencies within the community and it is acknowledged that all reports have a high degree of importance to those affected by Council decisions.
- 14. The Policy requires Council and its communities to identify the degree of significance attached to particular issues, proposals, assets, decisions and activities.
- 15. In terms of the Significance and Engagement Policy this decision is considered to be of **low** significance because the decisions to submit the report to Bay of Plenty Regional Council is administrative in nature.

ENGAGEMENT, CONSULTATION AND COMMUNICATION

16. Engagement, consultation and communication for the Future Directions project is outlined in the project Engagement Plan (Appendix C of the Future Directions Report).

ISSUES AND OPTIONS ASSESSMENT

17. The Future Directions report is a requirement of Resource Consent RM16-0206-DC.02+ Coastal Discharge. Relevant conditions are provided below.

Condition 15.1 - No later than 31 December 2026 the Consent Holder shall prepare a Future Directions Report confirming the best practicable option for future management of the discharge and the proposed pathway for implementation of the option prior to expiry of these consents. The Future Directions Report shall be informed by and take into account the outcomes of the Alternatives Investigation.

Condition 15.11 - The Consent Holder shall lodge any Resource Consent applications and (if necessary) notices of requirement to implement the option identified in the Future Directions Report prior to the expiry of this consent.

Option A That Council endorse the Draft Katikati Wastewater Disposal Future Directions Report for submission to the Bay of Plenty Regional Council as per Resource Consent condition requirements requiring a report by 31 December 2026.

Assessment of advantages and disadvantages including impact on each of the four well-beings

- Economic
- Social
- Cultural
- Environmental

Options have been considered through a series of workshops with Te Ohu Waiora. The workshop included an extensive assessment of the advantages and disadvantages of the preferred option. Further detail is captured within Appendix F of the Future Directions Report.

The advantages in relation to endorsement of the future directions report is as follows;

- Establishes a strategic long-term direction or the disposal of wastewater from the Katikati wastewater treatment plant.
- Enables the development of consultation plans and cost estimates to support engagement with the wider community and key stakeholders.
- Recognises and supports the extensive work undertaken by Te Ohu Waiora in preparing the Future Directions Report.

- Aligns with requirements set out in the current discharge consent for Katikati.
- Supports future investment planning.

The disadvantages in relation to endorsement of the future directions report is as follows:

 Enables some flexibility to consider alternative options

Costs (including present and future costs, direct, indirect and contingent costs).

High level cost estimates indicate the preferred option sits within Council budget included within the current 2024/34 LTP, however further refinement of the cost estimates will need to be undertaken prior consultation and implementation into future budgets.

Option B That Council does not endorse the Draft Katikati Wastewater Disposal Future Directions Report for submission to the Bay of Plenty Regional Council as per Resource Consent condition requirements.

Advantages:

 Enables further flexibility to Council to explore alternative solutions.

Disadvantages:

- Risk of non-compliance with discharge consent requirements.
- Strains relationships with stakeholders engaged throughout the development of the Future Directions Report.
- There is currently no long-term strategy in place to address the recurring failures on the outfall pipeline and the environmental affects that failures create.
- Could result in higher costs to Council in addressing and responding to repeated failures while a preferred option is being explored.
- Delays in the decision may mean that consultation alongside the

Assessment of advantages and disadvantages including impact on each of the four well-beings

- Economic
- Social
- Cultural
- Environmental

	development of the 2027/37 LTP may not be possible.
Costs (including present and future costs, direct, indirect and contingent costs).	Further work will need to be undertaken to understand the cost implications of not endorsing the Future Directions Report as proposed by Te Ohu Waiora.

STATUTORY COMPLIANCE

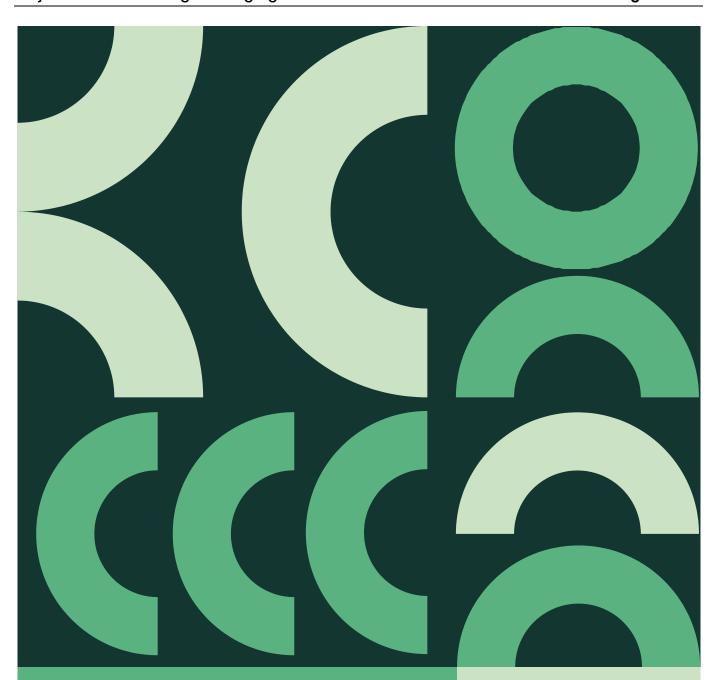
18. The recommendations in this report comply with legal requirements.

FUNDING/BUDGET IMPLICATIONS

19. Estimates undertaken to inform Future Directions Report are high level estimates only and used for the purpose of comparing options. Further work will need to be undertaken to verify costs to inform consultation and decision making, along side the development of the 2027/2037 Long Term Plan.

ATTACHMENTS

- 1. Katikati Wastewater Disposal Future Directions Final Report v0.4 August 2025
- 2. Resource Consent RM16-0206 U
- 3. Legal and Planning Framework (Cooney Lees Morgan) 💵
- 4. Engagement Plan 🗓 🖫
- 5. Technical Options Baseline Upgrade (Beca) 💵
- 6. Options Summary and Comparison Tables (Beca) 🗓 🖺
- 7. Multi-Criteria Assessment Evaluation Results 🗓 🖫
- 8. High Level Outfall Pipeline Construction Methodologies 💵
- 9. Summary of Planning Documents (WSP)



Mā tō tātou takiwā

For our District

Katikati Wastewater Disposal Future Directions Final Report v0.4, August 2025



Document Quality Assurance

Activity	Name	Title	Checked	Date
Prepared by	Simon Banks	Principal Planner (WSP)		01/08/25
Reviewed by	Kristina Hermens	Project Manager (WBOPDC)		01/08/25
Approved by	Coral-Lee Ertel	Infrastructure Capital Delivery Manager		01/08/25

Date	Version	Description of Change	Updated by
19/6/2025	0.1	Draft report outline	Simon Banks
02/07/25	0.2	Initial draft for Te Ohu Waiora review	Kristina Hermens
25/07/25	0.3	Final draft	Simon Banks, Kristina Hermens
01/08/25	0.4	Final draft for Projects & Monitoring Committee	Simon Banks, Kristina Hermens

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Executive Summary

The Katikati Wastewater Disposal Future Directions project was initiated to establish a sustainable structure for planning and implementing a long-term wastewater disposal solution for Katikati. The project engaged tāngata whenua partners and key stakeholders (Te Ohu Waiora) to determine a preferred option for Council recommendation. The project also developed an implementation pathway to minimise the impact of the deteriorating outfall and prepared this report to meet discharge consent requirements and inform future Resource Consent processes.

The existing cross-harbour treated effluent pipeline is nearing the end of its useful life, necessitating a new effluent disposal method. After a thorough multi-criteria analysis (MCA), Option IC, which involves the use of Membrane Bioreactor (MBR) technology and a new longer ocean outfall pipeline, was identified as the preferred option by Te Ohu Waiora. This option provides high-quality treatment, aligns with tangata whenua values in terms of protecting the harbour, and offers long-term environmental benefits.

Engagement with tangata whenua has been a fundamental aspect of the project, with their perspectives fully integrated into the decision-making framework. Emphasis has been placed on the protection of streams and the harbour. Although the solution does not strictly adhere to tikanga, the outfall pipeline with enhanced treatment was deemed more suitable than land discharge under these circumstances. Further engagement will continue as the project moves into the consenting and design phases.

This option will be consulted on, along side the development of 2027-2037 Long Term Plan.

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1 Introduction

Western Bay of Plenty District Council (Council) owns and operates the Katikati wastewater treatment plant (WWTP) at 42 Prospect Drive, which provides tertiary treatment for wastewater from the Katikati township and surrounds (approximately 6,000 people). Treated wastewater is then pumped across Tauranga Harbour and Matakana Island, prior to discharge to the Pacific Ocean via an ocean outfall off the coast of Matakana Island, as shown in Figure 1 below.

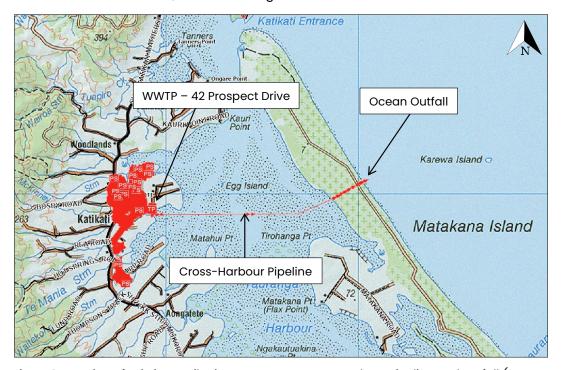


Figure 1: Location of existing Katikati wastewater treatment plant, pipeline and outfall (Source: Council Mapi)

Council holds a Resource Consent (RM16-0206) from Bay of Plenty Regional Council (BOPRC) for the disposal of treated effluent from the Katikati wastewater treatment plant to the ocean. To address concerns raised during the application process, the conditions of that consent required Council to work with tangata whenua and representatives of the Katikati community to investigate and identify at least one appropriate and practicable alternative to the ocean outfall discharge.

For several years now, Council staff have collaborated with tangata whenua and elected members through Te Ohu Waiora to explore alternative options to the current ocean outfall. In 2021, the Performance and Monitoring Committee received an Alternative Investigations report recommending further investigation of land disposal options and also to conduct effluent irrigation trials on land adjacent to the wastewater treatment plant owned by Council. However, this work has not progressed.

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In the last few years, there have been leaks identified and repaired in the existing cross-harbour pipeline. Condition and performance assessments indicate that the pipeline is nearing the end of its useful life. Council needs to invest in a new effluent disposal method earlier than anticipated and funding has been approved in the Long Term Plan 2024-2034.

1.1 Project Purpose

In 2024 Council committed to determine a preferred option for the disposal prior to the end of 2026, formally establishing Te Ohu Waiora as an advisory group to the Projects and Monitoring Committee of Council and commencing the Katikati Wastewater Disposal Future Directions project.

The purpose of the Katikati Wastewater Disposal Future Directions project is to:

- Establish a sustainable governance and project structure for the planning and implementation of a long-term Katikati wastewater preferred disposal option.
- Engage with tangata whenua partners and key stakeholders on long-term disposal options for the Katikati wastewater treatment plant and determine a preferred option for recommendation to Council.
- Develop an implementation pathway for the preferred option which minimises the negative effects of the existing outfall's deteriorating performance.
- Prepare a Future Directions Report which:
 - Meets existing discharge consent requirements (best practicable option and implementation pathway for discharge management for submission to BOPRC by end 2026).
 - Aligns with and provides sufficient information to inform a future replacement Resource Consent or variation application.

1.2 Objectives and Outcomes

Te Ohu Waiora has confirmed the objectives and outcomes for the project, as shown in Table 1 below.

Table 1: Project Objectives and Outcomes

Objectives (what we want to achieve)	Outcomes (what we will deliver)
Tāngata whenua and the Katikati community have ongoing oversight of the Katikati wastewater treatment and disposal activity.	Te Ohu Waiora membership comprises tāngata whenua and community representatives. Te Ohu Waiora is formally established as an advisory group to the Projects and Monitoring Committee of Council.

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Objectives (what we want to achieve)	Outcomes (what we will deliver)
Determine a preferred long-term disposal option that considers the social, economic, environmental and cultural wellbeing of present and future communities. This includes alignment with Council's strategic priorities and hapū cultural values and objectives.	Multi-criteria analysis is carried out to determine the best practicable option. Assessment criteria consider social, economic, environmental and cultural effects over the life of the asset. Best practicable option is demonstrated in terms of environmental effects on receiving environment, financial implications and other alternatives (Section 131, Resource Management Act 1991).
Develop an implementation pathway for the preferred option which minimises the negative effects of the existing outfall's deteriorating performance.	Best practicable option considers ease of implementation or staged approach to reduce or eliminate reliance on existing outfall operation.
Develop a Future Directions Report which meets existing Resource Consent requirements and provides an implementation pathway that is endorsed by Council, tāngata whenua and key stakeholders.	 Future Directions Report that: Meets Resource Consent requirements Documents the methodology in determining best practicable option Provides a basis with sufficient information for new Resource Consent or variation application Provides an implementation pathway for the preferred option

1.3 Report Structure

This report documents the work undertaken by Te Ohu Waiora on the Katikati Wastewater Disposal Future Directions project. It comprises of the following sections:

Section 1	Introduction to the project, including purpose, objectives and outcomes
Section 2	Description of the existing Katikati wastewater system and discharge
Section 3	Overview of the methodology followed for the project
Section 4	Summary of the legal and planning context
Section 5	Summary of engagement undertaken
Section 6	Summary of minimum wastewater treatment plant requirements and growth assumptions

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Section 7 Description of options considered Section 8 Summary of the multi-criteria analysis to evaluate the options Section 9 Overview of cultural values relevant to the project Section 10 Proposed implementation pathway and timing Section 11 Conclusions and recommendations The following supporting information is appended to this report:

Appendix A Resource Consent RM16-0206

Appendix B Legal and Planning Framework (Cooney Lees Morgan)

Appendix C Engagement Plan

Appendix D Technical Options – Baseline Upgrade (Beca)

Appendix E Options Summary and Comparison Tables (Beca)

Appendix F Multi-Criteria Assessment Evaluation Results

Appendix G High Level Outfall Pipeline Construction Methodologies

Appendix H Cultural Values and Impacts Assessments Appendix I Summary of Planning Documents (WSP)

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2 Existing Wastewater System

The Katikati wastewater treatment plant was originally constructed in 1999 and comprises of an inlet screen (installed in 2020), two aerated lagoons operated in series, floating treatment wetlands and ultraviolet (UV) disinfection. The existing wastewater treatment plant is shown on Figure 2. Screened effluent is pumped across Tauranga Harbour and Matakana Island via a 200mm diameter pipeline, discharging from an ocean outfall equipped with a diffuser 650m offshore from Matakana Island.



Figure 2: Aerial view of Katikati wastewater treatment plant (Source: Nearmap, dated 12/2/2025)

Council has invested in the following capital upgrades to the Katikati wastewater treatment plant and ocean outfall in the last 5 years:

- New inlet screen
- Replacement of the outfall diffuser
- Increase of on-site emergency storage
- New UV disinfection system

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Following, the completion of the 30-year masterplan in 2022, Council selected a Moving Bed Biofilm Reactor (MBBR) process to improve nitrogen reduction and achieve discharge consent compliance.

The Moving Bed Biofilm Reactor (MBBR), located to the west of the existing ponds as shown in Figure 2, is currently in the commissioning phase. This project also includes the construction of a new process building with associated roading, as well as the electrical, civil, geotechnical, and mechanical design and installations that are now being finalised.

2.1 Resource Consent Requirements

In 2018, Council obtained a replacement Resource Consent from BOPRC to discharge treated wastewater to the coastal marine area (CMA) from an ocean outfall (Ref: RM16-0206). A copy of Resource Consent RM16-0206 is attached at Appendix A.

During the application process, tangata whenua and other stakeholders provided strong feedback that the current disposal method should have already been discontinued and an alternative found. Council subsequently agreed to look for an alternative discharge solution to deal with these issues and also to make sure that there was a plan in place for the future of the discharge before the existing cross-harbour pipeline reaches the end of its engineering life.

This agreement was implemented through conditions of consent. Relevant requirements from the consent conditions, together with comments on compliance status as at November 2024 are summarised in Table 2 below.

Table 2: Relevant Existing Consent Conditions and Status

Consent Requirement Status as of July 2025 Establish Te Ohu Waiora to complete an Historically, this group has been Alternatives Investigation in accordance engaged during the 2018 consent with the Terms of Reference: application and for the 2021 Alternatives Investigation report. To receive and provide information and Membership and attendance have feedback on the Alternatives been ad-hoc. Investigation including the scope and methodology of the investigations and In September 2024, Council formally progress of the investigations established Te Ohu Waiora as an To identify and recommend where advisory group to the Projects and specialist technical information is Monitoring Committee with three required to assist it to fulfil its role (The elected members to represent the decision on whether to act on such a Katikati community. All hapū named recommendation will rest with the in the consent are represented on Te Ohu Waiora.

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Consent Requirement Status as of July 2025

consent holder after consultation with Te Ohu Waiora)

 To act as the channel for broader community input as necessary; and

To commit to finding an agreed way forward and seeking agreement with the group on its advice to Council.

Membership:

- at least one representative from Matakana Island hapū
- at least one representative from Northern Ngai Te Rangi hapū
- at least two residents of the Katikati community that are considered by the consent holder to be representative of the Katikati community

Te Ohu Waiora would also receive annual consent compliance monitoring reports which require distribution to hapū.

At its first official meeting is on 25 November 2024 –the group adopted a Terms of Reference and confirmed appointment of hapū representatives and BOPRC as a non-voting representative.

Alternatives Investigation – objective is to identify at least one appropriate and practicable alternative to the ocean outfall discharge authorised under these consents to inform the Future Directions Report. Must have regard to engineering, cultural, environmental, financial and any other relevant considerations.

The Alternatives Investigation was submitted to and accepted by BOPRC in 2021. Following a multi-criteria analysis, the preferred option was land based irrigation at a confidential site in Katikati.

The report was presented to Council in 2021 with the recommendation to pursue irrigation trials at the wastewater treatment plant and to approach landowners. This was not progressed.

Future Directions Report - Before 31
December 2026, prepare a report
confirming the best practicable option for
future management of the discharge and
the proposed pathway for implementation
of the option prior to expiry of these
consents. The Future Directions Report
shall be informed by and take into account
the outcomes of the Alternatives
Investigation. The Consent Holder shall
lodge any Resource Consent applications
and (if necessary) notices of requirement

To be undertaken within this project.

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Consent Requirement	Status as of July 2025
to implement the option identified in the Future Directions Report prior to the expiry of this consent.	
Reporting – Alternatives Investigation scope within 12 months of grant date and progress reporting every 2 years.	Conducted as part of annual compliance reporting

In addition to the Resource Consent conditions, advice Note 4 to the existing Resource Consent notes that Te Ohu Waiora is not a decision-making body with respect to funding.

2.2 Activities Since 2015

The table below summarises activities carried out since 2015 regarding Katikati wastewater treatment plant.

Year	Activity
2015	Engagement started to support replacement Resource Consent application ahead of consent expiry.
2016	Working group formed to explore alternative discharge options - hapū, community, Council and consultant members. Replacement consent application lodged.
2017	Workshops about alternative discharge options and beneficial reuse of recycled water.
	Field trip to existing discharge facilities and various discharge types. Land discharge area packages identified.
2018	Scheme success criteria introduced. Further field trip to additional land application sites.
	Agreement: medium-term continued discharge to ocean and long-term discharge to land.
	Consents granted with expiry in 2038
2019	Detailed investigation of land disposal options, scoring against success criteria and cost estimation.
	Alternative options methodology submitted to BOPRC.
2020	New inlet screen installed
2021	Alternative Options report - non-cost MCA scoring and cost NPV assessment both point to same preferred option.

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Year	Activity
	Final report signed off by working group members, adopted by Council, and submitted and accepted by BOPRC.
2022	30-year masterplan developed for WWTP. Outfall diffuser replaced and ponds de-sludged. Leak in cross-harbour pipeline notified and repaired (August).
2023	New UV disinfection system installed at WWTP. Leak in cross-harbour pipeline notified and repaired (June).
2024	Leak in cross-harbour pipeline notified and repaired (January). Design phase of MBBR upgrade, construction of electrical upgrade. Establish sustainable project structure and commence Future Directions phase.

2.3 Outfall Condition and Performance

The existing cross-harbour and outfall pipeline (DN200, Class D (PN 12) PVC U) was installed by a dairy company in 1977 and purchased and operated by Council from 1986. In 2019, WSP carried out a condition assessment of the pipeline. This assessment indicated that the pipeline could remain in service without significant risk of fatigue induced failure until at least 2040. Pressure cycling was identified as an issue which Council has tried to address through regular pressure testing of the ocean outfall.

There have been several leaks identified since 2022. Each investigation and subsequent repair require notification to tangata whenua, public health and the regional council. Since this time, WSP has reviewed outfall performance and indicated a remaining useful life of 5-10 years for the section crossing the harbour. The discharge rate is reduced to 20L/s to reduce pressure on pipeline.

2.4 Existing Wastewater Treatment Plant Performance

Existing Katikati wastewater treatment plant performance against current Resource Consent conditions is reported 6 monthly to tāngata whenua and annually to Te Ohu Waiora and Bay of Plenty Regional Council. Every five years, an independent consultant is engaged to review performance over the previous five years and provide recommendations for improvement.

The last independent performance review was conducted in March 2024 (Review of the WWTP and Reticulation System Performance Review, GWE Consulting Engineers,

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2024). The following conclusions and recommendations were made regarding the Katikati wastewater treatment plant:

- No recorded incidents of effluent flow exceeding the discharge limit of 3,700m³/day.
- A small number of overflow events occurred between 2022 and 2023, mainly due to extreme weather and cyclones.
- Wastewater discharge meets cBOD5 and TSS consent conditions, but total nitrogen (TN) levels have exceeded limits on several occasions.
- An MBBR plant is being implemented to address TN and ammoniacal nitrogen in the discharge.
- Faecal coliform levels exceeded the maximum allowable when the UV plant was underperforming; this was rectified by a 2020 upgrade, and the plant now meets required standards.
- E. coli concentrations in the receiving environment comply with the 2003 Recreational Water Quality Guidelines.
- Enterococci and faecal coliforms in the receiving environment exceeded guideline values less than 3% of the time.
- All heavy metals except copper and zinc were within the ANZG 2018 Default Guideline Values (DGV).
- Copper exceeded ANZG 2018 DGV 99% of the time, while zinc exceeded DGV 13% of the time.
- Benthic fauna and tuatua have been analysed, but expert judgement is required to assess suitability for human consumption.
- No available data for temperature and dissolved oxygen concentrations.

It is noted that effluent nitrogen levels are expected to be compliant with the commissioning of the MMBR in mid-2025.

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3 Methodology

3.1 Project Structure

The project structure is shown in the figure below.

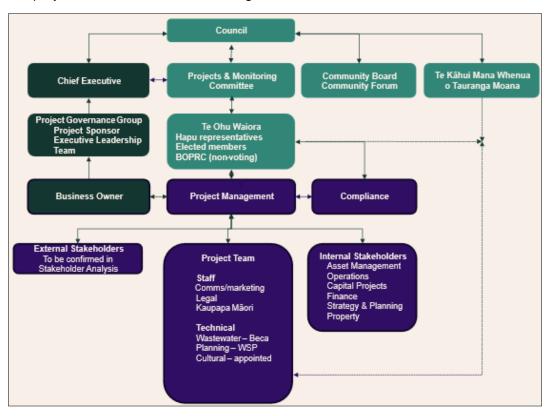


Figure 3: Katikati Wastewater Disposal Future Directions Project Structure

Te Ohu Waiora membership details are shown in Table 3 below. This group is appointed by the Council Projects and Monitoring Committee and guided by a Terms of Reference adopted by the group. Hapū membership aligns with existing Resource Consent requirements.

Table 3: Te Ohu Waiora Membership

lwi/ hapū	Representative	Alternate
Te Whānau ā Tauwhao ki Rangiwaea	Brendon Taingahue	
Ngāti Tauaiti	Hori Murray	
Te Ngare	Jason Murray	

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lwi/ hapū	Representative	Alternate
Ngāi Tuwhiwhia	Nessie Kuka	
Ngāi Tamawhariua	Te Uta Roretana	
Ngāi Tamawhariua ki Te Rereatukahia	Pare Samuels- Hudson	Hone Winder- Murray
Te Whānau ā Tauwhao ki Otawhiwhi	Reon Tuanau	Garston Smith
Ngāti Te Wai	Riki Nelson	Hapū chair
Katikati Community	Mayor James Denyer Cr Anne Henry Cr Rodney Joyce	
BOPRC (non-voting)	May Cheuyglintase	

3.2 Information Received

3.2.1 2021 Alternatives Investigation Report

The 2021 Alternatives Investigation Report was prepared to document the development and evaluation of alternative disposal options with Te Ohu Waiora, in accordance with the conditions of the existing Resource Consent.

The process commenced by the running of several stakeholder workshops that provided education on wastewater, its origins, its constituents, the methods of treatment and methods of discharge available. Considerable time was also spent discussing the issues associated with the management of wastewater.

Workshops were also held discussing the different levels or extent of treatment available, the relative water qualities produced and the treatment of wastewater as a resource whereby various resources (energy, carbon, nutrients, water) can be extracted and reused, depending upon the treatment provided.

Facility visits were also conducted to various WWTPs and discharge and biosolids management facilities on the Coromandel Peninsula and in the central north Island from Rotorua to Tauranga to Otorohanga.

A site screening process was conducted to identify potential sites for land disposal in the Katikati area. Using GIS analysis, land parcels within 10 km of the wastewater treatment plant were evaluated according to the following criteria:

- Minimum 30 ha land area and slope ≤26°
- Buffer zones: 20 m from watercourses, 30 m from property boundaries

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- Single ownership (except one island site)
- · Soil permeability and groundwater levels
- Planning overlays: ecological, cultural, landscape, zoning
- Archaeological and cultural sensitivity

Five potential candidate sites were shortlisted and further assessed through geotechnical, planning, and archaeological desktop studies to evaluate their suitability for treated effluent irrigation or wetland discharge. Additional considerations included soil characteristics, flood risk, and planning overlays such as ecological, cultural, and landscape values.

Analysis of the feasibility of irrigating the sites, growing crops of pasture (cut and carry) or forestry was undertaken, and several alternative options developed. To compare the options, Multi Criteria Analysis (MCA) was undertaken by scoring of success criteria agreed by Te Ohu Waiora. The main success criteria were cultural, community, health of water bodies and economic viability.

The MCA scoring was undertaken by Te Ohu Waiora at workshops held on 19 and 30 April 2021. Following the scoring, a preferred option was identified as a land-based irrigation of treated wastewater to pasture. However, as no discussions with the owners of the land or of neighbouring properties was undertaken, the 2021 report remains confidential due to commercial sensitivity.

The potential candidate sites identified were treated as representative examples for the assessment purposes. The 2021 report recommended that should the preferred option be pursued, engagement with the owners of the site should be progressed before commencing any further work on the option.

3.2.2 Hydrogeological Desktop Review

For the purposes of the Future Directions Report, the preferred site for land-based disposal from the 2021 Alternatives Investigation has been carried over to be reevaluated alongside the other options. A Hydrogeological Desktop Review of the site (including information from previous investigations where available) was undertaken to consider:

- Site characteristics location, topography, and land use.
- Hydrogeology soil profile, groundwater depth and flow directions, travel times to surface water and harbour receiving environments.
- Environmental considerations downgradient bore and surface water abstraction

Should land-based irrigation be selected as the preferred option, further site-specific testing and observation is recommended to support future design stages and environmental assessments. This should include:

Delineate intended area for irrigation

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- Detailed site investigations to confirm soil conditions and design infiltration rates.
- Updated groundwater effects analysis and leaching model for nutrient migration.
- Local survey of environmental receptors, including surface water and groundwater takes.

Alongside the Hydrogeological Desktop Review, an updated assessment of the land status was undertaken to consider the zoning and features of the land, including the productive land classification.

As the Hydrogeological Desktop Review and Land Status update is specific to a property, it remains confidential and as such is not appended to this report. Notwithstanding this, the matters considered and recommendations for further investigation would be broadly relevant to any site for land-based irrigation of treated wastewater.

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4 Legal and Planning Context

The Katikati Wastewater Treatment Scheme (KWTS) is subject to a complex legal and planning framework that guides how wastewater is managed and where it can be discharged. This framework includes national and local regulations, environmental standards, and cultural considerations.

A summary of the legal and planning frameworks applicable to the Project is attached at Appendix B. Key elements are summarised below.

4.1 National, Regional, and Local Planning

The Resource Management Act 1991 (RMA) is the primary legal statute governing environmental management in New Zealand. It requires that any discharge of treated wastewater—whether to land or water—must meet strict environmental standards. National Policy Statements (NPS) and National Environmental Standards (NES) set out rules for protecting freshwater, coastal areas, and highly productive land. These include:

- The New Zealand Coastal Policy Statement (NZCPS), which protects coastal water quality and requires early consultation with tangata whenua.
- The NPS for Freshwater Management (NPS-FM), which prioritises the health of water bodies and sets limits on pollutants.
- The NPS for Highly Productive Land (NPS-HPL), which restricts non-agricultural use
 of valuable rural land.

Regionally, BOPRC has planning documents that reinforce these national rules and add local requirements. These include the Regional Policy Statement, the Regional Coastal Environment Plan, and the Regional Natural Resources Plan. These documents identify sensitive areas like Tauranga Harbour and Matakana Island and set rules for discharges, land use, and infrastructure development.

The Western Bay of Plenty District Plan governs land use and infrastructure development in the area. It recognises the importance of wastewater infrastructure but also aims to protect rural character, ecological areas, and cultural heritage. Any new infrastructure must align with zoning rules and may require designations or Resource Consents.

4.2 Local Government Decision Making

The Long Term Plan (LTP) includes a section on wastewater management, focusing on the KWTS. KWTS is classified as a "significant activity" under the Local Government Act 2002 (LGA), so any key decisions about its future must be included in the LTP after careful analysis and public consultation. Council must evaluate all practical options,

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consult on them, and make transparent decisions within the LTP framework. Project inclusion in the LTP does not guarantee implementation, but sets up the process for future Council decisions, which may be delegated to officers as appropriate.

Currently, the LTP defers major decisions about KWTS to the 2027-37 cycle. Advancing decisions before this would need an LTP amendment with public consultation, which can occur alongside the annual plan process using the special consultative procedure.

If land is needed for disposal, Council has the power to acquire land under the Public Works Act including through compulsory acquisition if necessary. Council prefers to purchase land with a single owner to avoid legal complications. Acquiring Māori freehold land is generally avoided due to legal and procedural challenges.

4.3 Marine and Coastal Area

If the project affects the marine and coastal area, Council must consult with tāngata whenua groups who have applied for Customary Marine Title under the Marine and Coastal Area (MACA) Act as part of Resource Consent applications. While these claims are still being processed, early engagement is considered best practice. During workshops, Te Ohu Waiora resolved not to consult MACA applicants during this phase of the project. Consultation is likely to occur during the Resource Consent application process for the preferred option.

4.4 Legislative Changes and Fast-Track

The legal landscape is changing. New laws are being introduced to streamline infrastructure approvals and set national performance standards for wastewater. These include:

- Proposed amendments to the RMA and new fast-track consenting pathways.
- New environmental performance standards under the Water Services Act 2021.
- A shift in planning responsibilities from Long Term Plans to new water services strategies.

These changes aim to simplify the consenting process and support infrastructure projects like KWTS, while still protecting the environment and cultural values.

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5 Partner and Stakeholder Engagement

The engagement approach for the project was guided by an engagement plan, which set out a structured engagement programme. The engagement approach followed the IAP2 Public Participation Spectrum and was designed to ensure that tangata whenua and community voices were embedded throughout the project.

A copy of the Engagement Plan for the project is attached at Appendix C, with key components summarised below along with a summary of feedback received.

5.1 Engagement Approach

The engagement plan was developed to meet both the requirements of the project's Resource Consent and best practice standards. Engagement activities included:

- Regular workshops with Te Ohu Waiora to co-develop project objectives, evaluation criteria, and preferred options.
- Presentation of information to existing forums, including Te Kāhui Mana Whenua o Tauranga Moana.
- Email communications with stakeholders and interested parties.
- Public communications via Council ward forum and the Council website.
- Ongoing collaboration with regulators, including BOPRC, Taumata Arowai and the Commerce Commission.

The engagement process was designed to be iterative and adaptive, with feedback loops built into each phase of the project. It also included a clear distinction between negotiable elements (e.g. discharge method, treatment level) and non-negotiable elements (e.g. compliance with legislation, location of the existing WWTP).

5.2 Summary of Feedback

Limited feedback was received from stakeholders and interested parties, with responses received from a forestry company with interests on Matakana Island, and the Commerce Commission – both of whom requested to be kept updated.

Similarly, feedback from discussions held at the ward forum and Te Kāhui was focussed on being updated with outcomes of the Project.

The primary feedback received was from tangata whenua Te Ohu Waiora representatives during the project workshops and meetings, as documented in Sections 8 and 9 of this report.

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6 Planning for Growth and Compliance

This section provides a summary of how the Katikati wastewater treatment plant is being planned to meet the needs of the community now and into the future. The preconcept design is based on a thorough review of historical data, including how much wastewater the plant receives and how it performs in treating it. For full details, refer to the Technical Options – Baseline Upgrade attached at Appendix D.

6.1 Foundations of the Design

Key flow measurements were used to understand how the plant operates under normal and extreme conditions:

- Average Daily Flow (ADF): The typical amount of wastewater received each day.
- Average Dry Weather Flow (ADWF): The average flow during dry periods, which helps isolate household and business wastewater from stormwater.
- Peak Wet Weather Flow (PWWF): The highest flow recorded during heavy rain, which stresses the system the most.

A "peaking factor" of 4.0 was chosen to estimate future peak flows. This means the plant is being designed to handle up to four times the typical dry weather flow, which is a conservative and safe approach based on local guidelines.

6.2 Planning for Future Growth

The design discharge is based on a 50 year planning horizon (2024-2074). Population forecasts provided by the Council (LTP 2024-2034) show growth from about 5,700 people in 2024 to about 7,600 in 2074. This growth directly affects how much wastewater the plant will need to treat.

To plan for this, the design team calculated how much waste each person typically produces per day. These values were then multiplied by the projected population to estimate future loads. For example:

- Average daily flow (m³/day) 1,261 m³/day in 2024 to 1,414 m³/day in 2074.
- Biochemical Oxygen Demand (BOD₅) a measure of organic pollution—is expected to increase from 435 kg/day in 2024 to 575 kg/day in 2074.
- Total Suspended Solids (TSS) particles in the water—are projected to rise from 424 kg/day to 559 kg/day over the same period.

The plant's outflow systems, including pumps and pipelines, would be sized to handle these future volumes. A higher peaking factor is used for the effluent pump station to

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reduce the risk of overflows during storms or high-use periods. Additionally, a 10% buffer has been added to account for reduced treatment efficiency as the plant handles more water.

6.3 Ensuring Environmental Compliance

To meet environmental standards and protect public health, the WWTP must consistently produce treated water that meets strict quality guidelines. The design uses historical data to set conservative targets for pollutants in the treated water, including:

- BOD₅ and TSS, which indicate how clean the water is.
- Total Nitrogen (TN) and Total Phosphorus (TP), which are important for preventing algae growth in rivers and lakes.

The plant will also monitor **faecal coliforms** and **Enterococci**, which are bacteria that indicate the presence of harmful pathogens. These are expected to increase slightly by 2074 due to higher volumes, so the design includes allowances for this.

To support future land-based irrigation of treated water, the Council has added **phosphorus and potassium** to its regular monitoring programme. These nutrients are beneficial for crops but must be carefully managed to avoid environmental harm.

The design assumes that no new sources of waste—such as septic tank waste—will be added to the plant, and that the amount of industrial (trade) waste will remain stable. These assumptions help make sure the plant remains compliant under the projected conditions.

6.4 Taumata Arowai Discharge Standards

Taumata Arowai is the national water services regulator, established under the Water Services Act 2021, with a mandate that extends beyond drinking water to include wastewater and stormwater networks. In the wastewater space, its responsibilities include:

- Developing national environmental performance standards for wastewater discharges to land, freshwater, and coastal environments.
- Monitoring and reporting on the performance of wastewater network operators to improve transparency and accountability.
- Maintaining public registers of wastewater and stormwater networks to ensure communities have access to infrastructure information.
- Providing guidance and best practice tools to help councils and operators meet their obligations efficiently and consistently.

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Taumata Arowai is currently consulting on New Zealand's first national wastewater performance standards, which are expected to be finalised later in 2025. The four proposed standards for public networks cover the most common consenting topics (discharging treated wastewater to water or land, safe biosolid use, and managing overflows and bypasses) – with requirements tailored to appropriately manage the level of risk to public health and different environments.

A discharge which complies with the standards is intended to have a simpler consenting pathway under the RMA, including standard conditions and a guarantee of a long-term consent duration. For topics that fall outside the standards (e.g. treatment requirements for PFAS or heavy metals like iron and aluminium) the existing RMA consenting process would apply.

The standards are framed as contaminant limits which vary depending on the receiving environment, as outlined in the following sections. It should be noted that these standards are proposed only and some have been challenged during consultation. There may be significant changes before they are finalised.

6.4.1 Discharge To Water

For discharge to water, the standard proposes tailored treatment requirements for seven categories of waterbody, ranging from large open ocean environments to more static estuarine or lake environments. Generally, due to the significant amount of dilution and dispersion, open ocean environments are less sensitive to discharges than lakes, rivers and streams

Of the options considered, the only water-based receiving environment is 'open ocean', which is described as having a dilution ratio >1000, being remote from estuaries, fiords, inlets, harbours, and embayments, typically >500m from a shoreline, and a high energy environment. The proposed contaminant limits for discharge to Open Ocean are outlined in Table 4.

Contaminants are listed as 'not applicable' when they do not apply, or impacts are expected to be very low, for a specific category of waterbody.

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Table 4: Contaminant limits to for discharge to open ocean (Source: Taumata Arowai)¹

Parameter, rationale and statistic		Open ocean	
Carbonaceous Biochemical Oxygen Demand (cBOD _s)			
Rationale: $CBOD_5$ can indicate the effectiveness of wastewater treatment processes. High levels of $CBOD_5$ can deplete dissolved oxygen and harm aquatic life.			
Statistic: Annual median			
Total Suspended Solids (TSS)			
Rational: Total Suspended Solids an important visible indicator of water quality. Suspended solids absorb light, which can increase water temperature and decrease oxygen levels in waterbodies.			
Statistic: Annual median			
Nutrients (Total Nitrogen and Total	Total Nitrogen –	Not	
Phosphorous)	Statistic: Annual median	applicable	
Rationale: Nutrients can affect ecosystem			
health through eutrophication, increases in plant growth (e.g., algal blooms) and reduced			
water clarity. The proposed discharge to water	Total Phosphorus –	Not	
standards sets limits on total nitrogen and total phosphorous. For each of the subcategories, limits for nutrients reflect flow and loading.	Statistic: Annual median	applicable	
Ammoniacal-nitrogen (ammonia)			
Rationale: Ammonia can deplete oxygen levels in water, resulting in reduced biodiversity and declining fish populations.			
Statistic: Annual 90%ile			
E. coli			
Rationale: As with enterococci, <i>E. coli</i> indicates the presence of pathogens and faecal pollution in freshwater.			
Statistic: Annual 90%ile			
Enterococci			
Rationale: Enterococci and <i>E. Coli</i> indicate the presence of disease-causing bacteria, viruses or			
protozoa. Enterococci is the most suitable bacteria to test for in marine waters.			
Statistic: Annual 90%ile			

6.4.2 Discharge To Land

For discharge to land, limits depend on an assessment of how suitable the site is for discharging treated wastewater. This includes examining geology and groundwater, topography and size, and current or proposed land uses for the site, as well as an

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¹ cfu = 'colony forming unit'. It estimates the number of bacteria that have the potential to reproduce and increase overall levels of bacteria that could make people sick.

assessment of any risks to groundwater, recreation areas, food growing areas etc. posed by discharging treated wastewater at the site. The assessment would determine whether the site was a Class 1, 2, or 3, or not suitable for discharge.

In the absence of site-specific ground investigations, it is not possible to classify the potential land-based irrigation site with confidence. However, the Hydrogeological Desktop Review noted that based on the current contaminant loads from the Katikati wastewater treatment plant and an assumed irrigation area of 100ha, the discharge is likely to meet Class 1 or Class 2 limits, even without considering any treatment quality upgrades. The proposed contaminant limits for each class of land are outlined in Table 5.

Table 5: Contaminant limits to for discharge to land (Source: Taumata Arowai)

Class	Total Nitrogen (kg/ha/year)	Total Phosphorous (kg/ha/year)	E. coli (public health) (cfu/100mL)
1	500	75	No limit
2	250	50	< 2,000
3	150	20	< 1,000

The proposed standard uses total nitrogen and phosphorus as they represent the sum of all forms of these nutrients present in wastewater. Managing these nutrients is important to avoid run-off to waterbodies causing eutrophication. The proposed standard includes E. coli as it indicates the presence of pathogens and faecal pollution in soil. Where no limit applies for E. coli, this assumes the pathway/receptor connection can be adequately removed.

The hydraulic loading rate for discharges to land shall not exceed 5 mm/hour or 15 mm/application event. This application rate reflects the capacity of many soil types and is designed to avoid significant ponding or surface run-off.

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7 Options Considered

A summary of the options considered in the multi-criteria analysis (MCA) evaluation is outlined in Table 6 below. The summary outlines the treatment type, discharge method, key benefits, and limitations for each option.

A full description of the options is included in Appendix E (Evaluation Options and Comparison Tables).

Options discounted by Te Ohu Waiora are described below.

- Direct harbour discharge approximately 3km out from the WWTP, could potentially be considered as an affordable option. To be consented, a harbour discharge would likely require a very high-quality effluent. Taumata Arowai's draft wastewater discharge standards should provide further guidance. Note: Resolution made by Te Ohu Waiora on 10 March 2025 to discount this option and not evaluate further.
- Wetland options close to the harbour discharge to the harbour
- Hybrid options irrigation with discharge direct to the harbour in winter
- Most irrigation options except one suitably located proximity (indirectly discharge) to the harbour

Te Ohu Waiora representatives agreed that protection of the harbour is paramount in evaluating a treated effluent discharge option from Katikati wastewater treatment plant.

For completeness, the following options are noted but were discounted for the reasons stated:

- Connect to Tauranga City Councils Ōmokoroa pipeline no capacity for Katikati flows.
- New pipeline to Tauranga approximately 50 km so unaffordable
- New pipeline to the Waihī Beach WWTP That (Waihī Beach) effluent discharge consent precludes any wastewater from outside of the Waihī Beach area

Table 6: Options Summary

Option	Treatment Type	Discharge Method	Key Benefits	Limitations
0a²	Lagoon system with	Existing Ocean Outfall	Meets current consent conditions	_

² Option 0a is the baseline do minimum option, included for comparative purposes only.

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Option	Treatment Type	Discharge Method	Key Benefits	Limitations
	MBBR in series (Status quo)	with Renewals	 Sufficient hydraulic capacity to 2074 Limited nutrient removal, UV disinfection and flexibility for future expansion 	
Ια	Lagoon system with MBBR in series (Status quo)	New Ocean outfall 500m longer than existing	 Meets current consent conditions Sufficient hydraulic capacity to 2074 Limited nutrient removal, UV disinfection and flexibility for future expansion 	_
1b	Lagoon system with MBBR (Status quo) + DAF	New Ocean outfall 500m longer than existing	 Enhanced solids removal Improved UV disinfection Better effluent quality 	 Limited nutrient removal for future expansion Higher pathogen inactivation requires cleaner effluent
lc	New Membrane Bioreactor (MBR)	New Ocean outfall 500m longer than existing	 Highest level of treatment and disinfection Easily expandable 	 High capital and operational costs Requires skilled operators Sludge dewatering needed Wet weather flow management required

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Option	Treatment Type	Discharge Method	Key Benefits	Limitations
2 a	Lagoon system with MBBR (Status quo) + DAF	Katikati pasture irrigation	 Enhanced solids removal Improved UV disinfection Better effluent quality 	Limited nutrient removal for future expansion
3α	Modified Ludzak Ettinger (MLE) and UV	Katikati forestry irrigation	 High level of treatment Flexible for reuse Expandable for future needs 	 High cost Large land footprint Ground improvement costs

Indicative implementation timelines for all options are focussed on decommissioning the existing cross-harbour pipeline as soon as possible.

Options 1a, 1b, and 1c are focussed on the renewal of the cross-harbour pipeline in the short term, with renewal of the island section, extension of the ocean outfall and quality upgrades at the wastewater treatment plant staged over the subsequent years to align with the expiry of the current Resource Consent in 2038.

Options 2a and 3a are focussed on full implementation as soon as possible.

7.1 Effluent Quality Comparison

A comparison of effluent quality for each of the options is outlined in Table 7, along with the applicable Taumata Arowai proposed discharge standards.

Table 7: Effluent Quality Comparison

Option	Treatment	cBOD₅ mg/l	TSS mg/I	NH₄-N mg/I	TN mg/l	TP mg/l	E. coli / Enteroccocci¹ cfu/100ml
	Raw Sewage	280	280	60	69	9	10,000,000
	Pre-MBBR	15	17	43	57	6-7	< 40
0a	MBBR + UV	15	20- 30	25	33	6-7	< 40
1a	MBBR + UV ²	15	20- 30	25	33	6-7	< 40

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Option	Treatment	cBOD₅ mg/l	TSS mg/I	NH₄-N mg/I	TN mg/l	TP mg/I	E. coli / Enteroccocci¹ cfu/100ml
1b	MBBR + DAF + UV ³	10	10	25	32	0.1 - 64	< 20
1c	MBR + UV ²	4	1-2	1	7	6-7	< 10
TA Stand	TA Standard – Open Ocean		-	50	-	-	40,000
2 a	MBBR + DAF + UV ³	10	10	25	32	0.1 - 64	< 20
3α MLE + UV		5	10	1	8	6-7	< 40
TA Standard – Land (Class 1/2)		_	_	-	500 / 250	75 / 50	No limit / < 2,000

Notes:

¹ Enterococci and E. coli indicate the presence of disease-causing bacteria, viruses or protozoa. Enterococci is the most suitable bacteria to test for in marine waters.

² With carbon addition

³ With carbon addition and alum dosing

⁴ Dependent on alum dose level

8 Multi-Criteria Analysis

8.1 Methodology

During Workshops 5 and 6, the criteria to be used in the Multi-Criteria Analysis (MCA) evaluation were discussed by Te Ohu Waiora. A two-stage evaluation process was adopted, using gateway criteria in the first instance followed by a series of weighted criteria covering a number of key result areas.

8.1.1 Gateway Criteria

Options must meet the following criteria to be eligible for evaluation:

- Meet 50 year population forecasts
- Implementable and operational by 2038 (consent expiry)
- Maintains or improves environmental impacts
- Proven technology in NZ and/or in similar environments
- Ongoing tangata whenua and community governance involvement

8.1.2 Evaluation Criteria

The weighted evaluation criteria are outlined in Table 8 below.

Table 8: Evaluation criteria

Key Result Area	Sub Criteria	% of Total	Weight %
Cultural values	Improve mauri and mana (land and water)	25%	50%
	Integrate well with existing land and water uses		10%
	Gathering of food/kaimoana		40%
Community	Scalable/staged to meet growth	25%	40%
Needs	Able to be modified to meet water quality improvements		30%
	Resilient to climate change and natural hazards		30%
Impacts on Water and Land	Preserves recreational value of people (including swimming fishing and any other recreational activities)	25%	40%

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Key Result Area	Sub Criteria	% of Total	Weight %
	Nutrients managed to healthy levels in ground and surface water bodies		40%
	Habitat of indigenous flora and fauna protected, including taonga species		10%
	Efficient use of resources, including energy efficiency, operational carbon emissions, and biosolids production		10%
Economic Viability	Opportunity for beneficial reuse of treated wastewater for employment or commercial ventures	25%	10%
	Affordable to implement (capital costs)		35%
	Affordable to operate and maintain (operational costs)		35%
	Minimise loss of productive land resource		20%

8.2 Scoring

The MCA scoring was based on a 5-point scale, as outlined in Table 9. A higher score indicates a more favourable option.

Table 9: Scoring scale

Colour	Rating	Level of Criteria	Description
	1	Very unfavourable	Absolutely less favourable than others on this criterion
	2	Unfavourable	Less favourable than others on this criterion
	3	Neutral	Average, unquantifiable or not applicable
	4	Favourable	More favourable than others on this criterion
	5	Very favourable	Absolutely more favourable than others on this criterion

At Workshops 7 and 8, options were scored by Te Ohu Waiora against the evaluation criteria outlined in Table 8. A breakdown of the overall MCA scoring is shown in Figure 4. Full details of the MCA scoring are attached at Appendix F.

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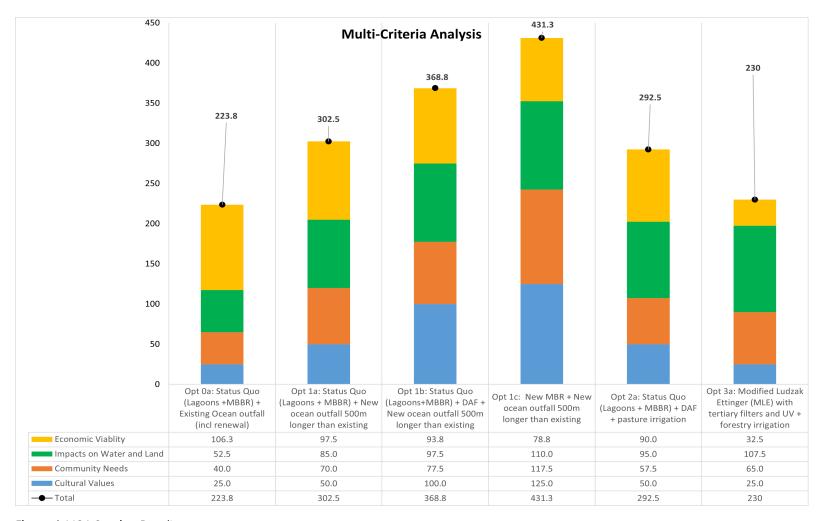


Figure 4: MCA Scoring Results

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8.3 Preferred Option

Following the MCA scoring during Workshops 7 and 8, and the subsequent discussion of the MCA results during Workshop 9, Te Ohu Waiora resolved that Option 1C was the preferred wastewater treatment and disposal solution. It was selected for its treatment performance, alignment with tangata whenua values, and long-term environmental benefits.

Key attributes of Option 1C include:

- **High-quality treatment:** MBR technology provides advanced removal of suspended solids, nutrients, and pathogens.
- Cultural alignment: Focus on protection of streams and the harbour. While does
 not align with tikanga, the outfall pipeline with improved treatment was considered
 preferrable to land discharge in this situation. Conclusions and recommendations
 made by tangata whenua with regard to the preferred option are provided in the
 following section.
- **Futureproofing:** Offers flexibility for future upgrades and aligns with long-term environmental and regulatory expectations.
- Trade-offs: High capital cost and redundancy of the newly commissioned MBBR system were noted as concerns

8.3.1 Indicative Construction Methodology

To inform final assessment of cultural values and impacts for the preferred option (see section 9) and development of the implementation pathway (see section 10), a high-level overview of indicative options for construction of the preferred option has been developed by Beca, and is attached at Appendix G.

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9 Cultural Values and Impacts

Engagement with tāngata whenua has been a central component of the Katikati Wastewater Disposal Future Directions process. Cultural Values Assessments (CVAs) and/or Cultural Impact Assessments (CIAs) were provided to ensure that Māori perspectives, values, and expectations are embedded in the decision-making process.

These CVAs and CIAs are attached to this report at Appendix H. The following section summarises key recommendations from these documents.

9.1 Ngāti te Wai

- Cultural values must be explicitly considered in decision-making.
- A Cultural Impact Assessment (CIA) should be commissioned to assess harm to Ngāti te Wai values.
- Recommendations will be developed to address harm through mitigation, restoration, avoidance, or opposition.

9.2 Ngāi Tamawhariua ki Rereatukahia

Wastewater Management Principles:

- Engage t\u00e4ngata whenua at all stages of planning, design, implementation, and monitoring.
- Incorporate m\u00e4tauranga M\u00e4ori (traditional knowledge) into wastewater management.
- · Minimise discharge volume and toxicity through high treatment standards.
- Protect cultural sites and restore degraded environments.

Operational Expectations:

- Ensure treatment technologies are reliable, effective, and adaptable to future upgrades.
- Avoid system failures that could result in untreated discharges.
- Provide adequate storage to support optimal performance.
- Establish a Management Review Group (MRG) with iwi representation to:
- Receive operational reports.
- Advise on policies and procedures.
- Support tangata whenua participation in environmental monitoring and research.

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9.3 Hapū of Matakana and Rangiwaea Islands

The joint CIA prepared by the hapū of Matakana and Rangiwaea Islands – i.e. Ngāti Tauati, Ngai Tuwhiwhia, Ngāi Tamawhariua, Te Whanau a Tauwhao and Te Ngāre concluded that:

The New Zealand Settlements Act 1863 led to the confiscation of up to 290,000 acres of Māori land, including Matakana, Rangiwaea, and Motuhoa Islands. Despite this, local Māori have maintained their authority and connection to these lands. The construction of the Katikati Dairy outfall in 1977 compromised the wellbeing of the harbour and ocean waters, and the community objects to continued discharges of treated sewage into these areas. Over the years, Māori have repeatedly called for alternative wastewater solutions and the recognition of their cultural values by the local council.

By 2025, after years of disagreement and tension with various councils, a collective effort has led tāngata whenua to reluctantly support the continuation of the outfall. The hapū of these Islands has deliberated extensively, acknowledging that the decision may not align with the wishes of all whanau. Ultimately, their resolution prioritises consideration of the inevitable consequences for Te Awanui and all the communities of Tauranga Moana.

The following recommendations were made:

- Continue quarterly monitoring of the receiving environment with tangata whenua involvement.
- Acknowledge and align with the Matakana and Rangiwaea Islands Hapū Management Plan.
- Ensure discharge quality exceeds minimum consent standards.
- Communicate monitoring results in accessible language for the community.
- Option 1c (MBR treatment) is identified as the most preferred option, with full hapu
 involvement in development, monitoring, and implementation.

As an addition to the recommendations, the CIA also seeks timely consideration and confirmation of any arrangements that may benefit our ever-growing hapori such as:

- The full cost of emptying the sumps for all four marae on Matakana and Rangiwaea on an annual basis including the cost of the barge.
- Support for Te Mana Whakahono a Rohe an addition to the Matakana & Rangiwaea
 Islands Hapū Management Plan Edition Three July 2025.
- A mutual agreement of an ongoing understanding and respect between Western Bay of Plenty District Council and the Matakana/Rangiwaea Islands.
- Plausible procurement of any contracts relevant for our Islands.
- Support for any transport discussions.

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- Support with return of the archival whare to the Tangata whenua.
- If it does not compromise the structure of the pipeline, to consider doing away with the kink in the actual pipeline.
- Ensure that appropriate and effective cultural monitoring and processes are in place for the placement and construction of the new pipeline.

9.4 Te Whāngu a Tauwhao ki Otāwhiwhi

Preferred Option:

 Support for a new outfall pipe with a 500m extension to improve discharge quality and reduce cultural impacts.

Recommendations:

- Conduct a CIA in consultation with mana whenua.
- Avoid discharges near cultural sites.
- Appoint iwi cultural monitors during construction and operation.
- Develop a Cultural Health Monitoring Framework led by mana whenua.
- Establish long-term partnerships for co-management and decision-making.
- Invest in restorative offsetting projects (e.g., wetland restoration, shellfish bed revival).
- Integrate tikanga Māori into operational protocols, including avoiding discharges during sacred periods.
- Provide training for staff on cultural protocols and establish clear reporting and feedback mechanisms to mana whenua.

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10 Implementation Pathway

10.1 Next Steps

Following adoption of this report by Te Ohu Waiora and Council, and subsequent submission to BOPRC, the key actions for Council and Te Ohu Waiora are outlined in the following sections.

10.1.1 Long Term Plan

The future directions process (linked to a Resource Consent) is separate from the LGA process, which is needed for council decision-making. The LTP must be amended during the June 2026 Annual Plan process or in new LTP 2027/2037 to reflect Council's preferred option following public consultation under the LGA. A consultation document with options analysis needs to be prepared for public feedback.

Once amended, decisions consistent with the LTP can be delegated to a Council officer. The LTP amendment should happen before the Water Services Strategy (WSS), which is due by 30 June 2027.

A key element of this process will be to justify the additional capital investment required to implement Option 1C to the Commerce Commission and community (compared to Option 1b particularly – which would also meet the proposed Taumata Arowai discharge to water standards).

10.1.2 Te Ohu Waiora

Te Ohu Waiora has an ongoing role under the existing Resource Consent and will be involved in the next phases of the project. Key actions include:

- Continue to provide cultural oversight and guidance throughout the design and implementation phases.
- Participate in the development of a cultural monitoring framework and management review group.
- Support communication of the preferred option and rationale to wider hapū and community stakeholders.

10.2 Implementation Timeline

An indicative staged timeline for implementation of the preferred option is shown in Figure 5 below.

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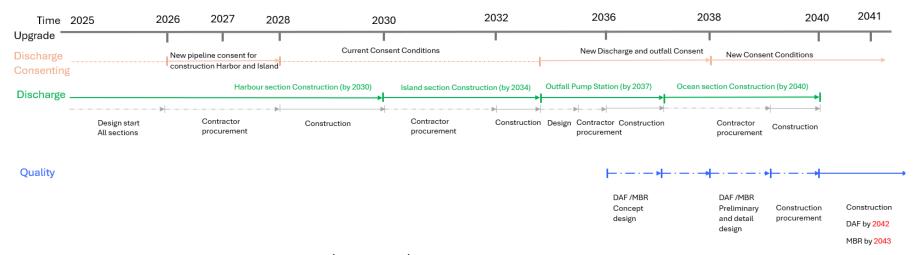


Figure 5: Implementation Timeline for Option 1c (Source: Beca)

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10.3 Design and Procurement

Following a decision to proceed with implementation of the preferred option, Council will need to develop design and procurement plans for staged implementation, ensuring alignment with the existing Resource Consent and Taumata Arowai standards (once finalised).

10.4 Consenting

A summary of the relevant planning documents has been prepared and is attached at Appendix I. The summary outlines the policy framework relevant to the options considered, and the likely consents required for both discharges to land and water.

To implement the preferred option, consents will be required from Bay of Plenty Regional Council for:

- Disturbance and deposition of material in the CMA.
- Placement of structures in the CMA (pipelines and outfall).
- Discharge of contaminants (treated wastewater) to the CMA.
- Discharge of contaminants (odour) to air.

Upgrades at the WWTP itself will also require an Outline Plan (under s176 of the RMA) approval from Western Bay of Plenty District Council to authorise works within the existing designation under the Western Bay of Plenty District Plan.

Two phases of consenting would be required based on the proposed staging of the preferred option:

- New consents for construction of cross-harbour pipeline (2026-2028)
- Replacement of existing consents for discharge of contaminants, plus new consents for extension of outfall pipeline (2034-2038)

The Resource Consent applications and Outline Plan would need to be supported by technical information, including (but not necessarily limited to):

- Detailed construction methodology and construction management plans, including an erosion and sediment control plan
- Environmental assessments, including:
 - Survey of the existing environment
 - Ecological assessment
 - Air quality assessment (for air discharge only)
- Detailed design of WWTP upgrades and details of discharge effluent quality.

Note that Option 1b / 1c would have the same consenting requirements and process.

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11 Conclusions and Recommendations

11.1 Conclusions

The Katikati Wastewater Disposal Future Directions project aims to establish a sustainable structure for planning and implementing a long-term wastewater disposal solution for Katikati. It engaged tāngata whenua partners and key stakeholders (Te Ohu Waiora) to determine a preferred option for Council recommendation.

The project also developed an implementation pathway to minimise the impact of the deteriorating outfall and prepared this report to meet discharge consent requirements and inform future consent processes.

The existing cross-harbour treated effluent pipeline is nearing the end of its useful life, requiring a new effluent disposal method.

After a thorough multi-criteria analysis (MCA), Option 1C, which involves the use of Membrane Bioreactor (MBR) technology and a new longer ocean outfall pipeline, was identified as the preferred option by Te Ohu Wairoa. This option provides high-quality treatment, aligns with tāngata whenua values (in terms of protecting the harbour), and offers long-term environmental benefits.

Engagement with tangata whenua has been central to the project, and their input has been incorporated into the decision-making process. The preferred option was focused on protection of streams and the harbour. While it does not align with tikanga, the outfall pipeline with improved treatment was considered preferrable to land discharge in this situation.

This option will be consulted upon in either an amendment to the current LTP or LTP 2027–2037.

11.2 Recommendations

Implementation of Preferred Option: Proceed with the implementation of Option 1C, which involves the use of MBR technology and a new ocean outfall. This option provides the best balance of treatment performance, cultural alignment, and long-term environmental benefits

Continue to engage with tangata whenua throughout the design and implementation phases. Encourage review of compliance/performance reports, request advice on

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policies and procedures, and support tāngata whenua participation in environmental monitoring and research

Publicly engage on preferred option and shortlisted options and its rationale to the wider community and stakeholders. This should include public consultation as part of the Long Term Plan (LTP) amendment process and ongoing updates on the project's progress.

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Resource Consent



Resource Consent RM16-0206-AP

Following the processing of the Application received on the 13 May 2016, the Bay of Plenty Regional Council has granted the applicant(s):

Western Bay of Plenty District Council

Consent(s) to:

RM16-0206-CC.01	Occupy Coastal Space	Expiry	31 July 2038
RM16-0206-CC.02	Coastal Structure	Expiry	31 July 2023
RM16-0206-CC.03	Disturb Coastal Habitat or Plants	Expiry	31 July 2038
RM16-0206-DC.01	Discharge To Air	Expiry	31 July 2053
RM16-0206-DC.02+	Coastal Discharge	Expiry	31 July 2038

The consent(s) are subject to the conditions specified on the attached schedule(s) for each activity. Advice notes are also provided as supplementary guidance, and to specify additional information to relevant conditions.

The Resource Consent hereby authorised is granted under the Resource Management Act 1991 does not constitute an authority under any other Act, Regulation or Bylaw.

DATED at Whakatane this 24th day of August 2018

For and on behalf of The Bay of Plenty Regional Council

Tabol

Fiona McTavish Chief Executive



Report Date: 27 August 2018 Report ID: BRCCONRP042 Page: 1 of 22

Consent Number: RM16-0206-CC.01

Bay of Plenty Regional Council

Resource Consent

Pursuant to the Resource Management Act 1991, the **Bay of Plenty Regional Council**, by a decision dated 24 August 2018, **hereby grants**:

A resource consent:

 Under section 12(2)(a) of the Resource Management Act 1991 and Rule 12.2.4(a) and of the Bay of Plenty Regional Coastal Environment Plan and Rule SO11 of the proposed Regional Coastal Environment Plan to undertake a discretionary activity being the Use and Occupation of Space in the Coastal Marine Area for the Discharge Pipeline, Diffuser Outlet and Buoy

subject to the following conditions:

1 Purpose

1.1 The purpose of this resource consent is to authorise and set conditions on the occupation of space in the coastal marine area for the discharge pipeline, diffuser outlet and buoy.

2 Location

2.1 Katikati Wastewater Pipeline as shown on B.O.P.R.C. Plan No. RM16-0206/2.

3 Map Reference

3.1 At or about map reference NZTM 1870609; 5841207 (ocean, approximately 650m from Matakana Island).

4 Legal Description

4.1 The activities authorised under this consent shall be located in the coastal marine area as shown on the plan referenced as B.O.P.R.C Plan Number RM16-0206/2.

5 Occupation

- 5.1 The area occupied by the pipe and diffuser outlet authorised under this consent shall be limited to the 200mm diameter pipe, approximately 11 kilometres in length, in the general location as identified on B.O.P.R.C Plan Number RM16-0206/2.
- 5.2 The area occupied by the marker buoy shall be limited to its mooring block.
- 5.3 The consent holder shall provide to the Regional Council the as-built drawings and area occupied in the coastal marine area for the marker buoy and new diffuser within 2 months after completion of the construction of these structures.
- 5.4 The consent holder shall not increase or extend the size and occupation of space of the structures authorised by this consent after initial construction, unless approved in writing by the Chief Executive of the Regional Council or delegate.

6 Review of Conditions

Report Date: 27 August 2018 Report ID: BRCCONRP042 Page: 2 of 22

6.1 In accordance with section 128(1)(a) of the Resource Management Act 1991, the Bay of Plenty Regional Council may serve notice on the consent holder, within six months after the receipt of any environmental investigation report that indicates that the structures are having an adverse effect on the coastal marine area, of its intention to review the conditions of this resource consent in order to deal with any adverse effect on the environment that occurs as a result of the exercise of this consent, and which it is appropriate to deal with at a later stage. The fair and reasonable costs associated with any such review shall be recovered from the consent holder.

7 Term of Consent

7.0 This consent shall expire on 31 July 2038.

8 Resource Management Charges

8.0 The consent holder shall pay the Bay of Plenty Regional Council such administrative charges as are fixed from time to time by the Regional Council in accordance with section 36 of the Resource Management Act 1991.

9 The Consent

9.0 The Consent hereby authorised is granted under the Resource Management Act 1991 and does not constitute an authority under any other Act, Regulation or Bylaw.

Report Date: 27 August 2018 Report ID: BRCCONRP042 Page: 3 of 22

Consent Number: RM16-0206-CC.02

Bay of Plenty Regional Council

Resource Consent

Pursuant to the Resource Management Act 1991, the **Bay of Plenty Regional Council**, by a decision dated 24 August 2018, **hereby grants**:

A resource consent:

Under section 12(1)(b), (c) and (d) of the Resource Management Act 1991 and Rule 13.2.4(h) and 4.2.4(e)
of the Bay of Plenty Regional Coastal Environment Plan and Rule SO11 and DD14 of the proposed Bay of
Plenty Regional Coastal Environment Plan to undertake a discretionary activity being the Placement of
Structures in the Coastal Marine Area and the associated Disturbance of the Coastal Marine Area.

subject to the following conditions:

1 Purpose

1.1 The purpose of this resource consent is to authorise and set conditions on the erection/ placement of a new diffuser outlet and buoy in the coastal marine area (CMA) and the associated disturbance in the CMA.

2 Location

2.1 Katikati Wastewater Pipeline outlet, approximately 650 metres off Matakana Isand as shown on B.O.P.R.C. Plan No. RM16-0206/2.

3 Map Reference

3.0 At or about map reference NZTM 1870609; 5841207 (ocean, approximately 650m from Matakana Island).

4 Legal Description

4.0 CMA, approximately 650m off Matakana Island.

5 Outfall Diffuser

- 5.1 The Consent Holder shall install a replacement diffuser structure within 24 months of the commencement of this consent.
- 5.2 At least six months prior to installation of diffuser, the Consent Holder shall submit the final design plan of the diffuser structure to the Regional Council for certification and a copy of the final design shall also be provided to Tangata Whenua.

This plan shall include:

- 1. Detailed drawings of the proposed changes;
- 2. The reasons for the proposed changes;
- A statement by a qualified engineer that the design will prevent backflow at each port and marine growth inside the flaps;
- Calculations to show the changes in dilution that will be achieved. Any changes shall as a minimum provide no less initial dilution.

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Reference to Tangata Whenua in conditions of this consent are defined as follows:

- "Tangata Whenua" means Matakana and Rangiwaea Islands hapū and Northern Ngai Te Rangi hapū collectively.
- "Matakana and Rangiwaea Islands hapū" means Te Whanau A Tauwhao, Ngati Tauaiti, Te Ngare, Ngai Tuwhiwhia, Ngai Tamawhairua,
- "Northern Ngai Te Rangi hapū" means Ngai Tamawhariua (Te Rereatukahia marae), Ngati te Wai (Tuapiro marae) and Te Whanau o Tauwhao (Otawhiwhi marae).
- 5.3 The Consent Holder shall notify the Regional Council and Tangata Whenua in writing at least one week prior to both the commencement of any required survey works undertaken to confirm the design of the diffuser and the installation of the diffuser.
- 5.4 A certificate signed by a suitably qualified expert responsible for the diffuser design shall be submitted to the Regional Council within three months of commissioning the outfall and diffuser to certify that the structure has been constructed in accordance with the construction drawings submitted in accordance with Condition 5.2.
- 5.5 The Consent Holder shall carry out a one-off study within 12 months of the commissioning of the diffuser to validate the dilution that is achieved. Within one month of completing the study a copy of the validation report shall be provided to the Regional Council and Tangata Whenua.

6 Review of Conditions

6.1 In accordance with section 128(1)(a) of the Resource Management Act 1991, the Bay of Plenty Regional Council may serve notice on the consent holder, within 3 months after the receipt of the diffuser validation report provided in accordance with condition 5.5 of its intention to review the conditions of this resource consent in order to deal with any adverse effect on the environment that occurs as a result of the exercise of this consent, and which it is appropriate to deal with at a later stage. The fair and reasonable costs associated with any such review shall be recovered from the consent holder.

7 Term of Consent

7.0 This consent shall expire on 31 July 2023.

8 Resource Management Charges

8.0 The consent holder shall pay the Bay of Plenty Regional Council such administrative charges as are fixed from time to time by the Regional Council in accordance with section 36 of the Resource Management Act 1991.

9 The Consent

9.0 The Consent hereby authorised is granted under the Resource Management Act 1991 and does not constitute an authority under any other Act, Regulation or Bylaw.

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Consent Number: RM16-0206-CC.03

Bay of Plenty Regional Council

Resource Consent

Pursuant to the Resource Management Act 1991, the **Bay of Plenty Regional Council**, by a decision dated 24 August 2018, **hereby grants**:

A resource consent:

Under section 12(1)(c) of the Resource Management Act 1991 and Rule 13.2.4(f) and 14.2.4 (e) of the Bay
of Plenty Regional Coastal Environment Plan and Rule DD14 of the proposed Bay of Plenty Regional
Coastal Environment Plan, to undertake a discretionary activity being the Inspection and Maintenance of
Structures in the Coastal Marine Area and the associated Disturbance of the Coastal Marine Area.

subject to the following conditions:

1 Purpose

1.0 The purpose of this resource consent is to authorise and set conditions on the disturbance, deposition and excavation in the coastal marine area in the coastal marine area associated with undertaking discharge infrastructure investigations or maintenance.

2 Location

2.0 Approximate location of the Katikati Wastewater Pipeline as shown on B.O.P.R.C. Plan No. RM16-0206/2.

3 Map Reference

3.0 At or about map reference NZTM 1870609; 5841207 (ocean, approximately 650m from Matakana Island).

4 Legal Description

4.0 The activities authorised under this consent shall be located in the coastal marine area as shown on the plan referenced as B.O.P.R.C Plan Number RM16-0206/2.

5 Inspections and Maintenance

- 5.1 The Consent Holder shall ensure that all structures and works authorised under this consent are maintained in a structurally sound condition at all times to the satisfaction of the Regional Council.
- 5.2 The Consent Holder may undertake inspections of the pipeline at any time along its length within Tauranga Harbour and must undertake inspections at five yearly intervals with a focus on the integrity of joints. The first inspection shall be undertaken within 12 months of commencement of this consent.

Inspections and investigations of the integrity of the pipeline within Tauranga Harbour shall be limited to:

- · Visual inspections undertaken by disturbing the seabed to uncover the pipe; and
- · Removal of sections of pipe for further analysis.
- 5.3 No less than 2 months prior to undertaking the first inspection, the Consent Holder shall submit a long term methodological approach for inspections. The methodology shall be provided to the Regional

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Council and Tangata Whenua and take into consideration feedback provided by Tangata Whenua. The long term methodology shall include a report from an engineer certifying that the methodology(s) are suitable given the likely range of inspections and/or investigations.

Reference to Tangata Whenua in conditions of this consent are defined as follows:

- "Tangata Whenua" means Matakana and Rangiwaea Islands hapū and Northern Ngai Te Rangi hapū collectively.
- "Matakana and Rangiwaea Islands hapu" means Te Whanau A Tauwhao, Ngati Tauaiti, Te Ngare, Ngai Tuwhiwhia, Ngai Tamawhairua,
- "Northern Ngai Te Rangi hapū" means Ngai Tamawhariua (Te Rereatukahia marae), Ngati te Wai (Tuapiro marae) and Te Whanau o Tauwhao (Otawhiwhi marae).
- 5.4 The methodology identified in condition 5.3 and any works undertaken shall minimise the disturbance of the seabed as far as is practicable.
- 5.5 Inspections undertaken under condition 5.2 shall be subject to the following:
 - Prior to undertaking any inspections the locations and methodology for that particular inspection shall be agreed between the Consent Holder and Tangata Whenua;
 - 2. The Consent Holder must notify the Regional Council of the location, nature and timing of the inspection no less than 5 working days prior to any inspection; and
 - Tangata Whenua shall be provided with the opportunity to monitor any inspection works.
- 5.6 Within one month of any visual inspection; or the receipt of the results of any pipeline testing, the Consent Holder shall provide a copy of the information obtained to the Regional Council and Tangata Whenua.
- 5.7 Notwithstanding condition 5.5, if an inspection or investigation required is of an urgent nature and there is not sufficient time to give prior notice, the Consent Holder shall notify the Regional Council and Tangata Whenua as soon as reasonably practicable of the nature of the situation and the measures being undertaken.
- 5.8 The Consent Holder shall undertake inspections of the outfall diffuser portion (above the sea bed) off Matakana Island on an annual basis and report the results annually.

(It is recommended that the reporting is included as part of the annual report required by consent RM16-0206 - DC-01).

6 Review of Conditions

6.1 In accordance with section 128(1)(a) of the Resource Management Act 1991, the Bay of Plenty Regional Council may serve notice on the consent holder within 3 months after the receipt of pipeline inspection and testing results provided in accordance with condition 5.6 of its intention to review the conditions of this resource consent in order to deal with any adverse effect on the environment that occurs as a result of the exercise of this consent, and which it is appropriate to deal with at a later stage. The fair and reasonable costs associated with any such review shall be recovered from the consent holder.

7 Term of Consent

7.0 This consent shall expire on 31 July 2038.

8 Resource Management Charges

8.0 The consent holder shall pay the Bay of Plenty Regional Council such administrative charges as are fixed from time to time by the Regional Council in accordance with section 36 of the Resource Management Act 1991.

9 The Consent

9.0 The Consent hereby authorised is granted under the Resource Management Act 1991 and does not constitute an authority under any other Act, Regulation or Bylaw.

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Consent Number: RM16-0206-DC.01

Bay of Plenty Regional Council

Resource Consent

Pursuant to the Resource Management Act 1991, the **Bay of Plenty Regional Council**, by a decision dated 24 August 2018, **hereby grants**:

A resource consent:

Under section 15(1)(c) and 15(2A)(b) of the Resource Management Act 1991 and Rule 19(w)(i) of the Bay
of Plenty Regional Air Plan and Rule AQ R21(x)(i) of the proposed Plan Change 13 (Air Quality) of the Bay
of Plenty Regional Natural Resources Plan, being a discretionary activity to Discharge Contaminants into
Air associated with the Operation of a Waste Water Treatment Plant.

subject to the following conditions:

1 Purpose

1.0 The purpose of this resource consent is to authorise and set conditions on the discharge of contaminants to air from the Katikati Wastewater Treatment Plant (WWTP).

2 Location

 Katikati Wastewater Treatment Plant, 42 Prospect Drive as shown on B.O.P.R.C. Plan No. RM16-0206/1.

3 Map Reference

3.0 Wastewater Treatment Plant: At or about map reference NZTM 1859243; 5839206 (approximate mid-point of the WWTP).

4 Legal Description

4.0 Lot 4 DPS 27471 (Western Bay of Plenty District)

5 Emission Limits and Controls

- 5.1 The Consent Holder shall ensure that the operation of the WWTP does not give rise to the discharge of odour to air at or beyond the property boundary, that is deemed by a suitably trained and experienced Enforcement Officer of the Regional Council to be noxious, dangerous, offensive or objectionable. For the purposes of this condition, "property boundary" refers to the legal boundary of Lot 4 DPS 27471, as referenced on B.O.P.R.C. Plan No. RM16-0206/1.
- 5.2 The consent holder shall ensure that a back-up power supply is available within 24hours, in the event of a power failure to ensure that the plant continues operating.
- 5.3 The Consent Holder shall ensure that all screenings from the primary screen are contained and sealed to restrict gases discharging from the screenings, prior to and during removal of them off site, to reduce the potential odour to a level where there is not likely to be an odour nuisance beyond the boundary from the screenings removal.
- 5.4 The Consent Holder shall monitor the oxygen level in the aerated lagoons on a continuous basis and the oxygen level in the wetlands on a weekly basis. If the oxygen levels drop below the operational

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design parameters corrective action shall be undertaken as soon as practicable in accordance with the OMP.

5.5 Any wastes removed from site shall be transported in covered trucks to ensure no spillage or odour release en-route.

6 Odour Management Plan (OMP)

6.1 Within twelve months after the grant of this consent, the Consent Holder shall prepare an OMP as part of the Site Management Plan required under consent RM16-0206 and provide it to the Regional Council for certification. The purpose of the OMP is to give effect to condition 5.3.

The Regional Council's certification is limited to confirming that the OMP:

- 1. Complies with all conditions of this resource consent.
- Adopts best practicable options for the management of odorous gases as identified in condition 6.4 of this consent.
- 3. Contains provisions that are enforceable.
- 6.2 Prior to submission of the OMP under condition 5.1, or any OMP subsequently reviewed in accordance with condition 5.5, the Consent Holder shall seek feedback from the Medical Officer of Health and tangata whenua. The submission of the OMP shall include a summary of the feedback received and how the feedback has been incorporated into the OMP and/or reasons for not incorporating certain feedback.

Reference to Tangata Whenua in conditions of this consent are defined as follows:

- "Tangata Whenua" means Matakana and Rangiwaea Islands hapū and Northern Ngai Te Rangi hapū collectively.
- "Matakana and Rangiwaea Islands hapū" means Te Whanau A Tauwhao, Ngati Tauaiti, Te Ngare, Ngai Tuwhiwhia, Ngai Tamawhairua.
- "Northern Ngai Te Rangi hapū" means Ngai Tamawhariua (Te Rereatukahia marae), Ngati te Wai (Tuapiro marae) and Te Whanau o Tauwhao (Otawhiwhi marae).
- 6.3 The objectives of the OMP are to:
 - Ensure that on-site activities (sewage treatment, plant maintenance and contingency measures) and off-site activities (network maintenance, disposal and transport of biosolids) achieve compliance with the conditions of this resource consent and avoid or minimise potential odour, and
 - Remedy or mitigate the effects of any offensive or objectionable odours that occur at or beyond the site boundary; and
 - Implement industry best practices for odour control for this type of operation (being community wastewater treatment).
- 6.4 The OMP shall document all relevant site management, monitoring and operational procedures and contingency plans. Prior to submitting the OMP to Council, the Consent Holder shall have the OMP reviewed by an independent appropriately experienced and qualified practitioner(s) to verify that:
 - The OMP adopts the mitigation measures identified in the application documentation, or as otherwise required by the conditions of the consent;
 - The implementation of the OMP will appropriately avoid, remedy or mitigate the occurrence of offensive or objectionable odours at or beyond the property boundary or at any sensitive receptor; and
 - 3. The OMP gives effect to condition 6.3 of this resource consent.
- 6.5 The OMP shall be reviewed at least once every three years, in the month of May, by the Consent Holder and, if necessary, be updated to reflect any changes to site management, monitoring and odour mitigation measures. If the OMP is updated a copy of the new version shall be provided to the Regional Council for certification in accordance with condition 5.1 within one month after the update.
- 6.6 The OMP shall be in general accordance with the information supplied in support of the application and should as a minimum include, without being limited to, the following aspects:
 - Key personnel contact details, including management personnel and employees responsible for the implementation of the OMP;
 - Identification of employee responsibilities for the implementation of the OMP;
 - Employee training (in relation to odour remediation or mitigation procedures);

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- Identification of potential sources of odour;
- Plant operational parameters/ controls required to control odour, including but not limited to dissolved oxygen levels in the lagoons;
- Odour management, remediation and mitigation measures, including inspection, monitoring, maintenance and housekeeping procedures;
- Contingency / emergency planning and procedures (including identification of risks and incidences) and remedial actions (including waste product removal);
- · Management review and reporting procedures;
- · Complaint response, investigation resolution and reporting procedures; and
- Any specific measure required by conditions of this resource consent.
- 6.7 In the event of any conflict between the conditions of this resource consent and the OMP provisions, the resource consent conditions shall be complied with.
- 6.8 The Consent Holder shall operate the waste water treatment plant in accordance with the most recently certified version of the OMP at all times.

7 Complaints

- 7.1 The Consent Holder shall log all complaints received. The complaint details logged shall include:
 - The date, time and nature of the complaint;
 - 2. The name, phone number and address of the complainant, unless the complainant elects not to supply these details;
 - 3. An assessment of weather conditions at the time (wind direction);
 - 4. The likely cause of the odour and incident duration;
 - The outcome of all investigations including site and boundary surveys following notification of the issue, including an assessment as to whether the odour was likely to have been of an intensity or nature that was offensive;
 - 6. The possible cause of the incident; and
 - 7. The remedial action undertaken.
- 7.2 The Consent Holder shall also log each complaint, which may indicate non-compliance with the conditions of this consent, with the Bay of Plenty Regional Council Pollution Hotline. The details of the complaint and any remedial action undertaken shall be provided to the Chief Executive of the Regional Council or delegate within five (5) working days of receipt of the complaint.
- 7.3 The Complaints Register shall be made available to the Bay of Plenty Regional Council within 48 hours of it being requested.

8 Notification

- 8.1 The Consent Holder shall notify the Regional Council in writing of any maintenance or upgrade works to the WWTP which may increase discharges of contaminants to air on a short-term basis and provide mitigation measures proposed to manage the potential effects. Mitigation proposed shall be in accordance with the OMP.
- 8.2 The consent holder shall, as a minimum, notify the closest sensitive receptors, being any residential properties within 300m (refer to map RM16-0206/2), within 48 hours prior to any significant maintenance or upgrade works to the WWTP which may increase discharges of contaminants to air (odour), on a short-term basis.

9 Monitoring and Maintenance

- 9.1 The consent holder shall inspect and undertake preventative maintenance on all plant equipment on a frequency identified by the manufacturer. A maintenance schedule shall be maintained and budgeted for and provided to the Regional Council on request.
- 9.2 The consent holder shall install a suitable remote alarm system to signal any plant malfunction that could affect odour generation.
- 9.3 The consent holder shall inspect and maintain all odour mitigation measures as per the manufacturer's instructions to ensure compliance with condition 6.1 at all times. Odour mitigation measures include, but are not limited to the aerators, screen covers and biosolids management.

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10 Signage

- 10.1 For the duration of this consent, the consent holder shall install and maintain appropriate signage on any formal access points to the WWTP. The wording on the signage shall be as agreed with the Medical Officer of Health. The signage shall include:
 - · A warning that wastewater is treated on site and public access is prohibited.
 - A 24 hour contact telephone number for the consent holder or appointed agent for reporting complaints, faults or emergencies;
 - The Bay of Plenty Regional Council Hotline Number;
 - A clear explanation that the contact telephone number is for the purpose of receiving complaints and information from the public about odour nuisance or any other problem resulting from the exercise of this consent.

11 Review of Conditions

- 11.1 The Regional Council may, , the five last working days of [May], serve notice on the Consent Holder of its intention to review the conditions of this resource consent, under s128 of the Resource Management Act 1991. The purposes of this review may include one or more of the following:
 - To assess, and if necessary to address, any identified adverse effects of odour discharge from the treatment plant at or beyond the site boundaries; and/ or
 - 2. To assess and if necessary to review current odour controls for the purpose of compliance with conditions of this resource consent; and/ or
 - 3. To require the Consent Holder to carry out monitoring and reporting instead of, or in addition to, that required by the consent, and/ or
 - 4. To require the Consent Holder to adopt the best practicable option for odour control in accordance with section 128(1)(a)(ii) of the Resource Management Act 1991; and/ or
 - When relevant national environmental standards or national planning standards have been made

12 Term of Consent

12.0 This consent shall expire on 31 July 2053.

13 Resource Management Charges

13.0 The consent holder shall pay the Bay of Plenty Regional Council such administrative charges as are fixed from time to time by the Regional Council in accordance with section 36 of the Resource Management Act 1991.

14 The Consent

14.0 The Consent hereby authorised is granted under the Resource Management Act 1991 and does not constitute an authority under any other Act, Regulation or Bylaw.

Advice Notes

- 1 FIDOL factors used to qualify odour are: Frequency, Intensity, Duration, Offensiveness, Location.
- Odour perception is subjective and perceived differently, depending on the sensitivity of the person in question. The Regional Air Plan, Objective 5.6.5(b) Odour, shall be used to guide and inform the monitoring process including the use of monitoring persons and verified complaints in the main instance to identify offensive or objectionable odour emissions. The odour can be quantified using an olfactometer, for analytical and comparative purposes with regards to the intensity. However, the determination whether an odour is objectionable should be made using all FIDOL factors (see Advice Note 1).
- Reporting and notification required by conditions of this consent shall be directed (in writing) to the Manager Regulatory Compliance, Bay of Plenty Regional Council, PO Box 364, Whakatane or fax 0800 884 882 or email notify@boprc.govt.nz, this notification shall include the consent number RM16-0384
- 4 The consent holder is responsible for ensuring that all contractors carrying out works under this consent are made aware of the relevant consent conditions, plans and associated documents.
- The consent holder is advised that non-compliance with consent conditions may result in enforcement action against the consent holder and/or their contractors.

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Consent Number: RM16-0206-DC.02+

Bay of Plenty Regional Council

Resource Consent

Pursuant to the Resource Management Act 1991, the **Bay of Plenty Regional Council**, by a decision dated 24 August 2018, **hereby grants**:

A resource consent:

 (a) under s 15(1)(a) of the Resource Management Act 1991 (RMA) and Rule 9.2.4(b) of the Bay of Plenty Regional Coastal Environment Plan as a discretionary activity and under Rule CD9 of the proposed Bay of Plenty Regional Coastal Environment Plan as a non-complying activity to Discharge Treated Municipal Wastewater to the Coastal Marine Environment.

subject to the following conditions:

1 Purpose

1.0 The purpose of this resource consent is to authorise and set conditions for the discharge of treated wastewater to the coastal marine area (CMA) from the Katikati Wastewater Treatment Plant (WWTP).

2 Location

 Katikati Wastewater Treatment Plant, 42 Prospect Drive, as shown on B.O.P.R.C. Plan No. RM16-0206/1.

3 Map Reference

3.0 Wastewater Treatment Plant: At or about map reference NZTM 1859243; 5839206 (approximate mid-point of the WWTP).

Discharge: At or about map reference NZTM 1870609; 5841207 (ocean, approximately 650m from Matakana Island).

4 Legal Description

4.0 Lot 4 DPS 27471 (Western Bay of Plenty District) and coastal marine area.

5 Notifying the Regional Council

- 5.1 Within one month of granting this consent the consent holder shall notify the Regional Council or delegate the details of who is to be responsible for site management and compliance with consent conditions.
- 5.2 The consent holder shall notify the Regional Council via the Pollution Hotline of any malfunction of the reticulated network or WWTP that has, or has the potential to, discharge untreated sewage, as soon as practicable and as a minimum requirement, within eight hours of the malfunction occurring or of any accidental discharge. If a malfunction or incident results in the discharge of untreated sewage to land or water the consent holder shall notify the Medical Officer of Health in addition to the Regional Council.
- 5.3 The Consent Holder shall notify the Regional Council, the Medical Officer of Health and Tangata Whenua as soon as practicable and, as a minimum requirement, within 48 hours of any accidental discharge, plant breakdown or other contingency (Incident) which is likely to result in an exceedance

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of the limits of these resource consents.

6 General Operation

6.1 The consent holder shall ensure that a back-up power supply (generator) is available within 24hours, in the event of a power failure to ensure that the plant continues operating.

7 Discharge Quantity

7.1 The maximum daily volume of treated wastewater discharged to the coastal marine area shall not exceed 3700 cubic meters per day.

8 Discharge Quality

- 8.1 The discharge of treated wastewater through the outfall shall not cause any of the following effects outside of the 50 metre mixing zone:
 - 1. A change in the natural temperature of the receiving water by more than 3 degrees Celsius.
 - Any significant adverse effects on aquatic life as assessed by the benthic and tuatua surveys required by conditions 9.9 and 9.10 of this consent.
 - There shall be no production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials.
 - A concentration of dissolved oxygen in the receiving water of below 80 percent of the saturation concentration.

unless background levels are higher.

- 8.2 The following water quality limits apply to the treated wastewater discharged from the WWTP as measured after the UV treatment unit on a 12 month rolling mean median (based on at least 52 weekly samples):
 - · Carbonaceous Biochemical Oxygen Demand (cBOD5): 40 kg/day
 - · Total Suspended Solids (TSS): 40 kg/day
 - Total Nitrogen 55 kg/day
- 8.3 The pH of the treated wastewater discharged from the WWTP as measured after the UV treatment unit shall be in the range of 6.5 to 8.5 at all times.
- 8.4 The 90th percentile of the concentration of ammoniacal nitrogen in the discharge, as measured after the UV treatment unit, shall not exceed 55 grams per cubic metre, calculated over a rolling 12 month period.
- 8.5 The Faecal coliforms in the treated wastewater discharged from the WWTP as measured after the UV treatment, shall not exceed 500 cfu /100ml as a rolling median based on 52 consecutive samples.
- 8.6 The Faecal coliforms in the treated wastewater discharged from the WWTP as measured after the UV treatment, shall not exceed a maximum of 1000 cfu /100ml.
- 8.7 Enterococci coliforms in the treated wastewater discharged from the WWTP as measured after the UV treatment, shall not exceed a maximum of 300 cfu /100ml.
- 8.8 Samples taken at 50m from the point of discharge shall meet the Enterococci contact recreation standard of 140 cfu /100ml.
- 8.9 Total heavy metals in the discharge, shall not exceed the 90% protection level of the Australia and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000 Guidelines) trigger values for marine water

Total Arsenic No Limit

Total Cadmium 0.0140 mg/m3

Total Chromium 0.0200 mg/m3

Total Copper 0.0030 mg/m3

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Total Mercury 0.0007 mg/m3

Total Nickel 0.2000 mg/m3

Total Zinc 0.0230 mg/m3

9 Discharge Monitoring

- 9.1 The flow discharged from the WWTP shall be measured continuously and daily flow totals shall be recorded
- 9.2 The flowrate and volume of treated effluent shall be measured to an accuracy of plus or minus five percent on a daily basis at the pump station after the UV plant in order to identify irregular pumping, signifying leakage. The pump station shall be monitored using scada in accordance with the methodology set out in the Site Management Plan required by Condition 10.
- 9.3 The scada system required by condition 9.2 is to be fitted with an alarm system that will alert the operator to any irregular pumping.
- 9.4 The consent holder shall undertake quarterly pressure testing on the outfall pipeline, within the first two weeks of February, May, August and November.
- 9.5 The Consent Holder shall carry out sampling of treated wastewater after the UV treatment system, and test the samples for all the contaminants listed in condition 8.2 to 8.7 and 8.9. The sampling methodology shall be as follows:
 - The contaminants listed in condition 8.2, 8.4 and 8.9 shall be measured weekly in a 24 hour composite sample;
 - The microbial contaminants (8.5, 8.6 and 8.7) and pH (8.3) shall be measured weekly from a grab sample.
 - The heavy metals listed in condition 8.9 shall be measured annually from a 24 hour composite sample.
- 9.6 The consent holder shall carry out a programme of microbiological water monitoring in the receiving environment. Water samples shall be taken in February, May, August and November from the following locations:
 - Approximately 200m directly up current of the outfall structure;
 - At points as close as practical to 50m, 100m and 200m down current from the outfall structure

Ten samples shall be collected at each location and analysed for Enterococci and Faecal Coliforms. For avoidance of doubt, the microbial water monitoring required by this condition is separate from the monitoring programme required by condition 9.9 and shall be undertaken for the duration of the consent.

- 9.7 The Consent Holder shall undertake a monitoring programme of receiving water quality, sediment and benthic fauna in accordance with the locations, parameters and frequency specified below:
 - 1. Sediment quality and benthic fauna monitoring shall coincide with water quality monitoring. Monitoring shall occur on a quarterly basis until there are 12 sampling rounds. For the avoidance of doubt, the sampling may include periods prior to the consent commencing, starting from 2016.
 - Sampling of water quality and sediments shall occur quarterly at the locations identified in Schedule
 - 3. Water quality and sediment samples shall be analysed for:
 - Heavy metals: Aluminium, Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel and Zinc.
 - Faecal coliforms, Enterococci, E.coli, Total phosphorus, Total nitrogen, Dissolved Oxygen and Total organic carbon.
 - 4. Sampling of benthic fauna shall occur quarterly at the following sites for three years: W50, W15, W5, Outfall, E5, E15, E50, E1000 and E4000 (Locations of these sites are referenced in Table 1 cited in condition 9.7 (2) above).
 - 5. Six sites located within the intertidal zone along Matakana Island are to be sampled for tuatua at the same time as the benthic fauna. The tuatua samples shall be analysed for faecal coliforms, Enterococci and heavy metals as listed in condition 9.9 (3) above.

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- 9.8 Upon completion of the 12 sampling rounds required by condition 9.7, the sampling locations, parameters and frequency shall be reviewed by an appropriately experienced and qualified practitioner(s). Following consultation with Matakana and Rangiwaea Islands Hapū, the consent holder shall submit a revised monitoring programme that has been certified by the practitioner(s) to the Regional Council for approval. As a minimum the revised programme shall include:
 - A further survey in 2026 at a minimum of six sites with samples analysed for water quality, sediment quality and benthic fauna; and
 - · Annual monitoring of tuatua for fecal coliforms, Enterococci and heavy metals.

The Consent Holder must undertake monitoring in accordance with the revised monitoring programme or any subsequent revision of the programme that has been approved by the Regional Council (see Advice Note 5).

- 9.9 Within 12 months of completing the monitoring undertaken under condition 9.7, the Consent Holder shall facilitate and pay the reasonable costs of the preparation by Matakana and Rangiwaea Islands Hapū a Supplementary Assessment of Cultural Effects.
 - The objective of the Supplementary Assessment of Cultural Effects is to provide an updated assessment of the impact of the wastewater discharge on the cultural values of Matakana and Rangiwaea Islands Hapū, taking into account the results of the monitoring programme, and to provide an opportunity for the Hapū to make recommendations on measures to assist in addressing any of those adverse effects that are identified (see Advice Note 6).
- 9.10 Treated wastewater samples shall be collected, stored, preserved and analysed in accordance with Standard Methods for the Examination of Water and Wastewater (American Waterworks Association and the Water Environment Federation) or any other method as may be approved by the Regional Council.
- 9.11 All samples taken shall be analysed by a laboratory that is accredited for that analysis to NZS/ISO/IEC 17025 or equivalent or to any other comparable standard approved by the Regional Council.
- 9.12 Matakana and Rangiwaea Islands Hapū may at any time request that additional species, parameters or locations be sampled in order to assess the effects of the discharge on the environment and/or on cultural values, and any such request and its outcome must be reported in accordance with Condition 16.6.
- 9.13 The Consent Holder shall invite at least one representative from the Matakana and Rangiwaea Islands Hapū to be involved in each sampling round and must pay the reasonable costs of their involvement.
- 9.14 Any water quality results exceeding the water quality standards (maximum, mass load, range, etc. as appropriate) listed in condition 8.6 to 8.9, for 3 consecutive sampling rounds shall trigger the following:
 - 1. Investigation into the causes of the exceedance(s); and
 - 2. Corrective action to address the exceedance(s); and
 - Re-testing of the discharge for constituent(s) that caused the breach of the water quality standards, following implementation of any corrective action.
 - 4. Actions taken in accordance with this condition shall be documented in the annual report (condition 16.6).
- 9.15 Should the water quality analysis results remain above the limits for the discharge, despite the corrective actions undertaken as per condition 9.14 the consent holder shall provide the Regional Council with a Remedial Action Plan (RAP) for certification. The RAP shall include, but not be limited to:
 - 1. Investigation of the cause;
 - 2. Identify remedial action where applicable;
 - Identify any further mitigation measures required;
 - 4. Investigation of the environmental effects on the receiving environment;
 - 5. An alternative monitoring programme;
 - 6. Reporting; and
 - 7. Timeframes for all actions, investigations and reporting.

9.16 The preparation of a RAP and investigations required by condition 9.15 shall be undertaken by a

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suitably qualified person(s).

- 9.17 The Regional Council certification of the RAP shall be limited to:
 - 1. The investigation methodology;
 - 2. That best practice is adopted in relation to mitigation and remedial actions proposed;
 - 3. The proposed monitoring frequency;
 - 4. The proposed timeframes for all actions identified; and
 - Reporting.
- 9.18 Should the water quality analysis results remain above the trigger limits for the discharge, despite the corrective actions undertaken as per the RAP, the consent conditions may be reviewed in accordance with condition 17.1.

10 Site Management Plan

- 10.1 The consent holder shall submit a Site Management Plan (SMP) for the WWTP and discharge system to the Regional Council for certification within 12 months of the consent commencing. The Regional Council's certification is limited to confirming that the SMP:
 - 1. That the SMP gives effect to the objectives listed in condition 10.2.
 - 2. Complies with all conditions of this resource consent.
 - 3. Contains provisions that are enforceable.
- 10.2 The objective of the SMP is to detail the procedures that will be implemented to ensure that:
 - 1. The operation of the WWTP and the discharge complies with the conditions of this consent;
 - 2. The wastewater is treated to an appropriate standard prior to discharge;
 - 3. The plant is effectively maintained to ensure treatment capacity;
 - 4. There is sufficient contingency in the event of a failure;
 - 5. The treatment plant and discharge does not cause adverse environmental or health effects.
- 10.3 The SMP shall be in general accordance with the information supplied in support of the application and should as a minimum include, without being limited to, the following aspects:
 - (a) Location and design
 - (b) Operation and Maintenance
 - 1. Detail of staff responsibilities, including names and contact telephone numbers for operational staff and a 24 hour contact telephone number. This shall include a clear WWTP staff structure diagram with names and contact details (reviewed and updated 6 monthly) and a description of their respective responsibilities;
 - Inspection and maintenance plan for both the WWTP and any monitoring and measuring equipment;
 - 3. The procedures for recording routine maintenance and all repairs that are undertaken;
 - 4. Design/ operational requirements and key performance requirements for each stage of treatment and inter-relationships with other processes, where applicable;
 - 5. Waste management procedures (screenings, biosolids);
 - Pest management requirements and processes;
 - 7. A treatment plant risk register and contingency plan, including spill and breakdown Response Procedures, to deal with unusual events. The Response Procedures shall include:
 - a clear and concise description of potential issues which could arise.
 - potential effects,
 - · mitigation measures/ remedial actions required,
 - · responsibilities,
 - · timeframes to fix the issues, and any
 - other actions required.
 - (c) Monitoring
 - 1. Identify suitably qualified and experienced persons to undertake the monitoring and analysis.

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- 2. A Monitoring Plan in accordance with conditions of consent, including but not limited to:
 - The method(s) and frequency to be used for monitoring, including that undertaken for internal/management purposes;
 - · A map of all monitoring points;
- 3. Details of the operation and maintenance of any automatic sampling or monitoring equipment;
- 4. The procedures and processes for ensuring Tangata Whenua have the opportunity to be involved in monitoring in accordance with conditions 9.12 and 9.13.
- (d) Record keeping: Identification of the records to be kept and how these are maintained.
- (e) Reporting:
 - A process for reporting monitoring data, including how the annual plan requirements will be met:
 - · A process for non-compliance reporting;
 - · A process for audit and review of the SMP;
- (f) Details of the complaints and response procedure in accordance with conditions of this consent.
- 10.4 Prior to submission of the SMP under condition 10.1, the Consent Holder shall seek feedback from the Medical Officer of Health (MoH). The submission of the SMP shall include a summary of the feedback received from the MoH and how the feedback has been incorporated into the SMP and/or reasons for not incorporating certain feedback.
- 10.5 Any significant amendments to the SMP shall be forwarded to the Regional Council for certification in writing in accordance with condition 10.1. Notwithstanding the requirement to certify any significant change as and when required, the consent holder shall review the SMP every five years to ensure it accurately reflects the operation of the WWTP and reticulated network.
- 10.6 The consent holder shall ensure that the certified SMP is complied with at all times and that the Regional Council has a copy of the most current SMP.
- 10.7 Notwithstanding the procedures set in the SMP, all wastes and biosolids shall be disposed of at a facility approved to accept this type of waste

11 Stormwater Management and Treatment

11.1 The consent holder shall ensure that practicable steps are taken to divert stormwater and surface runoff away from the aeration lagoons and treatment wetlands to ensure that the performance of the system is not impeded.

12 Maintenance

- 12.1 All equipment, including, but not limited to the pumps, flowmeters, SCADA, alarms and UV lamps shall be calibrated, maintained and/or replaced as per the manufacture's specifications.
- 12.2 The consent holder shall ensure that, any necessary maintenance of Plant or Equipment identified by the Regional Council is undertaken as soon as practicable.
- 12.3 The consent holder shall ensure that the desludging of the treatment system is undertaken by a suitably qualified and/ or experienced person.

13 Signage

- 13.1 The Consent holder shall ensure that for the duration of this consent that the WWTP is fenced and maintain appropriate signage on any formal access points to the wastewater plant. The signage shall include:
 - A warning that wastewater is treated on the site and public access is prohibited.
 - A 24 hour contact telephone number for the consent holder or appointed agent for reporting complaints, faults or emergencies;
 - The Bay of Plenty Regional Council Hotline Number;
 - A clear explanation that the contact telephone numbers are for the purpose of receiving

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complaints and information from the public about odour nuisance or any other problem resulting from the exercise of this consent.

13.2 Within 6 months of the commencement of this consent, the consent holder shall install appropriate signage on Matakana Island clearly identifying the location of the pipeline and advising that treated wastewater is discharged to the ocean 650 metres offshore. The locations and wording on the signage shall be as agreed with Matakana and Rangiwaea Island Hapū and the Medical Officer of Health. The signage must be maintained by the Consent Holder for the duration of the consent.

14 Complaints

- 14.1 The Consent Holder shall maintain and keep a Complaints Register for all complaints made about the treatment and discharge operations received by the Consent Holder. The Register shall record:
 - · The date, time and duration of the event/incident that has resulted in the complaint;
 - The name and address of the complainant;
 - · The location of the complainant when the event/incident was detected;
 - The weather conditions and wind direction at the site when the incident allegedly occurred;
 - The outcome of all investigations, including site and boundary surveys following notification of the issue including an assessment as to whether the odour was likely to have been of an intensity or nature that was offensive;
 - · The possible cause of the incident;
 - Any corrective action undertaken by the Consent Holder in response to the complaint.
- 14.2 The Complaints Register shall be made available to the Regional Council at all reasonable times.
- 14.3 Complaints which may indicate non-compliance with the conditions of this resource consent shall be forwarded to the Regional Council within 72 hours of the complaint being received.

15 Te Ohu Waiora And Future Directions Report

- 15.1 Within 6 months of the grant of these consents, the Consent Holder shall establish Te Ohu Waiora. The role of Te Ohu Waiora is to complete an Alternatives Investigation in accordance with the Terms of Reference set out in condition 15.7.
- 15.2 The objective of the Alternatives Investigation is to identify at least one appropriate and practicable alternative to the ocean outfall discharge authorised under these consents to inform the Future Directions Report required under condition 15.10.
- 15.3 In addition to representatives of Western Bay of Plenty District Council, the consent holder must invite as a minimum, the following parties to be part of Te Ohu Waiora:
 - · at least one representative from Matakana Island Hapū;
 - · at least one representative from Northern Ngai Te Rangi hapū;
 - at least two residents of the Katikati community that are considered by the consent holder to be representative of the Katikati community.
- 15.4 Once Te Ohu Waiora is formed the consent holder shall provide details of its membership, and any subsequent changes, to the Regional Council. The consent holder may, from time to time, add to or replace members of Te Ohu Waiora in consultation with Te Ohu Waiora. Any additional or replacement members of Te Ohu Waiora shall be notified to the Regional Council.
- 15.5 The Consent Holder shall fund the administration and operation of Te Ohu Waiora and shall meet all actual and reasonable costs incurred by Te Ohu Waiora.
- 15.6 The Alternatives Investigation must have regard to engineering, cultural, environmental, financial and any other relevant considerations.
- 15.7 The Terms of Reference for Te Ohu Waiora shall include, but not be limited to:
 - To receive and provide information and feedback on the Alternatives Investigation including the scope and methodology of the investigations and progress of the investigations;
 - To identify and recommend where specialist technical information is required to assist it to fulfil
 its role (The decision on whether to act on such a recommendation will rest with the consent
 holder after consultation with Te Ohu Waiora); and
 - To act as the channel for broader community input as necessary; and

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- To commit to finding an agreed way forward and seeking agreement with the group on its advice to Council.
- 15.8 Within 12 months of the grant of these consents the Consent Holder shall submit to the Regional Council a summary of the scope and methodology of the Alternatives Investigation that has been prepared by Te Ohu Waiora.
- 15.9 Every two years the Consent Holder shall include in the annual report an update on progress with the Alternatives Investigation.
- 15.1 No later than 31 December 2026 the Consent Holder shall prepare a Future Directions Report confirming the best practicable option for future management of the discharge and the proposed pathway for implementation of the option prior to expiry of these consents. The Future Directions Report shall be informed by and take into account the outcomes of the Alternatives Investigation.
- 15.1 The Consent Holder shall lodge any resource consent applications and (if necessary) notices of requirement to implement the option identified in the Future Directions Report prior to the expiry of this consents.

16 Records and Reporting

- 16.1 The consent holder shall maintain records of:
 - 1. The date and description of any maintenance work carried out on:
 - · The aeration system;
 - The inlet screen;
 - · The UV system;
 - Pumps; and
 - · Any other item critical to maintain treatment capacity or quality.
 - 2. The details of any spill or incident and mitigation works carried out.
 - 3. The disposal documentation for treatment system waste generated (e.g. screenings, biosolids) taken off-site (volume, type, disposal facility).
 - 4. The contact details of the waste pick-up contractor.
 - 5. All wastewater analysis results.
- 16.2 The consent holder shall keep all records required by 16.1 for the duration of the consent.
- 16.3 Any event triggering the alarm on the outflow, that signifies potential leakage, is to be reported to the Regional Council within 48 hours.
- 16.4 Within seven working days of an incident occurring (accidental discharge, plant breakdown or other contingency), the Consent Holder shall submit a written report describing the incident, the reasons for it occurring, its consequences (including the nature of any complaints), the measures taken to remedy or mitigate its effects, and any measures taken to prevent a recurrence of the incident (including any changes proposed to the SMP) to the Regional Council.
- 16.5 The consent holder shall make documents and records required under conditions of this consent available to the Chief Executive of the Regional Council or delegate on request.
- 16.6 The results of all sampling and monitoring required by conditions 9.1, 9.2 and 9.5, shall be forwarded to the Regional Council on a quarterly basis in the months of April, July, October and January for the preceding three month period.
- 16.7 All sampling and monitoring results and records as required by the SMP and conditions of this consent from 1 July to 30 June of each year shall be compiled into an annual report. The annual report shall be submitted (in writing) to the Regional Council before the 31 August each year (first report due in 2019). The annual report shall include, but not be limited to:
 - · Operational performance;
 - · All discharge quality monitoring;
 - · All environmental monitoring (in accordance with condition 9);

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- Discharged nutrient loads compared to previous years;
- · An analysis of sampling and monitoring results, exceedances and actions taken
- Incidents, complaints, non-compliance reporting and mitigation (including actions taken in accordance with condition 9.14 and 9.15);
- Operational Site management and any proposed changes to the SMP;
- · Maintenance undertaken;
- Identifies any areas where improvement or upgrades are required and the plan and timeframes for implementing the necessary improvements or upgrades;
- Identifies any feedback given by Matakana Island Hapū under Condition 9.8 and any requests
 made by the Hapū under Condition 9.12 and whether those requests have been accepted. If
 they have not been accepted the report shall detail why they have not been accepted;
- Summarises the opportunities that have been provided to Tangata Whenua to be involved in the monitoring and the extent of any involvement.
- 16.8 Every fifth year the consent holder shall include in the annual report a review of the WWTP and reticulation system operation and monitoring results and trend analysis for the past five years.
- 16.9 The Supplementary Assessment of Cultural Effects prepared under Condition 9.9 must be submitted to the Regional Council with the annual report in the year that the Cultural Effects Assessment is received by the consent holder.
- 16.1 Quarterly in January, April, July and October the Consent Holder shall provide a summary and
 explanation of all monitoring results to Tangata Whenua in a format as agreed between the Consent Holder and Tangata Whenua.
- 16.1 Prior to submitting the annual report to the Regional Council, the Consent Holder shall invite Tangata
 Whenua to meet in order to present and discuss the contents of the annual report, with a particular focus on the annual monitoring results and trends.

17 Review of Conditions

- 17.1 The Regional Council may on the five last working days of May, or within 2 months of receiving the annual report required under condition 16.7 serve notice on the consent holder under s. 128(1)(a)(i) and/or (iii) of the Resource Management Act 1991 of its intention to review the conditions of this consent. The intention of such a review is for the purpose of:
 - (a) Dealing with any adverse effect on the environment which may arise from the exercise of this consent and which is appropriate to deal with at a later stage; and/ or
 - (b) Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; and/ or
 - (c) Requiring the Consent Holder to carry out monitoring and reporting instead of, or in addition to, that required by the consent, and/ or
 - (d) Addressing any issues identified in the annual reports submitted under condition 10 of this resource consent, and/ or
 - (e) Complying with a relevant rule in an operative regional plan which sets minimum standards of water quality; and/ or
 - (f) Implementing relevant national environmental standards or national planning standards that have been made.
- 17.2 The Regional Council may on receipt of any report or scientific publication on emerging contaminants that indicates that there is a concern in relation to the emerging contaminants, serve notice on the consent holder under s. 128(1)(a)(i) and/or (iii) of the Resource Management Act 1991 of its intention to review the conditions of this consent. The purpose of such a review is to undertake monitoring for the emerging contaminants of concern and assess the need additional treatment or alternative mitigation measures.

The review process shall require the consent holder to monitor the discharge for emerging contaminants and have the results assessed by a suitably qualified and experienced person and provide a report to the Regional Council for certification. The report shall include:

- An assessment of the risks posed by emerging contaminants;
- · Identification of any potential mitigation required;

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- A recommendation on the requirement for further monitoring of emerging contaminants, the frequency and location of any future monitoring.
- Consent conditions shall be amended to include further monitoring and mitigation measures
 recommended by the report received. The monitoring programme required may be amended, if
 approved in writing by the Regional Council, based on future results that indicate that the
 emerging contaminants are no longer a concern, either as a result of mitigation measures
 implemented or the removal of the contaminant from products.

18 Term of Consent

18.0 This consent shall expire on 31 July 2038.

19 Resource Management Charges

19.0 The consent holder shall pay the Bay of Plenty Regional Council such administrative charges as are fixed from time to time by the Regional Council in accordance with section 36 of the Resource Management Act 1991.

20 The Consent

20.0 The Consent hereby authorised is granted under the Resource Management Act 1991 and does not constitute an authority under any other Act, Regulation or Bylaw.

Advice Notes

- 1 Reporting and notification required by conditions of this consent shall be directed (in writing) to the Manager Pollution Prevention, Bay of Plenty Regional Council, PO Box 364, Whakatane or fax 0800 884 882 or email notify@boprc.govt.nz, this notification shall include the consent number RM16-0384.
- 2 The consent holder is responsible for ensuring that all contractors carrying out works under this consent are made aware of the relevant consent conditions, plans and associated documents.
- 3 The consent holder is advised that non-compliance with consent conditions may result in enforcement action against the consent holder and/or their contractors.
- 4 Te Ohu Waiora is not a decision-making body with respect to funding.
- The consent holder may submit a request to the Regional Council for approval as part of the annual report required under Condition 16.7 seeking that the monitoring parameters, site locations and/or frequency of sampling outlined in the revised programme be changed only on the basis that the monitoring results are not demonstrating any significant adverse effects and as a result monitoring at a lesser frequency is considered appropriate or that a need to monitor is no longer required. Any request to alter the monitoring shall be verified by an appropriately experienced and qualified practitioner(s) and shall be submitted only following consultation with Matakana and Rangiwaea Islands Hapū. The Consent Holder shall include feedback from the Hapū in its request to the Regional Council.
- The Matakana and Rangiwaea Islands Hapū Supplementary Assessment of Cultural Effects should be based on the Assessment Matrix identified in the Hapū's Cultural Impact Assessment.

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Prepared for Te Ohu Waiora

CooneyLeesMorgan

Katikati Wastewater Treatment Scheme Legal and Planning Framework

7 July 2025

Executive Summary

- This document summarises the key legal and planning considerations relevant to the future directions project and options analysis for the Katikati Wastewater Treatment Scheme (KWTS). It has been prepared for review and discussion at the meeting of Te Ohu Waiora on 20 February 2025. It summarises relevant provisions and does not amount to legal advice. The matters summarised are:
 - 1.1 Local Government Considerations (Section A)
 - 1.2 Marine and Coastal Area Considerations (MACA) matters (Section B)
 - 1.3 Land Disposal Considerations (Section C)
 - 1.4 RMA and Water Regulation Considerations (Section D)
 - 1.5 Bylaws and Policies (Section E)
 - 1.6 Good Practice Guides and Voluntary Reporting (Section F).
- 2. If Council wishes to implement decisions relating to the KWTS before the 2027 Long Term Plan (LTP) cycle, it will need to amend the current LTP to explicitly provide for the preferred option, and include an options analysis for public consultation. This amendment could occur in connection with the 2025 or 2026 Annual Plan process (i.e. prior to 30 June in the relevant year), and would involve a combined consultation document and a special consultative procedure. Any recommendation by Te Ohu Waiora would not be binding on Council but is likely to constitute a compelling reason for preferring that option. Once the LTP is amended to provide for the preferred option then decisions can be made under delegation by a Council officer provided they are in accordance with the LTP.
- 3. When a consent application is lodged for the KWTS, Council will be required to notify and seek the views of Marine and Coastal Area Act (MACA) applicants affected by the consent. Good practice would involve consultation before filing the application given the applicant (Council) is a local authority. Council should maintain a watching brief over the relevant MACA High Court proceedings. It is unlikely that any MACA orders would be sealed before a consent application is lodged for the KWTS and therefore the "veto" right attaching to a customary marine title order is unlikely to apply. Even if it did, the KWTS is likely to be exempt as an "accommodated activity".
- 4. Land disposal options will include various legal and procedural considerations. In summary, single ownership is preferable due to the increased complexity of leasing or acquiring land with multiple owners. Council should aim to purchase a fee simple interest. Long-term leases and acquisition of Māori freehold land should generally be avoided due to a number of legal and practical obstacles. Council has the power to acquire land under the Public Works Act including through compulsory acquisition if necessary. Acquisition can be a lengthy process (minimum 1-2 years). Once Council has identified a list of potential properties, we recommend seeking legal and title advice to assess any issues and identify the most suitable property for the KWTS.

- 5. In both the RMA and Water Regulation space, there are a number of current and imminent changes to both primary and secondary legislation. Amendments have already been made to the RMA to enable fast-tracking of consents, to amend the discharge provisions of the RMA, and in anticipation of wastewater environmental performance standards being released. A significant package of reform of national direction (national policy statements and national environmental standards) has been released by central government and is open for submissions until the end of July 2025. Further full-scale reform of the RMA (likely two replacement acts) will also progress this year.
- 6. The relevant water services legislation is in a similar state of change, with some provisions already in force, and further amendments currently making their way through Parliament. Of relevance is the introduction of a new planning framework, unique to water services. Those provisions will replace the role of long-term plans in relation to water services. Proposed legislation also introduces a new economic regulation regime to be implemented by the Commerce Commission. CLM will continue to keep a watching brief on all the amendments as they progress, as a number are likely to be highly relevant to the project. However, from what we have seen so far, the changes are likely to be helpful to the project from a consenting perspective.

Section A: Local Government Considerations

Overview

- 7. The current Long-Term Plan (LTP) includes a section on wastewater management, specifically highlighting the Katitkati Wastewater Treatment Scheme (KWTS). Key points include:
 - (a) The current wastewater outfall is nearing the end of its life.
 - (b) A replacement may be required in the near future.
- 8. The KWTS is considered a "significant activity" under the Local Government Act 2002 (LGA 02). This means:
 - (a) Any decisions to alter or replace the KWTS are also likely to be considered significant;
 - (b) Such decisions must be formally signalled in the LTP after a careful options analysis and public consultation process.

Reviewing and updating the LTP

- 9. The current LTP does not sufficiently provide for any decision to implement a preferred option recommended by Te Ohu Waiora, and signals to the public that any such decision will be made through the 2027-37 LTP process.
- 10. If Council wishes to progress decisions earlier than 2027, it will need to amend the current LTP. Council can undertake consultation on an LTP amendment at the same time as it prepares its annual plan (i.e before 30 June in any year) and must use the special consultative procedure (SCP) in relation to both processes.
- 11. Council will need to identify all reasonably practicable options, assess the advantages and disadvantages of each option, and publicly consult on those options (through an LTP amendment process) before finalising its decision to proceed with a particular option. The fact that an option has been recommended by Te Ohu Waiora is persuasive (and would be a clear advantage of a particular option) but is not binding on Council.

12. Providing for the project in the LTP does not amount to a decision to implement the project, but it paves the way for those decisions to then be made by Council. Provided the decision(s) are clearly provided for in the LTP, then those decisions can be delegated to Council officers to be made in accordance with the LTP.¹

Section B: Marine and Coastal Area Act

Potential application of MACA Provisions

- If an option involves diffuse discharges into the Coastal Marine and Coastal Area (CMCA), it
 may trigger obligations under the Marine and Coastal Area Act (MACA).
- Council should review any draft Customary Marine Title (CMT) or Protected Customary Right (PCR) orders to identify potential restrictions that could impact the consenting process for diffuse discharges.
- 15. Even if CMT has not yet been determined for a specific area, s62A MACA requires resource consent applicants to notify MACA applicant groups and seek their views if the consent application relates to an area covered by a CMT application.
- 16. Several CMT applications overlap with the area where the current outfall discharges and the proposed extended outfall area (if that option is pursued). There are also CMT applications adjacent to the outfall area. The obligation to notify and consult adjacent CMT applicant groups will likely depend on the extent of the bloom effect.
- 17. Information relating to potentially relevant applications has been provided to WSP and this issue has been addressed in the draft engagement plan for consideration by Te Ohu Waiora. The three most directly affected applications (covering the area the outfall currently discharged into) to by Ngā Hapū o Ngāi Te Rangi, Ngāti Pukenga, and Ngāti Ranginui. The pipe, but not the outfall, passes through the application area of Ngāti Tara Tokanui Trust.²

Future Obligations

- 18. If CMT orders are granted and sealed before a consent application for the KWTS is accepted for processing by the consent authority, the terms of that order could potentially affect the consentability of the scheme, given that CMT order holders have "veto" rights on resource consent applications lodged after CMT orders are sealed. However, the KWTS may be exempt from those rights if it is classified as an "accommodated activity" under s 64 MACA. If the outfall constitutes a "substantial interruption" to the use of an area, this may also affect the awarding of CMT under s 58. This is a factual determination and would depend on the particular evidence called in the relevant MACA High Court proceedings.
- 19. Consent authorities cannot grant resource consent for an activity to be carried out in a PCR area if the activity is likely to have more than minor adverse effects on the exercise of the PCR (s 55). There is potential for an outfall activity to conflict with possible PCR activities.
- 20. The status of the relevant High Court MACA proceedings mentioned is currently unclear. A hearing is scheduled to take place after 1 February 2026, but no definitive date has been set.

¹ LGA 02, Schedule 7, clause 32.

² Other applicant groups adjacent to the pipe and outfall which may be affected depending on the effects of the option selected are Ngāti Hē Hapū Trust, Te Kupenga o Ngāti Hako, Ngāi Te Hapū, Motiti Rohe Moana Trust, Ngā Pōtiki a Tamapahore Trust, Koromatua Hapū of Ngāti Whakaue, Ngāti Whakaue ki Maketu Hapū, Ngāti Awa, Te Uri A Te Hapū, Ihakara Tangitu Reserve, and Ngāti Pū.

- 21. To add to the uncertainty surrounding the MACA proceedings, the funding framework for applicant groups has been significantly restricted, which raises questions about the ability of applicants to participate in the proceedings. However, the Crown has recently confirmed that it will contribute to costs for MACA hearings scheduled in the 2025/2026 and 2026/2027 financial year (although contributions will be capped)
- 22. A bill is also before Parliament that proposes changes to the tests for CMT orders. The proposed changes aim to make it easier to exclude infrastructure such as the KWTS from CMT order restrictions. Progress on the Bill has been paused while the Crown considers the implications of the 2024 Supreme Court Re Edwards decision.

23. In short:

- 23.1 When a consent application is lodged for the KWTS, Council will be required to notify and seek the views of MACA applicants affected by the consent. Good practice would involve consultation before filing the application given the applicant (Council) is a local authority:
- 23.2 Council should maintain a watching brief over the relevant MACA proceedings;
- 23.3 It is unlikely that any orders would be sealed before a consent application is lodged and therefore the "veto" right is unlikely to apply. Even if it did, the KWTS is likely to be exempt as an "accommodated activity".

Section C: Land Considerations

- Council has identified that land for some disposal options includes privately owned land and Māori land.
- 25. Council has indicated "single ownership" as a key criterion for site selection. We agree that single ownership is preferable due to the increased complexity of leasing or acquiring land with multiple owners.
- 26. Council should aim to purchase the fee simple interest of land required for the KWTS. This gives Council full control of the property, simplifying future development and crystallising the purchase price.
- 27. Long-term leases should generally be avoided due to a number of legal and practical obstacles. Short-term leases may be suitable for investigation and due diligence purposes.
- 28. Once Council has identified a list of potential properties, we recommend seeking legal and title advice to assess any issues and identify the most suitable property for the KWTS.
- 29. Council has the power to acquire land under the Public Works Act including through compulsory acquisition if necessary. A landowner is entitled to full compensation, and additional compensation may be payable for any business activities occurring on the acquired land. Only land required for the works may be acquired without landowner agreement. Acquisition can be a lengthy process, usually a minimum of 1-2 years.
- 30. Acquisition of Māori freehold land should be avoided for various legal and procedural reasons.

Section D: Resource Management Considerations

31. The RMA landscape is undergoing significant changes, with some amendments already implemented and others pending. These changes will impact national direction, regional planning documents, and consenting though the full extent of their effects remains unclear as details are still emerging. A watching brief will be needed to monitor and address these developments, as outlined below.

National Direction

- 32. National direction, including National Policy Statements (NPS) and National Environmental Standards (NES), must be considered. Key considerations include:
 - 32.1 Discharging wastewater onto land must align with the NPS for Highly Productive Land (NPS-HPL);
 - 32.2 The NPS for Urban Development (NPS-UD) may influence wastewater volume estimates due to the long-term nature of infrastructure;
 - 32.3 Discharges into water, land, or wetland construction must comply with the NPS for Freshwater Management (NPS-FM).
- 33. On 29 May 2025, the Government announced a series of proposed reforms to national direction relevant to infrastructure and development. The reforms are intended to establish a more enabling regulatory framework and have been grouped into four packages: Infrastructure and Development, Primary Sector, Freshwater, and Going for Housing Growth.
- 34. The signalled introduction of an NPS-Infrastructure could be relevant to the project. This is intended to ensure that the benefits of infrastructure (which includes wastewater networks) are given greater weight in decision-making processes, particularly in sensitive environments such as the coastal marine area. The changes would require recognition and provision for the benefits of infrastructure.
- 35. Further potentially relevant proposed changes include:
 - 35.1 A new NPS on Natural Hazards, and the introduction of a nationally consistent risk matrix designed to support proportionate responses to natural hazard risks and to standardise terminology and assessment across the country;
 - 35.2 Amendments to the NPS-HPL, including the exclusion of LUC Class 3 from the scope of the NPS-HPL;
 - 35.3 Amendments to the NPS-FM. Options include reverting to the 2017 framing of Te Mana o Te Wai, removing the current hierarchy of obligations, or potentially removing the concept altogether. The revised approach would reintroduce multiple objectives, allowing water quality considerations to be balanced against economic factors, community expectations, and other relevant interests.
- 36. Consultation on the proposed reforms is open until 27 July 2025, with the Government indicating its intention to finalise and implement the new or amended national direction instruments by the end of the year.
- 37. CLM will maintain a watching brief on these changes and update this framework accordingly.

Regional planning documents

- Notification of freshwater planning instruments implementing the NPS-FM is deferred until 31 December 2025, pending the new NPS-FM (expected mid-2025).
- 39. Consequently, the Bay of Plenty Regional Council has paused work on its draft Regional Policy Statement (RPS) and regional plan changes related to freshwater, likely until 2026.
- 40. A watching brief will be maintained on these developments for relevance to the project, particularly if provisions take legal effect upon notification.

District Plan

41. Western Bay of Plenty District Council is conducting rolling reviews of its District Plan. A watching brief will be maintained for any plan changes that could affect the project, especially regarding land disposal.

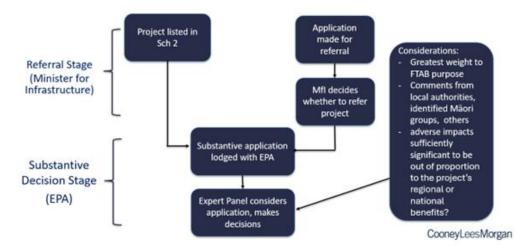
Other

42. Relevant provisions of iwi and hapū management plans and statutory acknowledgments must be considered, particularly in relation to anticipated discharges. These matters will inform consultation with iwi and hapū.

Further RMA changes

- 43. **Section 104(2D)** has recently been added to the RMA: when considering a resource consent application for a wastewater network (as defined in the Water Services Act 2021), a consent authority:
 - 43.1 must not grant consent in violation of wastewater environmental performance standards under s 138 of that Act; and
 - 43.2 must impose conditions that are at least as restrictive as necessary to comply with those standards.
- 44. Further details on the process and timeframes for wastewater environmental performance standards are outlined in the Water Services Act section below.
- 45. **Section 107 of the RMA** has been amended to include s 107(2A), allowing a consent authority to grant a discharge or coastal permit for activities that would otherwise breach ss 15 or 15A, provided:
 - 45.1 The receiving waters already exhibit the effects described in subsection (1)(g);
 - 45.2 Conditions are imposed on the permit; and
 - 45.3 The consent authority is satisfied these conditions will reduce the effects described in subsection (1)(g) over the permit's duration.
- 46. Subsection (1)(g) refers to "any significant adverse effects on aquatic life." This amendment addresses concerns from two recent High Court decisions regarding granting discharge permits in already degraded environments. This provision will be relevant to any discharge permits required for the proposal.

- 47. Fast-tracking legislation was introduced in late December 2024 via the Fast-track Approvals Act 2024. In summary, the Act provides a permanent fast-track regime to make it quicker and easier to gain approval for development and infrastructure projects that would deliver regional and national benefits. In summary, there are two pathways for fast-tracking 'listed projects' (which have already been determined and form part of the Act) and 'referred projects'. 'Referred projects' could apply from 7 February 2025 to be considered by the Minister of Infrastructure for consideration (which includes inviting comments from the Minister for the Environment and any other Ministers with relevant portfolios) before deciding whether to refer the project for fast-track.
- 48. A high-level overview of the process is set out below:



- 49. Some points to note are:
 - 49.1 Prior to making a referral application, consultation must be undertaken with local authorities, identified Māori groups and administering agencies (eg DOC if required);
 - 49.2 The Minister will assess the application against referral criteria, including the purpose of the FTA and whether fast-track will result in a more expedient and cost efficient process, as well as the list of eligibility criteria which the project must demonstrate. This includes demonstrating a regional, national or economic benefit.
 - 49.3 If accepted into the process, substantive applications will require broadly the same level of information and environmental assessment as under the RMA (but the process is a one-stop shop and truncated process).
 - 49.4 There is no public notification or right to lodge a submission but affected persons, iwi, relevant ministers and government departments will be invited to 'comment' on the application. There is no requirement to hold a hearing, but the Panel may elect to do so.
 - 49.5 The Panel must still assess the proposal against the usual RMA criteria but there is a discretion as to weight to give to the criteria. The Panel is directed to give 'the greatest weight' to the purpose of the FTA, over other provisions including the RMA.
 - 49.6 The Panel makes the ultimate decision whether to decline or approve the proposal, including conditions to impose. Appeals are limited to points of law.

49.7 Below is a table summarising the advantages and disadvantages of the fast-track approval process:

Factor	Advantages Disadvantages	
Efficiency & Speed	Limited public participation (no hearings, restricted appeals) Strict statutory timeframes "One-stop shop" for multiple approvals	Potential delay due to high volume (149+ listed projects) Uncertainty (panel composition / vetting timelines)
Approval likelihood	 Economic benefit test not environmental Pathway for prohibited/NC activities High threshold for rejection (impacts "out of proportion" to benefits) Opportunity to amend application if declined 	New legal tests create uncertainty Limited precedent (3 accepted applications so far)
Cost		High upfront fees (\$500k+) Additional cost recovery charges for government agency inputs
Public & Environmental concerns		Reduced public participation may erode trust Risk of environmental harm Reduced social license
Legal Risk	No hearings, restricted appeals	Judicial review remains available No case law precedent

- 50. The Resource Management (Consenting and Other Systems Changes) Amendment Bill includes:
 - 50.1 a proposed lapse period for designations, giving clarity on the scope of s 92 requests; and
 - 50.2 an ability for applicants to request draft consent conditions.
 - 50.3 A default period of 35 years for long-lived infrastructure resource consents.
- 51. The Select Committee released its report on the Bill on 11 June 2025 and the Bill is expected to be passed into law before the end of the year. Potentially relevant recommendations from the Select Committee include:
 - 51.1 Reduced obligations in relation to alternative options assessments for requiring authorities in relation to designations;
 - 51.2 The potential for permitted activity discharge rules where standards would contribute to a reduction in adverse effects over a 10 year period.

- 52. We will keep a watching brief as it progresses through Parliament.
- 53. The Government has signalled an intention to introduce two new bills to replace the RMA before the end of 2025, which would be passed into law by mid-2026. The key features of the new legislative scheme are still very high level at this stage. We will keep a watching brief on this, particularly any transitional provisions relevant to resource consent applications which will need to be lodged before any post-RMA plans are developed.

Relevant Water Regulation

- 54. The **Water Services Act 2021** includes provisions for wastewater network operators, such as wastewater environmental performance standards, risk management plans, and monitoring and reporting requirements. Upcoming changes to the Act and the broader water network system will impact how operators manage wastewater systems, comply with standards, and plan for risk management. Including:
 - 54.1 **Environmental Performance Standards** (Section 138): Taumata Arowai is developing standards with requirements, limits, conditions, or prohibitions, which will apply to the KWTS once implemented.
 - 54.2 Wastewater Network Risk Management Plans (Section 139): Operators must prepare risk management plans to identify hazards, assess risks, and outline strategies for managing or eliminating them. Plans must align with environmental performance measures or targets, be developed in consultation with Taumata Arowai, and be reviewed every five years. Operators must ensure plans remain current and reflect any updates to standards or targets.
 - 54.3 **Monitoring and Reporting Requirements** (Sections 145 and 146): Section 145 allows Taumata Arowai to set performance measures and targets, which operators must consider in their risk management plans. While specific targets are pending, guidance on monitoring measures has been released. Section 146 requires operators to maintain records demonstrating compliance with performance standards, measures, and risk management plans. Council should monitor the implementation of these provisions, particularly regarding standards, risk management plans, and monitoring requirements.
- 55. The Local Government (Water Services Preliminary Arrangements) Act 2024 is not directly relevant to the consenting application, however, could have some implications. Key changes are set out below:
 - 55.1 Water Services Delivery Plans (WSDP): Councils must develop WSDPs by 3 September 2025, as outlined in sections 13 and 14 of the Act. While not directly relevant to consenting applications, WSDP information (e.g., projections, financial sustainability assessments) may inform project options and associated costs. Key requirements include:
 - (a) Detailing the current state of water, wastewater, and stormwater services.
 - (b) Explaining how councils will ensure financial sustainability by 30 June 2028, including aggregated financial projections for 2024/25–2033/34.

- 55.2 **Consultation on Water Services Delivery**: Councils must consult on proposed water service delivery models, using a streamlined process under Part 3 of the Act. This involves assessing two options: maintaining the current approach or establishing/joining a water services council-controlled organisation (CCO) or joint local government arrangement.
- 55.3 As mentioned, Taumata Arowai is developing wastewater environmental performance standards, which could be relevant to the proposed discharge environment of the various options. Section 115 of this Act has now specified that when setting those standards, Taumata Arowai must not have regard to the hierarchy of obligations currently contained in clause 1.3(5) NPS-FM. As noted above, the NPS-FM has been earmarked for amendment in the near future.
- 56. The Finance and Expenditure Select Committee reported back on the **Local Government Water Services Bill** on 3 July 2025. The Bill is now intended to be split into two parts³. The proposed changes in this Bill are likely to be highly relevant. Extensive amendments were made to the Bill at the Select Committee stage, with most being technical in nature. Key proposed changes relevant to this matter are set out below (updated to reflect the Select Committee amendments):
 - 56.1 **Core requirements for water service providers**: The Bill introduces a series of requirements that water service providers will be required to implement, including:
 - (a) a set of **objectives** (cl 15) which relevantly include:
 - To provide water services that ⁴are reliable; resilient to external factors (e.g. climate change and natural hazards); are of a quality that meets consumer expectations; and meet all regulatory requirements;
 - (ii) To ensure that water services are provided in a cost-effective and financially sustainable manner through effective planning for asset management;
 - (iii) To perform functions in an open, transparent and accountable manner, and in accordance with sound business practice;
 - (iv) To act in the best interests of current and future consumers; and
 - (v) To support housing growth and, if applicable, urban development in its service area.

³ Parts 1 to 4, Part 6, and Schedules 1 to 4 would continue as the Local Government (Water Services) Bill. Part 5 and Schedules 5 to 12 would become the Local Government (Water Services Repeals and Amendments) Bill (or a similar name).

⁴ The objective to 'not have adverse effects on the environment' has been removed, on the basis that this is governed by the RMA.

(b) financial principles (cl 16):

- Spending revenue from providing water services (and any funding it receives) on providing water services (maintenance, improvements, infrastructure renewal, servicing debt and growth);
- (ii) Ensuring revenue and funding applied to the provision of water services is sufficient to sustain the long-term investment in the provision of water services while meeting all regulatory requirements;
- (iii) Public transparency;
- (iv) Accountability to communities or shareholders;
- (v) Demonstrating compliance with financial principles in financial operations and policies, and for councils, in their financial strategies prepared and adopted under the LGA. For territorial authorities they must also demonstrate compliance with financial principles in any transfer agreement entered into and in documents relating to proposal to establish a water organisation⁵.
- 56.2 **Environmental performance standards**: The Water Services Act 2021 prevents a resource consent being granted contrary to performance standards set by Taumata Arowai. This Bill proposes to strengthen this position by amending the RMA to:
 - (a) Amend ss9-15 to clarify that there will not be breaches of the relevant sections where the activity is allowed by a wastewater environmental performance standard or an infrastructure design solution;
 - (b) Clarify that performance standards prevail over plan rules and provisions within national direction (NES, NPS, NZCPS);
 - (c) Providing for removal of conflicts between plan rules and performance standards by amending the plan rule without using the standard Schedule 1 RMA process;
 - (d) Requiring local authorities and consent authorities to observe and enforce wastewater and stormwater environmental performance standards;
 - (e) Amending the RMA's activity status section (s87A) to provide for activity statuses to be determined by environmental performance standards or infrastructure design solutions (e.g. classifying a treatment plant discharge as a controlled activity);
 - (f) Introducing "infrastructure design solutions" which set design and operational requirements for standardised modular wastewater treatment plants or components that meet national wastewater environmental performance standards. Applicants can rely on these solutions, and if they do, regional councils must process and grant consents in accordance with the solution's

⁵ New clause 16(2)(ba) added by Select Committee.

provisions. Infrastructure design solutions, like wastewater standards, will take precedence over other regulatory instruments.

- 56.3 **Further RMA changes**: The Bill introduces several other key changes to the RMA, including to:
 - (a) Sections 95A and 95B: If an application relates to an activity covered by wastewater environmental performance standards or an infrastructure design solution, public notification is not required unless special circumstances arise.
 - (b) Section 104(2D): consent cannot be granted contrary to a wastewater environmental performance standard or an infrastructure design solution, and conditions must include requirements that are no more or less restrictive than is necessary to give effect to a wastewater environmental performance standard or an infrastructure design solution.
 - (c) Section 105: Consideration of the nature of the discharge, the sensitivity of the receiving environment, and alternative discharge methods will not be required if the application is for an activity regulated by the wastewater standards or infrastructure design solutions, provided the activity meets the requirements of those instruments;
 - (d) Section 107: restriction will not apply if an activity is regulated by a wastewater environmental performance standard (and the application complies with the standard) or is regulated by an infrastructure design solution (and complies with the design solution);
 - (e) Section 123: Where there is compliance with a wastewater environmental performance standards or infrastructure design solutions, the term of consent shall automatically be 35 years.
 - (f) **Section 128**: there will be provision for a review of a resource consent when the performance standards are made or amended.
- 56.4 Planning frameworks: The Bill creates a new planning and accountability framework for water services. It outlines requirements for three core documents: a statement of expectations, a water services strategy, and a water services annual report. Details of these planning documents are set out below.
 - (a) Statement of Expectations: Issued to a water organization by its shareholders, setting out the shareholders' expectations of the water organisation⁶. The water organization must incorporate this into its water services strategy;
 - (b) **Water Services Strategy**: A planning document that all water service providers must prepare, outlining their strategic, financial, and infrastructure

⁶ Amendments have been made by the Select Committee to clauses 184-189, including the removal of reference to shareholders setting the priorities and strategic direction of the water organisation as part of the statement of expectations.

- plans for the services they provide. Shareholders will have input into the preparation process.
- (c) Water Services Annual Report: Water service providers prepare this report to ensure transparency regarding their performance in the previous financial year, including detailed financial statements for water services.
- (d) Interaction with the LGA/LTPs: Under the new Bill, territorial authorities must not include water services (i.e water supply, stormwater, and wastewater services) in their long-term plans or annual plans (clauses 181(2)(a) and 181(2)(c)). During the interim (until water services strategies are in force) relevant parts of the LTP will continue to apply, but once the WSS is in force, the LTP will no longer apply (cl191(4) and (4A)).
- (e) Water Service Strategy Consultation: The process for adopting a water services strategy varies depending on whether the council provides water services directly or establishes a water organisation:
 - (i) For Territorial Authorities Providing Services Directly:
 - A Prepare a draft strategy and a summary (Clause 195).
 - B Consult on the strategy using the special consultative procedure under Section 83 of the LGA 2002.
 - C While territorial authorities may amend their strategy at any time, significant amendments must also follow the special consultative procedure.
 - (ii) For Water Organisations (Clause 196):
 - A Prepare a draft strategy in accordance with their significance and engagement policy and provide it to shareholders.
 - B Shareholders determine their level of involvement in finalising the draft strategy, such as providing comments or requiring amendments. However, if the shareholder is a territorial authority that is able to approve the final strategy, then it must comply with the decision-making requirements in the LGA.⁷ Neither organisation nor shareholders are required to consult communities or consumers on a draft strategy.
 - C However, if a water organisation's significance and engagement policy requires consultation, and if the shareholders require the water organisation to consult on any proposals contained in a draft strategy (in addition to commenting on the strategy), the water organisation must consult in accordance with its significance and engagement policy. **Key dates:** A water service provider must prepare and

⁷ New Clause 196(2A) added by Select Committee.

adopt its first water services strategy by 30 June 2027, and the strategy must come into force by 1 July 2027.

- Services. Clause 58D has been added to the Bill and requires a territorial authority to assess (from a public health perspective) the adequacy of wastewater services within its district, taking into consideration health risk arising from any absence or deficiency in services; quality of services; current and estimated future demands; actual or potential consequences of wastewater discharges within the district. Once the assessment is complete it must be made publicly available; and it must consider the findings and implications of the assessments in relation to the water services strategy; the statement of expectations; the district plan and its broader duties under the Health Act relating to the improvement, promotion and protection of public health in the district.
- 56.6 **Economic regulation regime**: The Bill includes a new economic regulation regime for water service providers, to be implemented by the Commerce Commission (**Commission**). Regulation will be as follows:
 - (a) From the outset, certain local government water suppliers will be subject to two forms of economic regulation:
 - (i) Information Disclosure Regulation: Schedule 6 of the Bill inserts new Schedule 7 which relates to the regulation of water services. Clause 5(3) of the provides that water suppliers may be required to disclose the following:
 - A Full Financial Statements Covering all business activities (both water and non-water related).
 - B Separate Financial Statements Isolating financial data related to non-water goods and services.
 - C Reconciliation Reports Demonstrating consistency between general financial statements and water-service-specific disclosures.
 - D Financing Information Detailing how all activities (including non-water operations) are funded.
 - (ii) Revenue Threshold Regulation: The Commission will set revenue thresholds to provide clear guidance on the revenue required to maintain and expand water infrastructure. The primary aim is to ensure that revenue levels cover efficient costs, thereby promoting necessary investment in water services. Although compliance with revenue thresholds is not mandatory, the Commission has monitoring powers and may make recommendations to the Minister for additional regulation where necessary.

- (b) Additional regulatory measures may be introduced later by designation, including:
 - (i) Quality Regulation Setting minimum service standards.
 - (ii) Performance Requirement Regulation Mandating operational performance levels.
 - (iii) Price-Quality Regulation Controlling pricing structures while maintaining service quality.

Section E: Bylaws and Policies

Trade Wastes Bylaw 2020

- 57. Trade waste under this must be discharged in accordance with the First Schedule of the WBOPDC Terms and Conditions for the Acceptance of Wastewater Drainage which relates to Acceptable Discharge Characteristics (unless consent is granted to deviate outside of these terms). Schedule Two of the Terms and Conditions also provide for prohibited trade waste.
- 58. The Trade Waste Bylaw also sets out a range of criteria that must be considered when assessing applications for a Trade Waste Consent. Relevant for these circumstances are the following considerations under 3.6 of the Bylaw:
 - 58.1 Any statutory requirements relating to the discharge of raw or treated wastewater to receiving waters, the disposal of Sewage Sludges, beneficial use of Biosolids, and any discharge to air, (including the necessity for compliance with any resource consent, discharge permit or water classification);
 - 58.2 The effect of the Trade Waste discharge on the ultimate receiving environment;
 - 58.3 Conditions on resource consents for the wastewater system and residuals from it;
 - 58.4 Consideration for other existing or future discharges.
- 59. While not directly relevant to the resource consent application, we note that one of the objectives of the Bylaw is to protect the ability of the wastewater authority to meet requirements of the legislation, including the RMA and any consents. As such, these matters may require a review to align with the new wastewater environmental performance standards (when released) and will also provide context to consent application.

Waste Drainage Bylaw 2020

60. This regulates the use of the District's wastewater drainage system and is intended to protect the system from damage and misuse, and to promote and protect public health. This Bylaw provides that wastewater discharged into the Council wastewater drainage system must comply at all times with the acceptable characteristics set out in the Terms and Conditions for the Acceptance of Wastewater Drainage 2020 (Terms and Conditions).

- 61. The Terms and Conditions for the Acceptance of Wastewater Drainage define the responsibilities of customers discharging wastewater into the Western Bay of Plenty District Council's wastewater drainage system and explains the procedures and practices which Council will follow to protect the system from damage and contamination and to protect the public health.
- 62. This bylaw is not directly relevant to a resource consent application but may need further consideration and/or updating once wastewater environmental performance standards are released.

Cultural Monitoring Protocols 2014 and Management Policy on Engagement with Tangata Whenua on Resource Consent Applications

- 63. These should both be considered for the resource consent application.
- 64. The protocols emphasise Council engagement at the pre-consultation phase to better understand iwi/hapu requirements. It seeks to provide a consistent approach to undertaking cultural monitoring of the environment/earthworks by tangata whenua within the Western Bay District to protect cultural sites of significance, taonga and wāhi tapu. The protocol helpfully sets out a checklist and diagram to demonstrate exactly what is required and when. This includes contacting relevant tangata whenua, reviewing entity plans or documents, liaising with NZHPT, contacting relevant iwi or hapū, confirming cultural monitoring arrangement, consultation with iwi and more.
- 65. Therefore, when considering wastewater sites, Council will have to have regard to cultural requirements under this protocol, and the resource that might be required to properly follow them.
- 66. The management policy on engagement with Tangata Whenua on resource consent applications specifically provides guidance on Council's role in the resource consent application process under the RMA with specific regard to the involvement of tangata whenua. Some of the specific obligations include providing accurate information in a timely manner, agreeing a reasonable timeframe for consultation, protocols on when non-notified applications will be sent to tangata whenua for comment etc.

Section F: Good practice guides and Voluntary Reporting

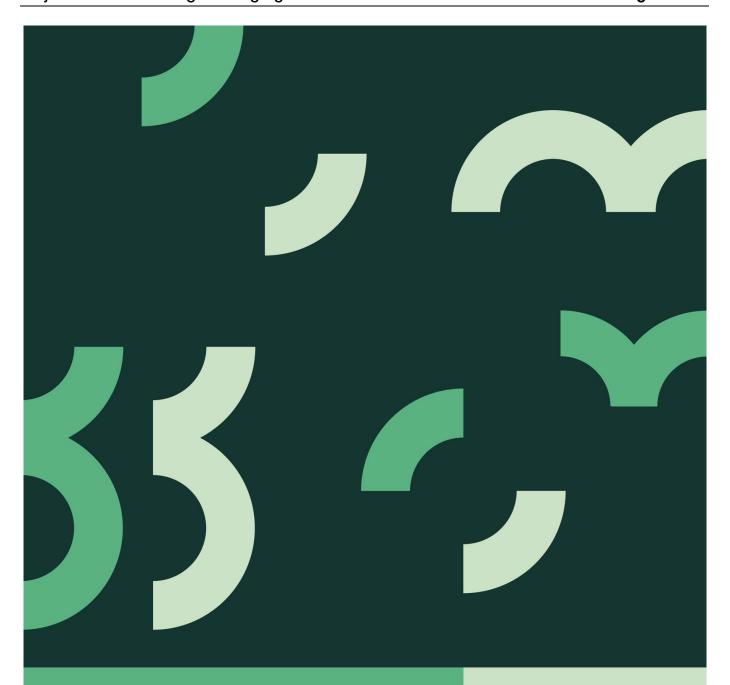
Network Environmental Performance Measures and Guide 2024

- 67. Taumata Arowai released Network Environmental Performance Measures and Guide 2024. This guide provides guidance for network operators who must report on the environmental performance of their wastewater networks, as required by Section 145 of the Waters Services Act 2021. It specifies the type of information that needs to be collected and reported, as well as the timelines for submission
- 68. Operators are required to collect and report two types of data: static data and continuous data. The information is organized around various "outcomes," each of which identifies specific data points that must be recorded. These measures are then categorized into distinct performance metrics, which can be reported at either the network or organizational level.

69. The guide includes a summary of each specific measure to be recorded and reported, which can be found on page 14 of the document.

Conclusion

70. There are currently a lot of changes in both the RMA and Local Water Done Well space. CLM will keep a watching brief on all the amendments as they progress, as a number are likely to be highly relevant to the project. However, from what we have seen so far, the changes are likely to be helpful to the project from a consenting perspective.



Mā tō tātou takiwā
For our District

Katikati Wastewater Disposal Future Directions Engagement Plan



Engagement Plan

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Revision:Final DraftDistribution:Project TeamDate:31 January 2025

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Engagement Plan

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Engagement Plan

Introduction

Background

The Katikati Wastewater Treatment Plant (WWTP) currently provides tertiary treatment for wastewater from the Katikati township and surrounds. Treated wastewater is then pumped across Tauranga Harbour and Matakana Island, prior to discharge to the Pacific Ocean via an ocean outfall, as shown on Figure 1 below.

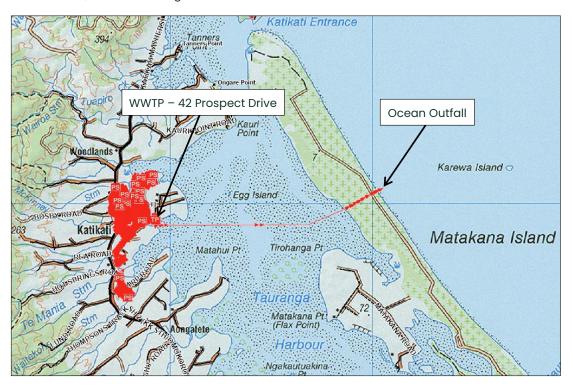


Figure 1: Location of existing Katikati WWTP, pipeline and outfall (Source: WBoPDC Mapi)

Western Bay of Plenty District Council (WBoPDC) holds a resource consent (RM16-0206) for the existing outfall and discharge, which was granted by Bay of Plenty Regional Council (BoPRC) on 24 August 2018 for a 20-year period.

Under Condition 15 of the resource consent, WBoPDC is required to establish Te Ohu Waiora, with membership made up of representatives from tangata whenua and the Katikati community. The initial objective of Te Ohu Waiora was to complete an Alternatives Investigation to identify at least one appropriate and practicable alternative to the ocean outfall discharge. An extract from the resource consent conditions is included at Appendix One.

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Engagement Plan

The Alternatives Investigation process was conducted through a series of workshops, field trips, and technical assessments guided by Te Ohu Waiora between 2016 and 2021. It culminated in an Alternatives Investigation report, which identified a preferred option for wastewater disposal using multi-criteria assessment. The report was adopted by WBoPDC and submitted to BoPRC in 2021.

Future Directions Project

WBoPDC is now commencing work on the development of the Katikati Wastewater Disposal Future Options Report (the Project), as required by Condition 15.10 of the resource consent. Taking into account the outcomes of the Alternatives Investigation report, the objective of the Project is to confirm the best practicable option for future management of the Katikati wastewater disposal and the proposed pathway for implementation of that option prior to expiry of the existing consents.

The proposed project structure established by WBoPDC is set out in Figure 2 below.

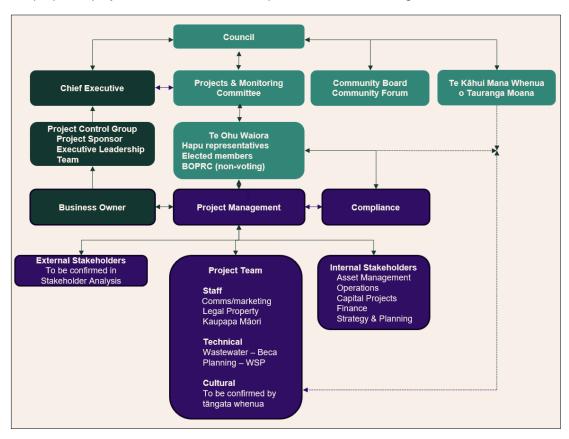


Figure 2: Proposed Project Structure

The project objectives and outcomes were confirmed at a meeting of Te Ohu Waiora on 25 November 2024 and are set out in Table 1 below.

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Table 1: Project Objectives and Outcomes

Objectives (what we want to achieve)	Outcomes (what we will deliver)
Tangata whenua and the Katikati community have ongoing oversight of the Katikati wastewater treatment and disposal activity	Te Ohu Waiora membership comprises tāngata whenua and community representatives Te Ohu Waiora is formally established as an advisory group to the Projects & Monitoring Committee of Council
Determine a preferred long term disposal option that considers the social, economic, environmental, and cultural well-being of present and future communities. This includes alignment with Council's strategic priorities and hapu cultural values and objectives.	Multi-criteria analysis is carried out to determine the best practicable option Assessment criteria consider social, economic, environmental, and cultural effects over the life of the asset Best practicable option is demonstrated in terms of environmental effects on receiving environment, financial implications and other alternatives (Section 131, Resource Management Act 1991)
Develop an implementation pathway for the preferred option which minimises the negative effects of the existing outfall's deteriorating performance	Best practicable option considers ease of implementation or staged approach to reduce or eliminate reliance on existing outfall operation.
Develop a Future Directions report which meets existing consent requirements and provides an implementation pathway that is endorsed by Council, tāngata whenua and key stakeholders	 Future Directions report: Meets consent requirements Documents the methodology in determining best practicable option Provides a basis with sufficient information for new consent or variation application Provides an implementation pathway for the preferred option

Purpose of this Engagement Plan

The purpose of this Engagement Plan is to set out a clear framework for engaging with partners and the community regarding the Project. This Engagement Plan aims to guide the engagement process so that the appropriate people and groups are kept informed, provided with opportunities to participate in the Project as it develops, and ultimately build understanding of (and ideally support for) the Project outcomes.

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Engagement Plan

The Engagement Plan identifies and describes the objectives and approach for engagement, the process and proposed methods. It identifies who should be engaged with and at what level, who will be responsible for engagement, and the timing of engagement.

The Engagement Plan covers engagement with anyone who could be affected by, has an influence on, or has an interest in, the Project. Collectively, these groups are referred to as the 'Engagement Parties' for this Project.

The current focus of engagement is limited to this phase of the Project, which culminates in the adoption of the Future Directions Report by WBoPDC and submission of the report to BoPRC in satisfaction of the consent conditions. Further engagement will be required as part of any work to implement the recommendations of the Future Directions Report.

This is a living document which will be added to and updated (as required) throughout the duration of the Project. Alternative and/or additional parties may be identified, and other engagement methods utilised over the course of the Project.

IAP2 Public Participation Spectrum

The approach to engagement for the Project is guided by the International Association for Public Participation (IAP2) public participation spectrum. The IAP2 is an international member association which seeks to promote and improve the practice of public participation or community engagement. Many central and local government agencies in New Zealand use the IAP2 public participation spectrum to support their engagement work.

The spectrum ranges from 'inform' to 'empower' as shown on Figure 3 below.



Figure 3: IAP2 spectrum of public participation (Source: NZ Transport Agency)

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Engagement Plan

Legislative Framework

A full discussion of the legislative framework relevant to the Project has been prepared as a separate document. It is intended that engagement undertaken to support the Project will contribute to a robust option evaluation and selection process which meets the relevant legislative requirements and can be used to support the subsequent statutory approval processes. Key points for engagement purposes are highlighted below.

Resource Management Act

Statutory approvals will be required under the Resource Management Act 1991 (RMA), or replacement legislation, to implement the outcome of the Project. Approvals sought may include resource consents or designations from WBoPDC and resource consents from BoPRC.

There is no duty by a requiring authority for a designation or an applicant for resource consent to consult any person, as stated in section 36A of the RMA. However, in terms of the Fourth Schedule of the RMA, there is an expectation that engagement will be undertaken as part of the approval process. There is also a requirement in certain circumstances to demonstrate an adequate consideration of alternatives, which relies in part on understanding the views and perspectives of the community.

All persons acting under the RMA must take also into account the principles of the Treaty of Waitangi (section 8). Statutory obligations and case law developed under the RMA have helped to translate into practice how these obligations are to be given effect to.

Local Government Act

Implementing the Project will require WBoPDC to make decisions under the Local Government Act 2002 (LGA), including the allocation of funding through the Long Term Plan (LTP) and Annual Plan processes. When developing (or amending) an LTP, WBoPDC must prepare a consultation document to describe the items proposed for inclusion in the LTP.

Marine and Coastal Area (Takutai Moana) Act

The Marine and Coastal Area (Takutai Moana) Act 2011 (MACA) provisions apply to the Common Marine and Coastal Area (CMCA). Implementing an option for the Project which utilises a harbour or ocean outfall will engage the MACA provisions, which include specific requirements for resource consent applicants to consult with holders (or applicants) for Customary Marine Title (CMT) and Protected Customary Rights (PCR).

An assessment of the MACA applicant groups in relation to the Project area is included in Appendix Two. Of the identified MACA applicant groups, only Ngã Hapū o Ngãi Te Rangi is represented on Te Ohu Waiora.

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Engagement Plan

Engagement Objectives

The primary objective of engagement is to allow individuals and groups to participate in the Project, in a way which is appropriate to their level of interest or influence. This participation will facilitate understanding of (and ideally support for) the Project, help shape the development of the Project, and inform decisions around implementation.

The secondary purpose of engagement is to satisfy the requirements of the legislative framework with regard to engagement, and support the statutory approval process and subsequent implementation of the Project outcome in the future.

Measuring Engagement Success

Table 2 outlines the key purposes for undertaking engagement, objectives, and success criteria to measure whether these have been achieved.

Table 2: Engagement Purpose and Objectives

Purpose	Objectives	Success Criteria
Identify problems and opportunities to address	To create understanding of the existing problems associated with the Project, as well as	Engagement Parties readiness to communicate emerging problems and opportunities.
	opportunities to address these problems.	Reach - identified Engagement Parties obtain information.
	Identify issues raised by Engagement Parties and consider solutions to problems.	Diverse range of ways for Engagement Parties to communicate with the Project Team.
		Capacity within the Project Team to respond to Engagement Parties input and communication in a timely way.
Generate alternatives, new ideas, and options	To develop and investigate an expanded list of potential options for the Project, help	Increase in awareness and understanding of Project purpose and objectives.
	refine that list to a shortlist and then a preferred option.	Understanding of Engagement Parties reactions, issues and concerns, and ideas for improvement.
		Strengthen relationships with Engagement Parties.
Support robust decision-making	To shape the decisions or actions for the Project based on	Participation levels are maintained and sustained.
	the perspectives and needs of the Engagement Parties.	Engagement Parties report confidence in the process and are responsive.

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		A clear line of sight between Project decisions or actions and Engagement Parties input.
Understand consequences of Project decisions	Manage (and ideally reduce) risk of opposition or reluctance to accept the preferred option for the Project.	Representation – adequacy and diversity of representation across the Engagement Parties. Understanding of Engagement Parties perspectives. Value-added feedback from Engagement Parties.

What is negotiable and what is not?

To ensure a successful engagement process, it is important that WBoPDC and the Project Team clearly communicate what aspects of the Project are able to be influenced by the Engagement Parties. Table 3 specifies aspects of the Project that are negotiable or non-negotiable.

Table 3: Negotiable and non-negotiable aspects of the Project

Non-negotiables	Negotiables	
Long-term sustainability of wastewater services for the Katikati community.	Location and method of wastewater discharge.	
Location of Katikati WWTP.	Level of wastewater treatment.	
• Compliance with legislative requirements, including:	 Balance of cost vs. level of service. Timing / staging of capital works (e.g. 	
 Resource consent conditions 	WWTP upgrades and pipeline renewals).	
 Taumata Arowai wastewater effluent standards (if/when implemented) 		

While the cost of the preferred option obviously needs to be affordable for WBoPDC and the Katikati community, costs will be assessed as part of the multi-criteria analysis (MCA) process, balanced with other criteria and success factors, which will be confirmed by Te Ohu Waiora.

The engagement process shall focus on the negotiable aspects of the Project which can be influenced by the Engagement Parties, with the non-negotiable aspects considered only to the extent necessary to build a full understanding and awareness.

Opportunities and Risks

Potential risks and opportunities associated with engagement for the Project, together with potential actions required to reduce risk and take any opportunity presented are outlined in Table 4 below. In terms of this Project the following risks (shaded in red) and opportunities (shaded green) have been identified.

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Table 4: Engagement Opportunities and Risks

Opportunities/Risks	Explanation and Action Required
Engagement parties have an opportunity to inform the project and therefore make a valid contribution.	Engagement material should emphasise WBoPDC's desire to seek feedback to help shape the Project outcome. This is likely to result in greater buy-in from engagement parties leading to less opposition at the statutory approvals stage. In addition, a good news story exists regarding future planning for Katikati's growth and how the wider community can be involved.
Lack of participation from engagement parties, or lack of alignment on key issues.	Lack of participation and/or lack of alignment could reduce confidence in the acceptance of Project outcomes by engagement parties ahead of future statutory approvals processes. Engagement methods and programme need to be designed to ensure an appropriate reach, with good opportunities to participate. Engagement will also need to be agile to respond to lack of alignment, so as to understand engagement party perspectives and attempt to build better alignment.
Changing legislative and regulatory environment.	The large number of forthcoming changes to the legislative and regulatory environment for wastewater (e.g. Local Water Done Well, Taumata Arowai Standards, RMA reform and new national direction) result in significant uncertainty for the Project. Engagement material will need to be adapted as the changes develop, to identify impacts to the Project, and ensure that engagement parties are informed and can respond accordingly. While primarily categorised as a risk, depending on the final form of the changes it is possible that some opportunities may arise – e.g. new RMA national direction for infrastructure may provide a clearer pathway for consenting wastewater discharges.
Adverse reaction from landowners to potential property purchase (if land disposal preferred).	Discuss and agree timing to engage with landowners if land disposal option preferred, as this may impact project timeframes. Seek input from WBoPDC legal and property advisors. When engaging, it is important for landowners to understand the reasons for the Project, next steps, timing for implementation, and how they can become involved in the statutory approvals and/or property purchase process.
WBoPDC relationship with tangata whenua compromised	It is essential for WBoPDC elected members and staff to maintain and enhance the relationship with tangata whenua throughout the Project. Te Ohu Waiora is to work witin terms of reference and partnership agreement, with commitment and oversight from co-chairs to the agreed work programme.

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Engagement Mapping

The engagement mapping is based on identifying both external (i.e. external to WBoPDC) and internal (i.e. WBoPDC elected members, staff, and consultants) Engagement Parties, based on the differing roles they have on the Project.

External Parties

External Engagement Parties have been grouped by the roles that they play and the potential influence that they might have on the Project, as outlined below.

- Project Partners: those that have a critical influence over the success of the work
 programme, and/or a statutory (e.g. directed by consent conditions), decision-making, or
 funding role in the Project. Representatives of the Project Partners may also form part of the
 Project Team itself.
- **Regulators:** those local and central government organisations that have a significant regulatory role relating to statutory approvals for the Project (e.g. consent authority).
- **Stakeholders:** those that are directly impacted (e.g. affected landowners) or have an advisory role in the Project, but do not have as much influence as Project Partners.
- Interested Parties: those that have a specific interest in the project (e.g. advocacy groups)
 and potentially have a greater influence over Project outcomes than the wider community.
- **Wider Community:** includes the general public and any other parties and groups that have a general interest in the Project, want to be kept informed, and provided with an opportunity to participate.

Using the IAP2 Public Participation spectrum, the external Engagement Parties have all been allocated an appropriate level of engagement, as set out in Table 5.

Table 5: External Engagement Parties

Engagement Parties	Comment	Level of Engagement
Project Partners		
Tangata whenua ¹	Members of Te Ohu Waiora, requirement of consent conditions	Collaborate

 $^{^{1}\,}$ In accordance with the conditions of the existing resource consent, 'Tangata Whenua' is defined as follows:

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^{• &}quot;Tangata Whenua" means Matakana and Rangiwaea Islands hapu and Northern Ngai Te Rangi hapu collectively.

 [&]quot;Matakana and Rangiwaea Islands hapu" means Te Whanau A Tauwhao, Ngati Tauaiti, Te Ngare, Ngai Tuwhiwhia, Ngai Tamawhairua.

 [&]quot;Northern Ngai Te Rangi hapu" means Ngai Tamawhariua (Te Rereatukahia marae), Ngati te Wai (Tuapiro marae) and Te Whanau o Tauwhao (Otawhiwhi marae).

This definition is specific to the existing resource consent and does not include adjacent hapu or iwi authorities who may have an interest in the area.

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Engagement Parties Comment		Level of Engagement	
Katikati community	Represented by nominated elected members on Te Ohu Waiora, requirement of consent conditions	Collaborate	
Regulators			
BoPRC	Consent Authority / non-voting member on Te Ohu Waiora	Involve	
WBoPDC ²	Consent Authority	Involve	
Heritage NZ	Regulatory role	Involve	
Taumata Arowai	Water Services Regulator	Consult	
Harbourmaster	Regulatory role	Consult	
Stakeholders			
Affected landowners for future disposal option ³	Potential property purchase of preferred site or environmental effects on adjoining properties (e.g. odour), varies depending on preferred option	Involve	
Neighbours and Landowners of existing WWTP and pipeline route, including: - Hume Pack-N-Cool Limited (WWTP) - Port Blakeley Ltd (Matakana Island)	Potentially directly affected parties for upgrades to existing infrastructure	Consult	
Toi Te Ora - Public Health	Advisory role	Consult	
lwi authorities	Cultural interest (high-level)	Involve ⁴	
Tauranga Moana Advisory Group	Co-governance entity established by Tauranga Moana treaty settlements, once formalised	Involve ⁵	
Interested Parties			
MACA Applicants (see full list in Appendix Two)	Requirement of MACA for consent application	Inform ⁶	
	1		

 $^{^{\}rm 2}\,$ See also mapping of internal WBoPDC engagement parties below.

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³ Timing of engagement with affected landowners is yet to be determined, and will affect the nature and reach of the engagement required.

⁴ Could change to 'consult' after initial discussions.

 $^{^{\}rm 5}\,$ Could change to 'consult' after initial discussions.

⁶ Note that three of the four MACA applicants are also iwi authorities, who are listed elsewhere.

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Engagement Parties	Comment	Level of Engagement
Department of Conservation	Potential Regulatory / advisory role, depending on site	Consult ⁷
NZ Transport Agency	Potential pipeline works within SH2 corridor	Consult
 Industry Groups: Dairy NZ Horticulture NZ Ministry of Primary Industries NZ Forest Owners Association 	Advocacy and advisory role	Consult
 Community Groups, including: Katch Katikati Priority One Katikati Boating Club Project Parore 	Advocacy and advisory role	Consult
Commerce Commission	Future Economic Regulator (Local Water Done Well system)	Inform
Community		
Local MP		Inform
Wider Public		Inform
Trade Waste customers		Inform
People previously involved in the Alternatives Investigation		Inform

Contact details for the above parties are stored in a separate document to protect privacy.

Internal Parties

WBoPDC is the ultimate decision-maker, funder, and owner of the Project. As a result, there are multiple groupings of internal stakeholders within WBoPDC which have an interest in or influence on the project and are therefore considered to be Engagement Parties. These are set out in Table 6 together with an appropriate level of engagement.

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⁷ Could change to 'involve' if specific ecological or biodiversity issues relevant.

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Table 6: Internal Engagement Parties

Engagement Parties	Level of Engagement	
Governance		
Council	Empower	
Projects and Monitoring Committee	Involve	
Te Kahui Mana Whenua o Tauranga Moana	Consult	
Katikati Community Board	Consult	
Asset Management and Delivery		
Asset Management	Consult	
Operations	Collaborate	
Strategy and Planning Involve		
Capital Projects	Inform	
inance Inform		
Project Support		
Communications	Involve	
Kaupapa Māori Involve		
Legal and Property Involve		

Representatives of these teams may also be part of the Project Team.

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Engagement Methods

Table 7 below outlines the engagement methods that can be implemented for Engagement Parties and the expected outcomes of each method. The methods to be used for each engagement party will be confirmed by the Project Team.

Table 7: Engagement Methods

Engagement Method	Target Group	Level of Engagement	Reason for Method	Expected outcomes
Project Newsletters	Community	Inform	Efficient way to disseminate key information to a wide audience at various stages throughout the Project.	Information shared community-wide by using multiple, targeted media platforms. Material is distributed through all known media platforms in accordance with communications plan.
Correspondence	Stakeholders & Interested parties	Inform & Consult	Enables the sharing of information in a more formal manner, allowing time to consider and provide feedback.	Interested parties are appropriately informed of the Project, have an opportunity to provide feedback. Meet regulatory requirements for specified parties.
One-on-one Meetings	Stakeholders	Involve	Builds trust and shows engagement is genuine. Allows the Project Team to explore and resolve key issues.	Stakeholder representatives engage with the Project Team, and are willing to identify, discuss, and seek to resolve key issues.
Workshops	Project Partners	Collaborate	Allows an in- depth understanding of key issues,	Project Partners engage with and buy into the Project; are willing to engage in

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Engagement Method	Target Group	Level of Engagement	Reason for Method	Expected outcomes
			perceptions, and	discussion and
			constraints to	debate; and come to
			inform option	a shared
			development and	understanding of
			evaluation.	issues and
				constraints.

For this Project, the workshops will be held with Te Ohu Waiora, which comprises Tangata Whenua and Elected Members (i.e. Project Partners) as well as a non-voting representative from BoPRC (i.e. a Regulator).

Communications Channels

Communications channels for public communications activities will focus on existing WBoPDC channels, including:

- **Facebook** posts on the WBoPDC Facebook page (12k followers), and posts by WBoPDC on the Katikati Community Centre Facebook page (2.5k followers).
- WBoPDC Website existing project page on WBoPDC website, provides a 'home base' for information on the Project, offers subscription option for people to stay in the loop (2 existing subscribers).
- **Antenno** community app that allows users to receive updates from WBoPDC on places and topics they have selected, or to provide feedback to WBoPDC on issues.
- **EDM** (electronic direct mail) district-wide newsletter distribution (approx. 2000 existing subscribers).

Roles and Responsibilities

The key personnel and their roles in Project engagement are set in Table 8 below.

Table 8: Project Team Engagement Roles

Role	Name	Contact Details		
Project Manager	Kristina Hermens	Ph. 027 702 5732		
		Email. kristina.hermens@westernbay.govt.nz		
Responsible for the day-to-day management of the Project.				
'Project Face'	EJ Wentzel	Ph. 021 655672		
		Email. ej.wentzel@westernbay.govt.nz		
	Gareth Yates	Ph. XXXXXX		
		Email. gareth.yates@westernbay.govt.nz		

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Role	Name	Contact Details					
Represent WBoPDC in engagement activities, including front one-on-one meetings, public info days, act as WBoPDC spokesperson for media enquiries							
Communications Lead	Luke Balvert	Ph. XXXXXX					
		Email. luke.balvert@westernbay.govt.nz					
Responsible for commun		ibution of information via WBoPDC channels, Project Team.					
Kaupapa Māori Advisor	Chris Nepia	Ph. XXXXXX					
		Email. chris.nepia@westernbay.govt.nz					
Responsible for advising	Project Team on tang	ata whenua engagement.					
Engagement Lead	Simon Banks	Ph. 021 244 5462					
Email. simon.banks@wsp.com							
Responsible for engager	ment advice and the in	nplementation of the Engagement Plan.					

Reporting

All engagement activities carried out by the Project Team must be recorded. Representatives of the project team need to ensure that minutes or file notes are generated at each meeting and sent to the Engagement Lead to register, file, and disseminate to those responsible for actions.

An engagement and communication database will be set up for the Project and will be administered by the Project Team. This database will record any engagement and communication undertaken, including contact details, communication / meeting times, issues raised, feedback received, actions to be undertaken and by whom, and when action has been taken. The database will be updated over the course of the Project as engagement progresses.

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Engagement Programme

Table 9 on the following page provides a high-level programme for the Project, with engagement activities aligned with the Te Ohu Waiora workshop schedule and milestones. Please note that this timetable is subject to change and amendment as required.

Co-ordination of all communications activities (e.g. newsletters, website updates, media releases, and social media) is required with the WBoPDC Communications Manager.

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Table 9: Engagement Programme

Year	Month	Meetings and Workshops	Milestones	Engagement Activities (excluding workshops)
24	November	Workshop 1 - Project objectives and outcomes	Te Ohu Waiora and project structure formally established	
2024	December		Initial legal and planning framework review	
2025	January		Stakeholder engagement plan	Stakeholder analysis and engagement planning
			Technical options updated	
	February	Workshop 2 - Review baseline updates (legal/planning, stakeholder engagement, technical options)		Correspondence with Stakeholders (excluding landowners) and Interested Parties to brief them on Project, seek feedback, and offer one-on-one meetings
	March	Workshop 3 - Present CIAs, confirm success criteria and options	Cultural impact assessments updated	One-on-one meetings with Stakeholders (excluding landowners) and selected Interested Parties
••	April			Project update #1 to brief wider community on Project
				One-on-one meetings with Stakeholders (excluding landowners) and selected Interested Parties
	Мау	Workshop 4 - Options -engagement and investigation update; draft wastewater standard and legislative change implications	Engagement and investigations inform options. Implications of draft national wastewater standards are understood	One-on-one meetings with Stakeholders (excluding landowners) and selected Interested Parties

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June	Workshop 5 - Options evaluation	Options are ranked to determine preferred option	One-on-one meetings with Stakeholders (excluding landowners) and selected Interested Parties (roll through entire programme)
July	Workshop 6 - Implementation Pathway and draft Future Directions report	Timeline of activities with risk assessment; Draft Future Directions report updated; inputs for budget adjustments	One-on-one meeting with impacted landowners (if land disposal option selected)
August	Workshop 7 - Final Future Directions report	Final report submitted to BOPRC	
September			Project newsletter #2 to update wider community on Project outcomes and next steps

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Appendix One

Extract from Resource Consent RM16-0206-DC.02:

15 Te Ohu Waiora and Future Directions Report

- 15.1 Within 6 months of the grant of these consents, the Consent Holder shall establish Te Ohu Waiora. The role of Te Ohu Waiora is to complete an Alternatives Investigation in accordance with the Terms of Reference set out in condition 15.7.
- 15.2 The objective of the Alternatives Investigation is to identify at least one appropriate and practicable alternative to the ocean outfall discharge authorised under these consents to inform the Future Directions Report required under condition 15.10.
- 15.3 In addition to representatives of Western Bay of Plenty District Council, the consent holder must invite as a minimum, the following parties to be part of Te Ohu Waiora:
 - at least one representative from Matakana Island Hapu;
 - at least one representative from Northern Ngai Te Rangi hapu;
 - at least two residents of the Katikati community that are considered by the consent holder to be representative of the Katikati community.
- 15.4 Once Te Ohu Waiora is formed the consent holder shall provide details of its membership, and any subsequent changes, to the Regional Council. The consent holder may, from time to time, add to or replace members of Te Ohu Waiora in consultation with Te Ohu Waiora. Any additional or replacement members of Te Ohu Waiora shall be notified to the Regional Council.
- 15.5 The Consent Holder shall fund the administration and operation of Te Ohu Waiora and shall meet all actual and reasonable costs incurred by Te Ohu Waiora.
- 15.6 The Alternatives Investigation must have regard to engineering, cultural, environmental, financial and any other relevant considerations.
- 15.7 The Terms of Reference for Te Ohu Waiora shall include, but not be limited to:
 - To receive and provide information and feedback on the Alternatives Investigation including the scope and methodology of the investigations and progress of the investigations;
 - To identify and recommend where specialist technical information is required to assist it to fulfil its role (The decision on whether to act on such a recommendation will rest with the consent holder after consultation with Te Ohu Waiora); and
 - To act as the channel for broader community input as necessary; and
 - To commit to finding an agreed way forward and seeking agreement with the group on its advice to Council.
- 15.8 Within 12 months of the grant of these consents the Consent Holder shall submit to the Regional Council a summary of the scope and methodology of the Alternatives Investigation that has been prepared by Te Ohu Waiora.

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- 15.9 Every two years the Consent Holder shall include in the annual report an update on progress with the Alternatives Investigation.
- 15.10 No later than 31 December 2026 the Consent Holder shall prepare a Future Directions Report confirming the best practicable option for future management of the discharge and the proposed pathway for implementation of the option prior to expiry of these consents. The Future Directions Report shall be informed by and take into account the outcomes of the Alternatives Investigation.
- 15.11 The Consent Holder shall lodge any resource consent applications and (if necessary) notices of requirement to implement the option identified in the Future Directions Report prior to the expiry of this consents.

Advice Note 4 - Te Ohu Waiora is not a decision-making body with respect to funding.

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Appendix Two

Assessment of MACA Applicant Groups⁸

Under the Marine and Coastal Area (Takutai Moana) Act 2011 (MACA), WBoPDC may need to notify and seek views from applicant groups should the preferred option for the Project comprise a discharge to the Common Marine and Coastal Area (CMCA) – i.e. a discharge to the harbour or ocean. Specifically, Section 62 of the MACA states:

MACA 62A Information requirements for applicants for resource consents

- (1) This section applies in a case where a person applies for a resource consent relating to an area where applicant groups seek customary marine title.
- (2) The person applying for a resource consent must—
 - (a) confirm that they have notified the applicant groups in the area to which the resource consent application relates and that they have sought the views of those applicant groups; and
 - (b) provide a list of the applicant groups notified; and
 - (c) record the views obtained from the applicant groups, describing how those views have influenced the contents of the resource consent application.
- (3) If an application does not contain the information described in subsection (2), the consent authority must return the application as incomplete in accordance with section 88 of the Resource Management Act 1991.

Based on the current pipeline and outfall location in relation to the MACA application maps, the following applicant groups have applications which directly cover the area:

CIV-2017-485-244	Ngā Hapū o	Attn: Paora Stanley (CEO)			
	Ngāi Te Rangi	Trustees of the Ngāi te Rangi Settlement Trus			
		PO Box 4369			
		Mt Maunganui 3116			
		ceo@ngaiterangi.org.nz			
CIV-2017-485-250	Ngāti Pukenga	Attn: Rebecca Boyce (General Manager)			
		Te Tawharau o Ngāti Pūkenga			
		PO Box 13610			
		Tauranga			
		tetawharau@ngatipukenga.com			
CIV-2017-485-294	Ngāti Ranginui	Attn: Charlie Rahiri (Chairperson)			
		Trustees of the Nga Hapu o Ngati Ranginui			
		Settlement Trust			
		PO Box 2526			

⁸ Adapted from information provided by email on 19 November 2024 from Jemma Hollis, Senior Solicitor at Cooney Lees Morgan.

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	Tauranga 3140
	info@ranginui.co.nz

In addition, the existing pipeline (but not the outfall) also passes through the application area for:

CIV-2017-485-222	Ngāti Tara	Attn: Amelia Williams (Executive Chair)
	Tokanui Trust	PO Box 77
		PAEROA 3640.
		Executive Administrator: Tennille Hirama,
		tennillehirama@yahoo.co.nz

There are also a large number of applications adjacent to the current outfall area. Whether engagement should occur with these groups will depend on an assessment of the extent of effects arising from a coastal discharge, should that be the preferred option.

This assessment relates to the current status of applications in the existing pipeline and outfall area. If CMT and PCR decisions are made prior to WBoPDC seeking statutory approvals to implement the Project, the requirements for engagement with order holders may change.

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Katikati Wastewater Future Directions

Technical Options – Baseline Upgrade

Prepared for Western Bay of Plenty District Council Prepared by Beca Limited

15 July 2025

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Appendices

Appendix A – Katikati WWTP Basis of Design

Appendix B – 2021 Effluent Reuse and Disposal Options Assessment Executive Summary

Appendix C – Katikati WWTP NPV Cost Breakdown



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Revision History

Revision N°	Prepared By	Description	Date
Α	Diego Valenzuela Jolanta Gussenhoven	First draft to summarise work to date and present options	20/12/2024
В	Jolanta Gussenhoven	Second Draft for Client review	05/02/2025
С	Jolanta Gussenhoven Sarah Kennedy	Final Draft for Client review	15/07/2025

Document Acceptance

Action	Name	Signed	Date
Prepared by	Jolanta Gussenhoven		15/07/2025
Reviewed by	Gareth Hall/ John Crawford		15/07/2025
Approved by	Gareth Hall		15/07/2025
on behalf of	Beca Limited		

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Executive Summary

The Katikati WWTP effluent discharge consent issued in 2018 required an initial assessment of options for future effluent discharge to the environment. The purpose of this report is to provide baseline options to inform an options evaluation for the Future Directions Report prepared by Western Bay of Plenty District Council (WBoPDC), to be completed in 2025.

The baseline options assessed are summarised below in Table 0-1: Summary of the Effluent Treatment and Discharge Options. These represent 'schemes', consisting of a treatment system (section 3.2 below) and a discharge system (section 3.1 below). They are based on the maximum 5-10 years of time remaining (from the year 2021) for the existing outfall and the WBoPDC 30-year Masterplan with recommended upgrades to achieve compliance with the effluent discharge consent conditions in the short to medium term.

This report is built on the initial technical work undertaken in by Beca and WSP in 2021 incorporating additional technical requirements/adjustments arising from a series of Te Ohu Wairoa Huis.

Table 0-1: Summary of the Effluent Treatment and Discharge Options.

Discharge option		Treatment Option	Scheme Options list for evaluation	Notes	Effluent class ¹
0.	Status quo (existing outfall with renewals)	a. Existing treatment incl. MBBR	Discharge Option 0a	Assume MBBR upgrade Pipeline renewals staged	Class B
1.	pipeline 500m treatment incl. Option 1a (larger diameter) MBBR		Pipeline reconstruction staged	Class B	
	longer than existing	b. Existing treatment incl. MBBR + DAF	Discharge Option 1b		Class B
		c. New MBR	Discharge Option 1c		Class A
2.	Pasture irrigation	a. Existing treatment incl. MBBR + DAF	Discharge Option 2a	Upgrade needed to reduce solids through irrigation equipment, maintain good disinfection	N/A
3.	Forestry irrigation	a. MLE with tertiary filters and existing UV	Discharge Option 3a	Upgrade needed to reduce TN and maintain good disinfection	N/A

The likely effluent quality provided by the different treatment options is shown in Table 0-2.

¹ The effluent classes referred to in Table 0-1 are based on the numerical effluent quality values of those used in the Queensland Wastewater Recycling Guidelines.



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Table 0-2: Treatment Quality Comparisons.

Option	Treatment	cBOD₅ (mg/L)	TSS (mg/L)	NH₄-N (mg/L)	NH ₄ -N (90 th %ile) (mg/L)	TN (mg/L)	TP (mg/L)	E. coli cfu/100mL
	Raw Sewage	280	280	60		69	9	10,000,000
	Pre-MBBR	15	17	43	57	48	-	4,000
0a	MBBR+UV	15	17-30		25	33	6-7	<40
1a	MBBR+UV	15	17-30		25	33	6-7	<40
1b	MBBR+UV+DAF	10	10		25	32	0.1**-6	<20
1c	MBR+UV	4	1-2		1	7***	6-7	<10
2a	MBBR+UV+DAF	10	10		25	32	0.1**-6	<20
3a	MLE+UV	5	10		1	8	6-7	<40
	Proposed T.A. Std				50			40,000*

Table 0-2 Notes:

- * Open ocean, proposed. Has been challenged. Limit infers significant treatment to get to $> 2 \log_{10} E$. coli inactivation (i.e 10,000,000 down to 40,000)
- ** Dependent upon alum dose, P can be taken down to extremely low levels in a DAF
- *** MBBR will use supplementary carbon dosing for denitrification. MLE & MBR may use carbon dosing

We have prepared high-level cost estimates for the treatment and disposal options discussed in this report, including estimates of capital costs (CAPEX) and of operating & maintenance costs (OPEX). The CAPEX and OPEX costs were combined to calculate the Net Present Value (NPV) for each option over a 50-year period. A summary of the cost estimate for each option is provided below in Table 0-3.

Table 0-3: Cost Estimate Summary.

Option	Disposal and Treatment Schemes	50yr NPV Breakdown (\$ millions)			
		CAPEX NPV	OPEX NPV	TOTAL NPV	
0a	Status quo (existing ocean outfall) + existing treatment level	49.6	27.4	77.0	
1a	New outfall pipe 500m longer than the existing + existing treatment level	52.1	27.8	79.9	
1b	New outfall pipe 500m longer than the existing + existing treatment level + DAF upgrade	55.1	35.2	90.4	
1c	New outfall pipe 500m longer than the existing + new Membrane Bioreactor (MBR)	68.8	34.8	103.6	
2a	Katikati pasture irrigation + existing treatment level + DAF upgrade	45.7	37.2	83.0	
За	Katikati forestry irrigation + Modified Ludzack Ettinger (MLE) with tertiary filters and UV	69.6	53.9	122.5	

The baseline options technical assessments and NPV cost estimates are intended to be inputs for the Multi Criteria Analysis (MCA) undertaken by Te Ohu Wairoa, and to inform the Katikati Wastewater Future Directions report to guide WBoPDC decision making. No recommendations are made in this technical options report.



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1 Introduction

1.1 Background

1.1.1 Work to date

The Katikati WWTP effluent discharge consent issued in 2018 required an initial assessment of options for future effluent discharge to the environment. This was completed in 2021 in the following report:

Katikati WWTP Effluent Reuse and Disposal Options Assessment, (Beca and WSP, 17 August 2021).
 Refer to Appendix B for the report Executive Summary which provides a summary of the work undertaken and recommendations at that time.

In addition, in 2022 a 30-year Masterplan was produced for the Katikati WWTP, with a recommended upgrade (MBBR, moving bed biofilm reactor) to achieve compliance with the effluent discharge consent conditions, nitrogen limits in particular, in the short to medium term.

• Katikati WWTP Masterplan Report - 2nd Draft (Beca, 11 October 2022)

The work undertaken by Te Ohu Waiora, Council staff and consultants (Beca and WSP) has built on the previous technical options studies and cost estimates. However, has considered the options afresh. The timeline of all investigations and work undertaken leading up to and since issue of the current consent is illustrated in Figure 1-1 below.



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Timeline to Date

Engagement started ahead of consent expiry

Working group formed - hapu, community, Council and consultant members

· Workshops about discharge options and beneficial reuse of recycled water

Trip to existing facilities and various discharge types

· Land discharge area packages identified

Scheme success criteria introduced. Further trip to additional land application sites

• Agreement: medium term continued discharge to ocean and long-term discharge to land

Consent granted with expiry in 2038

• Detailed investigation of land disposal options, scoring against success criteria and cost estimation

 Alternative Options report - non-cost MCA scoring and cost NPV assessment both point to same option. Signed off by working group members. Adopted by Council. Submitted to BoPRC

Outfall diffuser replaced

New UV disinfection system installated at WWTP

30-year masterplan developed for WWTP

· Establish sustainable project structure

Design phase of MBBR upgrade, construction of electrical upgrade

Commence Future Directions phase

· MCA scoring for preferred option completed, considering non-cost and cost

Cost and NPV updates undertaken

• Final Future Directions submitted and presented to working group members

Figure 1-1 Timeline to-date (from presentation to Te Ohu Waiora Hui 10/10/2024)

1.1.2 Existing Outfall Pipeline and Effluent Disposal Status

The WSP outfall pipe condition assessment report (Appendix to the Beca/WSP 2021 Options report) suggested that the remaining life of the outfall could be until 2040. However, there have since been a number of pipe breaks/leaks in the harbour section of the outfall over the last three years, summarised below:

- 24 August 2022 (100mm split)
- 24 June 2023 (1.2m crack & hole at pipe join)
- 11 May 2024 (failed rubber seal at bend location)

All leaks were repaired under trying conditions and are well documented with follow-up bacterial sampling. Analysis of removed pipe sections by WSP, has now confirmed a maximum remaining life for the outfall of 5-10 years only. WBoPDC now budget \$600,000 per year to cover further breakages in the interim.

The reduced remaining life, and risk of further pipe breaks/leakage, places more urgency on selecting an effluent disposal method (with appropriate level of wastewater treatment) and implementing it within the next five years.

Section 3 provides an overview of the wastewater treatment and effluent disposal options assessed previously and those recommended are to be further considered by the Katikati wastewater future directions stakeholders.

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1.2 Purpose

The purpose of this report is to provide baseline options to inform an options evaluation for the Future Directions Report prepared by WBoPDC.

This report is built on the initial technical work undertaken in 2021 incorporating additional technical requirements/adjustments from a series of Te Ohu Wairoa Huis. Refer to the diagram below for a summary of the technical work undertaken based on the outcomes from each Hui. The material provided related to a Multicriteria Assessment Analysis (MCA) and is not covered under this report but will form part of the Future Direction Report prepared by WBoPDC.

No technical work presented Hui #1 2021 Technical work - discharge options and treatment upgrades Treatment and discharge Schemes - based on 2021 work and Harbour discharge discussions in 2020 Hui #2 · Taumata Arowai context Treatment and discharge schemes from Hui #2 updated to discharge scheme options presenting combination of the treatment Options from 2021 and other treatment considerations discussed at Hui #2 Hui #3 • Timelines of the options upgrades presented based on current discharge consent expiry · Lessons learnt on WWTP upgrades and discharge to land schemes • No technical update requested Hui #4 · Land assessment - Site capability and proposed discharge to land standards. · One pager summary presented for all discharge schemes and upgrade timelines including assumptions and exclusions Hui #5 • Upgrade timelines to be adjusted based on cost estimate timeline Implementation timelines for technical options to be adjusted based on consenting timelines for Hui #7. Hui #6

• Effluent discharge quality comparison between different options prepared for Hui #8

Figure 1-2 Technical work update methodology



Hui #7

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1.3 Glossary of Terms

Term	Name	Description	
ADWF	Average Dry Weather Flow	Typical daily flow of wastewater coming into WWTP during dry periods, representing normal wastewater flows.	
ADF	Average Daily Flow	Typical amount of wastewater that flows through a WWTP in a single day. It's calculated by taking the total volume of wastewater over a period. This helps plan and size treatment systems to handle normal wastewater levels efficiently.	
BoD	Basis of Design	Outlines the important parameters, decisions, assumptions, and requirements (e.g. flows, contaminant loads, and performance objectives, redundancy requirements, design life) to inform a design process.	
BOD₅	Biological Oxygen Demand	Indicates organic content of wastewater by measuring the amount of oxygen needed by bacteria to break down organic matter in wastewater over five days.	
cBOD₅	Carbonaceous Biochemical Oxygen Demand	Indicates carbon-based organic content of wastewater by measuring the amount of oxygen needed by bacteria to break down carbon-based organic matter in wastewater over five days.	
COD	Chemical Oxygen Demand	Indicates the organic and inorganic content in wastewate by measuring the amount of oxygen needed to break it down chemically.	
DAF	Dissolved air flotation	Wastewater treatment process using small air bubbles to remove flocculated particles and suspended solids by floating them to the surface and then removing them.	
Effluent	Effluent	Treated wastewater that leaves a treatment plant.	
Enterococci	Enterococci	Bacteria that live in the intestines of warm-blooded animals. Used as an indicator in marine waterbodies as they can live in saltwater.	
Faecal Coliforms	Faecal Coliforms	Bacteria that live in the intestines of warm-blooded animals. They include species like Escherichia coli (E. coli). Used as an indicator in fresh water and land discharges. Doesn't live in the marine environment.	
1&1	Inflow & Infiltration	Measure of rainwater or groundwater that enters wastewater systems through things like cracked pipes, faulty connections, or illegal stormwater hookups, which can overwhelm treatment plants and reduce treatment efficiency.	
MBBR	Moving Bed Biofilm Reactor	MBBR was installed at Katikati WWTP in 2025. It is a wastewater treatment method where bacteria treating contaminants live attached on tiny plastic carriers. These bacteria clean the water by breaking down pollutants using it as a food source. Oxygen and mixing are provided for bacteria to breathe and move around the tank.	



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Term	Name	Description
MBR	Membrane Bioreactor	A wastewater treatment process where bacteria clean the water, and special membranes filter out solids. Using this process bacteria is living in clusters or flocks and require oxygen and mixing to keep it alive and in suspension form, so the treatment can occur across the entire tank volume. Membrane consists of tiny pores, which allows to separate treated water from the flocks. Because of the size of membrane pores, the bulk of E. coli can be filtered out.
NH ₃ -N	Ammoniacal Nitrogen	Represents the concentration of nitrogen in the form of ammonia (NH ₃) and ammonium ions (NH ₄ ⁺) in wastewater. High levels can harm aquatic life. This form of nitrogen is the best for plant uptake.
NH ₄	Ammonium	A type of nitrogen found in wastewater that needs to be treated because high levels can harm aquatic life.
NPV	Net Present Value	Cost estimating process to take account of the whole of life capital and operating costs of different options. Takes account of the time value of money, including inflation and the cost of capital.
PWWF	Peak Wet Weather Flow	Highest flow of wastewater coming into WWTP during heavy rain, caused by a combination of regular wastewater and extra water from inflow and infiltration.
Septage	Septage	Waste material pumped out of septic tanks, including liquids, solids, and sludge from household or small-scale wastewater systems
TKN	Total Kjeldahl Nitrogen	The amount of nitrogen in wastewater (including ammonia and organic nitrogen) which can contribute to water pollution and algae growth if not properly treated
TN	Total Nitrogen	The sum of all types of nitrogen present, including ammonia, nitrates, nitrites, organic nitrogen and particulate nitrogen.
TP	Total Phosphorus	Amount of phosphate in wastewater which can contribute to algae growth if not properly treated
TSS	Total Suspended Solids	Particles floating in wastewater that need to be removed during treatment
UV	Ultra-violet disinfection	Uses ultraviolet light to kill or deactivate harmful bacteria, viruses, and other microorganisms, making the water safe for discharge or reuse without adding chemicals
WWTP	Wastewater Treatment Plant	The facilities designed to remove pollutants from wastewater making it safe to discharge back into environment or for reuse. Utilize a combination of mechanical, biological, physical and chemical processes to achieve this.
MCC	Motor control centre	Centralised control of the WWTP



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2 Basis of Design

2.1 Previous Work

In 2022, Beca prepared a Basis of Design (Beca, May 2022) to inform the Katikati WWTP masterplan which included a design horizon of 30 years up to 2052. The basis of design consisted of a review of the influent and effluent flows and loads to the plant, with the objective to determine key parameters such as flow per capita, flow peaking factors and characterisation of the influent and effluent concentrations. The results were compared against typical values from literature and adjusted where the results deviated significantly due to inconsistencies in the provided data.

A summary of the key parameters adopted at the time is presented in Table 2-1 below. For more details, refer to Appendix A.

Table 2-1: Summary of key parameters adopted in Katikati WWTP BOD

Parameter	Adopted Value
Average Daily Flow per capita	220
(L/p/d)	
Peak Factor (PWWF/ADWF)	4.0
Influent ADWF/ADF Ratio	85%
Effluent ADWF/ADF Ratio	80%
Influent loads per capita,(g/p/d):	
BOD₅	76
TSS	74
TKN	13
NH ₄	10
COD	193
TP	2.1
Average effluent concentrations in	
2022 (g/m³):	
BOD ₅	12
TSS	20
TN	43
faecal coliforms as median ²	12 cfu/100ml
enterococci as median	10 cfu/100ml
Future effluent concentrations	Assumed an additional 10% increment in effluent concentrations will occur over the 30-year horizon to allow for reduced treatment efficiency

Following the characterisation of the influent and effluent, future flows and loads entering and leaving the plant were estimated based on the latest population projections available at the time. Since then, WBoPDC has updated their population projections for Katikati and extended the planning horizon to 50 years up to

² A new UV was installed by Apex in Jan 2023; therefore this value can vary



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2074. The following sections provide an update to the projections presented in the 2022 Basis of Design, considering the updated population projections and planning horizon.

2.2 Population Projections

The population projections shown in Table 2-2 were provided by WBoPDC based on the Long-Term Plan population forecast for the Katikati community.

Table 2-2: Population projections for Katikati community

Year	Population
2024	5730
2029	6028
2034	6640
2038	6848
2039	6900
2044	7000
2049	7100
2054	7200
2059	7300
2064	7380
2074	7560

2.3 Influent Projections

2.3.1 Influent Flow

Based on the criteria described in Table 2-1, the projected flows to the WWTP are calculated and shown in Table 2-3 below.

Table 2-3: Projected influent flow

Year	Population	ADF (m³/d)	ADWF (m³/d)	PWWF (m³/d)
2024	5730	1261	1072	4286
2029	6028	1326	1127	4509
2034	6640	1461	1242	4967
2038	6848	1507	1281	5122
2039	6900	1518	1290	5161
2044	7000	1540	1309	5236
2049	7100	1562	1328	5311
2054	7200	1584	1346	5386
2059	7300	1606	1365	5460
2064	7380	1624	1380	5520
2074	7560	1663	1414	5655

2.3.2 Influent Load

Using the projected influent ADF and the adopted per capita loads shown on Table 2-1, the future influent loads are calculated and shown below.



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Table 2-4: Projected influent average loads

Year	Population	BOD₅ (kg/d)	TSS (kg/d)	TKN (kg/d)	NH₄ (kg/d)	COD (kg/d)	TP (kg/d)
Per capita	g/p/d	76	74	13	10	193	2.1
2024	5730	435	424	76	55	1106	12
2029	6028	458	446	80	57	1163	13
2034	6640	505	491	89	63	1282	14
2038	6848	520	507	91	65	1322	14
2039	6900	524	511	92	66	1332	14
2044	7000	532	518	93	67	1351	15
2049	7100	540	525	95	68	1370	15
2054	7200	547	533	96	69	1390	15
2059	7300	555	540	97	70	1409	15
2064	7380	561	546	98	70	1424	15
2074	7560	575	559	101	72	1459	16

2.4 Effluent Projections

2.4.1 Effluent Flow

Based on the criteria described in Table 2-1, the projected flows to the WWTP are calculated and shown in Table 2-5 below. It is important to note that the projected ADWF and PWWF are slightly lower than the influent flows. This reduction is attributed to a lower ADWF/ADF ratio used for effluent calculations, which reflects the flow balancing effects introduced by the wetlands and the evaporation losses occurring from the ponds.

Table 2-5: Projected effluent flow

Year	Population	ADF (m³/d)	ADWF (m³/d)	PWWF (m³/d)
2024	5730	1261	1008	4034
2029	6028	1326	1061	4244
2034	6640	1461	1169	4675
2038	6848	1507	1205	4821
2039	6900	1518	1214	4858
2044	7000	1540	1232	4928
2049	7100	1562	1250	4998
2054	7200	1584	1267	5069
2059	7300	1606	1285	5139
2064	7380	1624	1299	5196
2074	7560	1663	1331	5322



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2.4.2 Effluent Load

The effluent quality projections described here assume that the plant continues to operate as per the existing lagoon system followed by wetlands and the UV treatment. The projections do not include any future upgrades to the WWTP that could improve the effluent quality including side stream MBBR upgrade which is currently under construction. For details on the effluent quality improvements that can be achieved with additional treatment upgrades, refer to Section 3.2.

The total average effluent concentrations from Table 2-1 are used as the starting effluent quality for year 2024. It is assumed that over the 50-year horizon, the effluent concentrations will increase by 16.7%, which is equivalent to the previously assumed 10% increase in 30 years, due to lower hydraulic retention times through the plant process units at the increased flows.

Table 2-6: Projected effluent average loads and concentrations

Year	Population	BOD₅ (mg/L)	TSS (mg/L)	TN (mg/L)	BOD₅ (kg/d)	TSS (kg/d)	TN (kg/d)
2024	5730	12	20	43	15	25	55
2029	6028	12	20	44	16	26	58
2034	6640	12	20	45	18	30	65
2038	6848	12	20	45	18	31	68
2039	6900	12	21	46	19	31	69
2044	7000	12	21	46	19	32	71
2049	7100	13	21	47	20	33	73
2054	7200	13	22	48	20	34	76
2059	7300	13	22	48	21	35	78
2064	7380	13	22	49	22	36	80
2074	7560	14	23	51	23	38	84

2.4.3 Effluent Microbiological Projections

The median values for the microbiological quality of the effluent shown on Table 2-1 are expected to increase 16.7% by 2074 due to a reduced treatment efficiency as a consequence of higher concentrations of TSS in the effluent.

Table 2-7: Projected effluent microbiological quality

Year	Median of Faecal Coliforms (cfu/100ml)	Median of Enterococci (cfu/100ml)
2012-2022	12	10
2074	14	12

2.5 Other Assumptions

The future flow and load projections assume the following:

- No septage receival facility is installed at the Katikati WWTP.
- The current proportion of trade waste flow and load remains consistent throughout the design horizon.
- Projections for the effluent quality do not consider future upgrades that could improve the treated effluent quality.



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 Current I&I rates will remain at same levels as they are at present, i.e. PWWF/ADWF will not increase above 4.

3 Options Overview

3.1 Discharge options

The following sub-sections outline the effluent discharge options to be considered further. As noted, the receiving environment normally dictates the level of wastewater treatment required. Taumata Arowai's draft wastewater discharge standards are currently released for public consultation and are expected to come in place as early as August 2025. These standards will provide guidance on the quality of effluent required for discharge into various receiving environments from a scientific and environmental perspective.

3.1.1 Ocean outfall

3.1.1.1 Existing ocean outfall with renewals (Status Quo)

Treated effluent would be discharged through the existing outfall (DN 200, PN 12, PVC-U). Several leaks have occurred in the harbour pipeline since 2022, requiring notification to partners, stakeholders and incurring significant reputational, safety, and financial risks (costing \$250-350k per incident). A 2019 assessment suggested the pipeline could last until 2040, but recent reviews now estimate only 5-10 years of useful life remains for the harbour section. The discharge rate has been reduced to 20 L/s to ease pipeline pressure.

For this option, treated effluent would be discharged through a new DN355 PE ocean outfall pipe 1,150 m off Matakana Island. The harbour, cross island and ocean sections of the pipeline would all be replaced. A new pump station would be also included in this upgrade to accommodate the future flows until 2074.

A pipe 1,150 m off Matakana Island would be 500 m longer than the existing outfall, noting that a longer outfall would likely be needed if a new consent for an ocean discharge were to be applied for.



Figure 3-1 New Outfall 500m longer (L) and new Diffuser (2022) (R)

Similar to the existing outfall renewal option, the new outfall is proposed to be built in stages. This would spread out the costs for Council, potentially making it more affordable. The harbour section would be constructed first (by 2030) as this section of pipe is where the breaks and leakage have occurred followed by the Island pipeline by 2034. A new pump station would be included in the upgrade, with staged increase in flow capacity, operational by 2037, 3 years prior to the ocean section pipeline upgrade by 2040. This is the basis for initial NPV cost calculations.



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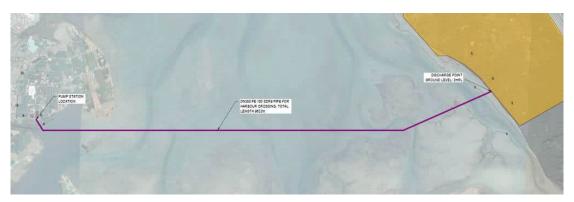


Figure 3-2 First stage upgrade of harbour crossing section

3.1.2 Land discharge (Land Irrigation)

The preferred land irrigation site is made up of two separate blocks of land (east and west) which are separated by a riverFigure 3-3. The site is approximately 10 km from the Katikati WWTP. Existing land use activities include dairy pasture for some 100 ha of the site, horticultural development such as kiwifruit and avocados (approx. 29 ha) along its northern and southern boundaries, and an esplanade reserve along the banks of the river toward the north of the site. Site information is summarised in Table 3-1 below.

Table 3-1. site inform	able 3-1.					
	Site Information					
Existing land use	Pasture used for farming					
Available area • 95.9 ha (between 0 – 15°)						
• 50.5 ha (between 15 – 19°)						
 118.9 ha (greater than 19°) 						
Site contours	Areas of manageable contour across much of the site, broken up by areas with steep contours (greater than 19°)					

3.1.3 Land discharge (Land Irrigation)



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Figure 3-3. Irrigation site L to R – site boundary, pasture and forest irrigation (Discharge Options report)

Based on the 2021 options report, irrigation to pasture at a suitable location requires a "minimum" level of wastewater treatment upgrade. This is because a pasture cut and carry operation can take up significant levels of nitrogen. The current MBBR upgrade (status-quo) will likely provide an acceptable quality effluent for pasture irrigation. The irrigation setup is based on a Precipitation Index, which is less strict than soil moisture deficit methods. Pivot and solid set irrigation would function according to rainfall levels throughout the year, requiring storage of roughly 35,000 m³. The expected average yearly application rate is 2 mm per day as an annual average. The application rate in any one application is significantly higher than this. The scheme would involve a new pump station at the WWTP (capable of handling flows of 2074 effluent), a pipeline leading to storage at the irrigation site, and another pump stage to distribute wastewater via the irrigation systems.

Forestry irrigation would require a greater level of treatment to remove more nitrogen. If Radiata Pine is considered as the crop, it takes up significantly less nitrogen per year than cut and carry pasture on the same land. MLE is a suggested (common) treatment plant configuration to provide this level of treatment. As forestry absorbs less nitrogen than pasture, a lower nitrogen effluent level is needed for the area. Irrigation



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would follow a precipitation-based regime, using above-ground, solid-set irrigation systems. Around 15,000 m³ of storage would be required once the blocks are established, which would need to be small enough so that at least one or two blocks are always available for harvest or re-establishment, a process that can take 5-7 years while the young trees establish a suitable rooting depth. The expected annual application rate is 2 mm/day. The application rate in any one application is significantly higher than this. The irrigation scheme would involve creating a new pump station at the WWTP, with capacity for the 2074 effluent flows. This would connect to a rising main leading to storage at the irrigation site, followed by a second stage of pumping into the irrigation system. Table 3-2 below summarises the main scheme components:

Table 3-2. Effluent re-use and disposal options component summary.

Site	WWTP Upgrade	Pump Station & Rising Main	Storage (m³)	Irrigation Crop
Irrigation Site	Minimum	Yes	35,000	Pasture
	MLE	Yes	15,000	Forestry

NOTE – for an effluent irrigation scheme to be confirmed as feasible Council must have access to the land (purchased or leased). Beca understands that no approaches to landowners have been made. To confirm technical feasibility, site investigations are needed to test parameters such as soil permeability that have been assumed in the irrigation desk top assessment to date.

3.2 Treatment options

Section 3.2 provides an overview of the appropriate treatment options which could be implemented, dependent on the discharge receiving environment, options for which are covered in Section 3.1. A high-level estimate of annual biosolids production for each treatment upgrade option is presented in Section 3.3.

3.2.1 Lagoon system with MBBR side stream treatment (Status quo - lagoon-based system)

This treatment option is used in Schemes 0a and 1a.

The Katikati WWTP is currently (2025) being upgraded with a moving bed bioreactor (MBBR) as a side stream process to treat a portion of NH_4 and TN to meet current discharge consent limits for these parameters.

The basis of design prepared by Beca described that the MBBR tank would consist of an aerobic zone only to remove NH₄. The flow from MBBR would be returned to the front of Lagoon1 (anoxic zone) close to the inlet pipe for TN removal. After Lagoon 1 the flow would continue through the rest of the plant for further treatment. It is understood that the contractor chose a slightly different configuration, where the MBBR consists of Aerobic and anaerobic zones for TN removal. The influent is taken from Lagoon 1 and returned to Lagoon 2.

Existing MBBR examples in NZ include:

- Hāwea WWTP c 2021 Same size as Katikati. Ammonia Reduction
- Moa Point WWTP, 1996 Wellington, 275,000PE, full secondary treatment

The Katikati WWTP MBBR upgrade process flow diagram (PFD) and NZ example are shown below in Figure 3-4 and Figure 3-5.



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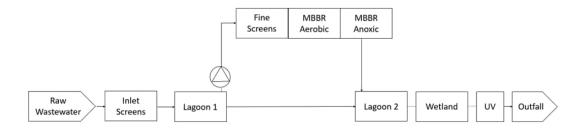


Figure 3-4: Status Quo - MBBR Upgrade PFD.



Figure 3-5: NZ MBBR example.

Currently the MBBR is still under commissioning, therefore the performance data is not yet available. The expected MBBR performance is presented in Table 3-3 below.

Table 3-3. Effluent quality with the side-stream MBBR application

Parameter	Unit	Value
cBOD₅ removal	%	>90
TSS removal	%	>95
TN removal*	kg/d	40
E. coli removal	-	UV disinfection required

^{*}Based on the Basis of design for the MBBR upgrade prepared by Beca in December 2022 to meet current discharge consent requirements of 55 kgTN/d with a design horizon to 2038.

The Design and Build Contractor has provided the following target performance levels:



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Table 3-4: MBBR Nitrogen effluent design

Parameter	Unit	Value (95%ile)
NH ₄ -N	g/m³	25
NOx-N	g/m³	5
Organic N	g/m³	2.5
Total Nitrogen	g/m³	32.5

Actual Katikati MBBR performance to be confirmed following full commissioning and operation.

Key points:

- Meets current consent conditions
- Sufficient hydraulic capacity to 2074
- Limited nutrient removal, UV disinfection and flexibility for future expansion.

3.2.2 Membrane Bioreactor, MBR (High range – high-rate treatment)

This treatment option is used in Scheme 1c.

MBR is an activated sludge technology which would replace the lagoon and MBBR side stream process. This technology is more advanced than MLE and can provide significantly better TSS removal rates and lower pathogen levels prior UV disinfection. A fine screening stage would need to be added after the existing screening. The reactor would include the anoxic, aerobic zones (for BOD, ammonia-N and TN removal) and membrane cassettes for filtration and disinfection stages all in one. MBR could be set up in various configurations targeting very low TN levels – albeit larger with extra stages (than conventional MLE-MBR) and significant extra cost.

This option would see a new standalone MBR plant built on-site, while the rest of the treatment assets (except UV disinfection and coarse screens) would become redundant. Some existing lagoon capacity would be used for diurnal and or wet weather balancing storage. A sludge dewatering process is also required.

Existing MBR examples in NZ include:

- Kinloch WWTP
- Te Aroha WWTP
- Turangi IWWTP
- Tirau WWTP
- Meremere WWTP
- Pukekohe WWTP
- Te Kauwhata WWTP

The Katikati WWTP MBR upgrade PFD and NZ examples are shown below in Figure 3-6 and Figure 3-7.



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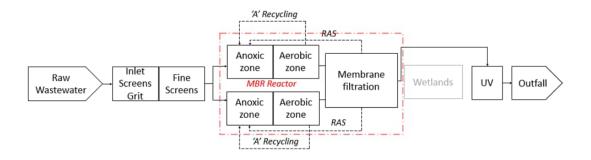


Figure 3-6: MBR Upgrade PFD.



Figure 3-7 MBR Examples in NZ.

The MBR process would achieve the highest effluent quality compared to the other treatment options. The expected removal of the incoming loads and effluent target concentration for TN are presented in Table 3-5 below, and should be compared with the concentration values Table 2-6 for improvement context. TSS and E. Coli values are added to the table for comparison.

Table 3-5. Effluent quality with the MBR application

Parameter	Unit	Value
cBOD₅	mg/L	<4
TSS	mg/L	1
TN	mg/L	7
E. coli	mg/L	<10 (1 with UV)

Key Points of MBR:

- Highest level of treatment: MBR provides the highest level of nutrient removal and disinfection levels.
- Can be easily expanded in the future
- High capital investment and operational costs
- Highly skilled operators required.



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- Biosolids require dewatering and there will be increased volume
- Wet weather flow management is required
- Little quality improvement in the future

3.2.3 Status Quo and Dissolved air floatation (DAF)

This treatment option is used in Scheme options 1b and 2a.

This option was not initially discussed in the 2021 Options report. A Dissolved Air Flotation (DAF) process is proposed as an enhancement to the current (with MBBR) system to reduce solids, downstream of lagoon 2 / Wetlands, and maintain better disinfection. At Hui #3 DAF was considered as a possible future upgrade especially as it could meet the proposed Taumata Arowai standards and maintain good disinfection levels.

A DAF process is used to remove solids, such as algae, which are light in weight and float easily. With the MBBR discharging into Lagoon 2, there is always a risk of algae regrowth upstream of the UV system, particularly in summer. Adding this process to the status quo would assist in reducing TSS concentration in the effluent and therefore provide greater disinfection benefits with lower E. coli values.

Existing DAF examples in NZ include:

- Waihi WWTP
- Waipawa WWTP
- Paihiatua WWTP
- Dannevirke WWTP

The Katikati WWTP DAF upgrade PFD and NZ examples are shown below in Figure 3-8 and Figure 3-9.

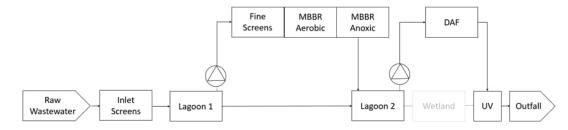


Figure 3-8: Status Quo plus DAF Upgrade PFD.



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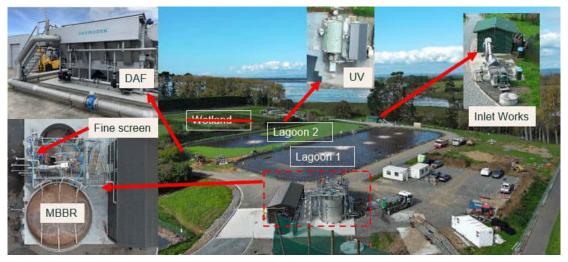


Figure 3-9: NZ DAF Examples.

Key Points of DAF:

- Enhanced Solids Removal: DAF effectively removes lightweight solids like algae, which are harder to settle in traditional systems.
- Improved UV Disinfection: By reducing Total Suspended Solids (TSS) concentrations and improving UV transmissivity, DAF minimises the shielding effect that solids have on pathogens, allowing UV light to disinfect more effectively.
- Better Effluent Quality: The process contributes to lower levels of Faecal Coliforms and improved colour
 in the treated effluent. Typically, chemicals are dosed to a DAF to both coagulate the solids and remove
 TP if required. Alum, for example, is used for both purposes simultaneously. Will meet current discharge
 consent limits.
- Higher Pathogen Inactivation: A cleaner effluent with reduced solids increases the overall efficiency of pathogen removal in the UV disinfection system, thereby reducing residual pathogen related health risk.
- · Limited nutrient removal for future expansion.

3.2.4 Modified Ludzack Ettinger, MLE (Mid range - high-rate treatment option)

This treatment option is used in Scheme 3a

A Modified Ludzack Ettinger (MLE) plant could replace treatment in the Lagoons and MBBR to provide lower nitrogen in effluent suitable for forest irrigation. The MLE activated sludge process consists of existing inlet works, a new reactor for biological nitrogen removal, secondary clarification to separate solids, and the existing UV disinfection system. The reactor would comprise two zones: anoxic and aerobic for ammonia, BOD and TN removal. Wastewater would be separated from activated sludge in a clarifier and be UV disinfected prior to discharge. Excess sludge produced in the reactors is stabilised and dewatered, then taken off-site for disposal.

Existing MLE examples in NZ include:

- Shotover WWTP
- Gore WWTP
- Pukete WWTP (Trains 1 to 3)

The Katikati WWTP MLE upgrade PFD and NZ examples are shown below in Figure 3-10 and Figure 3-11.



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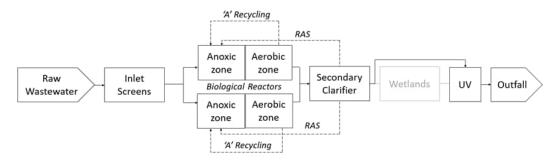


Figure 3-10: MLE Upgrade PFD.



Figure 3-11: MLE Examples in NZ.

The MLE process would achieve higher effluent quality than the status quo lagoon based system with MBBR and would be suitable for forestry irrigation. The expected removal of the incoming loads and effluent target concentration for TN are presented in Table 3-6 below, and should be compared with the concentration values Table 2-6 for improvement context.

Table 3-6 Effluent quality with the MLE application

Parameter	Unit	Value
cBOD₅ removal	%	>95
TSS removal	%	>95
TN (design)	mg/L	6-8
E. coli removal	-	UV disinfection required

Key points of MLE:

- High level of treatment can be achieved including nutrient removal to provide effluent quality required for
 forestry irrigation. Quality improvement is possible in the future by conversion to 4 stage process for very
 low TN or 5 stage process for bio P removal but will require disruptive and expensive retrofits.
- Process could be easily expanded for future needs



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- Flexible to other discharge methods especially effluent reuse. Class B effluent
- Much more expensive than other options
- Large footprint = high ground improvement costs

3.3 Sludge Management

The Katikati WWTP Masterplan Report – 2nd Draft (Beca, 11 October 2022) included a sludge management strategy and high-level estimate of annual biosolids production for all the above options except Status Quo and DAF. The sections below provide a summary of the strategy and sludge volumes for all the above options until year 2074.

3.3.1 Sludge management strategy

Each of the above proposed options will generate excess sludge which will have to be managed. Currently there is no sludge management strategy in place for the WBoP District or the wider region. The two Tauranga City wastewater treatment plants do not currently have capacity to receive external sludge for further processing. The sludge generated in Katikati WWTP is currently dewatered on site using geobags. Until recently, the dewatered solids (from the geobags) have been spread to farmland owned by WBoPDC. However the land available is currently near capacity for nitrogen application and will no longer be available in the near future. WBoPDC is committed to exploring more long-term options for sludge management including regional options.

For the Masterplan, it was assumed that solids generated in the upgrade options would be dewatered and stored on site in geobags until more land was available for further solids disposal. For cost estimation purposes an assumption has been added that the sludge will be eventually taken off site for disposal (Hui #4). Because of the putrescibility of the fresh waste activated sludge, the waste sludge from the MBE and MLE processes would need to be removed from site every 1 to 2 days to the ultimate disposal or end use facility. The anticipated volumes of sludge and dry solids for each option are discussed below.

3.3.2 Sludge production - current and future

Current

To estimate current sludge volumes and dry solids mass, data from the sludge survey (2022) was utilized. An average sludge dry solids of 4% measured in the ponds was used together with the surveyed sludge levels in the lagoons and wetlands to quantify how much sludge would settle in the bottom of the lagoons each year. It was estimated that approximately 725 m³ or 29 dry tonnes of (dry solids) sludge per year is accumulating in the lagoons and wetland.

Future

The future annual sludge production was determined by extrapolating the above 29 tonnes/year sludge production for the options which includes treatment in the lagoons. Future sludge production estimates for the other treatment options assumed the following:

- MBBR It is assumed that the sludge production will remain the same as the ponds for the current period
 as the nitrification process would not increase sludge yield significantly. It is assumed that population
 growth is the sole factor for increase in sludge production for this process in the future.
- MLE is a standalone option, which would not use treatment through the existing lagoons. Therefore, estimated daily sludge production is based on calculations for year 2023 and 2038. It is assumed that sludge production will increase as the load to the plant increases over the years. Sludge could be digested in a sludge Lagoon (like Waihi Beach). However, as sludge is wasted from the process daily, the more common method is to have a short aerobic stabilisation stage, dewater via centrifuges (or screw press) then haul away (e.g to vermicomposting).



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- MBR similar to MLE, treatment through the existing lagoons will not be used. MBR is operated at a
 higher mixed liquor concentration, but the sludge age would be the same as the MLE, and hence similar
 solids production. For the purpose of this calculation, it is assumed that sludge production (on a dry
 solids basis) is the same as for an MLE process.
- DAF- similar assumptions as for MBBR above, except that DAF would remove TSS from the final effluent.
 It was assumed that 26.6 kg of TSS daily would be removed based on the average daily flow to reduce TSS concentration from an average of 25 mg/l to 5mg/l.

The sludge volumes in the Masterplan were estimated based on a 25-year design horizon (up to 2038), for the first two options. Sludge production for the MBR and DAF options were not estimated in the Masterplan. Therefore a high-level estimates were undertaken for those options, based on the assumptions listed above.

Estimated population increase (ref Section 2.4) between 2038 and 2074 is approximately 10.5%. Therefore sludge production estimated in the Masterplan was increased by 10.5% to account for a design horizon until 2074. The table below presents the sludge volumes to be pumped to the geobags for further dewatering. A significant reduction of sludge volume would be achieved in the geobags, therefore sludge disposal volumes would be significantly lower than presented in the Table 3-7 below.

Table 3-7 Sludge production for the various treatment options for storage in Geobags or dewatering and disposal off site

Solids Production	2021*	2023**	2074		
Option 0a & 1a Sludge Production – Lagoons + MBBR (Status quo)					
Dry Solids sludge (Tonnes/year)	29	29	39		
Wet sludge 4% DS (m³/year)	725	725	967		
Option 1b & 2a Sludge Production – Status quo + DAF					
Dry Solids sludge (Tonnes/year)	29	36.3	48.7		
Wet sludge 4% DS (m³/year)	725	907	1,217		
Option 1c Sludge Production – MBR***					
Dry Solids sludge (Tonnes/year)	-	120	203		
Wet sludge 6% DS (m³/year)	-	2,000	3,385		
Option 3a Sludge Production – MLE***					
Dry Solids sludge (Tonnes/year)	-	120	203		
Wet sludge 6% DS (m³/year)	-	2,000	3,385		

^{*}Masterplan year 2021

3.4 Discharge schemes

The initial discharge schemes were based on the WWTP upgrade requirements to discharge to land for pasture irrigation or forestry (Katikati WWTP Effluent Reuse and Disposal Options Assessment) or discharge to ocean (Katikati WWTP Masterplan Report – 2nd Draft) requirements.



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^{**}Masterplan upgrade year

^{***}MLE and MBR options account for sludge stabilization in an anaerobic lagoon (not included in the Masterplan), hence the sludge volumes are further reduced as dry solids percentage would increase from 0.5% (MLE) and 1% (MBR) to 6% dry solids. If MLE and MBR sludge are aerobically stabilized in a pond on site, it is expected that the sludge could subsequently be transferred to Geobags for dewatering. Sludge volume to be transferred to geobags is expected to be the same for MLE and MBR. If not stabilized in a pond system, the fresh sludge would need to be dewatered and sent off site for landfilling or additional processing.

The schemes were reviewed during Hui #2 and the scheme list was updated to account for:

- Taumata Arowai proposed standards,
- Queensland standards for effluent reuse (effluent class, previously canvassed during the 2016 18 work of the group), and
- Thinking from current Te Ohu Waiora around discharge effects.

A list of discharge schemes options to be evaluated and presented in the Future Directions Report by WBoPDC are presented in Table 3-8 below. A Scheme is represented by a treatment option plus a discharge option.

Table 3-8 Discharge schemes list including notes and reference to reuse standards effluent class

Discharge option	Treatment Option	Scheme Options list for evaluation	Notes	Effluent class
Status quo (existing outfall with renewals)	a. Existing treatment incl. MBBR	Discharge Option 0a	Assume MBBR upgrade Pipeline renewals staged	Class B
1. New outfall pipeline 500m (larger diameter) longer than existing	a. Existing treatment incl. MBBR	Discharge Option 1a	Pipeline reconstruction staged	Class B
	b. Existing treatment incl.	Discharge Option 1b		Class B
	MBBR + DAF c. New MBR	Discharge Option 1c		Class A
2. Pasture Irrigation	a. Existing treatment incl. MBBR + DAF	Discharge Option 2a	Upgrade needed to reduce solids through irrigation equipment, maintain good disinfection	N/A
3. Forestry Irrigation	a. MLE with tertiary filters and existing UV	Discharge Option 3a	Upgrade needed to reduce TN and maintain good disinfection	N/A

3.5 Option Timeframes

The key timeframes suggested for the future discharge scheme options 1a,b,c, 2a and 3a shown in Figure 3-12 and Figure 3-13 below. Option timeframes are indicative only at this stage. More detailed timeframe estimates will be needed for preferred option(s).

For the Discharge option 0a (Status quo) the following timeframes are suggested:

- Current discharge consent expires in 2038
- Harbour section pipeline replacement 2030
- Island pipeline replacement 2034
- Outfall Pump station upgrade 2040
- Outfall pipeline replacement 2040



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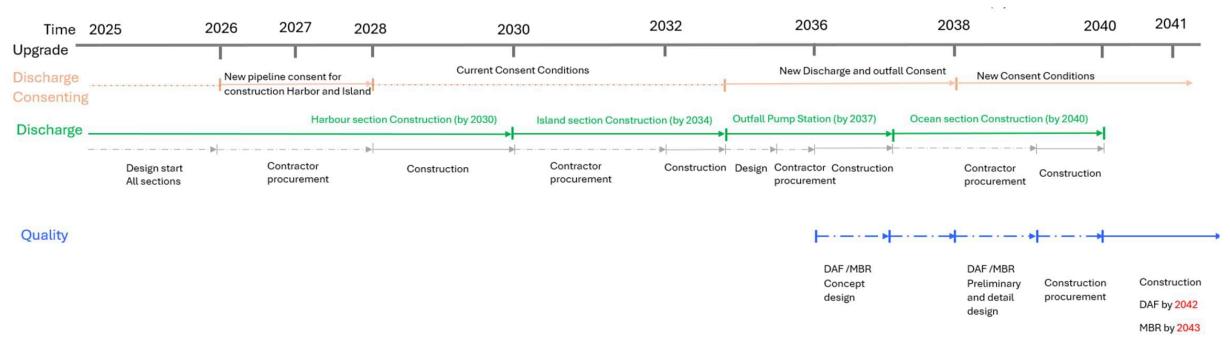


Figure 3-12 Discharge options 1a, 1b and 1c timeline

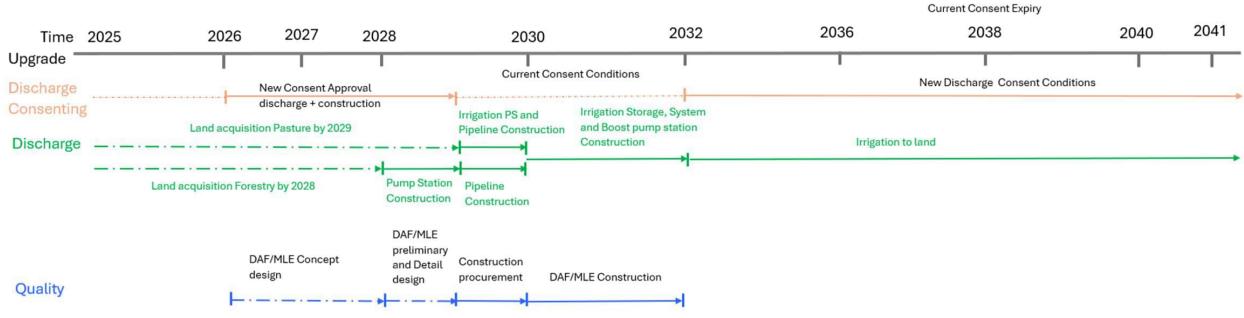


Figure 3-13 Discharge options 2a and 3a timeline



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Item 10.3 - Attachment 5

3.6 Taumata Arowai Network Environmental Performance Report

The Water Services Act 2021 has mandatory requirements for public network operators to monitor and report on the environmental performance of wastewater networks. This includes reporting on WWTPs.

The performance report will include sections on Power Consumption and Operational Carbon reporting. This section provides an insight into how the options compare against each other for power usage and operational carbon. These should be considerations for Multicriteria Analysis (MCA) to be undertaken by the stakeholders.

3.6.1 Power and Operational Carbon Comparative Ranking

The ranking criteria definition and summary table has been provided for comparative purposes only - no quantitative analyses has been completed. For the options assessment as part of Future Direction Report by WBoPDC, all columns are rated as one. The comparative rating presented in Table 3-9 below is for the context of performance reporting as per the above requirements, not for the purpose of the Future Directions Report options evaluation.

Table 3-9 Comparative Rating Power usage and Operational Carbon

	Power usage	Operational Carbon
Treatment Options		Process/Discharge
Option 1 Lagoons + MBBR (Status quo)	Inefficient surface aeration	Methane generation in lagoons, wetland
Option 2 MLE		Sludge to landfill. Methane
Option 3 MBR	20% more for MBR	generation in Landfill
Discharge options		
Status quo with renewals	Less pumping than irrigation to land	
Ocean outfall (9 km +1.65 km,500m longer than existing) but larger diameter	Same pumping as status quo, less than irrigation to land	
Land discharge to pasture via pivot irrigator.	Greater pumping distance to irrigation site + 60m vertical lift + 10m residual pressure	Moderate power. Also land discharge has worse N₂O emission
Land discharge to forestry.	Greater pumping distance to irrigation site + 60m vertical lift + 30m residual pressure	Highest power. Also land discharge has worse N ₂ O emission
*Ranking criteria:		
Low	Medium	High

3.6.2 Climate change effects - Coastal Inundation

An assessment of the reported effects of future coastal hazards from climate change was completed as part of the Masterplan preparation. It was completed using modelling by the Bay of Plenty Regional Council



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(Tauranga Harbour Inundation Modelling, NIWA 2019), which confirms that the WWTP site and associated assets are increasingly going to be exposed to coastal inundation with sea-level rise (SLR).

The exposure of the Katikati WWTP site and assets to coastal hazards is intrinsically linked to elevation. Planning for the 100-year hazards timeframe for long-lived/major infrastructure, the site is expected to experience between 0.55 and 1.36 m SLR, or more, depending on global emissions trajectories. As sea level rises, the site will be increasingly inundated during storm events and typical tidal cycles even if not continually. This will increasingly affect future WWTP operations alongside implications for future site uses.

Coastal inundation effects on each option may be as follows:

- Options 0, 1a, retaining Lagoons + MBBR (Status quo) worst case storm tide scenario would affect
 access road, Lagoons, Wetland and Outfall PS. The MBBR is being built above the ground and would
 not be affected, although ground level plant may have to be raised.
- Option 1b & 2a Status Quo + DAF the same as above. DAF would also be built at appropriate elevation to mitigate effects.
- Option 3a MLE Not affected as it would be built to appropriate elevation. Foundation and ground
 improvement designs would need to take account of higher ground water levels. Plant and electrical for
 the new plant would need to be sufficiently elevated.
- Option 1c, MBR Not affected as it would be built to appropriate elevation level. Foundation and ground
 improvement designs would need to take account of higher ground water levels. Plant and electrical for
 the new plant would need to be sufficiently elevated.



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4 Discounted Discharge Options

The 2021 Katikati WWTP Effluent Reuse and Disposal Options Assessment report (Executive Summary in Appendix B) describes all discharge options that were considered at that time. The following options were discounted, scoring the lowest (except for new ocean outfall pipe options) on a multi-criteria analysis (MCA) basis. The discounted options are as follows:

- Direct harbour discharge- approximately 3km out from the WWTP, could potentially be considered as an
 affordable option. To be consented, a harbour discharge would likely require a very high-quality effluent.
 Taumata Arowai's draft wastewater discharge standards should provide further guidance. Note:
 Resolution made by Te Ohu Waiora on 10 March 2025 to discount this option and not evaluate further.
- Wetland options close to the harbour discharge to the harbour
- Hybrid options irrigation with discharge direct to the harbour in winter
- · Most irrigation options except one suitably located proximity (indirectly discharge) to the harbour

For completeness, the following options are noted but are discounted for the reasons stated

- Connect to TCC's Omokoroa pipeline no capacity for Katikati flows.
- New pipeline to Tauranga approximately 50 km so unaffordable
- New pipeline to the Waihi Beach WWTP That (Waihi Beach) effluent discharge consent precludes any
 wastewater from outside of the Waihi Beach area



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5 Cost estimates

5.1 Cost Estimate Summary

We have prepared high-level cost estimates for the treatment and disposal options discussed in this report, including estimates of capital costs (CAPEX) and of operating & maintenance costs (OPEX). The CAPEX and OPEX costs were combined to calculate the Net Present Value (NPV) for each option over a 50-year period. NPV analysis is a financial tool used to calculate the present value of future costs (and, for some projects, potential future benefits) over an agreed period of time using an agreed discount rate. The discount rate reflects the opportunity cost of capital – the return that could be earned if that capital was invested elsewhere today.

NPV analysis can be used to compare the "whole of life" costs for multiple competing options that may deliver a similar outcome but have very different cashflow profiles. This is particularly useful where two projects may have a similar total capital cost, but one project may have higher ongoing annual operating and maintenance costs. Another example where NPV analysis is useful is where one option may be able to defer capital expenditure and stage construction across time. By calculating the total "whole of life" cost we can estimate the impact of competing options in today's value and better support informed decision making.

Table 5-1 shows a high-level summary of NPV cost estimates broken down into CAPEX NPV, OPEX NPV, and Total NPV.

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Table 5-1	Comparative	Ontione	Coet	Ectimata	Summary
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Option	Disposal and Treatment Schemes	50yr NPV Breakdown (\$ millions)				
		CAPEX NPV	OPEX NPV	TOTAL NPV		
0a	Status quo (existing ocean outfall) + existing treatment level	49.6	27.4	77.0		
1a	New outfall pipe 500m longer than the existing + existing treatment level	52.1	27.8	79.9		
1b	New outfall pipe 500m longer than the existing + existing treatment level + DAF upgrade	55.1	35.2	90.4		
1c	New outfall pipe 500m longer than the existing + new Membrane Bioreactor (MBR)	68.8	34.8	103.6		
2a	Katikati pasture irrigation + existing treatment level + DAF upgrade	45.7	37.2	83.0		
3a	Katikati forestry irrigation + Modified Ludzack Ettinger (MLE) with tertiary filters and UV	69.6	53.9	123.5		

Please refer to Appendix C for more cost estimate details. Please note that all cost estimate values in this report are in NZ\$, are exclusive of Goods and Services Tax (GST), and have been rounded.

5.2 Basis of Estimate

The cost estimates are based on the high-level concept design information described in this report. Please refer to the clarifications, assumptions, exclusions, and risk items that are outlined within the body of this report. As the design information is not yet at the detailed design stage (i.e. pre-concept design) the information is still limited, and some areas of scope remain undefined. All aspects of the design of these proposed options are subject to further design development.



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The estimates presented in this report are mostly revisions and refinement of previous cost estimates issued in the following reports:

- Beca. (June 2021) Katikati WWTP Effluent Reuse and Disposal Options Assessment report.
- Beca. (October 2022). Katikati Masterplan Report (Draft), Rev B.
- Beca. (Dec 2023). Katikati Wastewater Ocean Outfall Estimate 20231206.

We have updated the scope of the cost estimates based on current design inputs and scheme assumptions, for example, the inclusion of extensive foundation improvements for MLE and MBR WWTPs based on received information about likely foundation conditions and based on recent failures of the estuarine pipeline. For some of the estimate scope items we have revised material and equipment supply pricing. For other estimate items we have escalated rates and prices from their base date to Q2 2025, using percentage allowances based on price indexes published by Stats NZ.

WWTP Cost Estimates

- Status Quo WWTP including MBBR upgrade the MBBR upgrade is in progress and due for completion later in 2025. The capital cost of this upgrade is deemed to be a "sunk cost" and not included in the capital cost estimates which focus on future upgrades. The OPEX cost estimate for the MBBR upgrade includes allowances for ongoing power costs, operator labour, sludge disposal, screenings and grit disposal, chemicals, maintenance and an allowance for mechanical and electrical renewals after 25yrs. The MBBR OPEX estimate is based on the 2021 estimate and was revised in February / March 2025.
- DAF upgrade both the CAPEX and OPEX cost estimates for the DAF upgrade option were prepared in February 2025 and are based on concept-level design information. For the CAPEX estimate we received budget supply pricing from a local DAF equipment supplier, to which we added estimated costs for the necessary civil works, mechanical installation, and electrical and instrumentation. The DAF upgrade OPEX cost estimate is based on the additional costs for DAF sludge disposal, chemicals, maintenance and an allowance for mechanical and electrical renewals after 25yrs.
- MBR upgrade both the CAPEX and OPEX cost estimates for the MBR upgrade option are based on
 the estimates prepared in 2021. We have revised the CAPEX estimate for ground improvement
 allowances and reactor sizing and have escalated pricing from 2021 to 2025. The MBR OPEX estimate
 includes allowances for power, operator labour, sludge and screenings disposal, chemicals, maintenance
 and compliance monitoring etc. In addition, it also includes allowance for membrane replacements at
 10yr intervals, and mechanical and electrical renewals after 25yrs.
- MLE upgrade both the CAPEX and OPEX cost estimates for the MLE upgrade option are based on the
 estimates prepared in 2022 with rates and allowances escalated from 2022 to 2025. For the CAPEX
 estimate we have revised some of the larger items of scope based on more recent pricing information.
 The MLE OPEX estimate includes allowances for power, operator labour, sludge and screenings
 disposal, chemicals, maintenance and compliance monitoring etc. In addition, it also includes allowance
 for mechanical and electrical renewals after 25yrs.

Disposal Scheme Cost Estimates

Ocean outfall – the CAPEX and OPEX estimates for the Ocean Outfall options are based on the cost
estimates prepared in 2023 with rates and allowances escalated from 2023 to 2025. The OPEX
estimates include allowances for pumping power costs that increase over time in line with expected
WWTP discharge flow. The OPEX estimate includes an allowance of \$600k per year for the risk of



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reactive repairs required to the existing pipeline across the estuary to Matakana Island. This allowance is included in the estimate for current year until 2030 when the new Estuary pipeline is built. The OPEX estimates includes monitoring allowances for the Estuary pipeline (inspection at 5 yearly intervals) and the Ocean Outfall (yearly dive survey inspections and sampling).

- Pasture Irrigation the CAPEX and OPEX estimates for the Irrigation to Pasture option are based on the cost estimates prepared in 2021 with rates and allowances escalated from 2021 to 2025. The CAPEX estimate now includes an allowance for land purchase based on what are understood to be the current land uses. This is a high-level allowance only included for options comparison purposes and subject to further investigation. The OPEX estimate includes allowances for pumping to the irrigation site, irrigation booster pumping costs, and maintenance allowances for the pump stations, pipelines, storage pond, and irrigation system. The OPEX estimate also includes an allowance of \$600k per year for the risk of reactive repairs required to the existing pipeline across the estuary to Matakana Island until the new pipeline is built. The OPEX estimate excludes pasture management costs and potential future income from sale of hay / baleage as these are considered likely to be close to 'break even'.
- Forestry Irrigation the CAPEX and OPEX estimates for the Irrigation to Forestry option are based on the cost estimates prepared in 2021 with rates and allowances escalated from 2021 to 2025. The CAPEX estimate now includes an allowance for land purchase based on what are understood to be the current land uses. This is a high-level allowance only, included for options comparison purposes and subject to further investigation. The OPEX estimate includes allowances for pumping to the irrigation site, irrigation booster pumping costs, and maintenance allowances for the pump stations, pipelines, storage pond, and irrigation system. The OPEX estimate also includes an allowance of \$600k per year for the risk of reactive repairs required to the existing pipeline across the estuary to Matakana Island until the new pipeline is built (by 2032). The OPEX estimate excludes forestry management costs and potential future income from the sale of timber / logs as these are considered likely to be close to 'break even'.

5.3 Cost Estimate Assumptions, Exclusions, and Risks

General Cost Estimate Assumptions:

- For capital cost estimates assumptions and exclusions, please refer to the capital cost estimate breakdowns issued previously.
- For operating cost estimates assumptions and exclusions, please refer to the individual NPV cost estimate breakdowns issued previously.
- Net Present Value (NPV) estimates are based on the following inputs:
 - o Discount factor of 5.15%
 - o General cost inflation / escalation of 2.5%
 - o Power cost inflation / escalation of 2.5%.
 - Study period of 50 years.
- All estimates are high-level concept estimates. The estimates are deemed to be Class 4 or Class 5
 estimates in terms of the AACE Cost Estimate Classification System guidelines.
- The expected estimate accuracy range is likely no better than -20% +30%.
- We assume that the Disposal to Land estimates will also need to include \$600k per year allowance for the risk of reactive repairs required to the existing pipeline across the estuary to Matakana Island.
- The Disposal to Land CAPEX estimates include allowances for land purchase:
 - o Dairy (ha) 100ha x \$50,00/ha
 - o Horticulture (ha) 29ha x \$500,000/ha



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- The Irrigation to Pasture OPEX estimates exclude pasture management costs and potential future income from sale of hay / baleage.
- The Irrigation to Forestry OPEX estimates exclude forestry management costs and potential future income from the sale of timber / logs.

General Capital Cost Estimate Exclusions:

- Goods and Services Tax (GST).
- Incurred costs to date.
- Future cost escalation.
- Fast track / accelerated programme.
- Working outside normal working hours.

Capital Cost Estimate Risks:

Risks with a potential cost effect include:

- · Design development.
- · Cost of consenting and consent conditions.
- · Foreign exchange rate fluctuations and cost of shipping.
- · General cost escalation.
- Costs associated with sequencing and staging of the works.
- Local construction market conditions and contractor resource availability.
- Ground conditions and temporary works requirements, geotechnical requirements.
- Cost of delays due to weather and marine conditions.
- Lead times for supply of materials.
- Integration with existing infrastructure and working around existing services.
- Property costs, land purchase, access and easements.
- Cost escalation for remote location factor (especially for works at Matakana Island).
- Costs associated with staging of the works, maintaining level of service during tie-ins etc.
- Costs of impacts associated with extraordinary global events (such as the recent COVID-19 outbreak).

General Cost Estimate Considerations and Limitations.

- These cost estimates are solely for our Client's use for the purpose for which they are intended in
 accordance with the agreed scope of work. They may not be disclosed to any person other than the
 Client and any use or reliance by any person contrary to the above, to which Beca has not given its prior
 written consent, is at that person's own risk.
- The high-level estimates presented in this report are typically developed based on extrapolation of recent similar project pricing, budget quotes for some equipment items, industry unit rates, and Beca's general experience. The cost estimates are based on incomplete design and other information. While a contingency allowance has been included in the estimates to cover design development, further investigation and design work is recommended. A detailed design should be undertaken if a more reliable estimate is required.
- While Beca believes that the use of the assumptions, as set out elsewhere in this report, are reasonable for the purposes of this study, Beca makes no assurances with respect to the accuracy of such assumptions, and some may vary significantly due to unforeseen events and circumstances. To the extent that the conditions differ from those assumed in this report, the opinions expressed by Beca in this report may no longer be valid and should be reviewed.
- In preparing these estimates, Beca has relied on the accuracy, completeness and currency of the information provided, therefore is not responsible for the information provided, and has not sought to



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independently verify it. To the extent that the information is inaccurate or incomplete, the opinions expressed by Beca may no longer be valid and should be reviewed.



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6 Next Steps

The baseline options technical assessments and NPV cost estimates are intended to be inputs for Multi Criteria Analysis (MCA) undertaken by Te Ohu Wairoa, and to inform the Katikati Wastewater Future Directions report to guide WBoPDC decision making. No recommendations are made in this technical options report.



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7 References

Beca. (May 2022). Katikati WWTP - Basis of Design Memorandum

Beca. (October 2022). Katikati Masterplan Report (Draft), Rev B

Tauranga Harbour Inundation Modelling, NIWA 2019



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To: Rhys Spicer Date: 19 May 2022

Copy: James Abraham

Subject: Katikati WWTP - Basis of Design Memorandum

1 Introduction

The following memo summarises the assumptions and calculations of current and future influent wastewater and treated effluent flows and loads for the Katikati wastewater treatment plant (WWTP). This memo is an update to the previous 2018 Katikati WWTP Basis of Design¹, and incorporates updated population projections, flow and quality data. Calculations are based on Western Bay of Plenty District Council (WBOPDC) population projections, as well as trends from flow and parameter sampling data provided by WBOPDC.

The design horizon for the future flows and loads is 30 years (to 2052) extending beyond 2038, which is the year the current discharge consent expires. This provides the design basis for flows and loads for the WWTP Masterplan.

2 Glossary

ADF Average Daily Flow
ADWF Average Dry Weather Flow

BOD₅ Carbonaceous Biological Oxygen Demand

COD Chemical Oxygen Demand
NH4 Ammoniacal Nitrogen
PWWF Peak Wet Weather Flow
TKN Total Kjeldahl Nitrogen

TN Total Nitrogen
TP Total Phosphorous
TSS Total Suspended Solids

3 Information Provided

The following information was provided by WBOPDC:

Table 3-1: Data provided by WBOPDC

Data	Range Covered	Comments
Population projections	2018 to 2063	
Population statistics	2006 to 2012	
Inflow to WWTP	Jul 2010 to Dec 2021	Daily total in m ³

¹ Beca (20/11/2018). Katikati Effluent – Basis of Design Memo – Draft



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Data	Range Covered	Comments
Influent WW quality	Jan 2012 to Apr 2022	Samples taken on a monthly basis
Outflow from WWTP	Jul 2012 to Jan 2022	Daily total in m ³
Effluent quality	Jan 2012 to Jan 2022	Samples taken on a weekly basis
Pre-wetland quality	Jan 2018 to Apr 2022	Samples taken on a fortnightly basis
MBBR Sampling	Feb 2022 to Apr 2022	Focused sampling at effluents from Ponds 1 & 2, and influent wastewater

4 Flows Characterisation

4.1 Flow Records

A data cleansing was undertaken on the influent and effluent flows, to identify values out of typical ranges, and missing or erroneous data. Several gaps in data were identified during this exercise, which can be due to the plant not operating under normal conditions, poor data recording, issues with the flowmeters etc. In some periods, data was amended manually, as it was clearly identified that the daily flow was not reset to zero at the end of each day. More details on excluded and amended data can be found in Appendix 1.

Figure 4-1 below shows a summary of the average monthly flows for both the influent and effluent. In general, there is a relatively good correlation between flows entering and leaving the WWTP when looking at monthly averages.

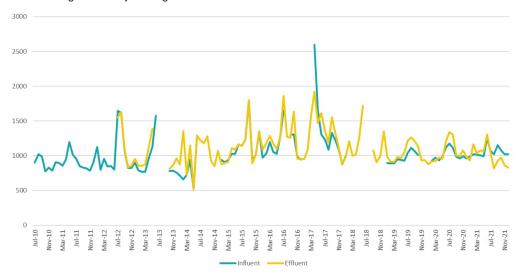


Figure 4-1: Influent and effluent average monthly flows (m³/day) at the Katikati WWTP

4.2 Population Records

Population statistics were used to determine the past population records for Katikati. The data provided did not include any records for the period from 2013 to 2017, so these were interpolated from the years with records (shown as yellow bars in Figure 4-2).

Table 4-1: Katikati population records

Year	Population
2011	4140



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Year	Population
2012	4210
2013	4406
2014	4550
2015	4695
2016	4839
2017	4983
2018	5190
2019	5300
2020	5420
2021	5500

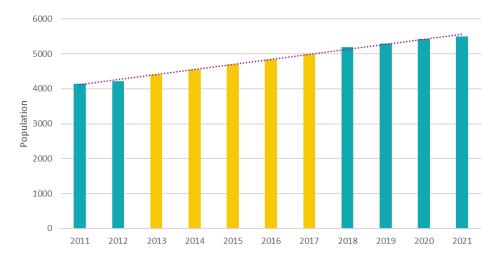


Figure 4-2: Population records for Katikati

4.3 Flows per Capita

By comparing the yearly average influent and effluent flows against the population records, a flow per capita was obtained for each of the years with records.

Table 4-2: Yearly ADFs and flows per capita

Year	Influent ADF (m³/d)	Effluent ADF (m³/d)	Influent flow per capita (L/person/day)	Effluent flow per capita (L/person/day)
2010	886			
2011	914		221	
2012	1024	1161	243	276
2013	922	967	209	219
2014	801	1039	176	228
2015	1137	1123	242	239
2016	1159	1260	239	260
2017	1336	1333	268	267
2018	993	1158	191	223
2019	978	1043	185	197



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Year	Influent ADF (m³/d)	Effluent ADF (m³/d)	Influent flow per capita (L/person/day)	Effluent flow per capita (L/person/day)
2020	1014	1048	187	193
2021	1054	1002	192	182
Average	1037	1115	214	229

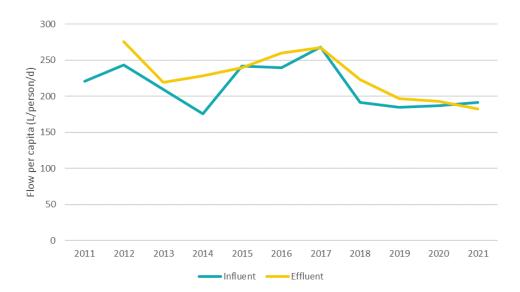


Figure 4-3: Calculated flows per capita

The effluent flow is slightly higher than the influent flow for most years, which can be partially explained by rainfall on the WWTP ponds. For the purpose of future projections, an ADF value of **220 L/person/day** is adopted for both influent and effluent flows. This is in line with the results obtained in Table 4-2 and from literature. The additional flow from rainfall in the ponds is assumed to be buffered within the ponds and partially outweighed by evaporation, so there is no need for the effluent pump station to pump at a higher flow rate to cater for these flows.

Figure 4-3 shows a clear decline in recorded flows for both the influent and effluent since 2018. WBOPDC was approached for a plausible explanation, but with the available information to date there is no certainty of the reason of this decline, or even if the decline in flows is real. Reasons for the decreased flows could be attributed to poor calibration of the flowmeters in the past or in the last few years. Considering the above, a per capita ADF value of 220 L/person/day is a closer representation of the flows pre-2018 rather than looking at the last three years of data only, where the average daily flow per capita is around 190-200 L/person/day.

4.4 ADWF and PWWF

The average dry weather flow (ADWF) and peak wet weather flow (PWWF) are calculated for each calendar year from the available data as follows:

- ADWF: 20%ile of all daily flows
- PWWF: Maximum recorded daily flow



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4.4.1 Influent Flow

For each year, the ADWF and PWWF were calculated to obtain the peak factor (PWWF/ADWF) and the ADWF/ADF ratio. The results for the influent flow are shown in Table 4-3 below.

Table 4-3: Influent flow peak factor and ADWF/ADF ratio

Year	ADF (m³/d)	ADWF (m³/d)	PWWF (m³/d)	Peak Factor	ADWF/ADF Ratio	Comments
2010	886	761	1332	1.8	86%	Not a full year of data
2011	914	783	2720	3.5	86%	
2012	1024	803	4299	5.4	78%	
2013	922	726	2824	3.9	79%	Missing winter months
2014	801	601	2465	4.1	75%	Missing second semester
2015	1137	898	2772	3.1	79%	
2016	1159	968	3880	4.0	84%	
2017	1336	1028	5238	5.1	77%	Missing summer months
2018	993	942	1234	1.3	95%	Missing most of year
2019	978	900	1383	1.5	92%	Missing summer months
2020	1014	923	1990	2.2	91%	Missing summer months
2021	1054	976	2758	2.8	93%	
	•		Average ²	3.4	84%	
			Adopted	4.0	85%	

 $^{^{\}scriptscriptstyle 2}$ Year 2018 excluded from total average calculations as data is missing for most of the year.



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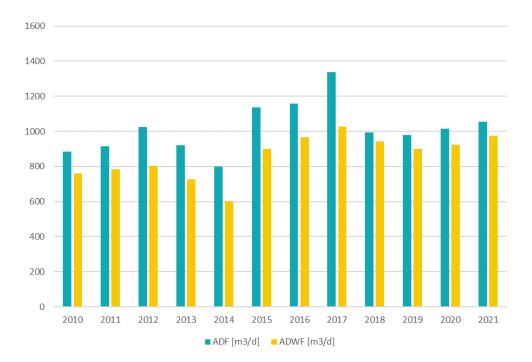


Figure 4-4: Historical influent flows for Katikati WWTP

The WBOPDC development code for the design of new sewers uses a peaking factor of 5 times ADWF. WBOPDC (Email Coral-Lee Ertel 29/10/18) advised that for bigger catchments (such as Katikati) 3.2 x ADWF is often used. Therefore, using a peaking factor of 4.0 for future flow projections for concept design purposes is a reasonable and conservative assumption.

4.4.2 Effluent Flow

A similar exercise was undertaken for the effluent flows. The results are shown in Table 4-4 and Figure 4-5 below.

Table 4-4: Effluent flow peak factor and ADWF/ADF ratio

Year	ADF (m³/d)	ADWF (m³/d)	PWWF (m³/d)	Peak Factor	ADWF/ADF Ratio	Comments
2012	1161	822	1695	2.1	71%	Not a full year of data
2013	967	776	1756	2.3	80%	Missing winter months
2014	1039	704	3027	4.3	68%	
2015	1123	861	2772	3.2	77%	
2016	1260	968	2301	2.4	77%	
2017	1333	937	2302	2.5	70%	
2018	1158	921	2351	2.6	80%	Missing winter months
2019	1043	901	1551	1.7	86%	
2020	1048	895	1553	1.7	85%	
2021	1002	799	1751	2.2	80%	
			Average	2.5	77%	
			Adopted	4.0	80%	



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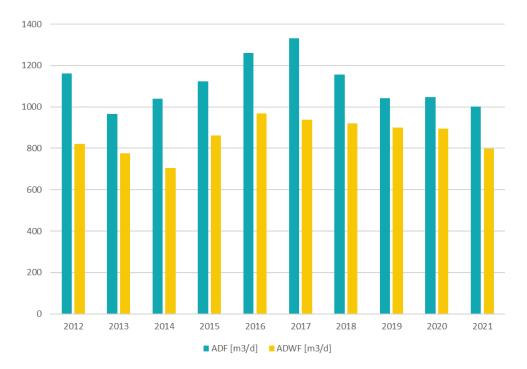


Figure 4-5: Historical effluent flows for Katikati WWTP

The required future effluent pump station will need to have adequate capacity to reduce the risk of overflows from the ponds. Therefore, a peaking factor of 4 (as per the inflow) is appropriate for the effluent pump station and pipeline sizing for comparison purposes at this stage. More detailed analysis (including assessment of the ponds buffering capacity and high flow storage requirement) would be needed during the masterplan exercise to optimise the capacity of the effluent pump station.

5 Water Quality

5.1 Influent Quality

The influent wastewater quality characteristics based on the monthly grab sampling monitoring programme from 2012 are shown in Table 5-1 below.

Table 5-1: Influent quality 2012-2022

Year	BOD ₅ (g/m³)	TSS (g/m³)	TKN (g/m³)	NH ₄ (g/m³)	COD (g/m³)	TP (g/m³)
2012 Average	228	273	53	36	491	7
2012 95%ile	329	371	74	57	819	9
2013 Average	261	333	66	44	584	8
2013 95%ile	323	408	86	58	705	11
2014 Average	259	289	61	43	596	8
2014 95%ile	348	439	87	56	752	10
2015 Average	293	357	66	46	705	9



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Year	BOD ₅ (g/m³)	TSS (g/m³)	TKN (g/m³)	NH ₄ (g/m³)	COD (g/m³)	TP (g/m³)
2015 95%ile	468	507	93	66	1010	13
2016 Average	243	310	60	42	647	9
2016 95%ile	343	422	72	53	787	12
2017 Average	275	357	63	44	715	9
2017 95%ile	397	600	92	68	996	12
2018 Average	253	278	54	41	651	8
2018 95%ile	410	458	70	56	1265	10
2019 Average	301	352	77	54	720	10
2019 95%ile	402	490	105	80	956	14
2020 Average	269	271	60	46	657	9
2020 95%ile	324	403	77	68	882	13
2021 Average	345	270	67	54	650	9
2021 95%ile	415	475	82	70	835	11
2022 Average	363	448	68	51	860	10
2022 95%ile	412	681	75	54	1154	11

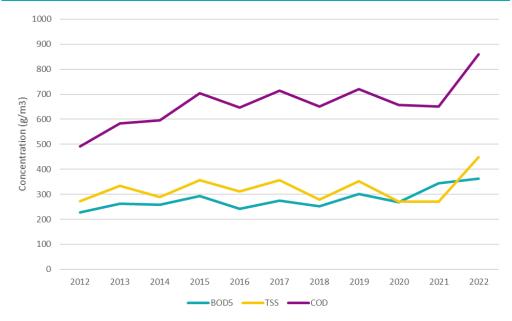


Figure 5-1: Average influent BOD₅, TSS and COD, 2012-2022



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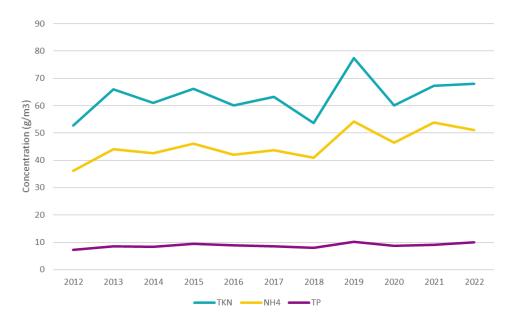


Figure 5-2: Average influent TKN, NH₄ and TP, 2012-2022

No significant changes are observed throughout the years, however average BOD_5 , TKN and NH_4 concentrations have increased in the last few years. Also, the samples taken on the first three months of 2022 show an increase in COD and TSS. The increase could be related to the flow decrease.

Table 5-2 below shows a summary of the complete influent monitoring programme since 2012. The total average for each parameter sits within the typical range of municipal wastewater characteristics.

Table 5-2: Influent quality and typical wastewater concentrations

						Typical ³		
Parameter	No. of Samples	Average	50%ile	95%ile	Max	Weak	Average	Strong
BOD₅ (mg/L)	117	275	279	403	553	133	200	400
TSS (mg/L)	117	314	309	532	730	130	195	389
TKN (mg/L)	117	63	61	90	109	23	35	69
NH ₄ (mg/L)	115	45	44	66	84	14	20	41
COD (mg/L)	118	650	643	980	1590	339	508	1016
TP (mg/L)	117	8.7	8.5	12.5	15.7	3.7	5.6	11.0

5.1.1 Loads Per Capita

Using the average concentrations for each year, average daily flows and population statistics, the loads per capita were estimated for each parameter. The results are summarised in Table 5-3 below.

³ Metcalf & Eddy, Wastewater Engineering Treatment & Resource Recovery, 5th Edition, Table 3-18



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Table 5-3: Per capita average influent loads

Year	Pop.	BOD₅ (g/person/d)	TSS (g/person/d)	TKN (g/person/d)	NH ₄ (g/person/d)	COD (g/person/d)	TP (g/person/d)
2012	4210	55	66	13	9	119	1.7
2013	4406	55	70	14	9	122	1.8
2014	4550	46	51	11	7	105	1.5
2015	4695	71	86	16	11	171	2.3
2016	4839	58	74	14	10	155	2.1
2017	4983	74	96	17	12	192	2.3
2018	5190	48	53	10	8	125	1.5
2019	5300	56	65	14	10	133	1.9
2020	5420	50	51	11	9	123	1.6
2021	5500	66	52	13	10	125	1.8
	Average	58	66	13	10	137	1.8
Adopted		76	74	13	10	193	2.1

The average influent loads per capita are slightly lower than the typical ranges of domestic wastewater, except for TKN and ammonia. Therefore, the loads per capita were adjusted to match typical per capita loads based on recommended values from Metcalf & Eddy⁴.

5.2 Effluent Quality

5.2.1 Historical Data

Treated effluent quality data was obtained from grab samples taken on a weekly basis. In some cases, the treated effluent quality data was shown as the lower detection limit instead of a fixed value. For the purpose of this analysis, the lower detection limit was used as the concentration. This will provide slightly conservative concentration estimates.

Table 5-4 shows the influent characteristics based on a monthly grab sample monitoring from 2012 to 2018.

Table 5-4: Effluent quality 2012-2021

Year	BOD₅ (g/m³)	TSS (g/m³)	TN (g/m³)
2012 Average	6	11	38
2012 95%ile	10	19	47
2013 Average	8	18	38
2013 95%ile	17	41	49
2014 Average	10	19	37
2014 95%ile	16	37	49
2015 Average	13	24	39
2015 95%ile	25	44	48
2016 Average	9	20	43
2016 95%ile	17	37	52
2017 Average	10	22	38

⁴ Metcalf & Eddy, Wastewater Engineering Treatment & Resource Recovery, 5th Edition, Table 3-16



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Year	BOD₅ (g/m³)	TSS (g/m³)	TN (g/m³)
2017 95%ile	23	40	49
2018 Average	10	16	44
2018 95%ile	18	36	56
2019 Average	12	18	48
2019 95%ile	19	34	69
2020 Average	22	30	57
2020 95%ile	50	56	72
2021 Average	16	18	49
2021 95%ile	25	32	65
Total Average	12	20	43
Total 95%ile	24	42	64

5.2.2 Effluent Microbiological Characterisation

The historical microbiological quality of the effluent was assessed based on all available samples taken from 2012 to 2022. The same principle of using the lower detection limit was applied when the exact value was not provided. The total median value is the median of all samples taken from 2012 to 2022.

Table 5-5: Effluent microbiological quality 2012-2022

Year	Median of Faecal Coliforms (cfu/100ml)	Max of Faecal Coliforms (cfu/100ml)	Median of Enterococci (cfu/100ml)	Max of Enterococci (cfu/100ml)
2012	24	8200	32	12000
2013	72	9200	42	3100
2014	33	12400	16	3700
2015	4	500	4	190
2016	4	100	4	350
2017	4	10400	4	1800
2018	4	1700	4	410
2019	4	320	10	450
2020	225	6800	190	2100
2021	50	50000	41	3300
2022	3250	5100	890	1200
Total	12		10	

5.2.3 Additional Sampling Programmes

Two additional sampling programmes were undertaken at different locations withing the WWTP to characterise the water quality at different stages of treatment. The first monitoring programme was based on fortnightly samples taken upstream of the wetlands, which started in January 2018. The results of this programme are summarised in Table 5-6 below.

Table 5-6: Pre-wetland fortnightly grab samples results

Parameter	2018	2019	2020	2021	2022	Total
Average of BOD ₅ - Carbonaceous (mg/L)	31.1	49.8	39.4	35.7	32.9	38.9
Average of Suspended Solids - Total (mg/L)	51.0	83.5	91.8	59.1	69.7	72.1



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Parameter	2018	2019	2020	2021	2022	Total
Average of Total Nitrogen (mg/L)	50.0	62.0	63.8	57.5	69.1	59.4
Average of TKN (mg/L)	44.8	50.8	84.2	48.6	68.8	58.2
Average of Ammonia Nitrogen (mg/L)	39.3	38.6	51.4	41.0	59.2	43.6
Average of Nitrite (mg/L)	4.7	10.2	2.6	7.3	0.2	6.0
Average of Nitrate (mg/L)	0.4	1.0	0.7	1.6	0.1	0.9
Average of Total Phosphorus (mg/L)	8.0	9.2	8.6	8.6	7.1	8.5
Average of Dissolved Reactive Phosphorus (mg/L)	7.0	6.7	6.2	6.9	4.9	6.5
Median of Faecal Coliforms (cfu/100ml)	63000	53500	84500	29000	47500	52500
Median of Enterococci (cfu/100ml)	14000	18000	15500	9600	17500	15000

The second monitoring programme was undertaken between February and April 2022, sampling at the influent wastewater, effluent of pond 1 and the effluent of pond 2. The results are summarised in Table 5-7 below.

Table 5-7: MBBR average sampling results

Parameter	Influent	Pond 1 Effluent	Pond 2 Effluent
No. Samples	13	7	7
Total Suspended Solids (mg/L)	294	246	65
Volatile Suspended Solids (mg/L)	267		
COD (mg/L)	650	461	185
Soluble COD (mg/L)	226	62	49
Filtered Flocculated COD (mg/L)	216		
cBOD₅ (mg/L)	246	66	23
Soluble CBOD₅ (mg/L)	246	7	80
Volatile Fatty Acids as Acetate (mg/L)	93		
Total Kjeldahl Nitrogen (mg/L)	63	66	59
Total Ammoniacal Nitrogen (mg/L)	54	48	58
Nitrite (mg/L)		0.2	0.6
Nitrate (mg/L)		0.1	0.1
Total Phosphorus (mg/L)	9.8		
Dissolved Reactive Phosphorus (mg/L)	6.7		
Alkalinity (mg/L CaCO ₃)	303	270	307
FOG (mg/L)	69		
pH	7.3		

5.2.4 Effluent Quality Requirements

The quality requirements of the treated effluent are dictated by the consent conditions in consent RM16-0206-DC.02+, which was granted in 2018 and expires in 2038.

Table 5-8: Current consent conditions for the Katikati WWTP treated effluent

Parameter	Consent Limit
Maximum flow	3,700 m ³ /d
cBOD₅ (12 month rolling mean median)	40 kg/d
TSS (12 month rolling mean median)	40 kg/d



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Parameter	Consent Limit
TN (12 month rolling mean median)	55 kg/d
pH	6.5 to 8.5
NH ₄ (90%ile over rolling 12 months)	55 g/m ³
Faecal coliforms (rolling median based on 52 consecutive samples)	500 cfu/100ml
Faecal coliforms (max)	1000 cfu/100ml
Enterococci	300 cfu/100ml

There have been some exceedances on the consent limits over the last few years, in particular ammoniacal nitrogen has been non-compliant since 2019. Total nitrogen limits were exceeded for most of 2020 and 2021, while faecal coliforms and enterococci have been intermittently exceeding the maximum limits.

Under the scenario that a consent for land discharge is granted, further improvements to the WWTP could be needed to meet the likely stricter quality requirements. For example, the permitted activity rule for discharge to land in the Bay of Plenty stipulates a limit of 200 kg TN/ha/yr. This could be even further reduced with changes to permitted activities in the future. Limits to concentration on other parameters such as BOD and TSS are likely to be required, for example the Victorian Guidelines for Water Recycling require BOD <20 mg/L and TSS <30mg/L for an effluent Class B to be used for irrigation.

6 Future Projections

6.1 Population Projections

The population projection for the design horizon was provided by WBOPDC based on the Long-Term Plan population forecast for the Katikati community. This population increase corresponds to a 0.8% compound annual growth rate over the 30 years.

Table 6-1: Population projections for Katikati community

Year	2022	2027	2032	2037	2038	2042	2047	2052
Population	5600	6080	6500	6820	6880	6960	7060	7160

6.2 Influent Projections

6.2.1 Influent Flow

Based on the 220 L/person/day contribution adopted, the population projections, the 85% ratio between ADWF and ADF, and the peak factor of 4 between PWWF and ADWF, the future flows are calculated for the design horizon.

Table 6-2: Projected influent flow

Year	Population	ADF (m³/d)	ADWF (m³/d)	PWWF (m³/d)
2022	5600	1232	1047	4189
2027	6080	1338	1137	4548
2032	6500	1430	1216	4862
2037	6820	1500	1275	5101
2038	6880	1514	1287	5146
2042	6960	1531	1302	5206



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Year	Population	ADF (m³/d)	ADWF (m³/d)	PWWF (m³/d)
2047	7060	1553	1320	5281
2052	7160	1575	1339	5356

6.2.2 Influent Load Projection

Using the projected influent ADF and the adopted per capita loads as per Table 5-3, the future influent loads are calculated.

Table 6-3: Projected influent average loads

Year	Population	BOD₅ (kg/d)	TSS (kg/d)	TKN (kg/d)	NH4 (kg/d)	COD (kg/d)	TP (kg/d)
2022	5600	426	414	75	53	1081	12
2027	6080	462	450	81	58	1173	13
2032	6500	494	481	87	62	1255	14
2037	6820	518	505	91	65	1316	14
2038	6880	523	509	92	66	1328	14
2042	6960	529	515	93	66	1343	15
2047	7060	537	522	94	67	1363	15
2052	7160	544	530	95	68	1382	15

6.3 Effluent Projections

6.3.1 Effluent Flow

Based on the 220 L/person/day contribution adopted, the population projections, the 80% ratio between ADWF and ADF, and the peak factor of 4 between PWWF and ADWF, the future flows are calculated for the design horizon.

Table 6-4: Projected effluent flow

Year	Population	ADF (m³/d)	ADWF (m³/d)	PWWF (m³/d)
2022	5600	1232	986	3942
2027	6080	1338	1070	4280
2032	6500	1430	1144	4576
2037	6820	1500	1200	4801
2038	6880	1514	1211	4844
2042	6960	1531	1225	4900
2047	7060	1553	1243	4970
2052	7160	1575	1260	5041

The effluent instantaneous peak flow is limited by the capacity of the outfall pipe. WBOPDC indicated the maximum capacity of the outfall is 25 L/s, therefore this value will be used as the maximum instantaneous effluent flow.

6.3.2 Effluent Load Projection

The total average effluent concentrations from Table 5-4 are used as the starting effluent quality for year 2022. Note the projections do not include any future upgrades to the WWTP that could improve the effluent quality. It is assumed that an additional 10% increment in concentrations will



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occur over the 30 year horizon to allow for reduced treatment efficiency due to lower hydraulic retention times through the plant process units.

Table 6-5: Projected effluent average loads and concentrations

Year	Population	BOD5 (mg/L)	TSS (mg/L)	TN (mg/L)	BOD₅ (kg/d)	TSS (kg/d)	TN (kg/d)
2022	5600	12	20	43	14	24	53
2027	6080	12	20	44	16	27	59
2032	6500	12	20	45	17	29	64
2037	6820	12	21	46	18	31	68
2038	6880	12	21	46	19	31	69
2042	6960	12	21	46	19	32	71
2047	7060	13	21	47	20	33	73
2052	7160	13	22	48	20	34	75

6.3.3 Effluent Microbiological Projections

The median values for the microbiological quality of the effluent shown on Table 5-5 are expected to increase by 10% on 2052 due to a reduced treatment efficiency when treating higher volumes of wastewater.

Year	Median of Faecal Coliforms (cfu/100ml)	Median of Enterococci (cfu/100ml)
2012-2022	12	10
2052	13	11

6.4 Other Assumptions

The future flow and load projections assume the following:

- No septage receival facility is installed at the Katikati WWTP.
- The current proportion of trade waste flow and load remains consistent throughout the design horizon.
- Projections for the effluent quality do not consider future upgrades that could improve the treated effluent quality.
- Current I&I rates will remain at same levels as they are at present, i.e. PWWF/ADWF will not increase above 4.



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WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2010-2011 KATIKATI WWTP INFLOW - RC 24895

2010/2011	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	1162	800	457	397	801	740	744	1369	898	981	1153	980
2	1063	969	838	397	761	781	766	1260	761	960	1533	936
3	1044	956	862	397	771	745	787	1147	811	955	1980	870
4	920	1115	924	397	767	711	776	1109	783	975	1779	899
5	945	1248	853	397	649	742	771	1030	825	924	1597	1013
6	953	1092	808	397	808	769	734	957	887	967	1418	903
7	900	1161	824	397	780	747	846	925	887	846	1514	954
8	900	1186	848	397	825	757	762	851	805	863	1359	932
9	900	652	920	397	792	825	763	864	801	858	1271	926
10	900	1120	215	397	844	789	767	847	798	805	965	1420
11	900	1074	987	407	927	748	750	961	782	826	1207	1398
12	900	963	1332	793	885	754	727	958	773	523	1352	1422
13	900	963	794	709	779	789	722	862	778	779	1299	1300
14	900	963	1306	0	769	672	759	882	829	799	1272	1213
15	397	963	1219	822	770	807	754	789	782	789	1173	273
16	964	963	1126	842	790	758	760	810	780	758	1070	273
17	630	1295	1163	756	819	787	786	802	783	855	1092	955
18	841	1246	1112	800	767	768	732	804	312	793	1049	1066
19	842	1109	1148	789	797	873	800	799	795	863	1029	1042
20	797	519	1152	758	755	865	762	793	764	801	956	1108
21	771	1212	1002	754	767	943	761	792	752	785	971	1187
22	982	1217	1098	808	818	846	743	771	1169	734	925	1128
23	946	1147	352	804	1171	833	1118	773	928	719	904	1089
24	1017	1098	352	721	1143	830	950	769	898	783	909	1143
25	945	1012	352	797	1080	712	822	789	845	847	879	1083
26	945	194	352	771	1017	784	865	768	923	2304	1105	1045
27	599	1050	397	752	867	795	823	778	1081	1769	1108	1033
28	901	1025	397	756	738	761	834	770	1149	1548	1129	948
29	885	1005	397	774	720	838	2720		1077	607	1061	962
30	882	1040		762	754	771	1777		1064	1258	1037	991
31	828	494		739		764	1494		1015		976	
Total (Month)	27459	30851	23587	19084	24931	24304	28175	25029	26535	28274	37072	30492
Average	886	995	813	616	831	784	909	894	856	942	1196	1016
Maximum	1162	1295	1332	842	1171	943	2720	1369	1169	2304	1980	1422
Minimum	397	194	215	0	649	672	722	768	312	523	879	273

Data not actually measured
Data out of typical ranges

File Location: Inflow Data.xlsx 2010-11

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2011-2012 KATIKATI WWTP INFLOW - RC 24895

2011/2012	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	954	866	846	759	751	758	1890	795	810	884	815	808
2	923	838	826	746	829	772	1781	762	799	892	809	801
3	818	826	872	785	795	768	1836	807	793	880	798	767
4	884	835	852	839	773	810	1836	809	833	883	816	874
5	843	854	832	793	783	882	1836	787	832	847	804	789
6	851	840	831	791	774	772	1277	842	787	883	804	850
7	876	840	854	793	820	828	1557	847	835	815	747	844
8	877	841	774	783	785	842	1557	825	765	785	1130	893
9	864	850	801	764	775	791	1557	807	851	899	927	818
10	876	811	847	721	768	747	1557	818	799	861	874	847
11	912	917	825	881	804	804	1733	789	954	856	864	833
12	1015	998	823	863	793	773	1491	804	954	855	817	819
13	1045	878	799	876	779	343	1421	804	954	893	867	820
14	1136	851	837	895	770	796	1317	860	954	849	855	792
15	1208	853	841	861	735	1025	1199	789	954	828	889	738
16	1236	851	827	851	766	975	1140	835	954	859	936	858
17	1143	827	806	859	791	932	1053	548	954	807	879	806
18	1092	856	817	858	788	1046	1059	850	954	834	852	770
19	1030	856	843	844	802	1110	996	699	954	824	866	754
20	956	865	828	875	791	1030	957	779	954	822	876	778
21	188	853	838	872	828	1010	947	803	954	818	835	830
22	959	863	835	801	803	946	900	785	954	842	828	830
23	940	838	822	792	770	976	915	887	1316	853	823	817
24	972	827	810	854	803	971	852	881	1207	778	822	335
25	926	833	759	846	806	815	815	832	1192	851	827	796
26	927	855	876	805	758	843	818	778	1162	804	822	809
27	884	866	827	767	825	866	823	818	1058	816	820	809
28	876	845	827	793	826	855	834	768	1036	821	873	843
29	855	811	827	769	747	823	759	761	986	829	841	844
30	839	818	827	867	809	962	805		982	840	800	841
31	898	835		800		2129	832		935		851	
Total (Month)	28803	26397	24829	25403	23647	28000	38350	23169	29426	25308	26367	24013
Average	929	852	828	819	788	903	1237	799	949	844	851	800
Maximum	1236	998	876	895	829	2129	1890	887	1316	899	1130	893
Minimum	188	811	759	721	735	343	759	548	765	778	747	335

Data not actually measured
Data out of typical ranges

File Location: Inflow Data.xlsx 2011-12

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2012-2013 KATIKATI WWTP INFLOW - RC 24895

2012/2013	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	783	1685	1652	808	801	695	941	721	706	756	1197	892
2	827	1684	1649	926	896	659	784	777	926	758	1194	839
3	2621	1680	1644	866	926	875	705	750	790	848	1206	782
4	4299	1679	1648	822	845	818	948	872	667	974	1208	781
5	2389	1678	1608	776	849	1015	1043	907	845	845	1210	838
6	1960	1679	1131	809	846	879	724	744	713	865	1225	966
7	1654	1679	1066	820	794	852	823	921	795	787	1259	1021
8	1462	1680	999	759	793	868	796	788	754	804	1249	771
9	1361	1678	1034	434	845	842	817	779	736	771	1242	890
10	1236	1651	495	902	821	857	819	687	748	724	1227	1176
11	1149	378	1018	1355	863	900	805	674	789	661	1259	1063
12	1080	1562	894	965	860	856	905	751	740	692	1223	997
13	1053	1680	894	757	1138	903	818	717	684	733	1072	2772
14	1000	1679	894	994	1007	842	884	826	778	638	1080	2404
15	922	1678	894	729	909	819	685	739	696	584	1064	2312
16	1053	1675	894	702	505	917	714	634	698	1104	1087	1234
17	1079	1671	894	672	832	763	664	946	848	1133	1185	1187
18	1014	1580	574	756	866	759	705	781	837	1127	1193	1174
19	956	1471	848	758	933	793	759	726	882	1075	1199	2360
20	923	1669	956	969	823	1092	789	786	819	1097	1185	2400
21	881	1660	866	1046	796	1085	815	764	772	1164	1171	1847
22	910	1664	918	1096	930	857	649	780	752	1139	1113	1367
23	2805	1663	871	399	775	820	788	692	751	1130	1087	1367
24	3109	1664	884	797	812	1154	751	780	756	1129	975	1367
25	2537	1658	868	726	791	1320	780	762	833	1157	925	1367
26	2246	1657	826	734	732	959	768	654	758	1188	1006	1367
27	1875	1654	970	764	681	1023	840	753	728	1190	1067	2824
28	1657	1657	908	825	774	873	712	758	815	1192	1079	2304
29	1505	1625	873	621	657	951	756		745	1194	1019	2784
30	2410	1659	893	997	691	907	764		751	1197	976	2800
31	2253	1657		893		999	746		732		926	
Total (Month)	51009	50031	30562	25477	24790	27948	24497	21468	23845	28653	35106	46253
Average	1645	1614	1019	822	826	902	790	767	769	955	1132	1542
Maximum	4299	1685	1652	1355	1138	1320	1043	946	926	1197	1259	2824
Minimum	783	378	495	399	505	659	649	634	667	584	925	771

Data not actually measured
Data out of typical ranges

File Location: Inflow Data.xlsx 2012-13

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2013 - 2014

KATIKATI WWTP INFLOW - RC 24895 Not for consent

2013/2014	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1				1096	785	429	15	685	27	14	557	989
2				1090	785	18	15	695	27	30	515	965
3				931	785	18	14	692	22	27	532	896
4				745	785	2	14	705	14	29	541	932
5				701	785	17	0	676	14	15	525	806
6				1058	785	0	4	669	16	16	557	890
7				893	785	10	14	658	14	15	437	1308
8				678	785	2	0	841	15	15	515	1245
9				856	785	1001	5	743	1	16	804	1119
10				1239	785	914	750	714	15	12	783	1268
11				877	825	911	726	635	0	16	401	1320
12				1072	804	860	700	659	727	8	285	2087
13				263	793	817	723	632	650	0	380	2208
14				763	779	807	704	640	731	827	498	2209
15				414	793	784	723	655	753	809	806	149
16				708	778	773	695	628	732	793	644	77
17				299	779	742	648	664	799	1415	503	2465
18				709	783	736	737	604	752	1169	314	2194
19				887	754	717	727	617	738	1062	375	1613
20				644	757	743	700	651	720	1029	400	614
21				852	761	715	799	656	746	998	454	599
22				722	802	674	777	594	715	967	465	601
23				654	768	675	724	653	729	920	477	854
24				1052	765	717	714	633	758	853	502	1299
25				937	762	610	699	606	706	883	649	1291
26				606	733	699	652	601	719	0	0	1288
27				916	729	737	761	599	708	863	457	1282
28				620	1095	678	708	591	702	817	480	1273
29				519	693	1001	702		734	805	436	1265
30				674	747	771	710		710	783	489	1255
31						742	690		732		699	
Total (Month)	0	0	0	23474	23550	18320	15850	18396	14726	15206	15480	36359
Average	#DIV/0!	#DIV/0!	#DIV/0!	782	785	591	511	657	475	507	499	1212
Maximum	0	0	0	1239.2	1095	1001	799	841	799	1415	806	2465
Minimum	0	0	0	263	693	0	0	591	0	0	0	77

Data not actually measured
Data out of typical ranges

File Location: Inflow Data.xlsx 2013-14

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2014 - 2015 KATIKATI WWTP INFLOW - RC 24895 Not for consent

2014/2015	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	124	103	87	60	842	52	69	904	753	916	1083	1288
2	151	83	88	65	790	70	73	913	937	896	1034	1279
3	119	82	84	71	916	52	85	901	958	1025	1033	1271
4	127	89	104	49	1175	54	73	925	889	922	1011	1367
5	105	85	150	49	968	54	70	894	873	883	997	1349
6	88	88	88	31	362	69	57	898	846	1104	999	1343
7	95	88	105	50	851	53	68	949	802	1028	956	1300
8	98	101	90		1563	73	691	937	977	976	998	1269
9	100	82	103		996	71	53	915	1007	927	1124	1222
10	115	82	95	48	783	71	69	902	853	956	1024	1074
11	120	68	105	68	1073	56	71	919	625	993	985	706
12	144	66	100	50	917	52	1033	930	947	962	933	844
13	121	94	138	44	832	56	890	930	1435	962	1028	1799
14	122	98	126	56	805	67	958	921	1192	1011	985	1799
15	135	84	124	69	837	52	921	875	796	995	1042	1169
16	105	81	125	72	965	53	917	904	1386	973	1076	932
17	126	82	128	50	978	83	936	909	1263	995	1012	914
18	105	80	115	47	921	94	914	922	1148	1378	1029	838
19	102	97	106	34	921	74	943	907	1046	1176	1010	831
20	90	125	96	35	921	0	926	904	743	1126	978	904
21	88	135	104	50	876	73	957	863	682	1137	966	1100
22	111	119	107	52	819	92	981	854	872	1077	985	1076
23	98	125	120	49	692	95	967	906	692	1056	1041	1050
24	91	112	106	32	949	71	950	886	729	1025	1124	1476
25	100	89	104	45	1037	66	940	912	951	1006	1045	1180
26	99	103	89	49	862	74	986	918	778	1056	1055	761
27	84	104	100	49	705	73	963	882	1053	1093	1083	1061
28	84	102	comms error	50	650	77	912	898	990	1101	1063	1115
29	85	84	86	51	449	56	952		944	1066	1047	1354
30	98	104	80	53	295	72	912		772		1034	1322
31	96	98		50		67	858		1126		994	
Total (Month)	3326	2933	3053	1478	25751	2022	20195	25378	29064	29821	31774	34989
Average	107	95	105	51	858	65	651	906	938	1028	1025	1166
Maximum	151	135	150	72	1563.4	95	1033	949	1435	1378	1124	1799
Minimum	84	66	80	31	295	0	53	854	625	883	933	706

Data not actually measured
Data out of typical ranges

File Location: Inflow Data.xlsx 2014-15

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2015 - 2016 KATIKATI WWTP INFLOW - RC 24895 Not for consent

2015/2016	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	1133	1031	1643	926	909	1991	868	973	1022	1195	969	1170
2	1092	947	1911	926	908	962	977	1036	1059	1164	1005	1100
3	861	1291	2013	926	862	1765	1038	1015	1031	1174	1033	1074
4	990	1461	2034	926	875	1030	1040	957	996	1158	1029	1061
5	1011	1002	2032	926	863	967	1027	949	992	1068	1001	1049
6	310	1687	2036	926	852	915	998	1056	977	1081	1011	1040
7	568	1300	2049	926	854	1839	934	1049	947	1045	1056	915
8	1435	1260	2081	926	849	2757	1008	1037	968	1004	979	945
9	1380	1233	2111	926	826	897	1042	1009	963	985	1086	1030
10	1519	1318	2134	926	840	896	957	1010	963	1009	998	1172
11	1200	1246	2146	926	821	876	945	983	934	940	965	1163
12	828	1404	2156	926	873	901	939	993	993	1019	1025	1123
13	699	1396	2166	926	924	1828	1025	968	965	979	1030	1116
14	843	1192	2171	926	893	895	979	967	984	1030	1028	1078
15	972	1521	2176	926	860	1800	933	970	963	995	1036	1056
16	1389	1321	1264	918	993	890	956	947	1078	988	1000	1043
17	1254	2730	2040	922	1034	881	925	973	1161	1121	981	1036
18	1226	1460	2031	932	925	1786	902	1240	1476	1210	1007	1031
19	1750	1470	2108	927	896	975	1100	1517	1251	1086	1030	1025
20	1486	1260	1207	921	939	1909	968	1138	1219	1055	1038	1354
21	1300	1237	1661	925	1907	894	992	1073	1325	1017	1016	1147
22	493	1166	1999	919	1194	866	974	1078	1239	1062	1052	1342
23	657	1309	1996	953	1055	1744	973	1022	1118	1041	997	1859
24	1356	1311	1746	866	991	1035	968	1037	1704	980	1045	1139
25	1466	1335	1150	951	947	1206	962	1005	1888	1121	1032	1548
26	1634	500	1114	988	1351	2299	970	1019	1715	1055	1031	1883
27	1347	119	1553	936	1351	923	923	1008	1564	1061	998	1882
28	1196	294	1074	924	1351	1613	991	1008	1575	1004	976	1815
29	1439	499	1098	892	1351	2772	985	973	1448	1012	1153	1747
30	1335	485	1058	895	981	905	973		1315	991	1106	1890
31	1269	1346		948		900	906		1287		1078	
Total (Month)	35434	37131	53957	28707	30270	41915	30178	30010	37120	31650	31791	37830
Average	1143	1198	1799	926	1009	1352	973	1035	1197	1055	1026	1261
Maximum	1750	2730	2176	988	1907	2772	1100	1517	1888	1210	1153	1890
Minimum	310	119	1058	866	821	866	868	947	934	940	965	915

Data not actually measured
Data out of typical ranges

File Location: Inflow Data.xlsx 2015-16

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2016-2017

KATIKATI WWTP INFLOW - RC 24895 Not for consent

2016/2017	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	1803		1137	2076	1010	945				0	1190	2266
2	1635		1100	1961	956	988				0	1194	2021
3	1503		1076	1832	964	928				0	1105	1813
4	1427		1076	1846	965	1023					1085	1712
5	1329		1068	1691	965	894				0	1087	1530
6	1256		1078	1609	930	921				0	1079	1407
7	1210		1020	1618	1063	937				0	1081	1407
8	3880		1020	1620	1063	1046				0	1081	1318
9	2612		1027	1572	1014	1016				1685	1073	1229
10	2185		1061	1429	1014	989				2965	1055	1229
11	1943		1061	1395	962	945				2978	1080	1170
12	1720		1004	1355	974	959				2476	1757	1170
13	1612		1004	1324	952	965				2192	1760	1101
14	1667		966	1327	968	894				2460	1588	1098
15	1622		938	1209	968	898				5225	1393	1098
16	1575		936	1140	987	917				5238	1351	1095
17	1490		962	1138	987	896				5174	1245	1073
18	1494		984	1110	1028	914				3748	1239	1073
19	1431		1099	1075	1028	927				3092	1288	1030
20	1450		1099	1018	968	909				2789	1288	1064
21	1374		1286	1046	979	945				2527	1283	1064
22	1311		1286	1046	1036	963				2209	1283	1121
23	1415		1220	1038	1036	1076				1985	1221	1429
24	1530		1293	1033	1009	977				1830	1157	1429
25	1556		1760	1033	979	930				1669	1124	1295
26	1585		2576	966	976	866				1518	1109	1263
27	1513		2576	995	976	896				1455	3018	1240
28	1531		2234	995	993	937				1386	5008	1140
29	1511		2001	976	993	914				1283	5008	1138
30	1497		2064	989	955	924				1246	3375	1124
31	1484			1010		967					2647	
Total (Month)	51151	0	39012	40472	29698	29306	0	0	0	57130	51252	39147
Average	1650	#DIV/0!	1300	1306	990	945	#DIV/0!	#DIV/0!	#DIV/0!	1970	1653	1305
Maximum	3880	0	2576	2076	1063	1076	0	0	0	5238	5008	2266
Minimum	1210	0	936	966	930	866	0	0	0	0	1055	1030

Data not actually measured
Data out of typical ranges

File Location: Inflow Data.xlsx 2016-17

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2017-2018

KATIKATI WWTP INFLOW - RC 24895 Not for consent

2017/2018	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	1124	1062	1495	1158	1704	879	942					
2	1112	1048	1503	1050	1505	938	1018					
3	1331	988	1647	1047	1397	889	1234					
4	1331	1051	1652	1047	1292	886	1200					
5	1224	1068	1652	1059	1185	876	1084					
6	1203	1068	1610	1059	1178	850	1041					
7	1165	1063	1411	1040	1176	855	1106					
8	1485	1048	1318	984	1105	850	1004					
9	1485	1048	1318	1425	1090	837	985					
10	1458	1110	1250	1592	1079	848	997					
11	1458	1110	1325	1606	1079	868	953					
12	1413	1099	1375	1524	1050	868	940					
13	1377	1103	1375	1494	979	818	995					
14	1246	1072	1367	1432	1051	799	1002					
15	1196	1072	1343	1275	1051	819	933					
16	1219	1071	1308	1216	974	835	911					
17	1219	1045	1308	1115	974	834	886					
18	1111	1037	1245	1115	969	959	981					
19	1090	1042	1246	1074	969	1036	957					
20	1048	1042	1248	1074	932	900	978					
21	1126	1014	1248	1015	1042	842	907					
22	1259	1066	1178	1002	1042	856	981					
23	1259	1066	1148	942	946	877	1017					
24	1245	1050	1165	1045	955	890	965					
25	1245	1041		1045	955	879	942					
26	1184	1037	1096	1028	968	885	980					
27	1117	1001	1104	971	974	891	950					
28	1113	971	1120	1258	984	884	1012					
29	1063	1390	1261	1582	984	863	963					
30	1132	1390	1261	1786	971	877	968					
31	1132	1407		1810		861	956					
Total (Month)	38170	33680	38577	37870	32560	27045	30788	0	0	0	0	0
Average	1231	1086	1330	1222	1085	872	993	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Maximum	1485	1407	1652	1810	1704	1036	1234	0	0	0	0	0
Minimum	1048	971	1096	942	932	799	886	0	0	0	0	0

Data not actually measured
Data out of typical ranges

File Location: Inflow Data.xlsx 2017-18

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2018-2019

KATIKATI WWTP INFLOW - RC 24895 Not for consent

2018/2019	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	0	182	0	0	0	0	0	877	873	926	951	914
2	0	194	0	0	0	0	0	933	873	1008	944	944
3	0	196	0	450	0	0	0	933	870	1012	935	994
4	0	184	0	450	819	476	0	892	871	934	935	994
5	0	333	0	53	917	476	0	892	877	935	941	893
6	0	333	0	0	917	4	0	882	898	929	946	922
7	0	290	0	0	880	4	0	882	907	954	946	922
8	0	254	0	0	890	0	0	876	884	954	904	919
9	7	238	0	0	889	0	0	876	868	953	907	983
10	7	238	0	0	890	0	0	860	907	944	907	986
11	0	210	0	0	890	1	0	880	907	935	976	920
12	75	210	0	0	1011	2	0	880	895	935	976	920
13	183	224	288	0	1015	2	0	870	871	969	942	960
14	192	254	0	0	961	0	0	888	873	969	942	960
15	296	255	0	391	912	0	0	888	873	955	931	944
16	333	210	0	838	900	0	0	864	878	955	931	920
17	333	212	0	873	911	0	680	863	878	912	946	920
18	263	199	0	874	47	0	898	939	842	941	946	927
19	264	203	0	926	0	0	898	941	865	978	907	927
20	248	203	0	937	0	0	877	890	865	978	953	888
21	247	288	288	63	653	0	886	876	922	922	953	910
22	231	201	288	0	870	0	871	876	927	881	915	943
23	246	186	0	401	910	0	911	870	880	944	920	859
24	246	198	0	876	910	0	911	887	880	949	923	900
25	234	198	0	876	1183	0	926	906	903	981	923	945
26	206	195	0	64	1183	0	868	906	916	981	938	914
27	203	167	0	0	1146	0	877	889	916	930	938	915
28	221	0	0	0	48	0	903	889	901	931	893	927
29	221	0	0	0	0	0	904		922	940	964	927
30	212	0	0	0	1	0	908		922	951	964	925
31	212	0		0		0	888		901		937	
Total (Month)	4680	6055	864	8072	19753	965	13206	24905	27565	28486	29034	27922
Average	151	195	29	260	658	31	426	889	889	950	937	931
Maximum	333	333	288	937	1183	476	926	941	927	1012	976	994
Minimum	0	0	0	0	0	0	0	860	842	881	893	859

Data not actually measured
Data out of typical ranges

File Location: Inflow Data.xlsx 2018-19

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2019-2020

KATIKATI WWTP INFLOW - RC 24895 Not for consent

2019/2020	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	907	1233	1001	942	545	0	0	0	899	941	963	1285
2	889	1181	1002	942	545	0	0	0	896	939	932	1293
3	900	1117	984	995	0	0	0	0	904	952	877	1212
4	1227	1118	1190	1010	0	0	0	0	910	946	988	1160
5	1227	1169	1196	1010	0	0	0	0	901	955	934	1070
6	1178	1169	1110	938	0	0	0	12	909	919	998	1081
7	1040	1103	1123	967	0	0	0	467	915	909	998	1047
8	992	1068	1123	971	0	0	0	870	913	904	991	1013
9	940	1119	1202	1032	0	0	0	918	921	919	994	1020
10	940	1119	1202	1032	0	0	0	963	906	992	980	1025
11	921	1115	1258	938	0	0	0	963	897	963	941	1032
12	936	1122	1258	964	0	0	0	923	900	889	966	991
13	957	1145	1177	1033	0	0	0	923	917	899	976	996
14	957	1151	1105	1033	0	0	0	949	925	892	976	1004
15	960	1131	1102	1251	0	0	0	949	922	934	989	1017
16	960	1131	1059	1251	0	0	0	921	927	941	995	978
17	965	1069	1059	1140	0	0	0	959	921	881	1018	987
18	971	1069	981	1065	0	0	0	966	928	943	1024	1046
19	953	1065	981	1071	0	0	0	897	946	949	1024	1017
20	1018	1065	985	1013	0	0	0	902	953	943	983	1055
21	1021	1125	991	1013	0	0	0	902	959	893	990	1020
22	1004	1136	936	1007	0	0	0	892	978	988	981	1135
23	1011	1136	936	964	0	0	0	943	912	886	991	1001
24	947	1234	933	973	0	0	0	957	943	944	991	965
25	1036	1239	859	1011	0	0	0	958	960	947	1008	1443
26	1274	1100	559	1011	0	0	0	919	967	951	1014	1177
27	1279	1098	1383	1009	0	0	0	900	1179	963	1017	1394
28	1208	1054	1383	977	0	0	0	891	1330	929	1038	1498
29	1109	1023	968	977	0	0	0	898	1344	923	1045	1341
30	1274	1023	930	933	0	0	0		1218	961	1029	1231
31	1277	1002		935		0	0		1076		1036	
Total (Month)	32278	34629	31976	31408	1090	0	0	20842	30176	27995	30687	33534
Average	1041	1117	1066	1013	36	0	0	719	973	933	990	1118
Maximum	1279	1239	1383	1251	545	0	0	966	1344	992	1045	1498
Minimum	889	1002	559	933	0	0	0	0	896	881	877	965

Data not actually measured
Data out of typical ranges
Amended data

File Location: Inflow Data.xlsx 2019-20 fixed

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2020-2021

KATIKATI WWTP INFLOW - RC 24895 Not for consent

2020/2021	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	1230	985	1045	976	976	944	965	1023	1019	1067	988	1066
2	1122	1017	1056	1000	980	1022	953	974	1124	1082	961	1014
3	1126	1068	1025	983	878	945	965	985	1090	1031	986	957
4	1024	1058	1030	961	907	974	1057	989	1083	1016	973	1031
5	1043	1023	992	1007	1038	919	1032	979	1102	1016	969	968
6	1214	936	1005	972	977	964	1036	1003	1103	1030	987	952
7	1133	1154	977	935	921	947	981	952	1055	1017	967	1017
8	1258	1090	1048	932	979	919	981	1035	1057	1008	933	1038
9	1283	106	1002	963	943	953	1045	938	1018	984	942	972
10	1246	1990	605	931	840	942	1016	983	987	960	994	1106
11	1178	1052	1355	955	997	967	1029	987	980	1034	973	998
12	1119	834	1048	925	1057	948	982	1025	1038	1005	975	1033
13	1092	922	1003	516	960	957	981	966	1047	1050	977	1008
14	1070	1430	960	1457	929	921	987	967	978	1016	1024	1052
15	535	1107	932	890	942	903	973	1068	939	1024	1150	1030
16	1875	1063	956	977		976	966	1302	968	1040	1066	1103
17	1326	1066	972	989	1880	938	956	1165	971	1003	1023	1040
18	1270	986	968	949	923	930	997	1103	976	1030	965	1074
19	1253	1319	987	954	962	496	939	1073	994	1010	982	1604
20	1235	1244	1021	914	968	1408	1018	1018	1006	971	1064	2758
21	1270	1199	1011	971	956	943	1020	1043	993	1071	1019	2252
22	1255	1248	969	1029	939	940	1003	1051	1021	991	975	1830
23	1236	1206	954	985	966	964	986	946	985	981	976	1650
24	1203	1231	923	965	884	1034	937	978	992	955	993	1458
25	1189	1219	1018	932	1112	908	1029	975	995	953	1006	1313
26	1124	1248	991	1004	1009	972	966	1031	980	1000	1005	1270
27	1172	1226	906	970	1006	996	976	1062	1022	936	997	1252
28	1114	1186	1005	923	975	1023	959	1012	987	979	971	1256
29	1086	1120	964	929	908	994	1020		998	949	967	1166
30	1047	1117	995	921	943	1029	951		975	1010	1015	1216
31	1030	1077		907		991	960		1010		990	
Total (Month)	36358	34527	29723	29722	28755	29767	30666	28633	31493	30219	30813	37484
Average	1173	1114	991	959	992	960	989	1023	1016	1007	994	1249
Maximum	1875	1990	1355	1457	1880	1408	1057	1302	1124	1082	1150	2758
Minimum	535	106	605	516	840	496	937	938	939	936	933	952

Data not actually measured
Data out of typical ranges
Amended data

File Location: Inflow Data.xlsx 2020-21 fixed

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2021-2022

KATIKATI WWTP INFLOW - RC 24895 Not for consent

2021/2022	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	1161	1212	1004	1059	1165	950						
2	1145	1151	1003	1035	1099	986						
3	1098	1063	978	1064	1043	1031						
4	1080	1088	934	1058	1059	952						
5	1069	1020	969	1057	1022	988						
6	950	1068	998	1048	1149	979						
7	1100	1076	940	1025	1140	974						
8	1075	1083	971	1147	1099	1007						
9	1001	1070	1010	1133	1020	1014						
10	1031	1106	966	1085	991	965						
11	989	1021	1032	1053	1027	991						
12	996	1031	1015	1021	991	942						
13	1011	1027	988	1083	978	1030						
14	1038	1082	937	1072	1035	1006						
15	997	1068	1153	1043	1042	1208						
16	983	995	1678	1031	998	1065						
17	981	972	1731	988	970	1052						
18	1024	983	1610	1364	994	1052						
19	1019	1014	1446	1090	1024	1052						
20	1005	974	1307	1119	999	1149						
21	1024	933	1232	1015	998	1002						
22	1053	991	1186	1012	962	1028						
23	1087	960	1417	1003	924	1048						
24	1062	931	1301	966	1059	1046						
25	1064	960	1289	1076	967	942						
26	1273	953	1100	1095	992	1022						
27	1243	936	1156	1060	981	1092						
28	1241	1001	1119	1055	983	989						
29	1188	998	1110	1222	1017	1051						
30	1116	992	1037	1169	958	1052						
31	1155	897		1076		1046						
Total (Month)	33259	31656	34617	33324	30686	31711	0	0	0	0	0	0
Average	1073	1021	1154	1075	1023	1023	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Maximum	1273	1212	1731	1364	1165	1208	0	0	0	0	0	0
Minimum	950	897	934	966	924	942	0	0	0	0	0	0

Data not actually measured Data out of typical ranges

File Location: Inflow Data.xlsx 2021-22

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2012- 2013

KATIKATI WWTP FLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

2012/2013	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	833	1685	1690	809	822	728	1001	792	796	863	1478
2	821	1684	1687	927	920	690	835	856	1062	865	1477
3	1339	1684	1686	869	950	924	763	824	884	973	1491
4	1587	1684	1690	825	869	861	1046	959	751	901	1496
5	1596	1683	1641	780	874	1065	1101	1001	962	981	1502
6	1602	1685	1158	811	873	928	785	825	797	987	1529
7	1608	1687	1097	820	820	895	890	1027	899	916	1562
8	1610	1688	1521	764	820	916	862	864	861	929	1551
9	1613	1690	1065	434	873	890	879	853	843	900	1542
10	1613	1661	525	915	849	911	883	760	857	833	1531
11	1614	389	1048	1365	892	945	868	754	901	761	1569
12	1616	1574	904	973	890	904	975	826	842	789	1487
13	1615	1695	904	771	1176	948	889	802	788	870	1340
14	1617	1694	904	1003	1039	886	962	911	883	740	1348
15	1617	1694	904	739	942	867	747	807	789	696	1328
16	1613	1694	904	838	505	966	777	715	798	1294	1385
17	1612	1690	904	681	865	815	728	1049	981	1326	1756
18	1612	1592	603	764	899	808	769	860	939	1316	1474
19	1611	1492	883	765	969	842	827	813	1000	1245	1464
20	1608	1693	992	986	853	1175	852	872	930	1295	1113
21	1605	1684	902	1067	830	1137	886	852	883	1369	1483
22	1607	1689	957	1112	966	910	649	873	859	1331	1381
23	1606	1692	908	399	805	877	860	776	866	1336	810
24	1608	1688	923	813	846	1242	818	871	866	1327	1203
25	1609	1690	907	744	818	1406	857	843	936	1367	1159
26	1610	1686	864	751	767	1018	842	855	866	1399	1260
27	1614	1685	1010	782	709	1083	910	845	832	1402	1344
28	1614	1687	950	845	804	939	789	843	923	1405	1332
29	1613	1659	919	621	688	1018	834		855	1409	1267
30	1615	1693	1071	1021	723	965	831		857	1413	1199
31	1616	1691		915		1070	824		845		1159
Total (Month)	48072	50582	32119	25907	25653	29629	26536	23925	27150	33240	43019
Average	1551	1632	1071	836	855	956	856	854	876	1108	1388
Maximum	1617	1695	1690	1365	1176	1406	1101	1049	1062	1413	1756
Minimum	821	389	525	399	505	690	649	715	751	696	810

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2013 - 2014

KATIKATI WWTP FLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

2013/2014	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1				1129	798	551	884	828	27	616	557
2				1124	973	575	790	774	27	1411	515
3				955	850	416	789	797	22	925	532
4				765	511	1101	875	782	14	962	541
5				722	773	1413	907	414	14	962	525
6				1090	1135	1487	1044	672	16	1707	557
7				919	1107	1331	872	716	14	545	437
8				698	1190	1053	1077	1979	15	606	515
9				898	1339	1361	1062	115	1	451	804
10				1267	1126	1548	778	476	15	773	783
11				904	964	1567	739	1570	0	1238	401
12				1105	661	1337	629	2397	727	1668	285
13				263	763	908	456	3027	650	1635	380
14				810	789	818	166	484	731	1199	498
15				414	807	686	653	1152	753	710	806
16				727	1133	981	1116	1676	732	1403	644
17				299	844	967	1045	2411	799	2043	503
18				737	933	814	869	186	752	2085	314
19				921	561	805	715	1114	738	1876	375
20				672	520	731	967	1920	720	1644	400
21				889	891	665	1295	2647	746	1497	454
22				746	989	630	1108	377	715	806	465
23				678	664	687	1016	1237	729	728	477
24				1104	560	820	798	1940	758	1828	502
25				972	579	782	246	2503	706	1364	649
26				628	544	744	556	19	719	987	0
27				958	1245	952	827	629	708	728	457
28				646	1317	1119	949	1356	702	623	480
29				539	699	969	1080		734	678	436
30				704	652	945	1094		710	758	489
31				922		1042	939		732		699
Total (Month)	0	0	0	25202	25915	29805	26341	34197	14726	34454	15480
Average	#DIV/0!	#DIV/0!	#DIV/0!	813	864	961	850	1221	475	1148	499
Maximum	0	0	0	1267	1339	1567	1295	3027	799	2085	806
Minimum	0	0	0	263	511	416	166	19	0	451	0

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2014 - 2015

KATIKATI WWTP FLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

2014/2015	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	1484	1610	1119	1028	842	461	1022	766	946	1011	1000
2	1461	816	1247	1404	790	1082	685	649	770	994	1076
3	1262	1328	1263	1253	916	694	1054	782	969	977	1047
4	1487	1263	1151	935	1175	906	665	751	987	955	937
5	1119	1215	1125	905	968	800	448	1071	921	1006	953
6	1480	1161	1241	685	362	633	1141	1115	890	1228	1150
7	1481	1210	1171	909	851	979	1430	1212	882	1084	1276
8	1389	1372	1165	732	1563	685	802	774	823	961	1236
9	1390	1378	1074	732	996	860	961	1184	1004	1020	1129
10	1182	1353	883	817	783	1019	884	899	1036	945	997
11	1180	1235	1083	989	1073	905	769	941	867	1039	1118
12	1296	1123	1188	701	917	864	777	1033	575	873	1081
13	1499	1078	1431	1023	832	897	1159	706	980	1054	1016
14	1505	1040	1485	1260	805	966	1115	921	1225	1116	1029
15	1488	1090	1565	1011	837	1024	813	881	817	954	1250
16	1466	1029	1535	917	965	1272	761	1017	1437	966	1195
17	1414	985	1463	841	978	1587	706	888	1293	930	1125
18	1365	805	1514	1029	921	1594	605	634	1189	1234	1091
19	1302	868	1509	1276	921	1601	976	818	1076	1609	1052
20	1249	1258	1200	1003	921	1599	1155	695	766	1619	941
21	1204	1342	1565	930	876	163	1072	681	700	1624	828
22	1137	1481	1701	989	819	1779	820	983	900	1202	1137
23	1031	1611	1663	897	692	1600	747	1133	712	1245	1233
24	983	1620	1664	728	949	1424	683	1049	740	1032	1387
25	927	1619	1198	728	1037	939	534	756	395	882	323
26	864	1508	680	728	862	1193	1168	706	400	1159	905
27	791	1276	674	728	705	521	1099	1041	1089	1119	1734
28	803	1006	1271	820	650	973	1001	981	1020	1291	177
29	861	315	1271	1034	449	615	1080		967	1142	651
30	519	552	1271	806	295	1224	702		804	998	1396
31	73	1105		699		1485	457		1150		1297
Total (Month)	36691	36650	38369	28540	25751	32342	27288	25064	28330	33270	32766
Average	1184	1182	1279	921	858	1043	880	895	914	1109	1057
Maximum	1505	1620	1701	1404	1563	1779	1430	1212	1437	1624	1734
Minimum	73	315	674	685	295	163	448	634	395	873	177
Minimum	73	315	674	685	295	163	448	634	395	873	

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2015 - 2016

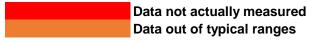
KATIKATI WWTP FLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	1133	1031	1643	967	909	1991	1187	497	1245	1810	1012
2	1092	947	1911	995	908	962	1387	497	1227	1835	1001
3	861	1291	2013	1027	862	1765	1108	497	1089	1447	1166
4	990	1461	2034	980	875	1030	828	810	1018	1211	1102
5	1011	1002	2032	935	863	967	940	1168	972	1180	1035
6	310	1687	2036	924	852	915	1376	1255	954	1497	1039
7	568	1300	2049	930	854	1839	1239	1239	944	1128	1041
8	1435	1260	2081	938	849	2757	1381	1126	921	1302	1042
9	1380	1233	2111	917	826	897	1011	1036	255	1115	1030
10	1519	1318	2134	909	840	896	946	990	396	1062	1045
11	1200	1246	2146	872	821	876	955	975	890	1036	1029
12	828	1404	2156	875	873	901	966	960	1002	955	1037
13	699	1396	2166	861	924	1828	1257	944	919	1031	1032
14	843	1192	2171	899	893	895	918	915	949	1003	1036
15	972	1521	2176	888	860	1800	893	903	950	986	1027
16	1389	1321	1264	862	993	890	886	927	1101	957	1069
17	1254	2730	2040	824	1034	881	918	1073	1592	1112	911
18	1226	1460	2031	831	925	1786	1246	1266	1673	1656	1050
19	1750	1470	2108	851	896	975	1332	1454	1688	1383	1067
20	1486	1260	1207	826	939	1909	1001	1626	1693	1172	1060
21	1300	1237	1661	818	1907	894	497	1625	1268	1076	1153
22	493	1166	1999	861	1194	866	497	1459	1247	1069	1091
23	657	1309	1996	869	1055	1744	497	2301	1255	1046	1078
24	1356	1311	1746	894	991	1035	497	1482	1478	1039	1289
25	1466	1335	1150	881	947	1206	497	1054	1513	1014	552
26	1634	500	1114	872	1351	2299	497	960	1505	1047	875
27	1347	119	1553	874	1351	923	1095	1001	1810	1043	1770
28	1196	294	1074.2	865	1351	1613	497	1037	1810	1030	1280
29	1439	499	1098	857	1351	2772	497	1074	1813	1001	1357
30	1335	485	1058	891	981	905	497		1815	980	1454
31	1269	1346		871		900	497		1813		1303
Total (Month)	35434	37131	53957	27662	30270	41915	27842	32150	38802	35224	34030
Average	1143	1198	1799	892	1009	1352	898	1109	1252	1174	1098
Maximum	1750	2730	2176	1027	1907	2772	1387	2301	1815	1835	1770
Minimum	310	119	1058	818	821	866	497	497	255	955	552

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2016-2017

KATIKATI WWTP OUTFLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

2016/2017	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	1897	1428	1605	1712	961	946	967	916	1216	1797	1983
2	1911	1543	1414	1713	973	955	942	915	1216	1815	1572
3	1918	1479	1146	1718	973	955	1132	623	1128	1825	1302
4	1704	1530	1088	1722	949	939	1132	709	989	1871	1161
5	1504	1491	1122	1723	944	933	1052	876	888	1922	1133
6	1378	1496	1122	1718	502	934	947	888	888	1923	1077
7	1320	1382	1073	1719	251	941	932	978	951	1854	1046
8	1892	1113	1088	1718	473	1072	914	1217	1525	1862	1038
9	1920	1324	1088	1719	1026	1072	867	1218	1565	1870	927
10	1928	1232	1022	1719	1026	1008	862	1189	1629	1876	858
11	1935	1164	1017	1718	986	986	873	1026	1668	1879	1020
12	1942	1148	1016	1732	1048	954	888	953	1672	1888	1743
13	1946	1140	1008	1733	1048	960	888	926	1693	1899	1999
14	1944	1109	968	1735	990	960	877	927	1724	1912	1999
15	1954	1121	995	1737	1025	901	895	949	1739	1926	1795
16	1952	1082	995	1740	1116	910	896	1206	1748	1932	1590
17	1948	1047	999	1743	1116	911	874	1534	1755	1946	1447
18	1945	1027	1066	1744	1081	909	874	1550	1756	1951	1447
19	1921	1019	1066	1746	1008	921	899	1551	1753	1956	1433
20	1956	1025	1143	1746	914	921	933	1550	1758	1961	1367
21	1953	1022	1512	1640	924	941	948	1531	1759	1972	1373
22	2023	1040	1525	2245	937	961	1190	1186	1765	1978	1373
23	2033	519	1533	2263	977	1066	1190	1020	1766	2122	1307
24	2034	705	1536	1981	977	1066	1038	949	1529	2258	1240
25	2028	1615	1538	1981	1003	976	958	939	1787	2258	1200
26	2017	1609	1543	1071	1011	924	958	939	1788	2232	1175
27	1957	1620	1545	1059	1011	891	925	947	1791	2101	1640
28	1721	1611	1547	991	942	931	925	1154	1797	1821	2094
29	1694	1587	1622	970	918	931	906		1797	1543	2097
30	1603	1603	1709	960	911	920	906		1797	1490	2105
31	1741	1600		961		967	915		1815		2111
Total (Month)	57617	39428	37649	50677	28019	29660	29503	30366	48652	57641	45651
Average	1859	1272	1255	1635	934	957	952	1085	1569	1921	1473
Maximum	2034	1620	1709	2263	1116	1072	1190	1551	1815	2258	2111
Minimum	1320	519	968	960	251	891	862	623	888	1490	858



WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2017-2018

KATIKATI WWTP OUTFLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

2017/2018	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
1	1229	1083	1945	1255	1995	879	888	853	990	960	1875	
2	1168	1077	1945	1155	1997	938	1221	1275	983	935	1817	
3	1384	1059	1864	1195	1745	889	1462	1261	982	938	1702	
4	1464	1096	1864	1195	1405	886	1859	1179	972	942	1584	
5	1464	1097	1841	1081	1405	876	1667	1120	973	941	1480	
6	1368	1073	1731	1025	1262	850	1171	1100	959	940	1388	
7	1302	1072	1632	1070	1178	855	1021	1053	965	938	1290	
8	1661	1114	1527	1070	1103	850	981	1004	983	935	1208	
9	1661	1110	1456	1378	1154	837	912	1020	979	934	1141	
10	1645	1206	1419	1958	1072	848	896	1188	955	954	1084	
11	1645	1279	1441	1958	1072	868	890	1292	951	954	1085	
12	1582	1279	1590	1873	1016	868	901	1576	990	937	1289	
13	1495	1207	1590	1703	908	818	887	1660	1189	942	1324	
14	1430	1142	1534	1541	949	799	938	1463	1163	1041	1295	
15	1348	1101	1434	1424	1071	819	763	1297	1116	1088	1245	
16	1295	1171	1434	1297	1071	835	664	1278	1075	1068	1228	
17	1223	1172	1424	1193	989	834	748	1253	1030	1057	1206	
18	1201	1133	1424	1093	936	959	895	1228	983	1052	1199	
19	1118	1433	1396	1045	917	1036	913	1216	978	1029	1195	
20	1119	1435	1396	1033	937	900	908	1207	972	591	1176	
21	1170	1133	1330	1011	937	842	867	1176	970	591	1155	
22	1483	1134	1278	982	933	856	930	1287	947	591	1155	
23	1486	1120	1278	947	923	877	956	1331	942	591	1159	
24	1486	1083	1252	1062	923	890	938	1234	965	591	1192	
25	1378	1055		1185	895	879	910	1155	1045	591	1227	
26	1301	1034	2171	1049	883	885	908	1089	1033	591	1230	
27	1231	1067	2172	1049	894	891	883	1046	1022	591	1203	
28	1168	1068	1245	1397	894	884	861	1021	1004	591	1157	
29	1150	1367	1246	1885	907	863	877		989	591	1117	
30	1150	1789	1254	1985	907	877	885		970	1872	1106	
31	1107	1789		1985		861	853		960		1111	
Total (Month)	41910	36973	45112	41079	33273	27045	30453	33859	31034	26363	39621	ļ
Average	1352	1193	1556	1325	1109	872	982	1209	1001	879	1278	
Maximum	1661	1789	2172	1985	1997	1036	1859	1660	1189	1872	1875	
Minimum	1107	1034	1245	947	883	799	664	853	942	591	1084	

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2018-2019

KATIKATI WWTP OUTFLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

2018/2019	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
1			1235	894	951	1135	1533	920	897	950	970	
2			1182	850	914	1191	1536	907	869	1087	948	
3			1175	832	898	1389	1535	892	863	940	949	
4			1404	850	876	1444	1242	925	852	1285	951	
5			1409	854	889	1529	981	903	859	982	940	
6			1336	888	873	1540	958	888	836	982	991	
7			1118	889	860	1572	933	854	887	971	992	
8			1029	892	1013	1630	931	840	890	963	967	
9			1022	898	1024	1651	926	830	944	965	976	
10			986	896	998	1647	903	864	981	959	976	
11			980	881	987	1639	920	869	937	1004	955	
12			973	913	994	1185	938	879	925	1027	957	
13			959	972	1006	1006	906	866	904	961	1004	
14			964	1019	1144	1023	885	874	891	952	998	
15			961	951	1193	893	967	907	886	943	963	
16			965	913	1092	1534	977	911	886	951	949	
17			969	879	1005	1545	984	866	884	937	946	
18			977	859	946	1311	959	843	899	934	953	
19			1004	868	906	1008	923	868	900	946	955	
20			1006	882	872	916	923	904	891	963	932	
21			982	907	845	1103	887	903	863	949	914	
22			1068	900	903	1010	844	924	866	1083	951	
23			1072	875	916	936	839	1137	963	999	953	
24			1006	906	880	1274	860	1285	968	978	945	
25			1184	895	929	1512	867	1008	927	978	946	
26			1188	870	1142	1526	818	914	928	978	955	
27			1140	862	1291	1533	930	896	921	938	952	
28			1017	996	1252	1535	880	860	942	934	991	
29			975	1047	1227	1536	896		994	1025	1087	
30			942	1009	1201	1532	932		950	982	1041	
31				991		1534	940		985		1002	
Total (Month)	0	0	32226	28139	30023	41816	30548	25534	28186	29546	30007	
Average	#DIV/0!	#DIV/0!	1074	908	1001	1349	985	912	909	985	968	
Maximum	0	0	1409	1047	1291	1651	1536	1285	994	1285	1087	
Minimum	0	0	942	832	845	893	818	830	836	934	914	

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2019-2020

KATIKATI WWTP OUTFLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

2019/2020	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
1	1038	1322	1224	1229	1092	872	874	858	865	932	496	
2	1061	1257	1117	1231	1092	875	885	878	869	933	496	
3	1049	1262	1069	1228	1091	901	881	893	875	925	496	
4	1401	1263	1230	1225	1048	875	882	858	914	925	496	
5	1520	1259	1257	1122	960	865	843	858	922	938	496	
6	1245	1266	1258	1036	902	859	809	871	899	925	496	
7	1175	1270	1260	1102	886	850	809	842	872	916	981	
8	1150	1257	1260	1106	897	851	767	852	863	929	1023	
9	1072	1243	1255	1157	898	938	802	854	906	952	1025	
10	1343	1246	1255	1163	895	1013	807	842	983	939	1008	
11	1030	1244	1256	1122	940	1014	1103	842	995	957	1011	
12	1078	1245	1254	1131	942	868	1109	960	906	968	984	
13	1094	1245	1252	1128	931	851	938	964	871	1044	983	
14	1081	1245	1252	1065	901	873	949	887	884	995	1004	
15	1085	1245	1249	1178	945	849	953	874	883	959	1008	
16	1088	1313	1248	1188	950	846	919	878	892	959	1013	
17	1080	1328	1249	1147	904	943	879	871	903	991	1022	
18	1077	1282	1246	1124	978	1054	868	896	906	1005	1019	
19	1096	1165	1244	1121	984	816	870	901	882	976	1029	
20	1104	1296	1242	1120	977	1099	880	877	917	978	1036	
21	1097	1315	1244	1116	930	1117	845	847	935	974	1018	
22	1066	1314	1242	1098	900	1109	844	951	942	950	1006	
23	1052	1322	1239	1103	888	1114	850	977	983	963	999	
24	1108	1321	1237	1105	878	1062	852	1051	1004	953	1086	
25	1527	1320	1059	1108	868	937	865	1205	989	952	1260	
26	1549	1292	1012	1108	860	1047	875	1208	943	954	1274	
27	1551	1254	1105	1108	870	938	833	1014	960	1072	1158	
28	1489	1170	1186	1103	863	874	862	899	978	1094	1092	
29	1512	1119	1223	1098	877	878	881	864	974	1077	1047	
30	1516	1202	1237	1095	890	851	896		967	1076	1280	
31	1446	1203		1093		851	880		965		1298	
Total (Month)	37778	39083	36459	35052	28037	28888	27310	26568	28644	29207	29636	
Average	1219	1261	1215	1131	935	932	881	916	924	974	956	
Maximum	1551	1328	1260	1231	1092	1117	1109	1208	1004	1094	1298	
Minimum	1030	1119	1012	1036	860	816	767	842	863	916	496	

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2020-2021

KATIKATI WWTP OUTFLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

2020/2021	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	1307	1538	1045	500	958	683	888	848	970	1579	1006
2	1309	1510	1056	1019	950	991	884	848	1198	1582	971
3	1259	1462	1025	1022	987	992	902	654	1547	1132	959
4	1215	1373	1030	1017	989	962	915	644	1550	1013	961
5	1217	1286	992	999	1068	913	926	700	1301	960	971
6	1218	1183	1005	989	1283	872	929	741	1082	1011	936
7	1220	1147	977	992	1285	1297	940	765	1008	985	985
8	1221	1247	1048	979	1187	1375	942	781	1001	974	1016
9	1223	1248	1002	951	1154	1377	843	814	944	984	986
10	1221	1126	1355	937	1128	984	888	845	950	1059	1019
11	1223	1145	993	938	1154	862	899	886	1019	1091	1021
12	1223	1256	1048	958	1156	877	901	904	1061	1105	1141
13	1224	1258	1003	1041	1164	879	900	906	1062	1013	1091
14	1224	1138	960	1042	1165	467	883	908	981	1045	932
15	1224	1140	932	1041	1053	1032	870	1065	954	1029	1480
16	1225	1080	956	1033	939	1192	872	1461	928	1014	1334
17	1225	1076	972	967	933	1473	865	1530	914	1073	1230
18	1177	1075	968	969	935	1475	1256	1532	911	1004	1112
19	1220	1106	987	969	925	1095	1298	1622	901	1000	999
20	1358	1371	1021	970	906	930	1300	1669	910	1057	997
21	1469	1372	1011	1050	915	902	1023	1671	912	1436	1031
22	1471	1336	969	1374	916	822	931	1665	919	1147	1012
23	1493	1352	954	1376	904	887	917	1023	1125	1030	980
24	1546	1454	923	1016	926	944	900	1641	1127	1000	948
25	1548	1512	1018	992	928	946	876	1644	668	968	956
26	1548	1514	991	968	889	869	858	1643	679	963	1254
27	1550	1501	932	976	1522	871	868	1646	731	1014	1254
28	1551	1467	1003	977	1524	894	870	1488	776	998	1026
29	1553	1438	964	971	1409	895	866		854	988	1192
30	1551	1410	995	960	1072	890	873		1399	974	1173
31	1550	1347		962		890	876		1651		1071
Total (Month)	41563	40465	30135	30955	32325	30538	28959	32544	32033	32228	33044
Average	1341	1305	1005	999	1078	985	934	1162	1033	1074	1066
Maximum	1553	1538	1355	1376	1524	1475	1300	1671	1651	1582	1480
Minimum	1177	1075	923	500	889	467	843	644	668	960	932

WESTERN BAY OF PLENTY DISTRICT COUNCIL WASTEWATER TREATMENT PLANTS 2021-2022

KATIKATI WWTP OUTFLOWS: CONSENT NO. 24895; Resource Consent: 3000m³/day

2021/2022	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
1	1710	970	696	890	932	750	987				-	
2	1715	940	718	843	854	792	1018					
3	1710	932	661	888	887	752	1033					
4	1709	853	592	1043	937	774	1029					
5	1322	901	669	1099	882	806	1044					
6	1143	894	688	972	878	776	1007					
7	1141	888	752	902	925	776	974					
8	1245	884	753	899	1060	766	983					
9	1159	889	738	947	1116	758	974					
10	1091	820	717	870	919	752	914					
11	770	828	773	840	834	755	1974					
12	758	803	720	826	799	745	947					
13	754	813	714	998	853	972	951					
14	760	806	727	1062	904	1029	990					
15	757	811	1043	864	914	1156	942					
16	756	798	1300	911	842	1221	952					
17	915	817	1301	821	802	1142	959					
18	894	846	1300	1045	792	907	948					
19	845	776	1300	1192	768	808	943					
20	793	745	900	1249	774	775	945					
21	848	727	901	881	770	795	941					
22	904	740	1304	993	770	788	968					
23	834	734	1306	1050	782	801	981					
24	816	713	1299	888	938	774	920					
25	848	703	1272	946	990	777	1041					
26	1207	708	1006	1000	853	754	1035					
27	1227	731	1060	934	775	725	973					
28	1027	924	942	876	751	774	989					
29	954	818	897	1146	739	821	944					
30	932	781	881	1208	798	801	920					
31	1036	741		1005		778	990					
Total (Month)	32580	25334	27930	30088	25838	25800	31216	0	0	0	0	
Average	1051	817	931	971	861	832	1007	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#
Maximum	1715	970	1306	1249	1116	1221	1974	0	0	0	0	
Minimum	754	703	592	821	739	725	914	0	0	0	0	



Executive Summary

Western Bay of Plenty District Council (Council) has renewed a previous consent (for a period of 20 years) to discharge treated effluent from the Katikati wastewater treatment plant (WWTP), via an ocean outfall that extends approximately 650m from Matakana Island into the Pacific Ocean. One of the conditions of this consent renewal is that Council is required to investigate alternative effluent reuse and disposal options by 2021, focussing on application to land. Council is committed to investigate effluent irrigation and this report presents the options that have been assessed to date.

The process commenced by the running of a number of stakeholder workshops that provided education on wastewater, its origins, its constituents, the methods of treatment and methods of discharge available. Considerable time was also spent discussing the issues associated with the management of wastewater.

Workshops were also held discussing the different levels or extent of treatment available, the relative water qualities produced and the treatment of wastewater as a resource whereby various resources (energy, carbon, nutrients, water) can be extracted and reused, depending upon the treatment provided.

Facility visits were also conducted to various WWTPs and discharge and biosolids management facilities on the Coromandel Peninsula and in the central north Island from Rotorua to Tauranga to Otorohanga.

The majority of this report is dedicated to addressing treatment and discharge of the liquid component of the wastewater. However, the solids stream, residuals and atmospheric emissions also featured in the discussions, but are to be canvassed in more detail at the next stage of implementation.

Five potential irrigation land parcels were identified by a GIS search based on maximum distance from the WWTP, minimum parcel area, maximum slope and adequate buffer zones to property boundaries and water courses. Single ownership was also a criterion, with the exception of Site 1. The four other sites identified on the mainland were:

- Site 2
- Site 3
- Site 4
- Site 5

Sections 3 and 4 contain more details on the five potential land application sites.

Analysis of the feasibility of irrigating the sites, growing crops of pasture (cut and carry) or forestry was undertaken. Because of the sensitivity of such issues, this research had to be undertaken largely as a desk top exercise, but with site visits by the technical team to each of the localities. Refer to Section 5 for the options assessed. The analysis deemed sites 2 and 4 not to be suitable for effluent irrigation. Site 5 would only be feasible if, for three months of the year during winter, the effluent was discharged to the harbour. Passing the effluent through wetlands at either Site 4 or Site 5 prior to discharge to the harbour was also assessed.

Table E-1 below presents the options that were determined to be technically feasible, and likely to be able to be consented, as well as the main components that make up each of the overall wastewater disposal scheme options. Option 11, Status Quo, is required to be included for comparison as the 'baseline' option. It represents effluent of the existing Katikati WWTP effluent quality being discharged through a new ocean outfall, 500m longer than the existing one.

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11. Status Quo

Status Quo

12.

12.6km -Ocean

12.6km -Ocean

WWTP Pump Station Irrigation Pump Station Option / Site Wetland & Outfall **Upgrade** & Rising Main Crop 1. Site 1 Minimum Yes Pasture 2. Site 1 Minimum Yes Forestry Site 1 **MBR** Pasture 3. Yes 4. MBR Site 1 Yes Forestry 5. Site 3 Minimum Pasture Yes 6. Site 3 MLE Yes Forestry 7. Site 5 MLE Yes **Pasture** 3km - Harbour 8. Site 5 MLE Yes 3km - Harbour Forestry MBR 9. Site 5 3km - Harbour Yes Yes 10. Site 4 **MBR** 3km - Harbour Yes Yes

Table E-1. Effluent Re-use and Disposal Options Component Summary

Minimum

MBR

To be feasible, consentable and acceptable some of the options require a much higher level of wastewater treatment than provided by the current plant. These are shown in the WWTP upgrade column above and are:

- MLE (Modified Ludzack Ettinger) which achieves a low level of nitrogen (down to 7mg/l) and clarified effluent to improve (compared to the existing pond system) the performance of UV disinfection
- MBR (membrane bioreactor) which can be configured to achieve to 5mg/l nitrogen and eliminates bacteria as the effluent passes through membrane filtration prior to UV disinfection

To compare the options, Multi Criteria Analysis (MCA) was undertaken by scoring of success criteria agreed by the iwi/hapu based Katikati Wastewater Advisory Group (WWAG). The main success criteria were cultural, community, health of water bodies and economic viability. At the beginning of the options identification process, it had been agreed that the option cost estimates would not be brought into consideration prior to the MCA scoring process. Thus, the economic criterion was scored by the WWAG using a number of factors other than estimated capital and operating costs. Section 7 contains details of the MCA criteria including weighting and the scoring methodology. The MCA scoring was undertaken by the WWAG at workshops held on 19 and 30 April 2021. The overall scores and a ranking for each option are presented in Table E-2. It should be noted that under the MCA scoring methodology the **lower** the score, the more preferred that option is.

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Table E-2. Effluent Re-use and Disposal Options Overall MCA Scores and Rank

Option	Cultural Values	Community Needs	Health of Water Bodies	Economic Viability	Total MCA Score / Rank
1. Site 1 Pasture	17.14	13.10	7.50	14.29	52.02 / 5
2. Site 1 Forestry	13.57	13.10	8.21	16.79	51.67 / 4
3. Site 1 Pasture (MBR)	14.29	12.50	5.00	18.57	50.36 / 3
4. Site 1 (MBR)	13.57	12.50	5.00	21.07	52.14 / 6
5. Site 3 Pasture	5.00	11.90	7.50	8.57	32.98 / 1
6. Site 3 Forestry	5.00	11.31	7.50	13.93	37.74 / <mark>2</mark>
7. Site 5 Pasture hybrid	25.00	11.90	18.21	16.07	71.19 / 9
8. Site 5 Forestry hybrid	25.00	11.90	18.21	17.14	72.26 / 10
9. Site 5 Wetland	24.29	9.52	17.50	19.29	70.60 / 7=
10. Site 4 Wetland	24.29	9.52	17.50	19.29	70.60 / 7=
11. Status Quo	25.00	22.62	20.36	18.57	86.55 / 12
12. status Quo (MBR)	25.00	20.83	7.86	22.86	76.55 / 11

Capital cost estimates for each main component of the feasible options and the total option capital costs are presented below in Table E-3. The estimated total scheme operating and Net Present Value (NPV) costs for each option as a whole are shown in Table E-4.

The cost estimates do not include land purchase costs or income from pasture and tree harvesting. It should be noted these cost estimates are for comparative purposes only and should not be used for setting budgets.

Table E-3. Effluent Re-use and Disposal Options Capital Cost Estimates

Option	WWTP Upgrade (\$ millions)	Pump Station & Rising Main (\$ millions)	Irrigation (\$ millions)	Wetland (\$ millions)	Pump Station & Outfall (\$ millions)	Total Capital Cost (\$ millions)
1. Site 1 Pasture	0.5	33.4	4.3			38.2
2. Site 1 Forestry	0.5	33.4	9.7			43.6
3. Site 1 Pasture (MBR)	13.4	33.4	4.3			51.2
4. Site 1 (MBR)	13.4	33.4	9.7			56.6
5. Site 3 Pasture	0.5	13.5	5.1			19.2
6. Site 3 Forestry	8.6	13.5	10.2			32.4
7. Site 5 Pasture hybrid	8.6	13.3	3.4		11.1	36.4
8. Site 5 Forestry hybrid	8.6	13.3	5.0		11.1	38.0
9. Site 5 Wetland	13.4	14.1		5.7	11.5	44.7
10. Site 4 Wetland	13.4	14.1		5.2	11.3	44.1
11. Status Quo	0.5	34.6			16.0	51.1
12. status Quo (MBR)	13.4	34.6			16.0	64.0

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Table E-4. Effluent Re-use and Disposal Options Operating and NPV Cost Estimates

Option	Capital Cost (\$ millions) (from Table E3)	Operating Cost (\$ millions p.a.)	NPV Cost (\$ millions)
1. Site 1 Pasture	38.2	0.6	45.2
2. Site 1 Forestry	43.6	0.6	50.2
3. Site 1 Pasture (MBR)	51.2	1.6	65.2
4. Site 1 (MBR)	56.6	1.6	70.2
5. Site 3 Pasture	19.2	0.6	31.2
6. Site 3 Forestry	32.4	1.2	48.5
7. Site 5 Pasture hybrid	36.4	1.2	53.2
8. Site 5 Forestry hybrid	38.0	1.2	54.3
9. Site 5 Wetland	44.7	1.6	64.0
10. Site 4 Wetland	44.1	1.6	63.3
11. Status Quo	51.1	0.5	54.9
12. status Quo (MBR)	64.0	1.6	74.8

The main conclusions that can be drawn from the MCA scores and cost estimates are:

- Any effluent discharge to the marine environment (harbour or ocean) is not acceptable. It makes little
 difference from a cultural perspective if the effluent is treated to a high standard (options with MBR) or
 only discharged to the harbour for quarter of each year (hybrid options)
- Culturally, irrigation to land is preferred further from the harbour (Site 3) compared to close to the harbour (Sites 1, 4 and 5)
- From a Health of Water Bodies perspective, irrigation to land is also preferred
- Higher levels of effluent treatment (MLE and MBR) improve the Health of Water Bodies scores for the
 discharge to water options (compared to cultural) but not significantly so. This is with the exception of
 MBR treated effluent discharged to the ocean 1,150m off Matakana Island (status quo with MBR),
 which improves the Health of Water Bodies score, compared to status quo without additional
 treatment.
- There is little variation between the Community Needs scores (compared to the other main success criteria), with the exception of the Status Quo (ocean outfall) options that score poorly
- There is a large range in the option cost estimates and consequently economic viability MCA scores
- Site 3 pasture, followed by irrigation to forestry on the same site score best on an MCA basis. These
 options also have the lowest capital costs, as well as lowest and third to lowest NPV costs respectively.
- Irrigation on Site 1 is next preferred with little separating pasture or forestry on an MCA basis, with or
 without enhanced (MBR) treatment. Inclusion of MBR significantly increases the cost for those options
 however
- A number of the cost estimates are within the limits of accuracy considering a high level desk top assessment has only been undertaken to date. Land purchase cost, revenue from crops (forestry in particular), carbon costs/offsets etc needs to be factored in for the next stage of this project.

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The MCA scoring has provided a clear mandate that effluent irrigation on the mainland, as opposed to Site 1 is the preferred option. Therefore, a staged approach moving forward is recommended as follows:

- 1. Council to contact the Site 3 land owner and explain the background to the Katikati effluent irrigation investigations and the interest in their land parcel and the likely timing and implications
- 2. If permission is provided by the Site 3 land owner to undertake site investigations (soil permeability, groundwater level, crop compatibility, effluent sodium & potassium levels as well as any other undesirable compounds) then Council proceeds to do that to confirm the feasibility of effluent irrigation on this site
- 3. If permission is not granted then expand the GIS property search to find possible irrigation site(s) with multiple ownership that may be feasible for effluent irrigation
- 4. If suitable site(s) can be found, request permission to undertake site investigations (as above)
- 5. If permission is not forthcoming, then irrigating effluent on Site 1 remains a viable option
- 6. The Site 1 WWAG reps to then request permission from their iwi/hapu for site investigations to be undertaken on the island

In parallel, Council intends to run effluent irrigation trials to land owned by Council at the Katikati WWTP site currently occupied by kiwifruit, to provide further data to assist with implementing an effluent irrigation scheme. A specialist consultant needs to be engaged to set up, monitor and report on the irrigation trials. In addition, a plant scientist could be engaged to review the most suitable crops and tree species to be irrigated with treated effluent in the local conditions.

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Katikati Wastewater Options

Comparative Concept Cost Estimates

Capital, Operating, and Net Present Value Cost Estimates

High Level Summary

16/07/2025

Option	Disposal and Treatment Schemes	NPV Estimate Breakdown (\$ millions)				
		CAPEX NPV	OPEX NPV	TOTAL NPV		
0a	Status quo (existing ocean outfall) + Existing treatment level *	49.6	27.4	77.0		
1a	New outfall pipe 500m longer than the existing + Existing treatment level	52.1	27.8	79.9		
1b	New outfall pipe 500m longer than the existing + Existing treatment level + DAF upgrade **	55.1	35.2	90.4		
1c	New outfall pipe 500m longer than the existing + New Membrane Bioreactor (MBR)	68.8	34.8	103.6		
2a	Katikati pasture irrigation + Existing treatment level + DAF upgrade	45.7	37.2	83.0		
3a	Katikati forestry irrigation + Modified Ludzack Ettinger (MLE) with tertiary filters and UV	69.6	53.9	123.5		

Option	Disposal and Treatment Schemes		CAPITAL COSTS (CAPE)	OPERATING COSTS	NET PRESENT VALUE	
		WWTP	Disposal Scheme (including Land)	TOTAL CAPEX ESTIMATE	(OPEX) (average cost per yr)	ESTIMATE (NPV) 50yrs 2025 - 2075
0a	Status quo (existing ocean outfall) + Existing treatment level *	\$ -	\$ 54,360,000	\$ 54,360,000	\$ 1,050,000	\$ 77,000,000
1a	New outfall pipe 500m longer than the existing + Existing treatment level	\$ -	\$ 60,000,000	\$ 60,000,000	\$ 960,000	\$ 79,900,000
1b	New outfall pipe 500m longer than the existing + Existing treatment level + DAF upgrade **	\$ 3,400,000	\$ 60,000,000	\$ 63,400,000	\$ 1,280,000	\$ 90,400,000
1c	New outfall pipe 500m longer than the existing + New Membrane Bioreactor (MBR)	\$ 24,270,000	\$ 60,000,000	\$ 84,270,000	\$ 1,320,000	\$ 103,600,000
2a	Katikati pasture irrigation + Existing treatment level + DAF upgrade	\$ 3,400,000	\$ 43,830,000	\$ 47,230,000	\$ 1,340,000	\$ 83,000,000
3a	Katikati forestry irrigation + Modified Ludzack Ettinger (MLE) with tertiary filters and UV	\$ 24,980,000	\$ 49,990,000	\$ 74,970,000	\$ 2,000,000	\$ 123,500,000

^{*} Existing treatment level includes the existing oxidation pond-based system and the MBBR upgrade currently underway.

Assumptions and Clarifications:

- 0.01 For capital cost estimates clarifications, please refer to the capital cost estimate breakdowns issued previously: Beca. (June 2021) Katikati WWTP Effluent Reuse and Disposal Options Assessment report.

 - Beca. (October 2022). Katikati Masterplan Report (Draft), Rev B Beca. (Dec 2023). Katikati Wastewater Ocean Outfall Estimate 20231206.
- 0.02
- For operating cost estimates assumptions, please refer to the individual NPV cost estimate breakdowns. Net Present Value (NPV) estimates are based on the following inputs:
- 5.15% 2.50% Discount factor of 5.15% General cost inflation / escalation of 2.5% Power cost inflation / escalation of 2.5%. 2.50% Study period of 50 years. 50
- All estimates are high-level concept estimates. The estimates are deemed to be Class 4 / 5 estimates in terms of the AACE Cost Estimate Classification System guidelines. The expected estimate accuracy range is likely no better than -20% +30%. 0.04
- We assume that the Disposal to Land estimates will also need to include \$600 k/year allowance for repairing the pipeline across the estuary to Matakana Island. The Disposal to Land CAPEX estimates include allowances for land purchase:
- Dairy (ha) 100

Horticulture (ha) 29 \$500,000 \$/ha

- 0.08
- The Irrigation to Pasture OPEX estimates exclude pasture management costs and potential future income from sale of hay / baleage. The Irrigation to Forestry OPEX estimates exclude forestry management costs and potential future income from the sale of timber / logs.

- Option 0a Pipeline renewals: Harbor section 2030, Island section 2034, Ocean section 2040. Outfall PS 2040 Option 1a Pipeline renewals: Harbor section 2030, Island section 2034, Ocean section 2040. Outfall PS 2037 0.10
- Option 1b Pipeline renewals: Harbor section 2030, Island section 2034, Ocean section 2040. Outfall PS 2037, DAF constructed 2042 Option 1c Pipeline renewals: Harbor section 2030, Island section 2034, Ocean section 2040. Outfall PS 2037, MBR constructed 2043 0.12
- Option 2a Land purchase 2029, Pipeline from WWTP to irrigation site 2030, Irrigation storage, boost PS, irrigation system and DAF 2032
 Option 3a Land purchase 2028, Pump Station 2029, Pipeline from WWTP to irrigation site 2030, Irrigation storage, boost PS, irrigation system, MLE, tree established 2032

^{**} DAF – Dissolved Air Flotation – minimum upgrade to increase disinfection level.

*** OPEX costs are an estimate of average annual costs. Actual OPEX costs will vary from year to year and some OPEX costs (e.g. power) may increase over time.

Glossary of Terms

Term	Name	Description
ADWF	Average Dry Weather Flow	Typical daily flow of wastewater coming into WWTP during dry periods, representing normal wastewater flows.
ADF	Average Daily Flow	Typical amount of wastewater that flows through a WWTP in a single day. It's calculated by taking the total volume of wastewater over a period. This helps plan and size treatment systems to handle normal wastewater levels efficiently.
BoD	Basis of Design	Outlines the important parameters, decisions, assumptions, and requirements (e.g. flows, contaminant loads, and performance objectives, redundancy requirements, design life) to inform a design process.
BOD₅	Biological Oxygen Demand	Indicates organic content of wastewater by measuring the amount of oxygen needed by bacteria to break down organic matter in wastewater over five days.
cBOD₅	Carbonaceous Biochemical Oxygen Demand	Indicates carbon-based organic content of wastewater by measuring the amount of oxygen needed by bacteria to break down carbon-based organic matter in wastewater over five days.
COD	Chemical Oxygen Demand	Indicates the organic and inorganic content in wastewater by measuring the amount of oxygen needed to break it down chemically.
DAF	Dissolved air flotation	Wastewater treatment process using small air bubbles to remove flocculated particles and suspended solids by floating them to the surface and then removing.
Effluent	Effluent	Treated wastewater that flows out of a treatment plant.
Enterococci	Enterococci	Bacteria that live in the intestines of warm-blooded animals. Used as an indicator in marine waterbodies as they can live in saltwater.
Faecal Coliforms	Faecal Coliforms	Bacteria that live in the intestines of warm-blooded animals. They include species like Escherichia coli (E. coli). Used as an indicator in fresh water and land discharges. Doesn't live in the marine environment.
1&1	Inflow & Infiltration	Measure of rainwater or groundwater that enters wastewater systems through things like cracked pipes, faulty connections, or illegal stormwater hookups, which can overwhelm treatment plants and reduce treatment efficiency.
MBBR	Moving Bed Biofilm Reactor	MBBR was installed at Katikati WWTP in 2025. It is a wastewater treatment method where bacteria treating contaminant live attached on a tiny plastic carriers. This bacteria clean the water by breaking down pollutants using it as a food source. Oxygen and mixing is provided for bacteria to breath and move around the tank.
MBR	Membrane Bioreactor	A wastewater treatment process where bacteria clean the water, and special membranes filter out solids. Using this process bacteria is living in a clusters or flocks and require oxygen and mixing to keep it alive and in suspension form, to the treatment can occur across the entire tank volume. Membrane consists of tiny pores, which allows to separate treated water from the flocks. Because of the size of membrane pores, the bulk of E.Coli can be filtered out.
NH ₃ -N	Ammoniacal Nitrogen	Represents the concentration of nitrogen in the form of ammonia (NH $_3$) and ammonium ions (NH $_4$ $^+$) in wastewater. High levels can harm aquatic life. This form of nitrogen is the best for plant uptake.
NH ₄	Ammonium	A type of nitrogen found in wastewater that needs to be treated because high levels can harm aquatic life.
PWWF	Peak Wet Weather Flow	Highest flow of wastewater coming into WWTP during heavy rain, caused by a combination of regular wastewater and extra water from inflow and infiltration.
Septage	Septage	Waste material pumped out of septic tanks, including liquids, solids, and sludge from household or small-scale wastewater systems
TKN	Total Kjeldahl Nitrogen	Amount of nitrogen in wastewater (including ammonia and organic nitrogen) which can contribute to water pollution and algae growth if not properly treated
TN	Total Nitrogen	The sum of all types of nitrogen present, including ammonia, nitrates, nitrites, organic nitrogen and particulate nitrogen.

Term	Name	Description
ТР	Total Phosphorus	Amount of phosphate in wastewater which can contribute to algae growth if not properly treated
TSS	Total Suspended Solids	Particles floating in wastewater that need to be removed during treatment
UV	Ultra-violet disinfection	Uses ultraviolet light to kill or deactivate harmful bacteria, viruses, and other microorganisms, making the water safe for discharge or reuse without adding chemicals
WWTP	Wastewater Treatment Plant	The facilities designed to remove pollutants from wastewater making it safe to discharge back into environment or for reuse. Utilize a combination of mechanical, biological, physical and chemical processes to achieve this.
MCC	Motor control centre	Centralised control of the WWTP

Projects and Monitoring Meeting Agenda 15 August 2025

Sensitivity: General

Common Assumption and Exclusions (applies to all treatment options)

Population and Wastewater I	Population and Wastewater Inflow Assumptions				
Parameter	2024	2074			
Population projections					
People	5,730	7,560			
Projected influent flows					
ADF, m³/d	1,261	1,663			
PWWF, m³/d	4,286	5,655			
Projected average influent loads					
BOD₅, kg/d	435	575			
TSS, kg/d	424	559			
TKN, kg/d	76	101			
NH ₄ , kg/d	55	72			
COD, kg/d	1,106	1,459			
TP, kg/d	12	16			

Wastewater Outflow Assumptions			
Parameter	2024	2074	
Projected outflows			
ADF, m³/d	1,261	1,663	
PWWF, m³/d	4,034	5,322	
Projected average effluent loads (before			
MBBR upgrade)			
BOD ₅ , kg/d	15		
TSS, kg/d	25		
TN, kg/d	55		
Median Enterococci cfu/100ml	See belov	N	
Median Faecal Coliforms, cfu/100ml	See belov	N	
Expected effluent loads (after MBBR upgrade)			
cBOD ₅ , kg/d	info yet n	ot available	
TSS, kg/d	info yet n	ot available	
TN, kg/d	info yet n	ot available	
NH ₄ , mg/l (90%tile)	info yet n	ot available	
Enterococci cfu/100ml	Median 1	0	
Faecal Coliforms, cfu/100ml	Median 4		

Other Assumptions

- **Projected average effluent loads (before MBBR upgrade)** are based on current plant performance and do not consider future upgrades that could improve the treated effluent quality.
- The current proportion of trade waste flow and load (e.g. from industrial uses) remains consistent throughout the design horizon.
- Current I&I rates will remain at same levels as they are at present, i.e. PWWF/ADWF will not increase above 4.
- Sludge to be stored on site in geobags. Sludge stabilisation applicable for MLE and MBR options, can convert existing lagoons.
- Existing components to be reused for Status quo and DAF upgrades:
 - Inlet works e.g. screen and grit removal incl. MCC
 - Lagoons incl. aeration system
 - Existing wet weather storage facility
 - UV disinfection
 - Outfall pumps (as applicable)
- Implementation timelines as below.

Exclusions

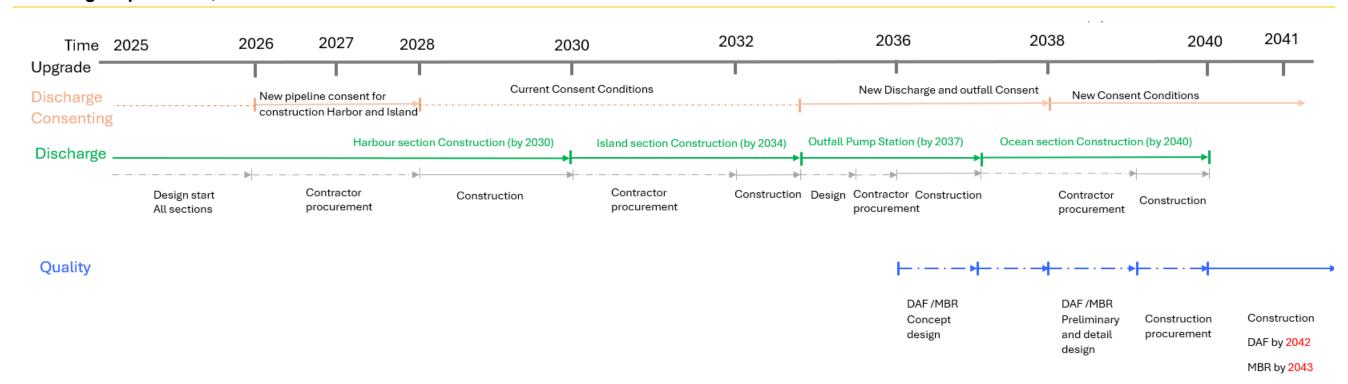
- Upgrade of existing UV disinfection unit based upon selected option.
- Use of the wetlands (except for Status Quo).
- WWTP site improvements regarding climate change and sea level rise.
- No septage receival facility is installed at the Katikati WWTP.

Cost Assumptions and Clarifications:

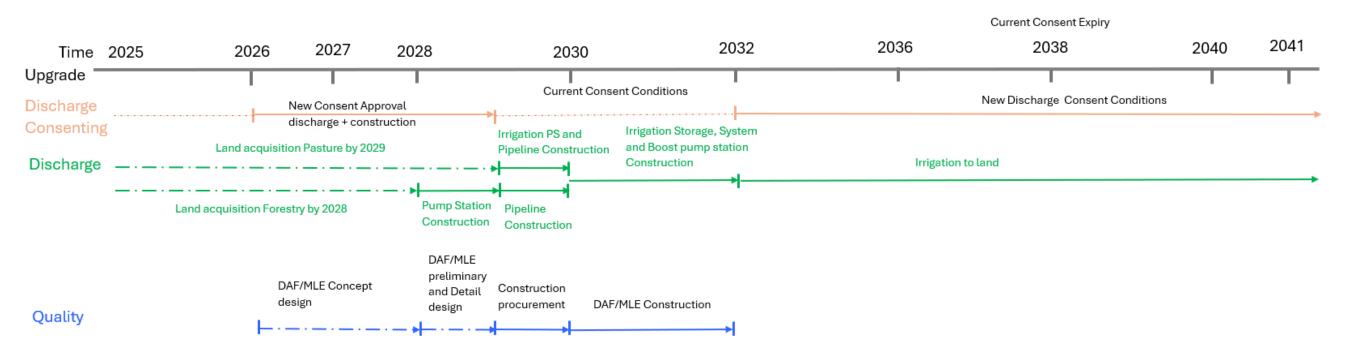
- For capital cost estimates clarifications, please see the separate capital cost estimate breakdowns.
- For operating cost estimates assumptions, please see the separate NPV cost estimate breakdowns.
- Net Present Value (NPV) estimates are based on the following inputs:
 - Discount factor of 5.15%
 - General cost inflation / escalation of 2.5%
 - Power cost inflation / escalation of 2.5%.
 - Study period of 50 years.
- All estimates are high-level concept estimates. The estimates are deemed to be Class 4 / 5 estimates in terms of the AACE Cost Estimate Classification System guidelines.
- The expected estimate accuracy range is likely no better than -20% +30%.
- We assume that the Disposal to Land estimates will also need to include 600 k/year allowance for repairing the pipeline across the estuary to Matakana Island.
- The Disposal to Land CAPEX estimates include the following allowances for land purchase:
 - Dairy (100 ha) \$50,000/ha
 - Horticulture (29 ha) \$500,000/ha
- The Irrigation to Pasture OPEX estimates exclude pasture management costs and potential future income from sale of hay / baleage.
- The Irrigation to Forestry OPEX estimates exclude forestry management costs and potential future income from the sale of timber / logs.

Implementation Timelines

Discharge Options 1a, 1b and 1c



Discharge Options 2a and 3a



Projects and Monitoring Meeting Agenda 15 August 2025

Sensitivity: General

Discharge Option 0a

Treatment - Lagoon system with MBBR in series (Status quo)

The Katikati WWTP is currently being upgraded with a moving bed bioreactor (MBBR) to meet current effluent consent limits for nitrogen. The WWTP effluent typically meets consent limits for other parameters. Upgrade cost is \$6.3m.

Key points:

- **Meets** current consent conditions
- Sufficient hydraulic capacity to 2074
 Limited nutrient removal, UV disinfection and flexibility for future expansion.

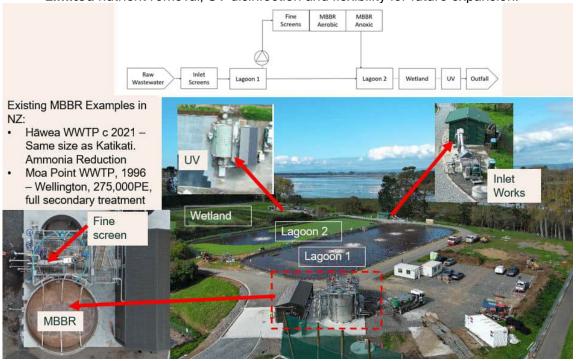


Figure 1: Katikati WWTP (MBBR system)

Consent Limits for Katikati WWTP Effluent (RM16-026-DC.02+)

Parameter	Median Limit (Annual Rolling)	Expect Improvement after MBBR upgrade*
cBOD ₅	40 kg/day	Removal >90% down to 15 kg/d
TSS	40 kg/day	Removal >95% down to 35 kg/d
TN	55 kg/day	Expected removal of 40 kg/d to achieve <55 kg/d
pН	6.5 to 8.5 at all times	
NH ₃ -N	55 g/m ³ (90% percentile)	<55 g/m ³
Faecal coliforms	500 cfu/100ml	Improved removal
Enterococci	300 cfu/100ml	
Total Cadmium	0.0140 mg/m ³	
Total Chromium	0.0200 mg/m ³	
Total Copper	0.0030 mg/m ³	
Total Mercury	0.0007 mg/m ³	
Total Nickel	0.2000 mg/m ³	
Total Zinc	0.0230 mg/m ³	

^{*}MBBR is yet to be commissioned, the expected improvement is based on what the proposed MBBR design should achieve

Discharge – Existing Ocean Outfall with Renewals

Treated effluent would be discharged through the existing outfall (DN 200, PN 12, PVC-U). Several leaks have occurred in the harbour pipeline since 2022, requiring notification to partners, stakeholders and incurring significant reputational, safety, and financial risks (costing \$250-350k per incident). A 2019 assessment suggested the pipeline could last until 2040, but recent reviews now estimate only 5-10 years of useful life remains for the harbour section. The discharge rate has been reduced to 20L/s to ease pipeline pressure.





Figure 2: Location of the 10-October-2018 burst on the ocean outfall pipe (L) pipe burst hole (R)

The renewal of the island and the outfall sections are to be completed by 2034 and 2040 respectively. Bringing the island section upgrade forward spreads capital investment more evenly.

The current outfall pump station will run out of capacity around the end of 2038. A renewal of a pump station is to be completed by 2040.

The current discharge consent will remain valid until 2038, after which the effluent discharge limits could change. Based upon current knowledge, Taumata Arowai national wastewater environmental performance standards would apply. If effluent reuse is considered in the future, these standards wouldn't apply, and Queensland's land discharge standards would likely be adopted to define the effluent class for reuse.

Draft Taumata Arowai standards for ocean wastewater discharge require an annual Enterococci limit of 40,000 cfu/100 ml, which can be easily met with current removal capabilities.

Effluent Class (Queensland land discharge std): Class B

Timeline Assumptions:

- 2030 Harbour Pipeline
- 2034 Island Pipeline
- 2040 Outfall Pump Station
- 2040 Ocean Pipeline

Discharge Option 1a

Treatment - Lagoon system with MBBR in series (Status quo)

The Katikati WWTP is currently being upgraded with a moving bed bioreactor (MBBR) to meet current effluent consent limits for nitrogen. The WWTP effluent typically meets consent limits for other parameters. Upgrade cost is \$6.3m.

Key points:

- **Meets** current consent conditions
- Sufficient hydraulic capacity to 2074
- Limited nutrient removal, UV disinfection and flexibility for future expansion.

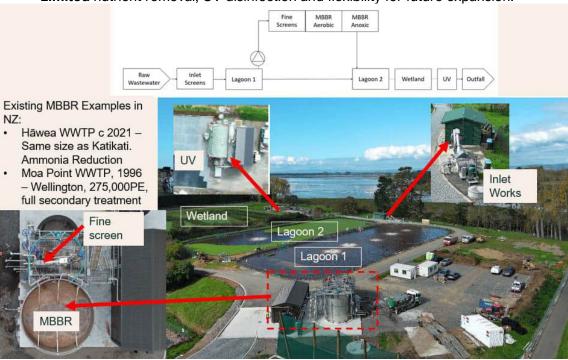


Figure 3: Katikati WWTP (MBBR system)

Consent Limits for Katikati WWTP Effluent (RM16-026-DC.02+)

Parameter	Median Limit (Annual Rolling)	Expect Improvement after MBBR upgrade*				
cBOD₅	40 kg/day	Removal >90% down to 15 kg/d				
TSS	40 kg/day	Removal >95% down to 35 kg/d				
TN	55 kg/day	Expected removal of 40 kg/d to achieve <55 kg/d				
pН	6.5 to 8.5 at all times					
NH ₃ -N	55 g/m³ (90% percentile)	<55 g/m ³				
Faecal coliforms	500 cfu/100ml	Improved removal				
Enterococci	300 cfu/100ml					
Total Cadmium	0.0140 mg/m ³					
Total Chromium	0.0200 mg/m ³					
Total Copper	0.0030 mg/m ³					
Total Mercury	0.0007 mg/m ³					
Total Nickel	0.2000 mg/m ³					
Total Zinc	0.0230 mg/m ³					

^{*}MBBR is yet to be commissioned, the expected improvement is based on what the proposed MBBR design should achieve

Discharge – New Ocean outfall 500m longer than existing

Treated effluent would be discharged through a new 1,150 m ocean outfall pipe (DN355 PE) off Matakana Island. The harbour, cross island and ocean sections of the pipeline would all be replaced. Harbour section probably first. An upgraded outfall pump station at the WWTP would be also included in this upgrade to accommodate the future flows until 2074.





Figure 4: New Outfall 500m longer (L) and new Diffuser (2022) (R)

The current discharge consent will remain valid until 2038, after which the effluent discharge limits could change. Based upon current knowledge, Taumata Arowai national wastewater environmental performance standards would apply. If effluent reuse is considered in the future, these standards wouldn't apply, and Queensland's land discharge standards would likely be adopted to define the effluent class for reuse.

Draft Taumata Arowai standards for ocean wastewater discharge require an annual Enterococci limit of 40,000 cfu/100 ml, which can be easily met with current removal capabilities.

Effluent Class (Queensland land discharge std): Class B

Timeline Assumptions:

- 2030 Harbour Pipeline
- 2034 Island Pipeline
- 2037 Outfall Pump Station
- 2040 Ocean Pipeline

Discharge Option 1b

Treatment – Lagoon system with MBBR (Status quo) + DAF

A Dissolved Air Flotation (DAF) process is proposed as an enhancement to the current system to reduce solids and maintain better disinfection.

Key Points of DAF:

- Enhanced Solids Removal: DAF effectively removes lightweight solids like algae, which are harder to settle in traditional systems.
- Improved UV Disinfection: By reducing Total Suspended Solids (TSS) concentrations and improving UV transmissivity, DAF minimises the shielding effect that solids have on pathogens, allowing UV light to disinfect more effectively.
- Better Effluent Quality: The process contributes to lower levels of Faecal Coliforms and improved colour in the treated effluent. Typically, chemicals are dosed to DAF to remove TP if required. Will meet current discharge consent limits
- **Higher Pathogen Inactivation:** A cleaner effluent with reduced solids increases the overall efficiency of pathogen removal, ensuring safer water quality.
- Limited nutrient removal for future expansion

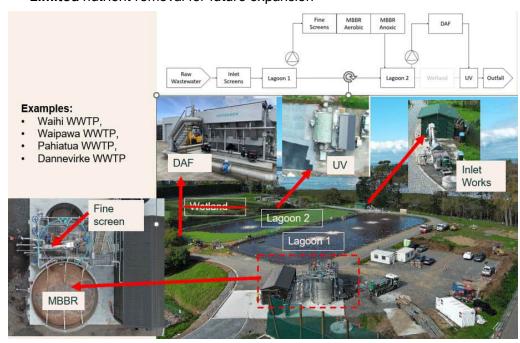


Figure 3: Katikati WWTP (MBBR system) + DAF

Discharge – New Ocean outfall 500m longer than existing

Treated effluent would be discharged through a new 1,150 m ocean outfall pipe (DN355 PE) off Matakana Island. The harbour, cross island and ocean sections of the pipeline would all be replaced. Harbour section probably first. An upgraded pump station would be also included in this upgrade to accommodate the future flows until 2074.





Figure 4: New Outfall 500m longer (L) and 1

The current discharge consent will remain valid until 2038, after which the effluent discharge limits could change. Based upon current knowledge, Taumata Arowai national wastewater environmental performance standards would apply. If effluent reuse is considered in the future, these standards wouldn't apply, and Queensland's land discharge standards would likely be adopted to define the effluent class for reuse.

Proposed Taumata Arowai Wastewater Discharge Standards for Open Ocean category as described below would require to meet annual Enterococci limit of 40,000cfu/100 ml only. This could be easily achieved based on current Enterococci removal.

Effluent Class (Queensland land discharge std): Class B

Timeline Assumptions:

- 2030 Harbour Pipeline
- 2034 Island Pipeline
- 2037 Outfall Pump Station
- 2040 Ocean Pipeline
- 2042 DAF constructed

Discharge Option 1c

Treatment – New Membrane Bioreactor (MBR)

A Membrane Bioreactor (MBR) is an activated sludge technology which would replace the lagoons, including the MBBR process. This technology can provide significantly better TSS removal rates and lower pathogen levels prior UV disinfection. A fine screening stage will need to be added after existing screening. The treatment reactor would include the anoxic and aerobic zones (for BOD, ammonia-N and TN removal) followed by the membrane reactors for filtration and disinfection stages all in one. MBR could be set up in various configuration including targeting very low TN levels – albeit significantly larger with extra stages and significant extra cost.

This option would require a new standalone MBR plant built on site, while the rest of the treatment assets (except UV disinfection and coarse screens) would become redundant. A sludge dewatering process is also required.

Key Points of MBR:

- **Highest level of treatment**: MBR provides the highest level of nutrient removal and disinfection levels.
- Can be easily expanded in the future
- **High capital** investment and operational costs
- Highly skilled operators required.
- Biosolids require dewatering and there will be increased volume
- Wet weather flow management is required
- Little quality improvement in the future

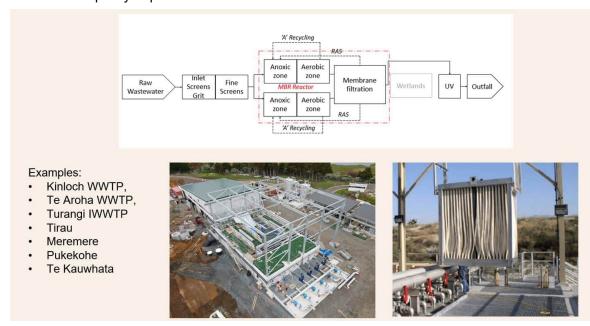


Figure 5: MBR example (Kinloch WWTP)

Discharge – New Ocean outfall 500m longer than existing

Treated effluent would be discharged through a new 1,150 m ocean outfall pipe (DN355 PE) off Matakana Island. The harbour, cross island and ocean sections of the pipeline would all be replaced. Harbour section probably first. An upgraded pump station would be also included in this upgrade to accommodate the future flows until 2074.





Figure 6: New Outfall 500m longer (L) and new Diffuser (2022) (R)

The current discharge consent will remain valid until 2038, after which the effluent discharge limits could change. Based upon current knowledge, Taumata Arowai national wastewater environmental performance standards would apply. If effluent reuse is considered in the future, these standards wouldn't apply, and Queensland's land discharge standards would likely be adopted to define the effluent class for reuse.

Proposed Taumata Arowai Wastewater Discharge Standards for Open Ocean category as described below would require to meet annual Enterococci limit of 40,000cfu/100 ml only. This could be easily achieved based on current Enterococci removal.

Effluent Class (Queensland land discharge std): Class A

Timeline Assumptions:

- 2030 Harbour Pipeline
- 2034 Island Pipeline
- 2037 Outfall Pump Station
- 2040 Ocean Pipeline
- 2043 MBR constructed

Discharge Option 2a

Treatment – Lagoon system with MBBR (Status quo)+ DAF

A Dissolved Air Flotation (DAF) process is proposed as an enhancement to the current system to reduce solids and maintain better disinfection.

Key Points of DAF:

- Enhanced Solids Removal: DAF effectively removes lightweight solids like algae, which are harder to settle in traditional systems.
- Improved UV Disinfection: By reducing Total Suspended Solids (TSS) concentrations and improving UV transmissivity, DAF minimises the shielding effect that solids have on pathogens, allowing UV light to disinfect more effectively.
- Better Effluent Quality: The process contributes to lower levels of Faecal Coliforms and improved colour in the treated effluent. Typically, chemicals are dosed to DAF to remove TP if required. Will meet current discharge consent limits
- **Higher Pathogen Inactivation:** A cleaner effluent with reduced solids increases the overall efficiency of pathogen removal, ensuring safer water quality.
- Limited nutrient removal for future expansion

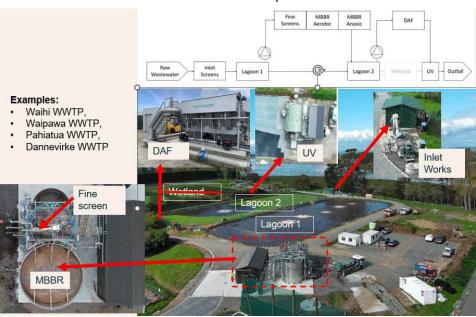


Figure 5: Katikati WWTP (MBBR system) + DAF

Timeline assumptions:

- 2029- Purchase Land
- 2030 Pipeline from the WWTP to irrigation site
- 2032 Irrigation storage, boost pump station, irrigation system and DAF

Discharge -Katikati pasture irrigation

The Katikati irrigation site (in private ownership) consists of two separate areas, divided by a tributary of the River. It is located about 10 km by road from the Katikati WWTP on elevated land, with current land use mainly focused on dairy farming and some horticulture. Pasture irrigation would only need a basic upgrade at the WWTP. This is because nitrogen can be absorbed effectively through a pasture cut-and-carry operation.

The irrigation setup is based on a Precipitation Index, which is less strict than soil moisture deficit methods. Pivot and solid set irrigation would function according to rainfall levels throughout the year, requiring storage of roughly 35,000m³. The expected average yearly application rate is 2 mm per day. The scheme would involve a new pump station at the WWTP (capable of handling flows of 2074 effluent), a pipeline leading to storage at the irrigation site, and another pump stage to distribute wastewater via the irrigation systems.

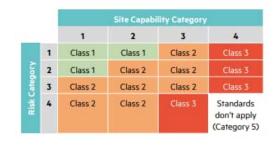


Figure 8: Katikati pasture irrigation co 1

The current discharge consent will remain valid until 2038, after which the effluent discharge limits could change. Based upon current knowledge, Taumata Arowai national wastewater environmental performance standards would apply. The proposed Taumata Arowai Discharge to Land (DtL) Standards would set new rules for discharge limits. These limits would depend on how the site is classified, which is based on its capability and risk level.

Taumata Arowai WW Standards DtL comments:

From the information available to date, it is expected that the site would likely need to meet the Class 1 or 2 limits (note this may change after standards finalised and further technical work).



	Total Nitrogen	Total Phosphorous	E. coli
Class	Kilogrammes that can be discharged per hectare each year (kg/ha/ year)	Kilogrammes that can be discharged per hectare each year (kg/ha/ year)	cfu*/100 millilitres
1	500	75	No limit
2	250	50	< 2,000
3	150	20	< 1,000

Figure 6: DtL standards Class indication

Discharge Option 3a

Treatment – Modified Ludzak Ettinger (MLE) and UV

A Modified Ludzack Ettinger (MLE) plant could replace the current lagoons and MBBR to provide lower nitrogen in effluent suitable for forest irrigation. The MLE activated sludge process consists of existing inlet works, a new reactor for biological nitrogen removal, secondary clarification to separate solids, and the existing UV disinfection system. Excess sludge produced in the reactors is stabilised and dewatered, then taken off-site for disposal.

Key points of MLE:

- **High level of treatment** can be achieved including nutrient removal to provide effluent quality for forestry irrigation.
- Process could be easily expanded for future needs
- Flexible to other discharge methods especially effluent reuse. Class B effluent
- Much more expensive than other options
- Large footprint = high ground improvement costs

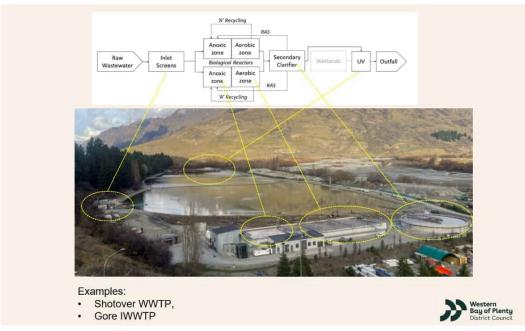


Figure 10: MLE example Shotover WWTP

Timeline assumptions:

- 2028- Purchase Land
- 2029 Pump Station
- 2030 Pipeline from the WWTP to irrigation site
- 2032 Irrigation storage, boost pump station, irrigation system, MLE, trees established

Discharge – Katikati forestry irrigation

The Katikati irrigation site (in private ownership) consists of two separate areas, divided by a tributary of the River. It is located about 10 km by road from the Katikati WWTP on elevated land, with current land use mainly focused on dairy farming and some horticulture.

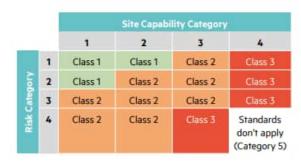
Forestry irrigation would require an MLE level of WWTP upgrade. As forestry absorbs less nitrogen than pasture, a lower nitrogen effluent level is needed for the area. Irrigation would follow a precipitation-based regime, using above-ground, solid-set irrigation systems. Around 15,000m³ of storage would be required once the blocks are established, which would need to be small enough so that at least one or two blocks are always available for harvest or establishment. The expected annual application rate is 2mm/day. The irrigation scheme would involve creating a new pump station at the WWTP, with capacity for the 2074 effluent flows. This would connect to a rising main leading to storage at the irrigation site, followed by a second stage of pumping into the irrigation system.



Figure 11: Katikati. forestry irrigation 1

Taumata Arowai WW Standards DtL comments:

From the information available to date, it is expected that the site would likely need to meet the Class 1 or 2 limits (note this may change after standards finalised and further technical work).



	Total Nitrogen	Total Phosphorous	E. coli
Class	Kilogrammes that can be discharged per hectare each year (kg/ha/ year)	Kilogrammes that can be discharged per hectare each year (kg/ha/ year)	cfu*/100
1	500	75	No limit
2	250	50	< 2,000
3	150	20	< 1,000

Figure 12: DtL standards Class indication

Multi-Criteria Assessment Evaluation Results

Katikati Wastewater Disposal Future Directions

Criteria Rating

Colour	Rating	Level of Criteria	
	1	Very unfavourable	Absolutely less favourable than others on this criterion
	2	Unfavourable	Less favourable than others on this criterion
	3	Neutral	Average, unquantifiable or not applicable
	4	Favourable	More favourable than others on this criterion
	5	Very favourable	Absolutely more favourable than others on this criterion

Weighting factors and analysis table

Area	Criteria	Indicators (Examples)	Weighting factor	Total
Cultural Values Cultural values		Improve mauri and mana (land and water)	12.5	
		Integrate well with existing land and water uses	2.5	25
		Gathering of food/kaimoana	10	1 1
Social	Community Needs	Scalable/staged to meet growth	10	
		Able to be modified to meet water quality improvements	7.5	25
		Resilient to climate change and natural hazards	7.5	1 1
Environment	Impacts on Water and Land	Preserves recreational value of people (including swimming fishing and any other recreational activities)	10	
		Nutrients managed to healthy levels in ground and surface water bodies	10	25
		Habitat of indigenous flora and fauna protected, including taonga species	2.5] 23
		Efficient use of resources, including energy efficiency, operational carbon emissions, and biosolids production	2.5	1
Economic	Economic Viability	Opportunity for beneficial reuse of treated wastewater for employment or commercial ventures	2.5	
Viablity		Affordable to implement (capital costs)	8.75] 25
-		Affordable to operate and maintain (operational costs)	8.75	25
		Minimise loss of productive land resource	5	1

Criteria Page 1 of 15

Multi-Criteria Assessment Evaluation Results

Katikati Wastewater Disposal Future Directions

Evaluation cr	iteria		Opt 0a: Status	Quo (Lagoons +l	MBBR) + Existing	g Ocean outfall (incl renewal)
Area	Criteria	Weighted	Raw Score	Weighted	Weighted	Reasons
		Score		Score	Criteria Score	
Cultural	Improve mauri and mana (land	25	1	25	25	
values	and water)					
	Integrate well with existing land	0	3	0		
	and water uses Gathering of food/kai	0	. 3	0		
	moana		J			
Community Needs	Scalable/staged to meet growth	10	1	10	40	Current outfall issues limited treatment. No to limited extra flow capacity
	Able to be modified to meet water quality improvements	7.5	. 1	7.5		Very limited increase to MBBR or the lagoon treatment quality could be made Little disinfection improvement
	Resilient to climate change and natural hazards	7.5	3	22.5		Worst case storm tide scenario would affect access road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not affected.
Impacts on	Preserves recreational value of	10	2	20	52.5	AO excellent (Category A)
Water and Land	people (including swimming fishing and any other recreational activities)	10	2	20	52.5	<40 - excellent (Category A) This is at end of pipe. Immediately after the diffuser, in ocean, the concentration is about 100 times less than this.
	Nutrients managed to healthy levels in ground and surface water bodies	10	2	20		Limited nutrient removal due to the treatment balance in the MBBR and the lagoons. No P removal
	Habitat of indigenous flora and fauna protected, including taonga species	2.5	4	10		Limited impacts on receiving ecosystem assumed due to excellent bacteriological quality. Potential residual impacts on intertidal and nearshore species greater than Options 1a, 1b, and 1c due to outfall being closer to shore.
	Efficient use of resources, including energy efficiency, operational carbon emissions, and biosolids production	2.5	1	2.5		Methane generation in ponds, wetland & eventually capped landfill. Inefficient surface aeration Less pumping than land discharge. But no increase in pipe diameter so more pumping than Options 1a-1c
Economic Viability	Opportunity for beneficial reuse of treated wastewater for employment or commercial ventures	2.5	1	2.5	106.25	No opportunity for reuse
	Affordable to implement (capital costs)	8.75	4	35		
	Affordable to operate and maintain (operational costs)	8.75	5	43.75		
	Minimise loss of productive land resource	5	5	25		Land is not used
			Total Score	223.75		
			1	Check Total	223.75	
I				Score		

Options Scoring Page 2 of 15

Multi-Criteria Assessment Evaluation Results

Katikati Wastewater Disposal Future Directions

Evaluation cr	iteria		Opt 1a: Status	Quo (Lagoons +	MBBR) + New o	cean outfall 500m longer than existing
Area	Criteria	Weighted	Raw Score	Weighted	Weighted	Reasons
		Score		Score	Criteria Score	
Cultural	Improve mauri and mana (land	25	2	50	50	
values	and water) Integrate well with existing land	0	3	0	-	
	and water uses					
	Gathering of food/kai moana	0	3	0		
Community Needs	Scalable/staged to meet growth	10	4	40	70	Limited capacity to upgrade the plant. Probably new biological plant for significantly higher capacity These processes can be duplicated / scaled Pipeline & outfall readily scalable for large extra capacity
	Able to be modified to meet water quality improvements	7.5	1	7.5		Very limited increase to MBBR or the lagoon treatment quality could be made Little disinfection improvement
	Resilient to climate change and natural hazards	7.5	3	22.5		Worst case storm tide scenario would affect access road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not affected.
Impacts on	Preserves recreational value of	10	5	50	85	<40 - excellent (Category A)
Water and Land	people (including swimming fishing and any other recreational activities)		, and the second	30		This is at end of pipe. Immediately after the diffuser, in ocean, the concentration is about 100 times less than this.
	Nutrients managed to healthy levels in ground and surface water bodies	10	2	20		Limited nutrient removal due to the treatment balance in the MBBR and the lagoons. No P removal
	Habitat of indigenous flora and fauna protected, including taonga species	2.5	5	12.5		Limited impacts on receiving ecosystem assumed due to excellent bacteriological quality and extension of outfall further from shore
					-	
	Efficient use of resources, including energy efficiency, operational carbon emissions, and biosolids production	2.5	1	2.5		Methane generation in ponds, wetland & eventually capped landfill. Inefficient surface aeration Less pumping than land discharge
Economic Viability	Opportunity for beneficial reuse of treated wastewater for employment or commercial ventures	2.5	1	2.5	97.5	No opportunity for reuse
	Affordable to implement (capital costs)	8.75	3	26.25		
	Affordable to operate and maintain (operational costs)	8.75	5	43.75		
	Minimise loss of productive land resource	5	5	25		Land is not used
			Total Score	302.5		<u> </u>
				Check Total	302.5	
	1			Score		

Options Scoring Page 3 of 15

Multi-Criteria Assessment Evaluation Results

Katikati Wastewater Disposal Future Directions

Cultural I I values 2 Community Seeds 2 Impacts on I I I I I I I I I I I I I I I I I I	Improve mauri and mana (land and water) Integrate well with existing land and water uses Gathering of food/kai moana Scalable/staged to meet growth Able to be modified to meet water quality improvements Resilient to climate change and natural hazards Preserves recreational value of people (including swimming fishing and any other recreational activities)	Weighted Score 25 0 10 7.5	4 3 3 4 4 2 2 3 3	Weighted Score	Weighted Criteria Score 100 77.5	Limited capacity to upgrade the plant. Probably new biological plant for significantly higher capacity These processes can be duplicated / scaled Pipeline & outfall readily scalable for large extra capacity Very limited increase to MBBR or the lagoon treatment capacity could be added. DAF added for disinfection improvement, could be expanded if required Worst case storm tide scenario would affect access road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not affected.
values a land a	and water) Integrate well with existing land and water uses Gathering of food/kai moana Scalable/staged to meet growth Able to be modified to meet water quality improvements Resilient to climate change and natural hazards Preserves recreational value of people (including swimming fishing and any other	7.5	3 3 4	0 0 40		new biological plant for significantly higher capacity These processes can be duplicated / scaled Pipeline & outfall readily scalable for large extra capacity Very limited increase to MBBR or the lagoon treatment capacity could be added. DAF added for disinfection improvement, could be expanded if required Worst case storm tide scenario would affect access road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not
Community S Needs S	and water uses Gathering of food/kai moana Scalable/staged to meet growth Able to be modified to meet water quality improvements Resilient to climate change and natural hazards Preserves recreational value of people (including swimming fishing and any other	7.5	3 4	40	77.5	new biological plant for significantly higher capacity These processes can be duplicated / scaled Pipeline & outfall readily scalable for large extra capacity Very limited increase to MBBR or the lagoon treatment capacity could be added. DAF added for disinfection improvement, could be expanded if required Worst case storm tide scenario would affect access road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not
Impacts on Water and Land	moana Scalable/staged to meet growth Able to be modified to meet water quality improvements Resilient to climate change and natural hazards Preserves recreational value of people (including swimming fishing and any other	7.5	2	40	77.5	new biological plant for significantly higher capacity These processes can be duplicated / scaled Pipeline & outfall readily scalable for large extra capacity Very limited increase to MBBR or the lagoon treatment capacity could be added. DAF added for disinfection improvement, could be expanded if required Worst case storm tide scenario would affect access road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not
Impacts on Water and Land	Able to be modified to meet water quality improvements Resilient to climate change and natural hazards Preserves recreational value of people (including swimming fishing and any other	7.5	2	15	77.5	new biological plant for significantly higher capacity These processes can be duplicated / scaled Pipeline & outfall readily scalable for large extra capacity Very limited increase to MBBR or the lagoon treatment capacity could be added. DAF added for disinfection improvement, could be expanded if required Worst case storm tide scenario would affect access road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not
Impacts on Water and Land	water quality improvements Resilient to climate change and natural hazards Preserves recreational value of people (including swimming fishing and any other	7.5				treatment capacity could be added. DAF added for disinfection improvement, could be expanded if required Worst case storm tide scenario would affect access road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not
Impacts on Water and I	Preserves recreational value of people (including swimming fishing and any other		3	22.5		road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not
Water and I	people (including swimming fishing and any other	10		ı		
-			5	50	97.5	<40 - excellent (Category A) This is at end of pipe. Immediately after the diffuser, in ocean, the concentration is about 100 times less than this.
	Nutrients managed to healthy levels in ground and surface water bodies	10	3	30		Limited nutrient removal due to the treatment balance in the MBBR and the lagoons. Good P removal
l f	Habitat of indigenous flora and fauna protected, including taonga species	2.5	5	12.5		Limited impacts on receiving ecosystem assumed due to excellent bacteriological quality and extension of outfall further from shore.
i	Efficient use of resources, including energy efficiency, operational carbon emissions, and biosolids production	2.5	2	5		Methane generation in ponds, wetland & eventually capped landfill. Inefficient surface aeration Less pumping than land discharge
Viability 6	Opportunity for beneficial reuse of treated wastewater for employment or commercial ventures	2.5	3	7.5	93.75	Opportunity for reuse, if diverted at treatment plant. Probably equivalent of Queensland Class B. Re-Use in production of fodder crop Suitable for root zone irrigation of grapes
	Affordable to implement (capital costs)	8.75	3	26.25		
	Affordable to operate and maintain (operational costs)	8.75	4	35		
	Minimise loss of productive land resource	5	5	25		Land is not used
			Total Score	368.75 Check Total Score	368.75	

Options Scoring Page 4 of 15

Multi-Criteria Assessment Evaluation Results

Katikati Wastewater Disposal Future Directions

Evaluation cr	iteria		Opt 1c: New N	IBR + New ocea	n outfall 500m le	onger than existing
Area	Criteria	Weighted	Raw Score	Weighted	Weighted	Reasons
		Score		Score	Criteria Score	
Cultural	Improve mauri and mana (land	25	5	125	125	
values	and water) Integrate well with existing land	0	3	0		
	and water uses			-		
	Gathering of food/kai moana	0	3	0		
Community Needs	Scalable/staged to meet growth	10	5	50	117.5	The plant can be upgraded, outfall could be designed for higher operating pressure Pipeline & outfall readily scalable for large extra capacity - But must be done at day 1.
	Able to be modified to meet water quality improvements	7.5	4	30		Quality improvement in future by conversion to 4 Stage for very low TN or to 5 Stage for bio-P removal. But these are disruptive and expensive retrofits
	Resilient to climate change and natural hazards	7.5	5	37.5		Not greatly affected as it would be built to appropriate elevation level. Foundation and ground improvement designs would need to take account of higher ground water levels
Impacts on	Preserves recreational value of	10	5	50	110	<40 - excellent (Category A)
Water and Land	people (including swimming fishing and any other recreational activities)					This is at end of pipe. Immediately after the diffuser, in ocean, the concentration is about 100 times less than this.
	Nutrients managed to healthy levels in ground and surface water bodies	10	4	40		Good nutrient removal through the plant. But that's all.
	Habitat of indigenous flora and fauna protected, including taonga species	2.5	5	12.5		Limited impacts on receiving ecosystem assumed due to excellent bacteriological quality and extension of outfall further from shore.
	F45:-:	25	2	7.5	-	Chada da la diil Adabaa aa aa ahi a i
	Efficient use of resources, including energy efficiency, operational carbon emissions, and biosolids production	2.5	3	7.5		Sludge to landfill. Methane generation in capped Landfill is significantly lower compared to open lagoons and wetlands. Efficient fine bubble aeration BUT 20% extra aeration of membranes Less pumping than land discharge
Economic Viability	Opportunity for beneficial reuse of treated wastewater for employment or commercial ventures	2.5	4	10	78.75	This treatment is a suitable pre-cursor for diversion of treated effluent at the treatment plant for further treatment for various forms of reuse.
	Affordable to implement (capital costs)	8.75	1	8.75		
	Affordable to operate and maintain (operational costs)	8.75	4	35		
	Minimise loss of productive land resource	5	5	25		Land is not used
			Total Score	431.25		
l			TOTAL SCOLE	431.25		
				Check Total	431.25	

Options Scoring Page 5 of 15

Multi-Criteria Assessment Evaluation Results

Katikati Wastewater Disposal Future Directions

Evaluation cr			Opt 2a: Status	Quo (Lagoons +	MBBR) + DAF +	Katikati pasture irrigation		
Area	Criteria	Weighted	Raw Score	Weighted	Weighted	Reasons		
		Score		Score	Criteria Score			
Cultural	Improve mauri and mana (land	25	2	50	50			
values	and water)			_				
	Integrate well with existing land and water uses	0	3	0				
	Gathering of food/kai	0	3	0				
	moana							
Community Needs	Scalable/staged to meet growth	10	2	20	57.5	Probably needs a new plant for more capacity. Pipe can be oversized to start with. Limited capacity to upgrade the plant, unlikely to purchase adjacent land block, but pasture type potentially could be changed		
	Able to be modified to meet water quality improvements	7.5	2	15		Very limited increase to MBBR or the lagoon treatment quality could be added. DAF added for disinfection improvement, could be expanded if required		
	Resilient to climate change and natural hazards	7.5	3	22.5		Worst case storm tide scenario would affect access road, Lagoons, Wetland and Outfall PS. The MBBR built above the ground not affected. Outfall not affected. Land discharge not affected		
Impacts on	Preserves recreational value of	10	4	40	95	Assume community would not visit this area.		
Water and Land	people (including swimming fishing and any other recreational activities)		·	.0	55	Maybe some potential for runoff to surface water		
	Nutrients managed to healthy levels in ground and surface water bodies	10	4	40		Limited nutrient removal due to the treatment balance in the MBBR and the lagoons. P removal through DAF. Further nutrient removal through pasture management		
	Habitat of indigenous flora and fauna protected, including taonga species	2.5	3	7.5		Limited impacts on receiving ecosystem assumed due to excellent bacteriological quality. However, potential for residual impacts of discharge on downstream freshwater receiving environments (i.e. Aongatete River) and species as a result of surface runoff.		
	Efficient use of resources, including energy efficiency, operational carbon emissions, and biosolids production	2.5	3	7.5		Sludge to landfill. Methane generation in capped Landfill significantly lower compared to open lagoons and wetlands. Also, land discharge has worse N2O emissions. Inefficient surface aeration in WWTP 6.7km + 60m vertical lift + 30m residual pressure at irrigator		
Economic Viability	Opportunity for beneficial reuse of treated wastewater for employment or commercial ventures	2.5	4	10	90	Probably equivalent of Queensland Class B. Re-Use in production of fodder crop Suitable for root zone irrigation of grapes		
	Affordable to implement (capital costs)	8.75	5	43.75				
	Affordable to operate and maintain (operational costs)	8.75	3	26.25				
	Minimise loss of productive land resource	5	2	10		Degradation from fully productive Dairy to a more tenuous & probably lower value cut and carry proposition. Maybe break even. Especially if Dairy payout is heading north of \$10/kg milk solids and Kiwifruit north of \$11 per tray		
			Total Score	292.5				
				Check Total	292.5			
				Score				

Options Scoring Page 6 of 15

Multi-Criteria Assessment Evaluation Results

Katikati Wastewater Disposal Future Directions

Evaluation cr						rtiary filters and UV + Katikati forestry irrigation		
Area	Criteria	Weighted	Raw Score	Weighted	Weighted	Reasons		
		Score		Score	Criteria Score			
Cultural	Improve mauri and mana (land	25	1	25	25			
values	and water)		-	23				
	Integrate well with existing land	0	3	0	-			
	and water uses		_		_			
	Gathering of food/kai	0	3	0				
Cit	moana	10		30	C.F.	The aleas exciled be consended book coefficience		
Community Needs	Scalable/staged to meet growth	10	2	20	65	The plant could be upgraded, but unlikely to purchase adjacent land block or change tree species		
	Able to be modified to meet water quality improvements	7.5	5	37.5		Process could be modified by adding additional treatment tanks, media or membrane. OR conversion to 4 or 5 stage. Tertiary filtration could be added		
	Resilient to climate change and natural hazards	7.5	1	7.5		Not affected by sea level rise as it would be built to appropriate elevation level. Foundation and ground improvement designs would need to take account of higher ground water levels. Discrete Tree crop vulnerable to significant wind throw (as per Bola) and various Pine diseases present in Waikato and BoP . Loss for multiple years. NEED TO CONSIDER if this is a fatal flaw.		
Impacts on	Preserves recreational value of	10	4	40	107.5	Assume community would not visit this area.		
Water and Land	people (including swimming fishing and any other recreational activities)		·	.0	20/10	Maybe some potential for runoff to surface water		
	Nutrients managed to healthy levels in ground and surface water bodies	10	5	50		Good nutrient removal by MLE process. Further nutrient removal through forestry harvesting		
	Habitat of indigenous flora and fauna protected, including taonga species	2.5	4	10		Limited impacts on receiving ecosystem assumed due to excellent bacteriological quality. However, potential for residual impacts of discharge on downstream freshwater receiving environments (i.e. Aongatete River) and species as a result of surface runoff.		
	Efficient use of resources, including energy efficiency, operational carbon emissions, and biosolids production	2.5	3	7.5		Sludge to landfill. Methane generation in capped Landfill significantly lower compared to open lagoons and wetlands. Also, land discharge has worse N2O emissions. Highest power. Intensive treatment process + 6.7km + 60m vertical lift + 30m residual pressure at		
Economic	Opportunity for beneficial reuse	2.5	4	10	32.5	Irrigation gun May provide long term economic return.		
Viability	of treated wastewater for employment or commercial ventures	2.5	4	10	32.3	MLE is also a suitable pre-cursor, with tertiary membrane filtration added, for further treatment for various forms of reuse.		
	Affordable to implement (capital costs)	8.75	1	8.75				
	Affordable to operate and maintain (operational costs)	8.75	1	8.75				
	Minimise loss of productive land resource	5	1	5		Degradation from fully productive Dairy to a more tenuous & probably lower value cut and carry proposition. Maybe break even but with a return only at the end of year 27/28. Especially if Dairy payout is heading north of \$10/kg milk solids and Kiwifruit north of \$11 per tray		
			Total Score	230				
				Check Total	230			
				Score				

Options Scoring Page 7 of 15

Katikati Wastewater Disposal Future Directions

CAPEX & OPEX NPV RANKING

	CAPEX Final	Score	Rank	OPEX/av	v/annum	Score	Rank	NPV Capex	Score	Rank	NPV Opex	Score	Rank	Total NPV	Score	Rank
Opt 0a: Status Quo (Lagoons +MBBR) + Existing Ocean outfall (incl renewal)	\$ 54,400,000	1	2	\$ 1,0	050,000	2	1	\$ 49,630,937	1	2	\$ 27,417,115	2	1	\$ 77,048,051	5	1
Opt 1a: Status Quo (Lagoons + MBBR) + New ocean outfall 500m longer than existing	\$ 60,000,000	0	3	\$ 9	960,000	2	1	\$ 52,095,340	0	3	\$ 27,810,116	2	1	\$ 79,905,456	5	1
Opt 1b: Status Quo (Lagoons+MBBR) + DAF + New ocean outfall 500m longer than existing	\$ 63,400,000	0	4	\$ 1,2	260,000	1	3	\$ 55,131,112	0	3	\$ 34,659,920	1	3	\$ 89,791,033	2	4
Opt 1c: New MBR + New ocean outfall 500m longer than existing	\$ 84,270,000	-2	6	\$ 1,2	250,000	1	3	\$ 68,800,000	-2	5	\$ 33,544,312	1	3	\$ 103,354,558	2	4
Opt 2a: Status Quo (Lagoons + MBBR) + DAF + Katikati pasture irrigation	\$ 47,230,000	2	1	\$ 1,3	320,000	0	5	\$ 45,748,436	2	1	\$ 36,656,409	0	5	\$ 82,404,845	3	3
Opt 3a: Modified Ludzak Ettinger (MLE) with tertiary filters and UV + Katikati forestry irrigation	\$ 74,970,000	-1	5	\$ 1,9	950,000	-2	6	\$ 69,592,343	-2	5	\$ 52,698,341	-2	6	\$ 122,290,685	1	6

	CAPEX Final	OPEX/av/annum	NPV Capex	NPV Opex			Total NPV	
			(\$m)	(\$m)	(\$m)	(\$m)	(\$m)	
Opt 0a: Status Quo (Lagoons +MBBR) + Existing Ocean outfall (incl renewal)	\$54.4	\$1.1	\$49.6	\$27.4			\$77.0	
Opt 1a: Status Quo (Lagoons + MBBR) + New ocean outfall 500m longer than existing	\$60.0	\$1.0	\$52.1	\$27.8			\$79.9	
Opt 1b: Status Quo (Lagoons+MBBR) + DAF + New ocean outfall 500m longer than existing	\$63.4	\$1.3	\$55.1	\$35.2			\$90.3	
Opt 1c: New MBR + New ocean outfall 500m longer than existing	\$84.3	\$1.3	\$68.8	\$34.8			\$103.6	
Opt 2a: Status Quo (Lagoons + MBBR) + DAF + Katikati pasture irrigation	\$47.2	\$1.3	\$45.7	\$37.2			\$82.9	
Opt 3a: Modified Ludzak Ettinger (MLE) with tertiary filters and UV + Katikati forestry irrigation	\$75.0	\$2.0	\$69.6	\$53.9			\$123.5	

					Total score
	CAPEX Final	OPEX av/annum	NPV CAPEX	NPV OPEX	Total NPV
Opt 0a: Status Quo (Lagoons +MBBR) + Existing Ocean	1	2	1	2	5
outfall (incl renewal)	į	2		2	,
Opt 1a: Status Quo (Lagoons + MBBR) + New ocean	0	2	0	2	5
outfall 500m longer than existing	0	2	U	2	3
Opt 1b: Status Quo (Lagoons+MBBR) + DAF + New	0	1	0	1	2
ocean outfall 500m longer than existing	0	'	0		2
Opt 1c: New MBR + New ocean outfall 500m longer than	2	1	2	1	2
existing	-2	ļ.	-2	'	2
Opt 2a: Status Quo (Lagoons + MBBR) + DAF + Katikati	2	_	2	0	2
pasture irrigation	2	U	2	0	,
Opt 3a: Modified Ludzak Ettinger (MLE) with tertiary	1	2	2	-2	1
filters and UV + Katikati forestry irrigation	-1	2	- z	-2	

CAPEX and OPEX NPV Rating Page 8 of 15

Katikati Wastewater Disposal Future Directions

Scoring Scale Calculations

	(APEX Final	OPEX av/annum		NPV CAPEX			NPV OPEX	Total NPV
min	\$	47,230,000	\$	960,000	\$	45,748,436	\$	27,417,115	\$ 77,048,051
max	\$	84,270,000	\$	1,950,000	\$	69,592,343	\$	52,698,341	\$ 122,290,685
range	\$	37,040,000	\$	990,000	\$	23,843,908	\$	25,281,226	\$ 45,242,634
split	\$	3,704,000	\$	99,000	\$	2,384,391	\$	2,528,123	\$ 4,524,263

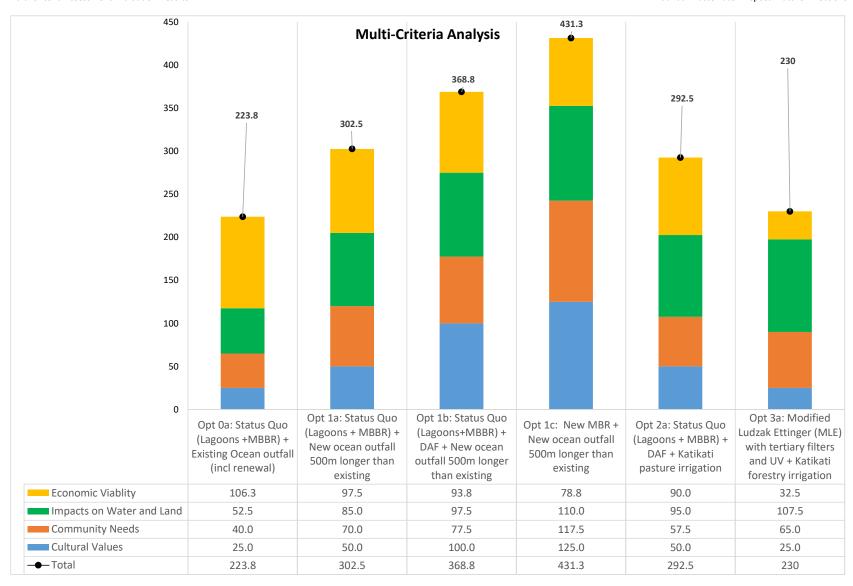
CAPEX Final	OPE	X av/annum	1	NPV CAPEX	NPV OPEX	Total NPV
\$ 84,270,000	\$	1,950,000	\$	69,592,343	\$ 52,698,341	\$ 122,290,685
\$ 76,862,000	\$	1,752,000	\$	64,823,562	\$ 47,642,096	\$ 113,242,158
\$ 69,454,000	\$	1,554,000	\$	60,054,780	\$ 42,585,851	\$ 104,193,631
\$ 62,046,000	\$	1,356,000	\$	55,285,999	\$ 37,529,606	\$ 95,145,104
\$ 54,638,000	\$	1,158,000	\$	50,517,217	\$ 32,473,360	\$ 86,096,578
\$ 47,230,000	\$	960,000	\$	45,748,436	\$ 27,417,115	\$ 77,048,051

Scoring Scale

	CAPE	X Final	OPEX av	/annum	NPV C	APEX	NPV OPEX		Tota	l NPV
score	price (low)	price (high)	price (low)	price (high)	price (low)	price (high)	price (low)	price (high)	price (low)	price (high)
1	\$76,862,000	\$84,270,000	\$1,752,000	\$1,950,000	\$64,823,562	\$69,592,343	\$47,642,096	\$52,698,341	\$113,242,158	\$122,290,685
2	\$69,454,000	\$76,862,000	\$1,554,000	\$1,752,000	\$60,054,780	\$64,823,562	\$42,585,851	\$47,642,096	\$104,193,631	\$113,242,158
3	\$62,046,000	\$69,454,000	\$1,356,000	\$1,554,000	\$55,285,999	\$60,054,780	\$37,529,606	\$42,585,851	\$95,145,104	\$104,193,631
4	\$54,638,000	\$62,046,000	\$1,158,000	\$1,356,000	\$50,517,217	\$55,285,999	\$32,473,360	\$37,529,606	\$86,096,578	\$95,145,104
5	\$47,230,000	\$54,638,000	\$960,000	\$1,158,000	\$45,748,436	\$50,517,217	\$27,417,115	\$32,473,360	\$77,048,051	\$86,096,578

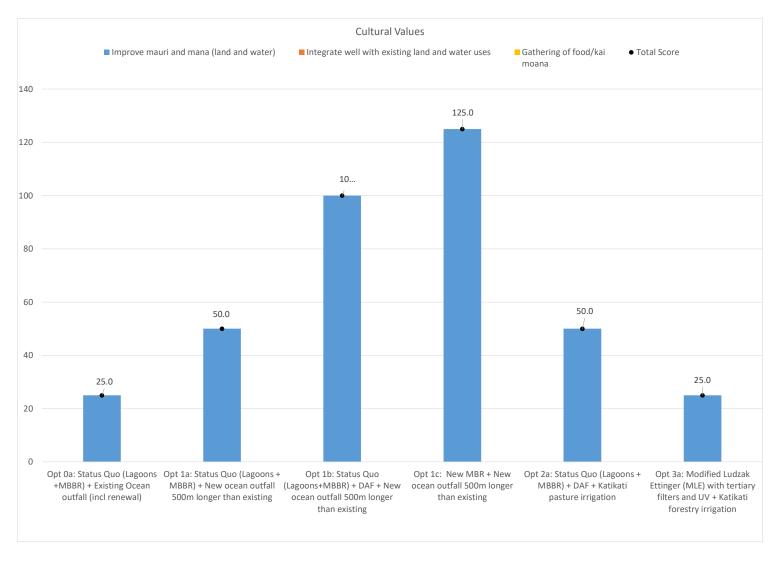
CAPEX and OPEX NPV Rating Page 9 of 15

Katikati Wastewater Disposal Future Directions



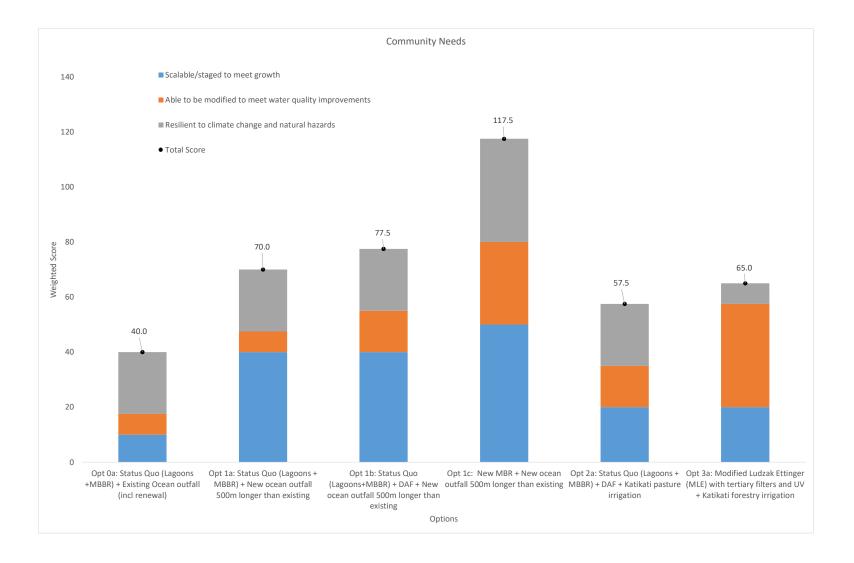
Combined Scoring with Costs Page 10 of 15

Katikati Wastewater Disposal Future Directions



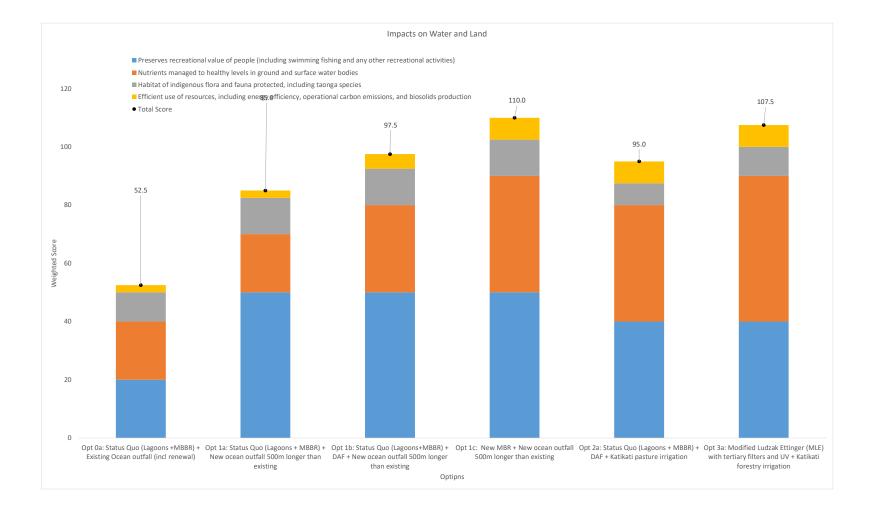
Cultural Values Page 11 of 15

Katikati Wastewater Disposal Future Directions



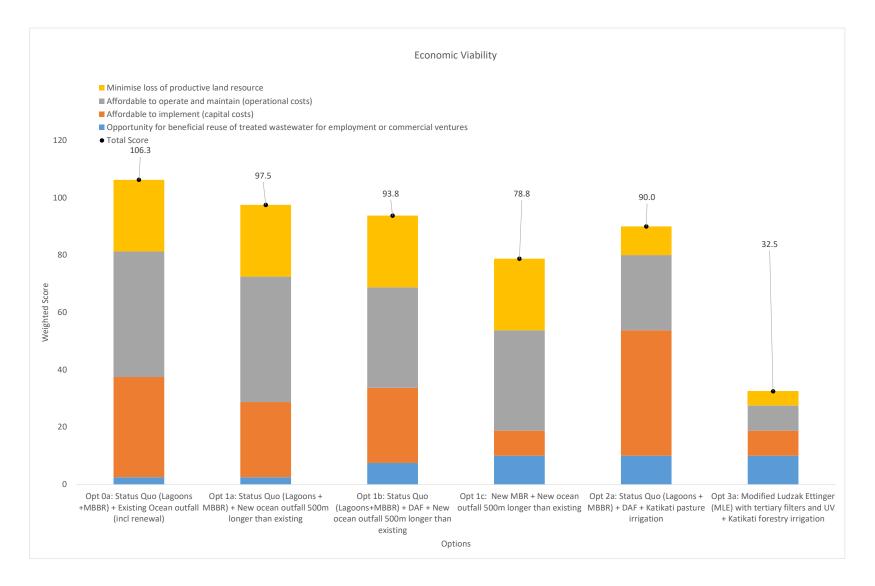
Community Needs Page 12 of 15

Katikati Wastewater Disposal Future Directions



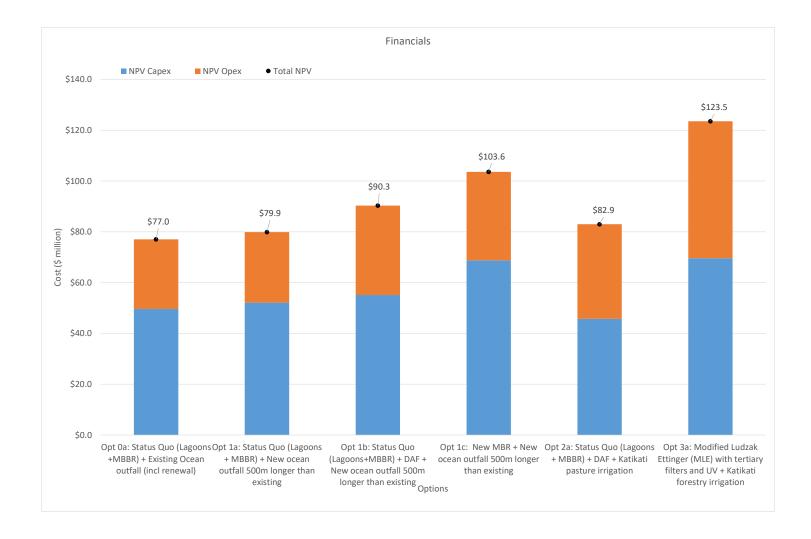
Impacts on Water and Land Page 13 of 15

Katikati Wastewater Disposal Future Directions



Economic Viability Page 14 of 15

Katikati Wastewater Disposal Future Directions



Financials Page 15 of 15



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22 July 2025

Western Bay of Plenty District Council 1484 Cameron Road Tauranga, 3112 New Zealand

Attention: Coral-Lee Ertel

Dear Coral-Lee

Katikati Treated Wastewater Outfall - Outline of Potential Construction Methodologies

1 Introduction

This letter outlines the expected layout and construction methods for replacing the treated effluent pipeline from the Katikati wastewater treatment plant. Its purpose is to help tangata whenua members of Te Ohu Waiora consider possible cultural impacts during construction at a pre-concept stage, as part of the Katikati Wastewater Disposal Future Directions report. More detailed cultural assessments could be made as any future design progresses.

The letter has been prepared by Ian Goss, Senior Associate Civil Engineer, who has considerable experience in designing and supervising ocean outfalls from his time at OCEL Ltd. The technical details have been reviewed by Greg Offer, Waters Project Director at Beca, who has overseen several projects involving the consenting and construction of ocean outfalls.

The replacement pipeline is expected to replicate this alignment, but with the ocean outfall section 500m longer to the point of discharge. The existing outfall would need to continue to operate until the new outfall components become available, so the new installation components would be constructed in parallel with the existing system.

The cross-harbour section of the current pipeline was originally installed in 1978. The route of the existing pipeline is shown in the marine chart extract below (Figure 1) and consists of three main sections:

- The cross-harbour section, which is 9.63 km long
- The Matakana Island crossing, which is 1.85 km
- The ocean outfall section, which is 1.15 km

The replacement pipeline is expected to follow this same route, but the ocean outfall section will be extended by 500 metres to reach the new discharge point. The current outfall will need to keep working until the new components are ready, so the new pipeline will be built alongside the existing system.

make everyday better.

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Figure 1 Extract from LINZ Marine Chart nz5422 Tauranga Harbour - Katikati Entrance to Mount Maunganui.

It is important to note that, when seeking tenders for projects like this, the detailed requirements for the pipeline—such as materials, pressure rating, connection types, burial depth, and ballast—are typically specified. However, the actual construction method is usually left to the contractors. This encourages competitive bids and allows contractors to make use of their particular expertise and specialist equipment, sometimes resulting in innovative building solutions.

The construction options for each section of the pipeline are outlined below, bearing in mind that the original outfall scheme was likely built through a similar process. Since 1978, there have been significant improvements in pipeline construction, especially the widespread use of high-density polyethylene (HDPE) pipes, which are strong, long-lasting, and resistant to corrosion—making them especially suitable for wastewater in a marine environment. There have also been advances in directional drilling and tunnelling technologies. However, for this particular project, the cross-harbour section is expected to be too long for trenchless installation methods to be feasible. The most likely material for the pipeline would be 355mm outside diameter HDPE.

2 The Cross Harbour Section

The marine chart below shows that this 10 km section crosses tidal flats, where the bed levels are generally between 0.4 and 1.0 metres above chart datum. With spring tides, water levels range from 0.1 up to 1.9 metres above chart datum, meaning at high spring tide, water depth is about 0.9 metres.

At other times, the depth is even less, which makes it difficult for construction teams to access the area along the pipeline route. The water is too shallow for floating equipment and too deep for land-based excavators, with conditions constantly changing with the tide. There are also spots where the pipeline crosses permanent channels, where the water is around 0.5 to 3.0 metres deep at low tide.

The pipeline on this section would likely be required to be buried to 2m cover below the tidal flats, and 1.5m cover below the channel bed levels as for the existing pipeline. Although this method may create an undulating pipeline profile, which would need to be addressed in the hydraulic design to manage air and sediment build-up, it offers a practical and achievable approach to installation.

2.1 Trench Option

A review of the construction of the existing cross-harbour pipeline section suggests that the method used previously is likely to be the most practical to overcome the physical conditions and achieve the desired protective cover. Excavation was carried out using a small cutter suction dredge (Refer Figure 2) which, as



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well as excavating the trench for the pipe installation, created a localised pond around itself to allow it to operate over the full tide cycle.

This method lets the dredged material be carried away in a floating pipeline and pumped back into the trench behind the dredge to cover the newly installed pipe. As the dredge moves forward, ready-made sections of pipe can be lowered into the trench right behind it. This way, the material only has to be moved once, making the process more efficient.

For the new pipeline, the pipe sections would be made from HDPE, welded and tested on land, then floated or towed out to where they are needed. Concrete weights, such as collars or saddle weights, would be attached to the pipes to keep them from floating, especially in the event of an earthquake that could loosen the harbour sediments. Each section of pipe would likely be welded together above the water—either on the dredge itself or on a nearby pontoon.



Figure 2 Heron Construction small cutter suction dredge "Beaver"

Temporary construction effects may include:

- The requirement for an assembly and launching area for fabricating the pipe strings
- Disturbance of the harbour bed
- · Release of fine sediment mainly in the vicinity of the backfilling area
- · Operation of support vessels and anchoring systems to maintain position and pipeline alignment
- Engine noise
- · Land based excavation at either end of the crossing alignment to achieve landfalls
- Restrictions on access for other harbour users, the extent of this may influence the length of pipe string assembly

2.2 Drill/Micro-Tunnel Option

An alternative method to cross the inter-tidal zone within the harbour may be to directionally drill or micro tunnel underneath it in order to minimise the disturbance of the inter-tidal zone. However, in practice this may not be feasible due to the considerable extent to the inter-tidal zone, resulting in drilling lengths that are not practically achievable. An environmental assessment of the open excavation option could be used to develop mitigation measures for that method to minimise any construction-phase impacts.



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3 Matakana Island Crossing

The pipeline section across Matakana Island (Refer Figure 3) could be constructed using conventional land based pipelaying techniques and equipment (excavators, trench shields etc.) and would need to incorporate air release and pigging receiver at the western landfall. Also, de-aeration components at the eastern side of the island to prevent air entering the outfall pipeline. These are standard hydraulic components required in pipelines of this nature.

Creating a construction corridor across Matakana Island would likely mean clearing a section of the plantation to allow for safe pipeline installation. This involves removing stumps and roots that could get in the way of digging and laying the pipe. It might make sense to make the corridor wide enough to store and assemble the pipes needed for both the harbour crossing and the ocean outfall pipeline. Since heavy equipment and materials will need to be brought onto the island for the outfall shore crossing anyway, preparing a larger corridor now could make the whole process more efficient.



Figure 3 Plantation condition on Matakana pipeline route early 2023 (Google Earth)

Temporary construction effects would include those of normal on land pipe installation, and site restoration to an agreed standard to be included as part of the construction contract. Environmental assessment of the impact of vegetation disturbance and re-establishment would be an important input to construction phase environmental management.

4 Ocean Outfall Section

This project involves building a new wastewater outfall that will extend about 1,150m offshore (final length to be confirmed). The outfall will start from a sandy beach facing the Pacific Ocean, where the pipe will sometimes be exposed to strong ocean swells. The shoreline is likely to experience erosion due to seasonal storms and rising sea levels. In response, sandbars may form and shift offshore, helping to protect the coast by absorbing wave energy—if there is enough sand available. These sandbars can stretch far out into the ocean, especially in exposed areas. During storms, the surf zone can become very wide, which means that breaking waves might put extra pressure on any pipelines lying on the seabed in this region.

The design of an ocean outfall needs to consider these issues in detail, generally including information provided by bathymetric survey monitoring to identify an envelope of seabed profile movement.



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Geotechnical information to establish seabed and sub seabed conditions, detailed wave and current exposure information would also be needed to provide a secure pipeline design. At this stage none of this information is available.

At this site, given the proposed size and extent of the pipeline, the options are likely to be (but not limited to):

- Trench Bottom launch of a weighted HDPE pipeline preassembled onshore. The approach here is that the pipe is pulled directly offshore from the assembly site through a trench across the beach and the surf zone to establish an installed profile below the bar profile envelope. This is likely to require a sheet piled trench across the beach and an excavated trench (dredged or excavated from an adjacent trestle for access to build and maintain the sheet pile (Refer Figure 4) and to excavate to design profile beyond it) to the outer surf zone. Beyond this point, the pipeline would be designed to have adequate weight, to self-bury in the seabed, or to be secured by pin piles to the seabed.
- Directional drilling or micro tunnelling to install a pipe to beyond the storm condition surf zone width.
 A further extension to the diffuser location using a "float and sink" approach where a weighted air filled HDPE pipeline is fitted with enough weight that it would still float. That section of pipe is towed to site, sunk in a controlled manner and connected to the end of the drilled pipe. The feasibility of the drilling component of this approach reliant on appropriate ground conditions and the expertise of the installation contractor.

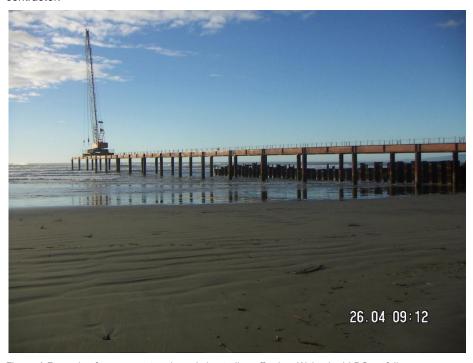


Figure 4 Example of temporary trestle and sheet pile cofferdam Waimakariri DC outfall



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Either of these options would require the mobilisation and establishment of a construction site adjacent to the beach at the outfall location. The bottom launch option would require the construction of a temporary trestle and sheet pile cofferdam. The directional drilled or micro tunnelled option would require the setup of the drilling machine and associated equipment including drilling slurry handling. Both methods require a substantial laydown area to store and pre-assemble pipe components on site.

Temporary construction effects would include:

- Provision to transport and establish construction equipment on the site
- Establishment of a pipe assembly and launch area
- The construction of a temporary trestle and sheet pile trench across the beach (bottom launch)
- Marine construction support based in Port of Tauranga

Site restoration after works completion would be part of the construction contract. Any temporary changes to the beach and foreshore on an active beach site like this have been shown to quickly recover once the temporary structures have been removed.

Yours sincerely

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on behalf of

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MEMORANDUM

То	Kristina Hermens - Western Bay of Plenty District Council
From	Simon Banks
Office	Rotorua
Date	23 January 2025
File/Ref	3-WLASS.AT
Subject	Katikati Wastewater Future Directions - Summary of Relevant Planning Documents

Introduction

- This summary of relevant planning documents builds on the legal framework described in Section D: Resource Management Considerations, in relation to the Katikati Wastewater Treatment Scheme (KWTS). Specifically, it outlines a high-level summary of relevant provisions in the statutory planning documents under the Resource Management Act 1991 (RMA), including:
 - (a) relevant national policy statements (**NPS**) and national environmental standards (**NES**), including:
 - (i) New Zealand Coastal Policy Statement (NZCPS);
 - (ii) NPS for Freshwater Management (NPS-FM) and NES for Freshwater (NES-F); and
 - (iii) NPS for Highly Productive Land (NPS-HPL).
 - (b) relevant regional planning documents, including:
 - (i) Bay of Plenty Regional Policy Statement (**RPS**);
 - (ii) Bay of Plenty Regional Coastal Environment Plan (RCEP); and
 - (iii) Bay of Plenty Regional Natural Resources Plan (RNRP).
 - (c) relevant district planning documents, namely the Western Bay of Plenty District Plan (District Plan).
- Many of the relevant planning documents listed above contain general provisions regarding the need for activities to avoid, remedy or mitigate adverse effects. Unless specifically relevant, this summary does not address these provisions. Instead it focuses on provisions which are directly relevant to the discharge of wastewater and related matters.
- 3. This summary is not intended to be a detailed assessment of consents required for the KWTS and associated construction and maintenance activities, nor is it intended to be a consenting strategy to determine an appropriate consenting pathway. Further assessment of the consenting requirements for the KWTS under the relevant planning documents will be undertaken as part of the development and evaluation of options.

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4. This summary is limited to the current versions of these documents at the time of writing. As noted in the legal framework, a number of amendments and reforms of the planning system have been signalled by central government, with a watching brief recommended. This summary can be updated to reflect changes to the relevant documents as required.

National Direction - NPS and NES

New Zealand Coastal Policy Statement

- 5. The NZCPS 2010 provides guidance on managing the coastal environment, including objectives and policies related to discharges. The NZCPS is obviously directly relevant to any option for the KWTS which discharges to the coastal environment. However, it is also likely to be relevant to a land-based option, as:
 - (a) The NZCPS applies to the coastal environment, which includes both the coastal marine area (i.e. the wet part of the coast below mean high water springs) and the adjoining land
 - (b) Tauranga Harbour would be the ultimate receiving environment for contaminants associated with a land-based discharge around Katikati.
- 6. Relevant provision of the NZCPS include:
 - (a) Objective 1, which seeks to maintain coastal water quality, and enhance it where
 it has deteriorated due discharges arising from human activities;
 - (b) Objective 3, which recognises the principles of the Treaty of Waitangi and the role of tangata whenua as kaitiaki of the coastal environment;
 - (c) Objective 6, which seeks to enable people and communities to provide for their social, economic, and cultural wellbeing and their health and safety through use and development of the coastal environment.
 - (d) Policy 23, which addresses the discharge of contaminants to water in the coastal environment, including specific provisions relating to the discharge of wastewater, and states:
 - (1) In managing discharges to water in the coastal environment, have particular regard to:
 - (a) the sensitivity of the receiving environment;
 - (b) the nature of the contaminants to be discharged, the particular concentration of contaminants needed to achieve the required water quality in the receiving environment, and the risks if that concentration of contaminants is exceeded; and
 - (c) the capacity of the receiving environment to assimilate the contaminants;
 - (d) avoid significant adverse effects on ecosystems and habitats after reasonable mixing;
 - (e) use the smallest mixing zone necessary to achieve the required water quality in the receiving environment; and
 - (f) minimise adverse effects on the life-supporting capacity of water within a mixing zone.
 - (2) In managing discharge of human sewage, do not allow:
 - (a) discharge of human sewage directly to water in the coastal environment without treatment; and

- (b) the discharge of treated human sewage to water in the coastal environment, unless:
 - there has been adequate consideration of alternative methods, sites and routes for undertaking the discharge; and
 - (ii) informed by an understanding of tangata whenua values and the effects on them.
- (3) Objectives, policies and rules in plans which provide for the discharge of treated human sewage into waters of the coastal environment must have been subject to early and meaningful consultation with tangata whenua.
- 7. In addition to the above, the NZCPS contains a number of directive policies to avoid adverse effects of activities on certain aspects of the coastal environment, including indigenous biological diversity (Policy 11), areas of outstanding natural character (Policy 13), natural features and landscapes (Policy 15), and surf breaks of national significance (Policy 16).
- 8. A number of these features are identified in the vicinity of Katikati and the existing KWTS, including the pipeline and outfall (see discussion of mapped features under the RPS and RCEP below). Any option located within or in the vicinity of these features will need to demonstrate how adverse effects are avoided.

NPS for Freshwater Management and NES for Freshwater

- 9. The NPS-FM 2020 (as amended in October 2024) has several implications for wastewater discharges, including:
 - (a) **Te Mana o te Wai:** This principle prioritizes the health and well-being of water bodies, followed by the essential needs of people, and then other uses
 - (b) Stricter Discharge Standards: The NPS-FM sets tougher national bottom lines for contaminants like ammonia and nitrate, which are common in wastewater. This means wastewater treatment plants must ensure their discharges meet these stricter standards to protect aquatic life
 - (c) Improving Water Quality: Councils are required to develop action plans to improve water quality, which includes managing discharges from wastewater and sewage systems. This could involve upgrading treatment facilities or implementing new technologies to reduce pollutants
 - (d) **Monitoring and Reporting**: Local authorities must monitor freshwater quality and report on it annually. This includes tracking the impact of wastewater discharges on water bodies and taking corrective actions if standards are not met
- 10. However, much of the work to give effect to the NPS-FM relies on regional council developing and implementing freshwater planning instruments. For the Bay of Plenty, work to change the RPS and RNRP have been placed on hold following amendments to the RMA to prevent notification of proposed regional plan changes for freshwater until the NPS-FM is replaced or 31 Dec 2025 (whichever is first).
- 11. In addition, and as noted in the legal framework, recent amendments to the RMA mean that the hierarchy of obligations in Te Mana o te Wai (as section 1.3(5) of the NPS-FM) are currently excluded from consenting while a review and replacement of the NPS-FM is undertaken.
- 12. The NES-F regulates certain activities that pose risks to freshwater and freshwater ecosystems. Anyone carrying out these activities will need to comply with the standards. The most relevant provisions for the KWTS are those relating to the protection of natural inland wetlands, which may be relevant to the development of a land-based disposal option.

NPS for Highly Productive Land (NPS-HPL); and

- 13. The NPS-HPL 2022 aims to protect New Zealand's highly productive land for land-based primary production i.e. agricultural, horticultural, and forestry activities. It currently applies to land classed as Land Use Capability (LUC) 1, 2, or 3 (although central government has proposed removing LUC3 land from consideration).
- 14. According to maps prepared by BOPRC as part of Proposed Change 8 (NPS-HPL) to the RPS, much of the land around Katikati which would be suitable for land-based wastewater disposal is classed as LUC 2 and 3, so any such option would need to address the provisions of the NPS-HPL. However, land on the coastal portion of Matakana Island is not considered highly productive.

Regional Planning Documents

Bay of Plenty Regional Policy Statement

- 15. The RPS provides a framework for managing the Bay of Plenty's natural and physical resources, and sets policies for discharges to water and land, aiming to meet target attribute states for water quality and protect freshwater ecosystems. The RPS identifies the declining water quality of Tauranga Harbour as one of the most important issues for the region to address.
- 16. The RPS also sets policies for regionally significant infrastructure, which includes local authority wastewater networks, systems and wastewater treatment plants. The RPS recognises the critical role this infrastructure plays in the social, economic and cultural well-being of the region's communities and their health and safety.
- 17. The RPS maps areas of natural character value in the coastal environment. Relevant areas to the KWTS include:
 - (a) Matakana Island (oceanside coastal strip) High Natural Character
 - (b) Northern Tauranga Harbour Very High Natural Character

Bay of Plenty Regional Coastal Environment Plan

- 18. The RCEP promotes sustainable management of the natural and physical resources of the Bay of Plenty's coastal environment and includes provisions specific to the discharge of wastewater and other contaminants to the coastal marine area.
- 19. Relevant provisions of the RCEP include (but are not necessarily limited to):
 - (a) Policy CD 1 Discharges to the coastal marine area must:
 - (a) Avoid significant adverse effects, including cumulative effects, on aquatic life, habitats, feeding grounds, kaimoana (including shellfish gathering), ecosystems, contact recreation and amenity values in the coastal marine area after reasonable mixing:
 - (b) Minimise adverse effects on the life-supporting capacity of water within the mixing zone;
 - (c) Avoid the discharge of persistent toxic contaminants into the environment, and where avoidance cannot be practically achieved, the adverse effects of such discharges must be mitigated or remedied;
 - (d) Avoid, remedy or mitigate adverse effects on the stability of the coastal environment, including localised erosion and scour resulting from the discharge;
 - (e) Maintain or enhance the physical characteristics of receiving waters (including salinity) that contribute to their life-supporting capacity, including their ability to support indigenous flora and fauna and kaimoana beds; and

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- (f) Be of a quality that has particular regard to:
 - The sensitivity of the receiving environment;
 - (ii) The capacity of the receiving environment to assimilate contaminants; and
 - (iii) The nature of the contaminants to be discharged, the concentration of contaminants needed to achieve the required water quality in the receiving environment, and the risks if that concentration of contaminants is exceeded.
- (b) Policy CD 4, which seeks to define the radius of a reasonable mixing zone in the conditions of a resource consent for the point source discharge of contaminants to coastal waters having regard to the following matters:
 - (a) Use of the smallest mixing zone necessary in order to minimise adverse effects on the life-supporting capacity of water within the mixing zone and achieve the required water quality standard of the receiving environment.
 - (b) The water quality standard in Schedule 10 to this Plan.
 - (c) The hydrological regime of the receiving water.
 - (d) The ambient concentrations of contaminants in the receiving water.
 - (e) Effluent discharge flow rate and contaminant concentrations.
 - (f) Existing discharge and abstraction consents in the area affected by the proposed point source discharge.
 - (g) The need to avoid significant adverse effects on ecosystems and habitats after reasonable mixing.
 - (h) The values and existing uses of the area affected by the proposed point source discharge.
 - (i) Māori cultural values (refer to Policy CD 6 and Iwi Resource Management policies).
 - (j) Proximity to bathing sites.
 - (k) Adverse environmental effects of the discharge, including cumulative effects in relation to (a) to (j).
 - (I) The location of the discharge and position of the outfall.
 - (m) Outfall diffuser design criteria.
 - (n) Information provided by the applicant.
 - (o) Any other information relevant to the nature of the discharge
 - (p) and the site characteristics.
- (c) Policy CD 5, which seeks to ensure that when considering measures to avoid, mitigate and remedy adverse effects on the coastal marine area, as a result of the discharge of contaminants, particular regard must be had to using alternative land based treatment and disposal systems, where appropriate and environmentally sustainable and where socially, technically and economically feasible.
- (d) Policy CD6, which requires recognition and provision for effects caused by the discharge of contaminants to the coastal marine area by:
 - (a) Promoting efficient use of water, including reuse and recycling of wastewater.
 - (b) Discouraging disposal of toxic materials via wastewater systems.

- (c) Encouraging a shift to land-based treatment and disposal systems, where appropriate and environmentally sustainable and socially, technically and economically feasible. This includes disposal of sewage by passage through land, soil or wetlands.
- (d) Avoiding, remedying or mitigating adverse effects on coastal resources or sites that are of significance to tangata whenua, where such resources or sites have been identified by tangata whenua.
- (e) Policy CD 9, which specifies that discharges of treated human sewage to coastal water that has not passed through land, soil or wetlands may only be consented where:
 - (a) The proposal is consistent with Policy 23(2)(b) of the NZCPS;
 - (b) There has been full consideration of the objectives and policies of this Plan; and
 - (c) The proposal to discharge treated human sewage directly to coastal water better meets the purpose of the Resource Management Act 1991 than a discharge to coastal water that has first passed through land, soil or wetlands.
- (f) Policy CD 10, which recognises that the disposal of wastewater in a different rohe from where it is generated is culturally inappropriate to tangata whenua.
- (g) Policy CD 11, which that during the assessment of applications to discharge treated human sewage to the coastal marine area, the consent authority consider whether the proposal:
 - (a) Promotes better use of fresh water by efficient use of water, reuse and recycling of wastewater, and discouraging disposal of toxic materials via wastewater systems;
 - (b) Includes the passing of sewage through land, soil or a wetland or uses an alternative technology and disposal methodology that is acceptable to tangata whenua; and
 - (c) Avoids highly sensitive discharge locations such as gazetted taiāpure, mahinga kai, other traditional seafood gathering areas or recreational beaches.
- (h) Policy CD 12, which seeks to prevent the following discharges in the coastal marine area:
 - (a) Discharges prohibited by the Resource Management (Marine Pollution) Regulations 1998;
 - (b) Discharges of untreated sewage; and
 - (c) Discharges of sewage to harbours and estuaries in the region.
- (i) Rule CD 9, which regulates the discharge of a contaminant to coastal water, which is not covered by another rule in the RCEP, as a Discretionary Activity.
- (j) Rule CD 10, which regulates discharge of treated human sewage from land-based systems that has not passed through land, soil or wetlands as a Non-Complying Activity.
- (k) Rule CD 15, which specifies that discharges of untreated sewage from land-based activities to the coastal marine area is a Prohibited Activity.
- 20. In addition to the above provisions, the RCEP also addresses structures and occupation of space in the coastal marine area, as well as disturbance and deposition of material.

The physical works required to establish a wastewater discharge will more than likely require these provisions to be addressed alongside the discharge provisions listed above.

21. The RCEP maps areas and features of significance in the coastal environment. Features located in the northern areas of Tauranga Harbour around Katikati and Matakana Island are listed in Table 1 below:

Table 1 - Mapped Features in the RCEP

Feature Category	Feature Name
Outstanding Natural Features and Landscapes (ONFL):	ONFL 3 – Tauranga Harbour ONFL 5 – Matakana Island
Area of Significant Cultural Value (ASCV)	ASCV 4 – Tauranga Moana
Indigenous Biological Diversity Area (IDBA) A	IDBA A4 – Aongatete Estuary IDBA A7 – Egg Island Sandbank IDBA A8 – Katikati Estuary IDBA A10 – Matahui Point Intertidal flats IDBA A15 – Tirohanga Mangroves IDBA A21 – Blue Gum Bay 1 IDBA A22 – Matakana Island 1 (oceanside shoreline) IDBA A23 – Matakana Island 2 (harbourside shoreline)
Indigenous Biological Diversity Area (IDBA) B	IDBA B11 – Matahui Road IDBA B22 – Park Road Estuary IDBA B30 – Rereatukahia IDBA B32 – Stokes Road Coastal Forest IDBA B34 – Te Rereatukahia IDBA B35 – Tetley Road Estuary IDBA B38 – Tutaetaka Island IDBA B46 – Waitekohe Stream Mouth IDBA B49 – Central Matakana Wetlands IDBA B51 – Matakana Island 4
Surf Breaks of Regional Significance	North Matakana

22. The above features are shown on the extract from the BOPRC online mapping system at Figure 1 below.



Figure 1 – Mapped Features in the Coastal Environment (Source: BOPRC)

23. Depending on the options considered and location of the discharge point, other mapped features may also be relevant (e.g. features between Katikati and the Bowentown entrance to Tauranga Harbour may be relevant for a disposal option to the harbour).

Bay of Plenty Regional Natural Resources Plan

- 24. The RNRP addresses the management of land and water resources in the Bay of Plenty region. The RNRP includes policies and rules to manage discharges of wastewater to both water and land. These provisions are designed to minimise adverse effects on water quality and the environment. Discharges of contaminants to water is recognised as a particular concern in the region (Issue DW I1).
- 25. The Katikati area will form part of the Tauranga Moana Freshwater Management Unit (FMU) for future freshwater plan changes, following confirmation of changes to the NPS-FM anticipated during 2025 (see discussion above).
- 26. Relevant provisions of the RNRP include (but are not necessarily limited to):
 - (a) Objective DW O1, which seeks to ensure discharges of contaminants to water are managed to meet the following goals:
 - (a) After reasonable mixing, discharges of contaminants to lakes, streams and rivers meet the water quality classification of the receiving water bodies as a minimum; and have no more than minor adverse effects on heritage values, existing users in downstream areas, and lakes, harbours and estuaries.
 - (b) Discharges of contaminants to water are in a manner that takes into account the cultural values of tangata whenua acknowledged for that area.
 - (b) Objective DW O7, which seeks to ensure discharges of contaminants to land are managed to:
 - (a) Not exceed the natural treatment capacity of the soil.

- (b) Avoid, remedy or mitigate the adverse effects of run off to surface water.
- (c) Prevent the long-term contamination of the soil by hazardous substances, and safeguard the life-supporting capacity of soil.
- (d) Ensure that any adverse effects on high quality groundwater are no more than minor:
 - (i) Where there is potable water, including aquifers used for municipal water supply.
 - (ii) Where natural water quality has not been adversely affected by land use or point source discharges.
 - (iii) Where there are recharge areas of (i) and (ii)
 - (iv) In the groundwater catchments of the Rotorua lakes, Ohiwa and Tauranga harbours.
- (e) Ensure adverse effects on groundwater not otherwise addressed by (d) are avoided, remedied or mitigated.
- (f) Prevent adverse effects on lake water quality in relation to the TLI of the lake, where the discharge is in the catchment of a lake.
- (c) Policy DW P1, which specifies discharge requirements for the discharge of contaminants to rivers, streams, and ephemeral flowpaths.
- (d) Policy DW P4, which seeks to encourage the change from the discharge of contaminants to water to the land-based treatment and disposal of contaminants, where this is environmentally sustainable.
- (e) Policy DW P5, which seeks to recognise and provide for the effects on the mauri of the receiving environment caused by the discharge of contaminants to water by:
 - (a) Where appropriate, encouraging early and ongoing consultation with tangata whenua during the consideration of wastewater treatment systems to take into account the cultural values of tangata whenua acknowledged for that area.
 - (b) Where reasonable and practicable to do so, take steps to promote better use of freshwater by discouraging disposal of toxic materials via wastewater systems.
 - (c) Encouraging a shift to land-based treatment and disposal systems, where appropriate and environmentally sustainable and socially, technically and economically feasible. This includes disposal of sewage by passage through land, soil or wetlands.
 - (d) Avoid, remedy or mitigate adverse effects on water, land and geothermal resources or sites that are of significance to tangata whenua, where such resources or sites have been identified by tangata whenua.
 - (e) Avoiding physical degradation of the life-supporting capacity of receiving waters.
- (f) Policy DW P8(d), which seeks to avoid adverse effects on the environment caused by discharge of untreated sewage to the environment.
- (g) Policy DW P11, which seeks to set a reasonable mixing zone in conditions of resource consents to discharge contaminants to water where relevant, having regard to the criteria specified in DW M16.
- (h) Method DW M3, which seeks to encourage the development and implementation of methods to reduce the volume and toxicity of wastewater, including:

- (a) The avoidance and reduction of the production of wastes.
- (b) Reuse and recycling of wastes, and recovery of by-products.
- (c) Closed loop industrial systems.
- (d) Best practicable options.
- (e) Codes of practice or industry guidelines.
- (f) Environmental management systems.
- (g) Appropriate treatment of wastewater.
- (h) Recovery of by-products.
- (i) Method DW M16, which seeks to define the length or radius of a reasonable mixing zone in the conditions of a resource consent for the point source discharge of contaminants to a surface water body having regard to the following assessment criteria:
 - (a) The best practicable option to minimise the length or radius of the reasonable mixing zone.
 - (b) The water quality classification of the receiving water body (refer to the Water Quality Classification Map), and the relevant water quality classification standard in Schedule 9.
 - (c) The flow regime of the receiving water.
 - (d) The ambient concentrations of contaminants in the receiving water.
 - (e) Effluent discharge flow rate and contaminant concentrations.
 - (f) Existing discharge and abstraction consents.
 - (g) Fish migration and aquatic ecosystems requirements.
 - (h) The values and existing uses of the water body.
 - (i) Maori cultural values (refer to DW P5).
 - (j) Proximity to bathing sites, especially those listed in Schedule 10.
 - (k) Adverse environmental effects of the discharge, including cumulative effects.
 - (I) The location of the discharge and position of the outfall.
 - (m) Outfall diffuser design criteria.
 - (n) Information provided by the applicant.
 - (o) Any other information relevant to the nature of the discharge and the site characteristics.
- (j) Policy DW P13, which requires the appropriate management of discharges of contaminants to land, and to land where the contaminant may enter water, to ensure that:
 - (a) The rate and volume of the discharge does not exceed the natural treatment and assimilative capacity of the soil and its vegetative cover.
 - (b) Surface runoff of contaminants to rivers, streams, lakes, wetlands and drains is avoided, remedied or mitigated.
 - (c) The creation of contaminated sites is prevented.
 - (d) Any adverse effects on high quality groundwater are no more than minor:
 - Where there is potable water, including aquifers used for municipal water supply.

- (ii) Where natural water quality has not been adversely affected by land use or point source discharges.
- (iii) Where there are recharge areas of (i) and (ii).
- (iv) In the groundwater catchments of the Rotorual lakes, Ōhiwa and Tauranga harbours.
- (e) Adverse effects on groundwater not otherwise addressed by (d) are avoided remedied or mitigated.
- (f) There is no net increase of nitrogen or phosphorus in lake catchments.
- (k) Rule DW R8, which regulates the discharge of a contaminant to water, or onto/into land in circumstances which may result in the contaminant entering water.
- 27. In addition to the above provisions, the RNRP also addresses the discharge of contaminants to air (including odour). In that regard, the existing resource consents for the KWTS authorise the discharge of odour from the WWTP to air, with an expiry date of 31 July 2053. However, a land-based disposal option will need to consider the discharge or odour to air against the relevant provisions of the RNRP (which currently consists of the Air Chapter in the RNRP and Plan Change 13).
- 28. Land use activities associated with construction of wastewater infrastructure (e.g. earthworks, vegetation removal, pipe crossings of rivers and streams, temporary stormwater discharges etc.) will also need to be considered against the relevant provisions of the RNRP.
- 29. The RNRP maps the water quality classification of freshwater bodies. The classification of freshwater bodies around Katikati are shown on the extract from the BOPRC online mapping system at Figure 2 below.

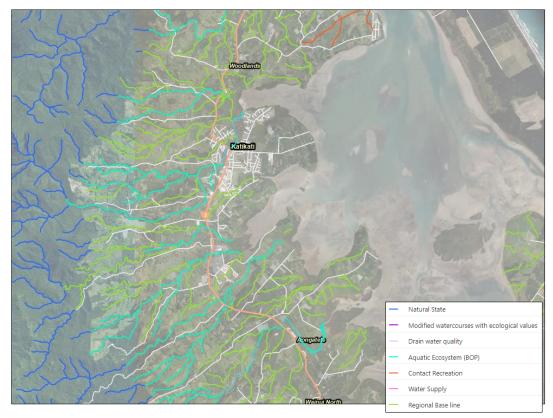


Figure 2 – Water Quality Classification of Freshwater Bodies near Katikati (Source: BOPRC)

District Planning Documents

Western Bay of Plenty District Plan

- 30. The District Plan became fully operative in 2022 and regulates subdivision and landuse across the Western Bay of Plenty District. Although it does not specifically address the discharge of wastewater, it contains a mixture of district-wide and zone-specific provisions relating to the provision of infrastructure and network utilities, as well as provisions to regulate the effects of use and development of land such as noise, lighting and glare, visual impacts, and traffic.
- 31. The District Plan notes that infrastructure and network utilities (including wastewater infrastructure) are essential components for the effective and efficient functioning of the District. They contribute positive benefits to local communities and also the wider subregion and the nation. In managing the effects of infrastructure and network utilities, recognition should be given to the essential role that these components play in the functioning of the District, and for the services they provide.
- 32. The District Plan sets the zoning of land and identifies features such as natural hazards, and areas of landscape, ecological, or heritage value¹. In terms of the KWTS, the area surrounding the Katikati urban area is largely zoned Rural, as is Matakana Island. Relevant mapped features include areas of outstanding landscape features, significant ecological areas, flood hazard areas, and cultural heritage features. Additional features are identified for Matakana Island, including coastal erosion areas.
- 33. The District Plan also identifies existing designations for public works. In that regard, the Katikati WWTP is currently designated in the District Plan (Ref: D172). Any construction activities affecting the WWTP would therefore need to be authorised under section 176A of the RMA. A land-based disposal option and/or new pump stations may also be authorised under the District Plan by a new designation under section 168A of the RMA, rather than a resource consent.
- 34. Relevant provisions of the District Plan include (but are not necessarily limited to):
 - (a) Objective 10.2.1(1), which seeks to ensure development, operation, maintenance and upgrading of infrastructure and network utility systems and services so as to efficiently and effectively meet the current and foreseeable needs of the District.
 - (b) Objective 10.2.1(2), which recognises that infrastructure and network utility systems and services provide both direct and indirect local, sub-regional and national benefits (social, economic, cultural and environmental).
 - (c) Objective 10.2.1(5), which seeks to fulfil the functional, locational, technical and operational requirements of different infrastructure and network utilities whilst avoiding, remedying or mitigating the actual or potential adverse environmental effects of such activities.
 - (d) Objective 10.2.1(7), which seeks to avoid or mitigate adverse effects and risks from the development, operation, maintenance and upgrading of infrastructure and network utilities, on the health and safety of the community.
 - (e) Policy 10.2.2(1), which seeks to ensure that provision of infrastructure and network utility development should be sequenced in a way that integrates with the longterm planning and funding mechanisms of local authorities and central government policies, directions and strategies.

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¹ Due to the resolution of the District Plan maps and amount of information contained therein, an extract has not been included with this summary. Detailed mapping of the Katikati and Matakana Island areas is available online at https://eplan.westernbay.govt.nz/eplan/.

- (f) Policy 10.2.2(6), which seeks that infrastructure and network utilities should be developed, operated, maintained and upgraded in a manner that avoids, remedies or mitigates the generation and/or emission of adverse environmental effects.
- (g) Objective 18.2.1(1), which seeks to ensure that the rural land resource and versatile land capability is maintained to enable its use for rural production activities.
- (h) Objective 18.2.1(3), which seeks to provide appropriate provision for activities not directly based on primary production but which have a functional or other legitimate need for a rural location.
- (i) Objective 18.2.1(5), which seeks to maintain the rural character and amenity values associated with the low density rural environment.
- (j) Objective 18.2.1(6), which seeks to protect and enhance ecological, landscape, cultural, heritage and other features located in the rural environment which are of value to the wider community.
- (k) Policy 18.2.2(1), which seeks to ensure that subdivision, use and development of versatile land should occur in a way which retains its potential to be used for a range of productive rural purposes and which maximises the likelihood of it actually being used for such purposes.

10.4 OPERATIONAL RISK AND STATUS REPORT

File Number: A6861613

Author: Tracy Gaby, Executive Assistant Infrastructure Group

Authoriser: Peter Watson, Acting General Manager, Infrastructure Group

EXECUTIVE SUMMARY

1. The purpose of this report is to give an update to Projects and Monitoring Committee on Infrastructure and Regulatory matters.

RECOMMENDATION

That the Executive Assistant Infrastructure Group's report dated 15 August 2025 titled 'Operational Risk and Status Report' be received.

BACKGROUND

Background

The Scorecard Report, which provides an overview of key achievements, an update on Strategic Priorities, the Capital Works Programme and Quarterly Development Trends for the period from 1 April to 30 June 2025 has been included in the Draft Annual Report agenda item and has not been attached to this report this quarter.

OPERATIONAL RISK AND STATUS TABLE

The operational risk table has been developed to show:

- Project or activity;
- Brief description of the risk and why it has arisen;
- Type of risk (e.g., timing, financial, service delivery);
- Project or topic status update;
- Items that the Committee needs to be aware of; and
- Traffic light system:

Green: Operational item, for information;

Orange: Potential to escalate, Council needs to be aware; and

Red: High risk, Council direction may be required.

This is an up-to-date status and forward-looking report and may supersede the comments in the Scorecard Report. Additional information and topics may be provided at the meeting.

Topic and Description	Risk Type and Risk Level
Transportation Maintenance Activity	
• Development of eight 'Request for Tender' (RFT) documents for new long-term maintenance contracts is ongoing. Tender evaluation for the first contract (Pavement Marking) is underway. The Pavement Maintenance RFT is currently being advertised on GETS.	
• Construction of the 24/25 resurfacing programme is 100% complete (84.4km).	
Investigation, design, consenting, and construction of storm damage remedial works is ongoing.	Funding vs LOS
• The 24/25 pavement rehabilitation programme (total length 6.5km) is 65% complete. The remaining works will be completed prior to Christmas.	
Construction of the seal extension project at Rotoehu Road is 80% complete.	
Procurement of a contractor for next year's (25/26) pavement rehabilitation programme will commence early August.	
No. 1 Road Pavement Rehabilitation and Seal Widening (RP300 – 1930)	
RP580 - 1960 (Stage 3)	
Construction of stormwater upgrades at discharge C (at #73 No 1 Road) are well progressed.	
Relocation of Chorus telecom cables is complete.	Weather
Recommencement of pavement construction has been delayed due to inclement weather.	Wedthel
RPO - 580 (Stage 2)	
Investigation and design are largely complete.	
Procurement may be negotiated with the current contractor to minimise delays.	
No. 4 Road Bridge Reinstatement	Riverbed Scour
Construction of the bridge is complete, and it is being used by traffic.	Kivei bed Scodi

- The Bailey bridge has been removed and returned to NZTA.
- The riverbed scour was deeper than anticipated. After discussions with BOPRC the decision was made to undertake remedial works under emergency provisions. These works are complete but require that the bank stabilisation design be amended. This is underway.

SH2 Ōmokoroa Road Interim Intersection Upgrade

Works

- Physical road (pavement) construction has continued south of the temporary roundabout on the southbound lanes.
- Pavement construction is very weather dependant and has slowed down due to wet conditions. However, good progress is made when weather allows. We are aiming for completion of this phase late July/early August, with a traffic switch to enable pavement work to commence on the centre lanes.

Stormwater Discharge

- · All underground stormwater infrastructure is complete.
- Finishing work on catchpits (drainage structures) and other associated drainage works which are appropriate while pavement construction continues will progress and be finalised alongside pavement construction.

Overhead Power Supply

Council, along with PowerCo's future proofing Works, (33kv) ducting, all ducts for undergrounding
of overhead lines are now installed. Undergrounding of overhead lines has commenced and is
expected to be completed mid-August which is a huge milestone for both this project and the
Ōmokoroa Urbanisation Stage 1 project.

Fibre Optics

Services, especially
Network Utility (PowerCo),
and their ability to resource
and keep to programme.

Weather

Ducting for Telco services will be completed this month (July). Hauling and connecting of Fibre will commence as the Ōmokoroa Stage 1 Project commences further to ensure efficiency of time and costs across both projects, due to close proximity of the two projects.	
Waihī Beach Stormwater	
The liaison group met in early 2025 and an information day for Waihī Beach was held on 15 February, drawing good community engagement and helping identify key stakeholders early to manage risks around the Earth Dam consent process.	
Design is progressing steadily for this complex project and staff are ensuring major stakeholders, like Tasman Holiday Park, are engaged through these works as there is a high potential the Park will be permanently impacted. Council staff are exploring options to minimise disruption and will report risks to Council as the optioneering progresses.	Weather
Design for Wilson Park, the Boardwalk, and Athenree Montessori School stormwater projects is complete and moving into construction, these projects are being packaged together with other smaller projects for delivery. Staff are expecting to receive tenders for this by the end of September.	
Waihī Beach Wastewater Treatment Plant	
Design of the Waihī Beach WWTP is progressing well and is expected to go out to tender in August 2025, with equipment ordered for items with long lead times to ensure the project continues to progress. A consent application to continue to use the farm at Capamagian Drive for bio-solids disposal while the upgrade is being completed has also been submitted to Regional Council.	Financial timing Regulation Enforcement Reputation
Katikati Wastewater Treatment Plant (WWTP) Outfall Pipeline	
The Katikati Wastewater Advisory Group – Te Ohu Waiora has been actively involved in reviewing long term discharge options for the Katikati WWTP. A range of discharge options have been assessed, including potential land-based discharge, to determine a long-term solution that aligns	Financial timing Regulation Enforcement Reputation
with environmental, cultural, economic and community values. Te Ohu Waiora has completed an options assessment, and a preferred option has been identified and workshop with Elected	

Members in the July Projects and Monitoring workshop. A future directions report has been drafted and will be presented at the 15 August Projects and Monitoring meeting.

Te Ohu Waiora has indicated that Discharge Option 1C — comprising the construction of a new Membrane Bioreactor (MBR) and a 500-metre extension of the existing ocean outfall—is the most preferred option.

No further leaks have been found in the existing ocean outfall, which continues to discharge treated wastewater to the ocean, 600m of Matakana Island under a consent valid until 2038. However, Council must confirm a long-term discharge solution by the end of 2026 to meet the conditions of this consent.

Construction of the WWTP's new Moving Bed Bio-reactor (MBBR) is nearly complete, with trial operations underway and commissioning expected to be completed by August. Existing non-compliances at the site are expected to be resolved during this period.

Te Puke Wastewater Treatment Plant (WWTP)

This project remains a concern and high risk.

Construction - The contractor has submitted an offer that is currently being considered. The award report will be presented to Council on the 15th of August to consider the contractual matters and a potential award on the 4th of September.

Consent – All consents have been obtained but may need small variations depending on the final design.

Consultation – Targeted consultation is currently underway with the Te Puke developers. Developers have been invited to talk to their concerns on the 15th of August Council meeting. Council will have to consider the feedback from the developers at its meeting on the 4th of September. There is a risk that Developers will ask Council to delay the decision.

Iwi – The Mayor and staff had a meeting with iwi in which they asked for the consenting process to be reviewed. They also asked Council to progress the alternative disposal options investigations.

Reputation
Finance
Legal

Heron Crescent	Completed
Athenree and Wharawhara WTP upgrade works (which includes fluoridation) design and build contract has been awarded to Apex Water. Completion of works is expected by the end of August 2026 for Athenree WTP and September 2026 for Wharawhara WTP. The Ministry of Health have approved a new compliance date of 31 January 2026 for the Wharawhara and Athenree plants.	
Plants (WTPs) to comply with the Drinking Water Quality Assurance Rules 2022 and the Water Services Act 2021. Currently, Muttons (Te Puke), Wharawhara, and Athenree WTPs are complying with the bacterial rules. Significant progress has been made with protozoa requirements, with Muttons and Athenree WTPs now having protozoa barriers in place. Upgrades to the remaining WTPs are well underway, with the aim to have all WTPs compliant in 2026. Fluoride update	Regulation enforcement Project Timing
Drinking Water Compliance While currently most water supplies are not compliant with the newly introduced protozoa and bacteria requirements, Council is currently delivering critical upgrades at all the Water Treatment	
Staff continue in discussions with Quayside Properties Ltd regarding the Rangiuru Financial Contributions methodology and other requirements outlined in the District Plan/Plan Change. 224 titles have been issued for Stage 1a of the development.	On track
Rangiuru Business Park Quayside Properties Ltd continue to progress development of the Rangiuru Business Park. Quayside delivered contracts on behalf of Council which are well established and nearing completion.	
It is a significant risk if the contract cannot be awarded before the end of the tender validity period. A delay in the award will allow the contractor and its subcontractors to review their price submission. Most of the mechanical equipment is imported and prices are linked to a volatile foreign exchange rate. The availability of Council to make decisions during the interregnum period may delay the award if a decision is not taken on the 4th of September.	

Code Compliance was for the project issued 12 June 2025.	
23 of the 26 units are tenanted. Tenants are happy and loving their new spaces	
Te Ara Mātauranga - Waihī Beach Library	
Project completed and in use. Community is loving the new space	On track
Fit out of the old library into a Community Hub space has commenced.	
Resource Consents of Interest	
• <u>Te Puna Industrial Limited (TPIL)</u> - Notified Land use application (joint BOPRC and WBOPDC) was granted by the Independent Commissioners on 7 July 2025. The decision has been appealed by Priority Te Puna Incorporated and the Applicant has objected (s357) to the fees.	
• Glen Isla Protection Society Incorporated (GIPS) - a resource consent application for a 200m-long revetment wall (within the Three Mile Creek reserve and adjacent to 9, 11, 13, 15, 16, 14 and 12 Glen Isla Place & above mean high water springs) for coastal erosion protection purposes has been received. The application has been publicly notified, and a hearing has been scheduled for 11 and 12 August 2025.	
• Waihī Beach Protection Society Incorporated - a second Waihī Beach seawall application (approximately 200m-long wall located between 17 - 41 Shaw Road) and associated works is being processed. The proposal requires District and Regional Council resource consents given the location of the seawall below mean high water springs. A s92 further information request has been made to the Applicant and which has not yet been responded to.	Public interest
 Wairakei South (Bell Road Partnership Limited) – An application is to be made under the Fastrack Approvals Act 2024 at the end of 2025. Land area of 335ha across two blocks targeting over 3,000 homes (recently increased from 2,000), 80ha of employment land, using the fast-track approval process. The completed development may be 10 years away but looking at 2025-2026 to get through fast-track approvals. Key staff from BOPRC and WBOPDC have formed a working group to work with the developer and his team. The Councils and the Applicant have shared their respective 	

lists of experts who are being engaged to assess effects to inform the process which will be administered by the Environmental Protection Act and decided by an expert panel. The applicant is due to present their overall masterplan for discussion with the Councils and their technical staff.

Ōmokoroa Developments

- 60 Prole Road (Blackridge/ Sabre) for 11 dwellings/lots (Stage 1). Comprehensive Consent (Land Use and Subdivision and urban design/typologies) has been considered and approved. Stage 3 for an additional 9 lots is in the pre-application phase.
- 149 Prole Road (Trinity Lands/ Lighthouse Group) for 73 dwellings/lots. Comprehensive Consent (Land Use and Subdivision and urban design/typologies) is currently with Council and processing.
- 62 Prole Road (Neil Group) for 84 lots (2 Stages). Subdivision Consent (lots only, no typologies presented) has also been received and currently processing.
- Ōmokoroa Town Centre (JACE Investments) have resource consent but are currently seeking a variation to the layout. The s127 resource consent variation has been granted.

Minden

• 15E Minden Road (Minden Property Limited) – Application for private and elective surgery hospital to be constructed over two stages, received and processing. Stage 1 for a day-stay facility with two operating theatres and 20 day stay beds; and Stage 2 expansion to four operating theatres and a ward with 20 single rooms. Notification determination underway

Te Puke Developments

• Vercoe/Zest Development (MacLoughlin Road) has resource consent approval for a 380 lot subdivision. The consent holders have submitted a variation to Stage 1 of this approved consent which is currently processing. Total lots may increase to 425 lots.

Regulatory Consenting – market and external impacts

Financial/Legislated/legal

- Appeal to consents and legal challenge of Council process may be a factor again in the current market. The appeal for TPIL consent is a likely signal that consent hearing decisions in the coming 6 months may be challenged.
- Resource Management and Building Control Act reforms are proposed, and Officers are keeping close attention on the likely operational and financial implications from these reforms.

Building Services

- The beginning of the Financial year 2024/25 started 25% down in activity but finished with only a 5% drop in Building Consent numbers indicating a slight increase in building activity (a combination of new consents and amendments).
- We note an increase in illegal building work as people continue to pre-empt government reforms.

Resource Consents and Development Engineering

- There is a positive increase in consent application volumes for the resource consent activity showing early signs of improvement in the economy and increased development activity. There is a noticeable "lag" in this positive sign being represented as an upturn in the building sector and consenting for new buildings.
- Engineering community is reporting patchy growth in consents/design/construction work –
 some are busy, others aren't. Construction works on site are slow, as normal for winter work
 season. This is affecting workloads for development engineers expect to improve approaching
 summer.
- These activities are showing positive revenue, and it is anticipated this trend will continue as signalled by the development community.

11 INFORMATION FOR RECEIPT

11.1 INFRASTRUCTURE SERVICES PROJECT UPDATES

File Number: A6860186

Author: Tracy Gaby, Executive Assistant Infrastructure Group

Authoriser: Peter Watson, Acting General Manager, Infrastructure Group

EXECUTIVE SUMMARY

To monitor and provide updates to the Projects and Monitoring Committee on current projects, contracts and works programmes.

More detailed information can be found on some projects on the link below.

https://yourplace.westernbay.govt.nz/

PROJECT UPDATES

1. Transportation

1.1 Athenree Road Rehabilitation (RP2914 - RP3433):

This project is complete and related to the rehabilitation of 520m on Athenree Road. It involved excavation, reconstruction and sealing of the carriageway.

1.2 Old Coach Road Rehabilitation (RP5500 – RP6150)

This project is due to be completed at the end of August 2025. It is a 650m rehabilitation project on Old Coach Road, west of Maniatutu Road. It involves excavation, reconstruction and sealing of the carriageway, curve easing and swale formation.

1.3 Old Coach Road Rehabilitation (RP9340 - RP9790):

This project relates to the rehabilitation of 450m on Old Coach Road, past the Pongakawa School. This project involved excavation, reconstruction and sealing of the carriageway, and new kerb and channel past the school.

1.4 No 3 Road Rehabilitation (RP4550 - RP5010)

This project is now complete and was a 460m rehabilitation project on No 3 Road, through two sharp curves. It involved excavation, reconstruction and sealing of the carriageway, new kerb and channel and swale formation to avoid shallow underground services.

1.5 No 3 Road Slip (RP12420)

This slip repair work was just beyond the end of the seal on No 3 Road. This involved realigning the road around the slip sites, installing new kerb and channel, catch pits, culverts and outfalls.

1.6 Rotoehu Road Seal Extension (RP1500 – RP13539)

This 1,000m seal extension project on Rotoehu Road is due to be completed by the end of August 2025. This project involves the clearing and reshaping of the roadside drains and construction and sealing of the carriageway.

1.7 No 1 Road Rehabilitation Project

This is a 1,400m rehabilitation project on No 1 Road. The project involves the widening of the carriageway, significant service relocation works, stormwater and associated mitigation works.

1.8 Boucher Avenue Rehabilitation (RP872 – RP2234)

This is a 1,800m rehabilitation project on Boucher Ave and No 2 Road through Te Puke. The project involves excavation and reconstruction and sealing of the carriageway and is being coordinated with stormwater and watermain renewals works proceeding at the same time. Due to be completed by June 2026

1.9 Tetley Road Rehabilitation (RP196 - RP533 and RP1006 - RP1605)

This is a 940m rehabilitation project on Tetley Road, outside of Katikati. This involved excavation and reconstruction and sealing of the carriageway, new kerb and channel and swale formation. Due to be completed by end of August

1.10 No 4 Road Bridge Replacement

A new bridge has been built to replace the No.4 Road bridge that was washed away during an extreme storm event in January 2023. The bridge was opened late June and the construction team are finishing shape and finish the verges and instream abutment works. Almost complete.

1.11 Kaiate Falls Road Slip Repair (RP580)

Slip repair work which involved cutting back and benching an over slip to mitigate the risk of falling land into the road. The face was then hydroseeded and a matting secured over it for added stability.

1.12 Upper Ohauiti Road Slip Repair (RP11541)

Slip repair work which involved excavating out slipped material from the under slope and stream and then building it back up with rock to create a stable platform for the road to sit on. This work also included drainage works and native planting. It is almost completed; we are just waiting for a break in the weather to reseal the road.

1.13 Bledisloe Park Avenue Slip Repair (RP440)

Slip remedial work that involved building a timber pole retaining wall to hold up the road. this work is almost completed with minor snags being worked through.

2. Recreation and Leisure

2.1 Panepane Wharf Project

Works are progressing slowly due to poor weather and an incorrect coating on the steel framing. Completion is expected early October 2025.

2.2 Precious Toilet

Has been installed with finial site reinstatement completed and will be operational by mid August. Landscape planting and chip-sealing to the access track will follow.

2.3 Katikati Landing Jetty

This project is now complete; fencing will remain in place while the grass establishes.

There is a need to develop a fresh concept plan to conclude landscaping and amenity features. New funding will be required to progress this.

2.4 Maketu Cemetery

Extended community consultation and support has been positive. Earthworks to correct and re-contour burial areas on the Eastern side are progressing with completion expected early summer, subject to weather. A small weather shelter to harvest rainwater for cultural purposes and a compost area are also being constructed.

2.5 Dave Hume Pool Bulkhead and Liner project

All demolition has been completed, and upgrade works are progressing well for completion and reopening of the pool prior to Christmas 2025.

2.6 Ōmokoroa Golf Course foreshore esplanade reserve erosion

A new erosion mitigation design and resource consent application process is underway. The scientific investigation has recommended a low timber wall design as a medium-term solution. If current erosion rates force the closure of the path, Council can undertake emergency works.

Staff are keeping the Ōmokoroa Golf Club updated through the current club president.

2.7 Ahi Pātiki Pathway (Athenree Crossing)

Resource Consent application (seeking a fully notified process) is about to be lodged. A conclusion to the consent process is expected in 2026.

The development of a funding strategy and a comprehensive risk assessment to inform the detailed design process has begun.

3. Water Services

3.1 Te Puke Wastewater Treatment Plant Upgrade

Staff are completing due diligence on the tender proposal. The aim is to award a construction contract in early September pending consultation with affected parties and consideration by Council under a separate report.

3.2 Maketu Wastewater Treatment Plant – Irrigation Field Renewal

Staff are completing minor renewals and upgrades of components within the irrigation field. The aim of this work will be to return the irrigation field back to compliance and to a state it can be tested and future renewal options assessed.

It is expected that these minor repairs and upgrades and testing will be complete within the next two months.

3.3 Katikati Wastewater Treatment Pant Upgrade – MBBR

The Moving Bed Biofilm Reactor (MBBR) upgrade is specifically designed to remove nitrogen and ammonia bringing the plant back into compliance limits. The upgrade is largely completed with the team working through testing and analysis to confirm performance of the upgrade.

3.4 Waihī Beach Wastewater Treatment Plant Upgrade

The detailed design is largely completed, and the team are working through procurement of the physical works. It is expected this will be out on GETS mid-August.

3.5 Ōmokoroa Youngson Water Treatment Plant upgrade and reservoir

Physical works are approximately halfway through with the reservoir foundation and floor complete and precast concrete panels in place. The building for the treatment plant extension is underway. The aim is to have works largely completed by December 2025.

3.6 Athenree and Wharawhara Water Treatment Plant upgrades

Physical works are completed and in commissioning phase. Testing is expected to be completed in August 2025 for Athenree, and September 2025 for Wharawhara.

3.7 Pongakawa Water Treatment Plant upgrade

Staff are working through securing land for the treatment plant upgrade which involves a new tank and UV treatment. Fulton Hogan are engaged in developing design and will be in a position to finish detailed design once the land is secured. It is expected construction will begin in 2026.

3.8 Muttons Water Treatment Plant upgrade

Staff are monitoring the performance of the recently installed filters and UV treatment. Work is also underway to secure land for additional upgrades required at the water treatment plant.

3.9 Ohourere, Wilson Road, Tahawai Water Treatment Plant upgrade

Construction is underway at three smaller water treatment plants to install UV treatment. It is expected these will be completed by December.

3.10 Te Puke Watermain renewal – Boucher Avenue

Construction of the new watermain is underway and will be completed ahead of road rehabilitation works to ensure water infrastructure is not impacted during the rehabilitation works.

3.11 Maketu watermain renewal – Little Waihi Road

Little Waihi Road upgrade has been completed with the addition of a new control valve to add resilience to the water supply. This control valve caused some temporary disruptions for customers which the team have resolved.

3.12 District Wide Backflow Protection Programme

To meet drinking water compliance standards, backflow protection is required across the District. The team are working through surveying and assessing risks and hazards which then identify the right level of protection required to prevent backflow contaminating the reticulation.

3.13 Katikati Watermain renewal – Kotahi Lane

Watermain renewal on SH2 and Kotahi Lane in Katikati is scheduled to start in the coming weeks. Construction will take approximately 3 months from start to finish. Impacted businesses and stakeholders have been consulted with as part of the traffic management planning.

3.14 Eastern Supply Zone Alternative Supply – Groundwater Exploration and Development

The team have found a water source on No.3 Road; however, through rigorous testing, the supply is not as significant as initially thought. Further exploration is now underway to increase the capacity of the supply and ensure the groundwater supply is sustainable and large enough to cater for growth.

Further work on No.2 Road and No.1 Road is also underway to increase groundwater capacity across the zone to cater for growth.

3.15 Maketu Wastewater Grinder Pump Renewals

Staff have been investigating a number of issues with the grinder pumps in Maketu. The grinder pumps have begun to fail as they reach the end of their design life. The team have identified that by upgrading the pump station with added level sensors and pump controls, the team can manage the performance of the pumps better ultimately with the aim to maximising their service life.

3.16 Waihī Beach Stormwater – Earth Dam and One Mile Creek Improvements

The team are working through the feasibility design and undertaking initial discussions with key stakeholders, such as the Tasman Holiday Park. Once feasibility and initial stakeholder engagement is completed the options will be retested against the original objectives, with risks and costs assessed.

3.17 Waihī Beach Stormwater – Improvements

The first package of upgrades across Waihī Beach is going onto the market mid-August. This includes improvements in Wilson Park and The Crescent, The Boardwalk timber drain renewal, Didsbury Drive mound removal and Athenree Montessori school.

3.18 Brighton Reserve Diversion and Darely Drain Renewal

Concept design has been completed, and the team are working through identifying what consents are required and engaging with key stakeholders. The aim will be to consult with the community later in the year before further design is completed.

4. Growth and Delivery

4.1 Temporary Roundabout corner SH2 and Ōmokoroa Road

Most of the remaining works at this location are pavement-related and highly weather-dependent. Cement-bound basecourse was completed in July; sealing and asphalt will follow once the surface has dried. A traffic switch will then enable works on the southern middle lane of SH2. Completion remains on track for 30 April 2026.

4.2 Tangimoana (Heartwood Ave) Bridge

Bridge construction is scheduled for completion by the end August 2025, weather permitting. A walkover has been completed by asset managers, and responses to minor observations are being prepared ahead of asset handover.

4.3 Ōmokoroa Stage 1 Urbanisation and Industrial Road

Construction is progressing on the Ōmokoroa Road upgrade from Prole Road to SH2, including the new Industrial Road. The upgrade involves widening to four lanes and installing new water services, undergrounding existing power lines, and adding new power infrastructure to support growth. The Industrial Road will provide heavy vehicle access to the industrial area, with new water, stormwater, and wastewater services. Completion is expected mid-2026 for Ōmokoroa Road and late 2025 for the Industrial Road.

4.4 Ōmokoroa Stage 2 Urbanisation

Work is underway on the section from Prole Road to the EMT rail bridge near the Settlers Hall. This includes widening to four lanes up to Flounder Drive, constructing a new roundabout at Flounder Drive to enable access to the future town centre, and installing new stormwater and water supply infrastructure. Completion is expected by mid-2026.

4.5 Prole Road Urbanisation

The upgrade of Prole Road to an urban standard with three waters infrastructure, footpaths, and cycleways is due for completion by the end of August 2025 (weather depending). Final defect resolution and completion activities are in progress.

5. Operations

5.1 Heron Cres Elder Housing units

23 of the 26 units are tenanted. Tenants are happy and loving their new spaces. Code Compliance for the project was issued 12 June 2025.

5.2 Te Ara Mātauranga - Waihī Beach Library

Project completed and in use. Community is loving the new space. Fit out of the old library into a Community Hub space has commenced.

5.3 CCTV

We have entered into an agreement with Tauranga City Council to monitor our CCTV network through the Tauranga Transport Operations Centre (TTOC). This will ensure both financial efficiencies and a more secure network for our Community.

5.4 Resource Recovery

Council has partnered with Resource Collective (previously Chrome Collective) to establish a resource recovery centre in the western end of the District. This is working well out of the Katikati Recycle Centre but has outgrown the space, staff are looking at options to expand into Ōmokoroa. We are also working with Co-Lab to look for solutions in the eastern end of the District.

5.5 Katikati Arts Junction

The remediation of the Arts junction building is due to be completed 13 August 2025.

5.6 Clarke Road, Te Puna

3 of the 4 lots are under agreement. Civil's contract has been let but work is on hold awaiting Historic Places Trust approvals.