

AGENDA



P O Box 747, Gisborne, Ph 06 867 2049 Fax 06 867 8076
Email service@gdc.govt.nz Web www.gdc.govt.nz

MEMBERSHIP: Shannon Dowsing, Larry Foster, Terry Sheldrake, Kerry Worsnop and Tangata Whenua members Pene Brown, Ronald Nepe, Angus Ngarangioue.

WASTEWATER MANAGEMENT Committee

DATE: Thursday 7 July 2022

TIME: 9:00AM

AT: Te Ruma Kaunihera (Council Chambers), Awarua, Fitzherbert Street, Gisborne

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Wastewater Management

Reports to:	Council
Chairperson:	Terry Sheldrake
Deputy Chairperson:	To be confirmed
Membership:	Four Councillors (including the Chairperson) and four tangata whenua representatives.
Quorum:	Four members. Two to be Councillors and two to be tangata whenua.
Meeting Frequency:	Four times a year.

Purpose

The establishment of this Committee is a requirement of the conditions of the resource consents for the upgrade and discharge of Gisborne's municipal wastewater.

On 21 September 2007 the Minister of Conservation granted the coastal permit for the discharge of treated wastewater to the marine area subject to the same conditions as recommended by the Hearings Committee.

Terms of Reference

1. Ensure implementation, commissioning and monitoring of the Wastewater Treatment Plant is carried out in accordance with the consent conditions.
2. Monitor compliance with permit conditions and separated industry standards.
3. Explore feasible options for alternative use and disposal of domestic and industrial wastewater and recommend implementation.
4. Identify research, monitoring and planning projects to improve the mauri and water quality of Tūranganui a Kiwa. Develop and administer the Tūranganui a Kiwa Water Quality Enhancement Project.
5. Ensure development of educational information to encourage reductions in domestic and industrial wastewater.
6. Recommend membership of and receive reports from independent review panel (IRP).
7. Provide an annual report to the Chief Executive of the Gisborne District Council.
8. Carry out the functions required by the conditions of the resource consents and report them to Council.
9. The Committee has no delegated authority from Council other than the functions expressed in the conditions of the resource consents.

Collaborations

These arrangements are entered into by the Gisborne District Council and tangata whenua representatives of Tūrangānui a Kiwa, supported by other members of the Committee, in a spirit of goodwill and a pledge to act towards each other with the utmost good faith.

Each member to this protocol is committed to progressing and enhancing the overall wellbeing of the district's people, environment and heritage by acknowledging and accommodating each other's values and philosophies, where applicable.

The Committee will develop and maintain effective relations with other Council committees, Government and its departments, NGOs and other stakeholders to achieve its terms of reference, and in particular:

- Gisborne District Council officers
- Hauora Tairāwhiti (District Health Board)
- Department of Conservation
- Industry
- Recreational groups
- Environmental groups
- Federated Farmers.

Special Notes

1. Membership of the Committee comprises four councillors and four tangata whenua representatives and other members that the Committee itself shall determine from time to time.
2. The Committee may appoint, or invite participation in an advisory or consultative capacity, other persons from:
 - Gisborne District Council officers
 - Hauora Tairāwhiti
 - Department of Conservation
 - Industry
 - Recreational Groups
 - Environmental Groups
 - Federated Farmers.
 - Others who may have a particular contribution to make to the workings of the Committee.

The Council agrees to remunerate members that the Committee appoints.

Power to Act

To make all decisions necessary to fulfil the role and scope of the Committee, subject to the limitations imposed.

Power to Recommend

To Council and/or any standing committee as it deems appropriate.

3.1. Confirmation of non-confidential Minutes

MINUTES

Draft & Unconfirmed



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MEMBERSHIP: Shannon Dowsing, Larry Foster, Terry Sheldrake, Kerry Worsnop and Tangata Whenua members Pene Brown, Ronald Nepe, LeRoy Pardoe, Angus Ngarangioe.

MINUTES of the WASTEWATER MANAGEMENT Committee

Held via Audio Visual Link on Thursday 10 February 2022 at 9:00AM

PRESENT:

Crs Dowsing, Foster, Sheldrake, Worsnop and Tangata Whenua Members Pene Brown, Ronald Nepe and Angus Ngarangioe.

IN ATTENDANCE:

Director Lifelines David Wilson, 4 Waters Infrastructure Manager Neville West, Contract Manager John Tamoua, Mayor Rehette Stoltz, Democracy & Support Services Manager Heather Kohn and Committee Secretary Jill Simpson.

Secretarial Note: The meeting commenced at 9.00am and adjourned at 9.02am due to technical difficulties.

Secretarial Note: The meeting reconvened at 9.15am.

The meeting commenced with a prayer.

1. Apologies

MOVED by Cr Dowsing, seconded by Cr Foster

That the apologies from LeRoy Pardoe be sustained.

CARRIED

2. Declarations of Interest

There were no interests declared.

3. Confirmation of non-confidential Minutes

3.1 Confirmation of non-confidential Minutes 2 December 2021

MOVED by Cr Foster, seconded by Pene Brown

That the Minutes of 2 December 2021 be accepted subject to amendment.

CARRIED

3.2 Action Sheet

Item 10.4 The Tangata Whenua Reference Group is an agenda item for this meeting. Proposing that Nga Ariki Kaiputahi be part of that conversation.

Secretarial Note: It was suggested that the additional Wastewater Management meetings proposed for 2022 be future focused. The Workshop scheduled for 3 March will be a presentation on Alternate Use and Disposal.

4. Leave of Absence

There were no leaves of absence.

5. Acknowledgements and Tributes

There were no acknowledgements or tributes.

6. Public Input and Petitions

There were no public input or petitions

7. Extraordinary Business

There was no extraordinary business.

8. Notices of Motion

There were no notices of motion.

9. Adjourned Business

There was no adjourned business.

10. Reports of the Chief Executive and Staff for DECISION

10.1 22-25 Tangata Whenua Reference Group Membership

Director Lifelines David Wilson advised that this arose from the consent conditions for the wet weather and dry weather overflow consent. The consent conditions included a Tangata Whenua Reference Group to critique the performance of Council on the implementation of DrainWise, provide recommendations to the Wastewater Management Committee and to keep Council accountable through independent advice.

Discussion points included:

- The Terms of Reference are set by the Wastewater Management Committee for the KIWA Group and can co-opt.
- There is the opportunity to always be able to review who should participate at that operational level.

MOVED by Cr Foster, seconded by Cr Worsnop

That the Wastewater Management Committee:

1. Appoints the KIWA Group to provide the functions of the Tangata Whenua Reference Group.
2. May from time to time at its discretion review membership.

CARRIED

11. Reports of the Chief Executive and Staff for INFORMATION

11.1 22-17 Wastewater Treatment Plant Upgrade Update

Contract Manager John Tamoua attended and presented.

Questions of clarification included:

- Stabilised ground is down to 6 metres with 1.5 metre aggregate raft on top followed by concrete foundation slabs for structures.
- The pump station is a massive undertaking being 7 metres.
- The work is quite specialised and a number of teams have come in from across the country. Staff have done a very good job of putting together COVID-19 protocols to keep everyone safe along with business continuity planning.
- A review of the contact documents for biosolids is being completed by lawyers and hope to have it out for tender within the next four weeks.

David thanked John as this is his last meeting with the Wastewater Management Committee. John was originally seconded from Roding and he will be moving back into that role.

MOVED by Cr Sheldrake, seconded by Cr Worsnop

That the Wastewater Management Committee:

1. Notes the contents of this report.

CARRIED

11.2 22-22 Alternative Use and Disposal Update

Director Lifelines David Wilson advised that meetings have been held with the KIWA Group to look at the siting of the mortuary waste Wisconsin Mound within Taruheru Cemetery. Before finalising more information is being sought around the siting of the Wisconsin Mound from an operational perspective, as well as from a tikanga point of view.

Questions included:

- The design and layout of the Wisconsin Mound were presented to the Committee late 2021.
- Partnering with KIWA Group on what will be involved in the resource consent and ensuring that all are across the level of detail necessary which can then be presented to the Wastewater Management Committee.
- Modifications are within the allocated budget.
- The Endeavour Fund application needed to be submitted by December 2021. A meeting is planned with Cawthron Institute next week. They have been working on what they perceive to be a 5 year review with the major component being the cultural impact as well as the European treatment process aligned with cultural requirements.

David advised the Committee that this is one avenue being looked at. The workshops will identify other uses as the treatment plant comes on-line and the quality of the water is identified. Discussions around wetlands and other uses can then be identified.

Hot commissioning will commence in October 2022, and this will take a couple of months from getting the plant turned on to having it running fully. We will then look at the water results to see the quality coming through.

Working through details with the National Transition Unit for the 3 Waters Reform with regard to the existing consents and structures and waiting for DIA to supply the transitional timeframes. A report will be presented once the timeframes are known for the consent and governance arrangements.

MOVED by Cr Sheldrake, seconded by Cr Foster

That the Wastewater Management Committee:

1. Notes the contents of this report.

CARRIED

12. Public Excluded Business

Secretarial Note: These Minutes include a public excluded section. They have been separated for receipt in Section 14 Public Excluded Business of Council.

13. RE-ADMITTANCE OF THE PUBLIC

Moved by Cr Sheldrake, seconded by Cr Foster

That the Council:

1. Re-admits the public.

CARRIED

14. Close of Meeting

There being no further business, the meeting concluded at 9.58am.

Terry Sheldrake

CHAIR

3.2. Confirmation of confidential Minutes

PUBLIC EXCLUDED MINUTES

Draft & Unconfirmed

MEMBERSHIP: Shannon Dowsing, Larry Foster, Terry Sheldrake, Kerry Worsnop and Tangata Whenua members Pene Brown, Ronald Nepe, LeRoy Pardoe, Angus Ngarangioe.



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PUBLIC EXCLUDED MINUTES of the **WASTEWATER MANAGEMENT Committee**

Held via Audio Visual Link on Thursday 10 February 2022 at 9:00AM.

PRESENT:

Crs Dowsing, Foster, Sheldrake, Worsnop and Tangata Whenua Members Pene Brown, Ronald Nepe and Angus Ngarangioe.

IN ATTENDANCE:

Director Lifelines David Wilson, 4 Waters Infrastructure Manager Neville West, Contract Manager John Tamoua, Mayor Rehette Stoltz, Democracy & Support Services Manager Heather Kohn and Committee Secretary Jill Simpson.

1. Resolution to Exclude the Public

MOVED by Cr Sheldrake, seconded by Cr Foster

That:

1. The public be excluded from the following part of the proceedings of this meeting, namely:

Confirmation of Confidential Minutes

Item 4.1 Confirmation of Confidential Minutes 2 December 2021

2. This resolution is made in reliance on section 48(1)(a) of the Local Government Official Information & Meetings Act 1987 and the particular interest or interests protected by section 6 or section 7 of that Act which would be prejudiced by the holding of the whole of the relevant part of the proceedings of the meeting in public are as follows:

Item 4.1 7(2)(i) Enable any Council holding the information to carry out, without prejudice or disadvantage, commercial activities.

CARRIED

2. Apologies

MOVED by Cr Dowsing, seconded by Cr Foster
That the apologies from LeRoy Pardoe be sustained.

CARRIED

3. Declarations of Interest

There were no interests declared.

4. Confirmation of Confidential Minutes

4.1 Confirmation of Confidential Minutes 2 December 2021

MOVED by Cr Dowsing, seconded by Cr Foster
That the Minutes of 2 December 2021 be accepted.

CARRIED

12. Public Excluded Business

There were no public excluded reports.

13. READMITTANCE OF THE PUBLIC

MOVED by Cr Worsnop, seconded by Cr Foster
That the Council:
1. Re-admits the public.

CARRIED

14. Close of Meeting

There being no further business, the meeting concluded at 9.58am with a karakia.

Terry Sheldrake

CHAIR

3.3. Action Sheet

Meeting Date	Item No.	Item	Status	Action Required	Assignee/s	Action Taken	Due Date
11/03/2021	10.2	21-22 Wastewater Treatment Plant Stage 2 Delivery Update	In progress	Prepare a report to Council or, if necessary, an Extraordinary Wastewater Management Meeting (public excluded) outlining legal risks and any other information relevant to non-compliance and resource consent.	David Wilson	21/05/2021 David Wilson Underway - awaiting legal advice and Regulatory input.	08/02/2022
03/06/2021	10.4	21-123 Ngā Ariki Kaipūtahi and the Mangatū Request for Membership on the Wastewater Management Committee	Completed	A report will be prepared regarding representation on the Committee.	David Wilson	19/01/2022 David Wilson Report on agenda for 10 February 2022 meeting.	10/08/2021
10/02/2022	15.1	Additional Action Items	In progress	Council Meeting 24 February 2022 Budgets for Stage 1 and Stage 2 of the Wastewater Treatment Plan will be provided at 26 May 2022 Committee Meeting.	Neville West		03/05/2022

3.4. Governance Work Plan

WASTEWATER MANAGEMENT - STANDING COMMITTEE							Meeting Dates				
Group Activity	Activity	Name of Agenda Item	Purpose	Significance L/M/H	Report Type	Owner	26-May	7-Jul	1-Sep	3-Nov	1-Dec
Community Lifelines	4 Waters Infrastructure	Wastewater Treatment Plant Upgrade - Update	Update on progress of the Wastewater Treatment Plant (WWTP) Stage 2 Upgrade	L	Information (I)	Ben McArthur (CPS)					
Community Lifelines	4 Waters Infrastructure	Alternative Use and Disposal (AUD) Update	Provide the WMC with an update on the Alternate Use and Disposal Project	M	Information (I)	Neville West					
Community Lifelines	4 Waters Operations	Turanganui A Kiwa Water Quality Enhancement Project Update *last report Sept 21	Provide update on the Tūranganui-a-Kiwa Water Quality Enhancement Project as worked on by the KIWA Group and GDC.	L	Information (I)	Ian Ruru?					
Community Lifelines	4 Waters Operations	Drainwise Programme Update	Provide an update on the DrainWise programme.	L	Information (I)	Chris Hopman					
Community Lifelines	4 Waters Infrastructure & 4 Waters Operations	WMC Annual Report 2021-22	Provide the Wastewater Management Committee (WMC) with an annual report that summarises the financial year's activities.	L	Information (I)	Tracey Panton, Neville West, Chris Hopman, Ben McArthur (CPS)					
Community Lifelines	4 Waters Infrastructure	Wastewater Overflow Consent	Update the WMC on the wastewater overflow resource consents for both dry and wet weather overflows	L	Information (I)	Neville West					

WASTEWATER MANAGEMENT - STANDING COMMITTEE							Meeting Dates				
Group Activity	Activity	Name of Agenda Item	Purpose	Significance L/M/H	Report Type	Owner	26-May	7-Jul	1-Sep	3-Nov	1-Dec
Community Lifelines	4 Waters Infrastructure	Treated Water Effluent Quality Report	Outlines the characteristics of what the treated wastewater will be like post the clarifier and UV what do we know volume-wise and quality-wise, also a refresh of the list of potential users i.e. if this quality who could use it.	H	Information (I)	Neville West, Ben McArthur (CPS) & Beca					
Community Lifelines	4 Waters Infrastructure	Wastewater Conveyance Report	Outlines at a high level how far we can pump the wastewater, with proposed routes across the Poverty Bay flats, do radius circles of how far for what cost and what infrastructure is required	L	Information (I)	Beca					
Community Lifelines	4 Waters Infrastructure	Three Waters Reform Update	This paper is to update the committee on the 3W reforms to go to every meeting with what is happening, any changes etc.	L	Information (I)	Carrie White & Yvette Kinsella					
Strategy & Science	Strategy & Science	Tairāwhiti Resource Management Plan	Report on updates and how can the WMC feed into this?	L	Information (I)	Charlotte Knight					

10. Reports of the Chief Executive and Staff for INFORMATION



22-108

Title: 22-108 Alternative Use and Disposal Update
Section: Community Lifelines
Prepared by: Neville West – 4 Waters Infrastructure Manager
Meeting Date: Thursday 7 July 2022

Legal: Yes

Financial: Yes

Significance: **Low**

Report to WASTEWATER MANAGEMENT Committee for information

PURPOSE

The purpose of this report is to provide the Wastewater Management Committee (WMC) with an update on the Alternate Use and Disposal Project (AUD).

SUMMARY

Treated Water Effluent Quality Report and Wastewater Conveyance Report

The WMC requested two reports: one on treated water quality and one on wastewater conveyance. Both these reports will be completed for the 1 September 2022 meeting, however an interim progress update will be provided for the 26 May meeting.

Mortuary Wastewater Management

- Before deciding on a location for the Wisconsin Mound the KIWA Group has requested additional information to inform their decision making. This information is currently being compiled.

Endeavour Fund Application

- *Wai-Kino to Wai-Māori - taking the waste out of wastewater*
- In February 2022, Cawthron Institute submitted a research proposal to the Ministry of Business, Innovation & Employment Endeavour Fund (MBIE Endeavour Fund). An executive summary and an outline of the proposed work programme is provided.
- The decisions or matters in this report are considered to be of **Low** significance in accordance with the Council's Significance and Engagement Policy.

RECOMMENDATIONS

That the Wastewater Management Committee:

- 1. Notes the contents of this report.**

Authorised by:

David Wilson - Director Lifelines

Keywords: wastewater, AUD, alternate use, disposal project

BACKGROUND

1. The AUD work to date has focused on engagement and investigations that support funding applications, material used to educate and inform interested and affected parties on AUD and mortuary wastewater management.
2. Gisborne District Council (Council) has historically been unsuccessful in obtaining a grant through the Endeavour Fund as their grants are targeting research, hence the alignment with Cawthron Institute (Cawthron). Council's role has therefore become secondary with Cawthron taking the lead on the project with the KIWA Group, and Council supporting Cawthron as required.
3. Separation of mortuary wastewater from the conventional wastewater system forms part of AUD investigations/activities. Tangata whenua consider it critical that treated wastewater does not contain any mortuary wastewater for it to be acceptable for AUD.
4. Council has provided a budget of \$725k for AUD investigations over the term of the 2021–2031 Long Term Plan (LTP) which is considered as 'seed funding'. This budget will enable partnership and co-operation with industry and other stakeholders/partners to identify opportunities for collaboration and progress sourcing additional funding.
5. **Treated Water Effluent Quality Report** – this paper is to outline the characteristics of what the treated wastewater will be like post the clarifier and UV, what we know volume wise and quality wise, and a refresh of the list of potential users – ie. if this quality, who could use it.
6. **Wastewater Conveyance Report** – this paper is to outline at a high level as to how far we can pump the wastewater, with proposed routes across the Poverty Bay flats, do radius circles of how far for what cost and what infrastructure is required.

DISCUSSION and OPTIONS

Treated Water Effluent Quality Report and Wastewater Conveyance Report

7. In scoping this work, it became apparent that crop type and soil type are important to determine pumping costs due to variability of application rates and distance to different crops. Council has data on crop types and their location, as well as soil types. The approach taken is to assess the water balance between application to land and need for storage.
8. The Australian guidelines for water recycling will be used to determine the quality of the effluent required to apply to which crops (if further treatment is required). We will also be able to group land use to allow meaningful discussions on use of recycled water. This will then allow costs for pumping, storage and additional treatment to be developed.
9. Beca Consultants have been engaged to undertake these reports. An interim update will be provided to this meeting by Beca. A Draft Interim **Report 2022-05-02** Gisborne Wastewater Treatment Plant (WWTP) Effluent Reuse is provided as **Attachment 1**.

10. In defining the scope of work, the following has been agreed:

- Study area
 - 8km radius from the WWTP extending out to the Poverty Bay flats
 - does not extend beyond the Waipaoa River
 - does not extend into the hills – apply a percentage slope rule in GIS
 - apply a waterway exclusion zone/buffer in GIS.
- Use GIS to profile crop types by season (summer/winter), soil type, land parcel, and topography.
- Group crops to align with Australian standards, ie. Class A, B, C. This will be used as a proxy for whether or not further treatment is required.
- Determine agronomic need
 - based on literature (summer/winter)
 - get total daily volume that could be used by season (summer/winter)
 - exclude review of climate/rainfall to determine agronomic need.
- Water Balance
 - compare daily potential water use with average daily treated at WWTP
 - create a summer/winter water balance
 - look at the location of the crops/high demand water uses for logical clusters of common users/common water quality
 - identify next steps to progress viability review.
- Exclusions/Out of Scope
 - Cost estimates. Potential to spend a lot of fees for not much benefit due to amount of uncertainty.
 - Focus on the technical first to confirm scope of what may be required for costing as the next step
 - Commentary on cultural, social, or industry acceptability – stick to technical
 - Commentary on New Zealand statutory landscape – ie. rules and regulations, consents, nutrient load limits – would be considered as part of subsequent steps
 - Commentary on farm storage/irrigation infrastructure.
- The reports are interrelated, and the Wastewater Conveyance Report will follow the Water Quality and Land Use Report that will be completed for the 1 September 2022 WMC meeting.

Mortuary Wastewater Management

11. At the last KIWA Group hui the group requested that further information be provided as to why the crematorium site is unsuitable and what other alternative sites are available. Information is being compiled.
12. It is unlikely that the Wisconsin Mound will be constructed this financial year. A carryover of the budget will be requested.

Endeavour Fund Application

13. An executive summary and programme have been provided by Cawthron. The application was submitted in February 2022.

Cawthron Executive Summary

Freshwater is an increasingly scarce and valued resource in Aotearoa New Zealand. Our three waters approaches are unsustainable and investment in sewerage infrastructure and treatment has not delivered the intended water quality benefits consistently throughout the country. Much of our treated wastewater is still discharged to rivers or coastal environments using practices that are neither culturally acceptable nor environmentally sustainable. The relationship of people to water has been lost, and even in a 'water-rich' country like New Zealand, competing demands for water are exacerbating inequitable freshwater resource allocation and constraining economic growth.

Our research programme will be key to transforming how we manage our water, from a linear 'down the drain' model to a circular one driven by a deep knowledge of the values of iwi and communities, achieving more efficient water use, and protecting the health and well-being of our people and the wider environment. The foundations of this paradigm shift will be new knowledge to assess feasibility, sustainability, social and cultural acceptability, and development of circular models to recover value through reuse. This will transform wastewater management from a hazardous and costly service to a valuable and self-sustaining system that plays a key role in restoring mauri and strengthening the cultural acceptance of reused water.

Our trans-disciplinary research will characterise water quality across the gradient of wai-kino (polluted) to wai-Māori (freshwater) and examine what constitutes fit-for-purpose water from socio-cultural, ecological, and public health expectations. Through Kaupapa Māori and social science methodologies, we will canvass the full spectrum of perceptions and attitudes towards wastewater management and illuminate the cultural practices that enable the treatment of water to reach a culturally acceptable state for reuse.

Using innovative molecular biology methods, we will determine the fate of contaminants and their influence on environmental health. We will examine the water purification potential of soils, plants and microbes and progress nature-based solutions to wastewater treatment and reuse. We will determine targets for a range of chemical and microbiological contaminants and water treatment performance to inform future investment in reuse schemes and meet water safety and public health objectives.

Our participatory research will weave together mātauranga and science scholarship to develop novel models of wastewater management based on circular economy principles and guided by tikanga frameworks. By combining expertise in Māori cultural research, water quality, ecology, wastewater management, and environmental and social science, our team has the unique knowledge required as well as established relationships with iwi, water resource managers, industry and regulators to ensure successful implementation of our research.

Working with communities committed to change is the first step to realising the beneficial reuse of wastewater. Through the co-production of values-driven knowledge in place-based studies, including transdisciplinary and participatory research, we will ensure new knowledge discovered is fit-for-purpose and 'owned' by those that can apply it most effectively. Using this knowledge, our iwi and council partners will be exemplars, demonstrating transformative change in their investment in wastewater infrastructure, management of natural capital and enacting kaitiakitanga over aquatic resources. Our research, underpinned by these exemplars, will catalyse long-term systemic change nationally through a growing understanding and acceptance of wastewater reuse options and nature-based solutions, restoring the vital relationship between people and water.

Cawthron Work Programme

Understand what constitutes fit for purpose water

- Quantify contaminant reductions through wastewater treatment processes
- Quantify microbial wastewater signals in nature
- Determine tolerable risk and health-based performance targets for water reuse schemes.

Develop processes and technology to support culture-based solutions to wastewater reuse

- Te ara whakanoa: an atua reframing of water purification
- Taonga moroiti: Using natural systems to recover and optimise resources from wastewater.

Empower communities to adopt beneficial wastewater reuse

- Perceptions and policy, attitudes, and acceptance of wastewater reuse
- Capacity building and creative practice approaches

- Create frameworks informed by tikanga and planning tools for wastewater reuse.

ASSESSMENT of SIGNIFICANCE

Impacts on Council's delivery of its Financial Strategy and Long Term Plan

Overall Process: **Low** Significance

This Report: **Low** Significance

Inconsistency with Council's current strategy and policy

Overall Process: **Low** Significance

This Report: **Low** Significance

The effects on all or a large part of the Gisborne district

Overall Process: **Medium** Significance

This Report: **Low** Significance

The effects on individuals or specific communities

Overall Process: **Medium** Significance

This Report: **Low** Significance

The level or history of public interest in the matter or issue

Overall Process: **Medium** Significance

This Report: **Low** Significance

14. The decisions or matters in this report are considered to be of **Low** significance in accordance with Council's Significance and Engagement Policy.

TANGATA WHENUA/MĀORI ENGAGEMENT

15. The WMC includes iwi representatives from Te Rūnanga o Tūrangānui a Kiwa (TROTAK), Te Aitanga a Māhaki, Rongowhakaata, and Ngai Tamanuhiri. The WMC has been kept informed for the duration of the wastewater consent, including on AUD matters.
16. The Endeavour Fund application by Cawthron Institute was developed following a series of hui arranged by the KIWA Group.
17. Extensive consultation has taken place as a result of engagement with the KIWA Group and work on the Mauri Compass.

COMMUNITY ENGAGEMENT

18. Apart from extensive historical consultation on wastewater issues, AUD was included as part of the wastewater management options in the consultation process for the 2021–2031 LTP.

CLIMATE CHANGE – Impacts / Implications

19. The progression of treated wastewater for reuse has the potential to provide additional water and reduce the environmental effects and demand for water taken both from the Waipaoa River and aquifers by providing an alternative water source.
20. There is also the potential to reduce salt intrusion to aquifers as sea levels rise.

CONSIDERATIONS

Financial/Budget

21. A budget of \$725k for AUD investigations is included over the term of the 2021–2031 LTP. This budget will be spent on the following tasks:
- supporting WMC/KIWA Group
 - project management
 - funding applications, engagement with iwi, industry, other key stakeholders, and the farming community
 - research and investigations required to provide the necessary information for the above to be meaningful. and
 - identification of successful business and governance models for the use of recycled wastewater.
22. Applying for potential external sources of funding remains a priority for Council staff. In the event of receiving external grants (eg. through the Endeavour Fund), budget requirements will be reviewed, and the work plan could then be accelerated.

Legal

23. As part of Council bundled resource consents for the Wastewater Treatment Plant, Clause 8 of the consent is particularly relevant:

“The permit holder shall use its best endeavours to adopt those AUD options that are identified as feasible and which will enable the progressive removal of the treated human sewage from the discharge, via the marine outfall, with the objective of complete removal by 2020.”

24. Council is continuing to investigate AUD with the aim of identifying feasible options that enable progressive removal of treated human sewage from the discharge via the marine outfall.

POLICY and PLANNING IMPLICATIONS

25. Investigations for AUD are included in existing plans.

26. The outcomes of AUD investigations and engagement may influence the LTP and spatial planning.

RISKS

27. Legal risks apply if AUD investigations are not progressed as envisaged in the wastewater consent. If this cannot be resolved, it is unlikely to be able to achieve the tangata whenua objective of reducing and ultimately stopping the discharge of treated wastewater from the marine outfall.

28. Additional funding for AUD work has not been secured. Obtaining external funding remains a high priority for the project team as work on AUD cannot be accelerated until additional funding has been secured.

29. Currently Council remains non-compliant with its resource consent by not providing UV treatment and solids removal by 30 December 2020.

NEXT STEPS

Date	Action/Milestone	Comments
1 September 2022 WMC Meeting	Treated Water Quality Report and Wastewater Conveyance Report	Reports as requested
Ongoing	External funding applications	Awaiting outcome of Cawthron Institute application to the Endeavour Fund
Ongoing	KIWA Group consultation	Engage with the KIWA Group and work on integrating mātauranga Māori knowledge and western science aspects

ATTACHMENTS

1. Attachment 1 - Gisborne WWTP Effluent Reuse - Interim Report [**22-108.1** - 27 pages]



CH2M Beca

Gisborne WWTP Effluent Reuse - Stocktake

Draft Interim Report

Prepared for Gisborne District Council

Prepared by Beca Limited

20 May 2022



**make
everyday
better.**

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Appendices

Appendix A – Model Outputs



Revision History

Revision N°	Prepared By	Description	Date
A	Diego Valenzuela	Draft Interim Report for May 2022 WMC update	02/05/2021
B	Diego Valenzuela	Draft Interim Report – WWTP Effluent Flows Update	20/05/2021

Document Acceptance

Action	Name	Signed	Date
Prepared by	Diego Valenzuela		20/05/2021
Reviewed by	Rachael Shaw		20/05/2021
Approved by	Garry Macdonald		20/05/2021
on behalf of	Beca Limited		

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Executive Summary

To be included in the final report version

Interim Report

1 Introduction

CH2M Beca has been engaged by Gisborne District Council to undertake a study to look at the potential reuse options for the treated effluent from the Gisborne Wastewater Treatment Plant (WWTP). The focus of the study is to develop a stocktake of potential users within an 8km radius from the WWTP location, and subsequently develop a water balance by comparing the estimated water requirements to the outflows from the WWTP.

1.1 Scope

- The scope of the study is limited to the 8km radius zone from the WWTP. The area does not extend beyond the Waipaoa river.
- The potential water use is to be obtained from the estimated irrigation needs of the crops grown in the study area.
- The study excludes the review of climate/rainfall to determine irrigation demand.
- The report focuses on technical aspects of the effluent reuse, and excludes commentary on cultural, social or industry acceptability.
- At this stage, the study does not include a review of NZ statutory landscape – i.e., rules, regulations, consents, etc, related to effluent reuse, application to land or limits to nutrient loadings.
- Commentary on farm storage and irrigation infrastructure is excluded.
- Cost estimates for the potential reuse scheme are excluded.

1.2 Structure

The report is structured in separate sections that address different aspects of the viability of reusing the WWTP effluent:

- **Section 2** summarises the main findings from previous studies commissioned by GDC in relation to effluent reuse and disposal of treated effluent from the WWTP.
- **Section 3** describes the assumptions and processes followed to estimate the potential water demand for irrigation in the study area.
- **Section 4** summarises the WWTP Domestic wastewater flows and future projections that will inform the water balance.
- **Section 5** describes the expected quality requirements of the treated effluent for irrigation of different crops grown in the Gisborne region, based on the Victorian guidelines for water recycling, and presents possible treatment options to achieve the required quality.
- **Section 6** compares the daily potential water use with the average daily volume treated at the WWTP.
- **Section 7** provides recommendations and next steps based on the results of the study.

2 Background and Previous Reports

There is a history of previous work done in the Gisborne Tairāwhiti region looking at possible options for reuse/land disposal of the Gisborne WWTP treated effluent. This study reviewed three key reports that were considered to be relevant, which are summarised below:

- Options for Land Disposal of Gisborne City Wastewater (Opus International Consultants Limited, 2004)
- We are pumping our wealth into the ocean: 'Wastewater Report' (Gisborne Chamber of Commerce, 2019)
- Options for alternative uses of Gisborne Turanganui a Kiwa treated municipal wastewater (Nga Mahi Te Taiao, 2015)

2.1 Opus 2004 Report

The report 'Options for Land Disposal of Gisborne City Wastewater' was prepared by Opus International Consultants Ltd for the Gisborne District Council in October 2004. The focus of the report was to scope a full disposal to land scheme for the Gisborne City wastewater as alternative to the current discharge to the Bay via an ocean outfall.

The key points the report defined were the quantities of wastewater, the issues of peak flows and storage, indicative loading rates for irrigation and a review of the soil types of the Poverty Bay area. The base assumption was that all human sewage wastewater would be disposed of to land under all but extreme circumstances like earthquakes or major floods.

Flows and loads for the report were obtained from the companion report "Gisborne Wastewater System: Flows and Loads", Opus 2005. The flow data used was collected over the five-year period prior to the report. It was assumed that the wastewater would be treated to at least a secondary standard and disinfected by UV-light. The soil data was obtained from Pullar ("Soils and Agriculture of the Gisborne Plains", 1962).

The findings from the study were that only the well-drained sands and soils in the Waipaoa flats would be suitable for long-term wastewater disposal. In addition, large open storage lagoons would be required to allow for the times when wet weather produced higher flows and the ground was unsuitable for wastewater application. Based on this, the report described two possible schemes based on different soil type availability and storage assumptions.

Both schemes would require extensive areas of prime soil to be purchased and dedicated to wastewater disposal. The conclusion was therefore that a year-round total land irrigation scheme for Gisborne wastewater would not be feasible. However, it did not rule out the use of treated effluent for irrigation and beneficial use on a smaller scale and on a seasonal basis.

2.2 Gisborne Chamber of Commerce 'Wastewater Report'

The Gisborne Chambers of Commerce 'Wastewater Report: We are pumping our wealth into the ocean' published in March 2019 was prepared to investigate the beneficial use of treated wastewater for horticultural crop irrigation. This report was not prepared by technical or scientific experts and was not intended to be a detailed feasibility report. Rather it captured the local needs and views of Gisborne's business, scientific and regulatory communities.

Information used for this report was gathered by interviewing a broad range of people in the sector such as Gisborne District Council staff, representatives from the horticulture sector, researchers (Waikato University), consultants and bank personnel. Other information was obtained by reviewing related articles, previous case studies from NZ and overseas and documents provided by Gisborne District Council.

The report noted the increasing demand for freshwater in the growing horticulture sector and the decrease of natural freshwater resources in the region. It also discussed particular crop considerations, irrigation methods, national standards and exporter and grower requirements, as well as different case studies for the use of treated wastewater in agriculture. The report presented two possible options for the use of wastewater for irrigation in Gisborne and emphasized the economic, environmental and social benefits associated. The report looked at costs, risks, possible funding and commercial viability of reuse of wastewater for irrigation in the region.

One of the main conclusions was that while wastewater used to irrigate horticultural crops may require additional treatment, costs may be offset by private investment and water sales, which must also be viewed in the context of broader economic, socio-cultural and environmental benefits. Another conclusion was that although there is a high potential for the use of reclaimed water for the irrigation of horticulture crops, there is a significant barrier in the perception of the users and the resistance of exporters to purchase such produce.

2.3 Nga Mahi Te Taiao Report

The report 'Options for alternative uses of Gisborne Turanganui a Kiwa treated municipal wastewater' was prepared by Nga Mahi Te Taiao in June 2015. The aim of the report was to discuss alternative use options for the City's treated wastewater and develop a set of suitable options for such use.

The development of the options in the report evolved from discussions with the Alternative Use Working Group in preliminary consultation with a small number of key landowners, industry and community representatives. The report referenced several reports from New Zealand research institutes, New Zealand councils (including six from Gisborne DC), independent consultants as well as regulatory guidelines.

A key factor considered for alternatives to the discharge of Gisborne city's treated wastewater was the great cultural and social significance of the waters of the Bay. Another important factor was the need for the conservation of water resources and important mineral nutrients. The report also highlighted that the availability of potential reusable wastewater provides opportunities for combining the values around the cultural, social and environmental restoration of water in the Bay, with those associated with water, nutrient and carbon conservation.

The report developed different options for alternative wastewater discharge. The following criteria was considered for all the options proposed: logistic consideration, geophysical and social analysis, tangata whenua, aquatic ecosystem health, human health and wellbeing, as well as irrigation and livestock water. The options described were:

- Treated wastewater for industrial and commercial use and/or non-portable domestic water supply
- Treated wastewater for irrigation (municipal (recreational and landscape) irrigation, pastoral agriculture irrigation ('cut and carry'),
- Treated wastewater irrigation for other purposes: afforestation and fibre crops (timber, energy, biodiversity, fibre))
- Treated wastewater for energy production: biogas and microalgae
- Treated wastewater for wetland biodiversity development and water storage (constructed wetland reservoir options, abandoned river oxbows)
- Treated wastewater subsurface irrigation to dune lands
- Treated wastewater flow to surface (river, wetlands and estuaries) and ground water

The report did not draw any conclusions, rather it was a documentation of the reasoning behind finding new use options for Gisborne's wastewater. It also represented a first step in the consultative and discursive process to develop a sustainable set of options for wastewater reuse.

3 Water Demand Estimation

This section describes the assumptions and methodology used to estimate the potential irrigation water demand for the study area.

3.1 Study Area

The area considered for this study includes existing agricultural land in an 8km radius from the location of the Gisborne WWTP, extending out to the Poverty Bay flats. It does not extend beyond the Waipoua River.



Figure 3-1: Study area radius

Land with slopes greater than 15° were excluded from the review, as these are considered unsuitable for irrigation, in line with the Process Design Manual: Land Treatment of Municipal Wastewater Effluents (USEPA, 2006).

In addition, a buffer zone of 20m from water courses has been applied as a no-irrigation zone.

3.2 Crop Water Demand Model

In 2012, Aqualinc Research Limited (Aqualinc) developed for Gisborne District Council the Guidelines for Irrigation Water Requirements in the Poverty Bay Flats (Aqualinc Research Limited, 2012), which provided a detailed methodology to estimate water demand for different crops grown in the region. In 2017, the guidelines were updated, and a spreadsheet-model was developed, using a daily time step water balance model. The model takes into account different factors including:

- Crop type and typical rooting depth
- Soil type and water storage capacity

- Rainfall and evapotranspiration for the area
- Irrigation system used

It is understood that the model is based on deficit irrigation, which assumes the soil moisture content is kept below free draining levels, and water use is optimised for the crop needs not to produce water stress.

Gisborne District Council has been using this tool to estimate the potential water requirements for the crops grown in the Poverty Bay Flats and for water allocation purposes. The spreadsheet has been adjusted over the years to better match the irrigation water use requirements in the region and the new crops grown. In 2021, NIWA undertook a peer review of the model (NIWA, 2021) as the water requirements from the model were perceived as larger than what is likely used, and recommendations were provided to optimise the model.

The GDC spreadsheet model has been used to estimate the potential irrigation water demand for the study area in this assessment. The inputs needed for the model are the type of crop grown and the soil type.

3.3 Survey Crop and Soil Type

Gisborne District Council conducts an annual crop survey to detail the type, location and area of different crops in the Gisborne district. A summer crop survey and a winter crop survey are made depending on the time of the year the information is collected. The crop survey reports include a geographical representation of the different crops throughout the region, indicating the predominant crop grown on each parcel.

The information from the last crop survey (2020/2021) (Gisborne District Council, 2021) was used for the purposes of this study, which was provided in a geodatabase format. This information was overlaid against the soil type layer provided by Council to determine the total area occupied by a particular crop for each soil type within the study area.

The winter survey crop was compared against the summer winter crop, and it showed that most of the land parcels from the winter crop survey are contained in the summer crop survey parcels (refer Figure 3-2 below). As the spreadsheet model can estimate the water demand for a crop for the whole year, the winter crop survey data was disregarded for the study.



Figure 3-2: Summer crop survey vs. winter crop survey

Figure 3-3 below shows a summary of the summer crops within the study area that meet the slope requirements and excludes the buffer zones around watercourses. The spatial analysis showed that a total of 3,619 ha from the summer crop survey meet these criteria.

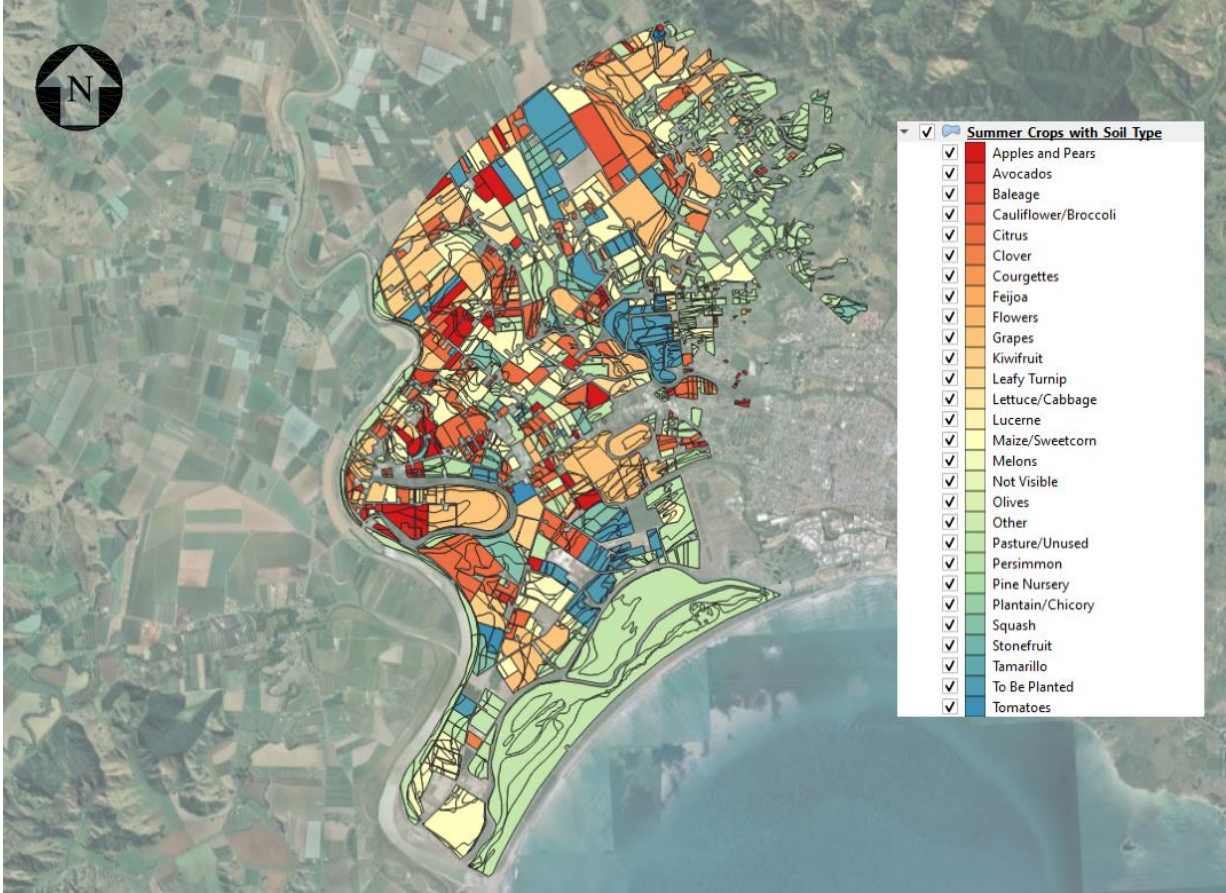


Figure 3-3: Summer crops within the study area considered potentially suitable for irrigation

Figure 3-4 shows a summary of the total hectares per crop type that are situated within the study area, based on the information from the summer crop survey.

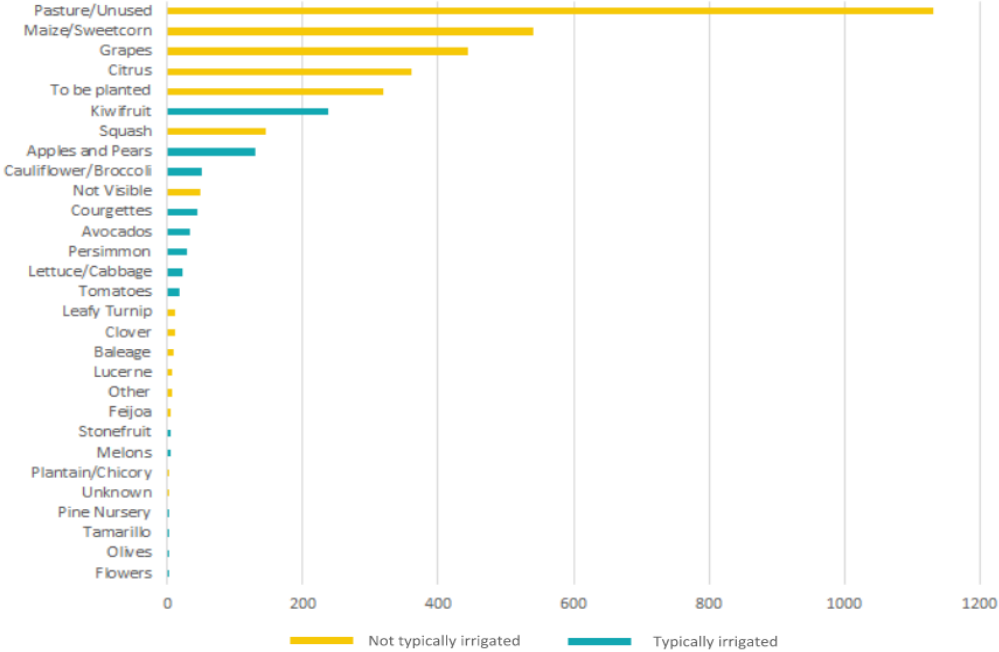


Figure 3-4: Summary of total hectares per crop type

The crops have been divided into two categories, those that are not typically irrigated in the Gisborne region (yellow), and those that typically require irrigation (teal). This categorisation follows information provided by Gisborne District Council for the crops grown in the area.

The figure shows that the top 5 crops by land area, which account for 77% of the total study land area, are not typically irrigated.

3.4 Model Outputs

The data for the different crops and their corresponding soil types was entered into the spreadsheet model. Not all types of crops identified in the crop survey are listed in the model, so a similar crop from the available list was selected in those cases. Some of the assumptions used are listed below:

- There were 49.4 ha of crops categorised as 'Not Visible'. These were modelled as pasture crops.
- There were 6 ha of crops categorised as "Other". These were modelled as pasture crops.
- There were 317.8 ha of crops categorised as "To Be Planted". These were modelled as pasture crops.
- There were 3.2 ha of crops with no category. These were modelled as pasture crops.
- There was a total of 76 ha of crops in the crop survey with no associated soil types. These crops were excluded from the analysis.

The outputs from the model for each month are shown in Table 3-1 and Figure 3-5 below.

Table 3-1: Monthly irrigation water requirements from spreadsheet model

Month	Irrigation Requirement (m ³)
Jul	6,070
Aug	35,483
Sep	526,541
Oct	1,646,303
Nov	2,768,215
Dec	3,542,006
Jan	3,381,885
Feb	2,212,781
Mar	1,383,119
Apr	410,442
May	26,323
Jun	11,127
TOTAL	15,950,292 (m³/year)

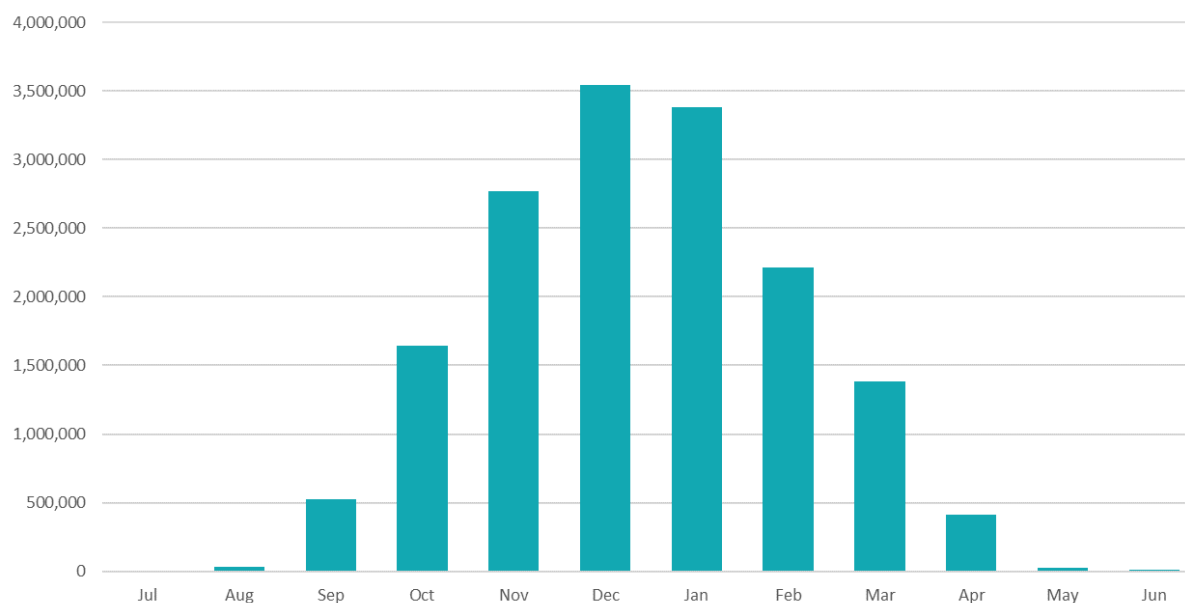


Figure 3-5: Potential irrigation water demand in the study area (m³/month)

The theoretical water demand from the scenario described above was further refined following a review from Olive Steven and Paul Murphy from Gisborne District Council on 28 April 2022, where the following crops were considered not to be typically irrigated in the Gisborne region, and therefore were removed from the irrigation requirements calculations:

- Baleage
- Clover
- Citrus (only occasionally irrigated)
- Feijoas (only occasionally irrigated)
- Grapes
- Leafy turnip
- Lucerne
- Maize/sweetcorn (not often irrigated – possibly only once to get established if planting time is badly timed)
- Not visible (likely to be a not irrigated crop rather than irrigated pasture)
- Pasture
- Plantain / Chicory
- Squash (not often irrigated – possibly only once to get established if planting time is badly timed)

The results from the adjusted scenario are shown in Table 3-2 and Figure 3-6 below.

Table 3-2: Monthly irrigation water requirements from spreadsheet model excluding not commonly irrigated crops

Month	Irrigation Requirement (m ³)
Jul	5,189
Aug	16,762
Sep	44,763
Oct	149,134
Nov	280,129
Dec	455,505
Jan	583,777

Month	Irrigation Requirement (m ³)
Feb	404,237
Mar	236,055
Apr	71,063
May	14,943
Jun	7,521
TOTAL ANNUAL	2,269,079 (m³/year)

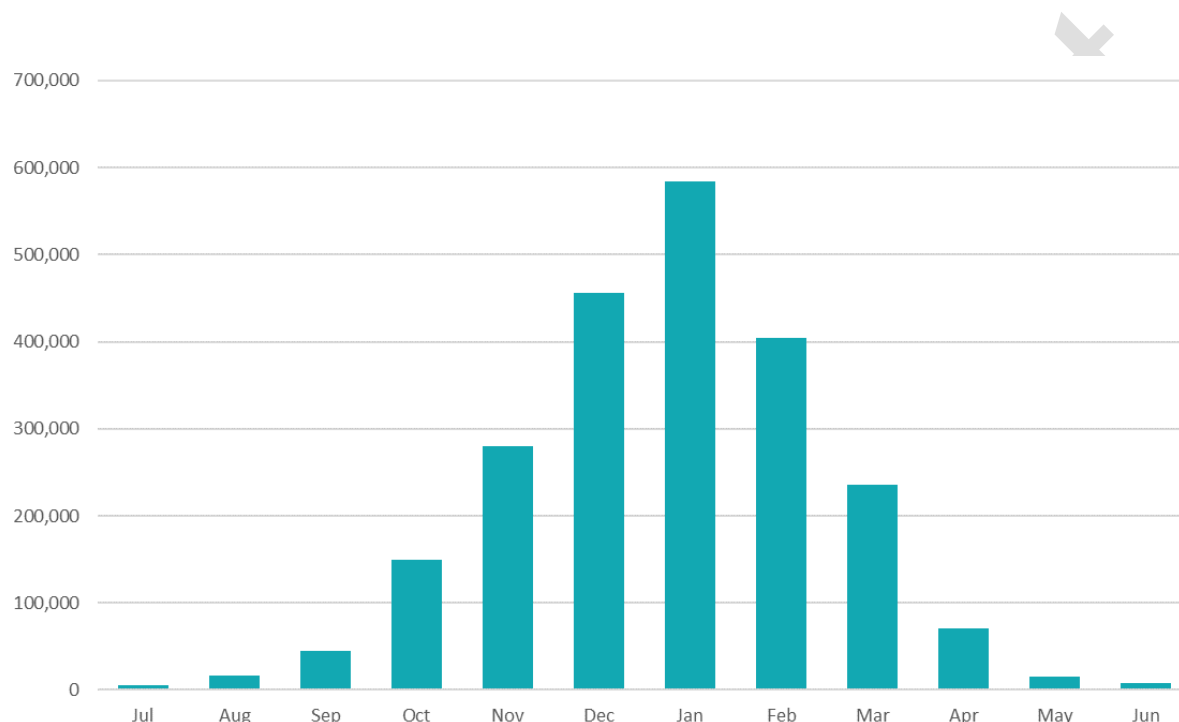


Figure 3-6: Potential irrigation water demand in the study area (m³/month) excluding not commonly irrigated crops

3.5 Existing Water Use

Gisborne District Council provided a database with the water use records in the whole district for the past two seasons. The information in this database is submitted to Council by the consent holders in the region. The database contained the total annual water use and maximum water allocation for each consent. These were filtered to include only those consents that fall within the study area, and this information was used to compare the current water use as recorded against the potential water use predicted by the model.

It was assumed that if the geographic coordinates of the consent fall within the study area, all the water usage was utilised in the study area (no translocation of water out of the zone). Likewise, if a consent is located outside of the study area, it was assumed no water from this source was used to irrigate crops within the study area.

Figure 3-7 shows the location of the water consents that meet the criteria. There are four water consents that are located in the city, and one consent to the east that takes water from the Waimata river. These are likely not used to irrigate crops in the Poverty Flats, however they were not excluded as these are consents that could potentially be replaced by treated effluent.



Figure 3-7: Water consents within the study area

Table 3-3 below shows a summary of the total water use for the past two seasons of the water consents within the study area. There is a slight decrease in water consumption from the 2019/20 season to the 2020/21. The current water use is between 15 - 17% of the total annual water allocated for these consents, indicating that only a minor fraction of the consented water is being used.

Table 3-3: Actual water use and consented water take allocation summary

Item	Annual Volume (m ³ /year)
Water Consumption 2019-2020	477,745
Water Consumption 2020-2021	418,735
Annual Consented Limit	2,776,022

It is noticeable that whilst the consented annual water take is a similar order of magnitude to the modelled annual water take presented in Table 3-2, the actual water consumption as reported by the consent holders is a factor of 6 lower.

4 WWTP Effluent Characterisation

4.1 WWTP Flows

The WWTP domestic flows follows an annual daily flow profile as shown in the figures below. Industrial wastewater flows are separated and bypass the biological and tertiary treatment processes. As such they are excluded from this analysis. Figure 4-1 shows the long term daily flow profile, whereas Figure 4-2 presents the average daily flow by month for the period 2011 to 2018.

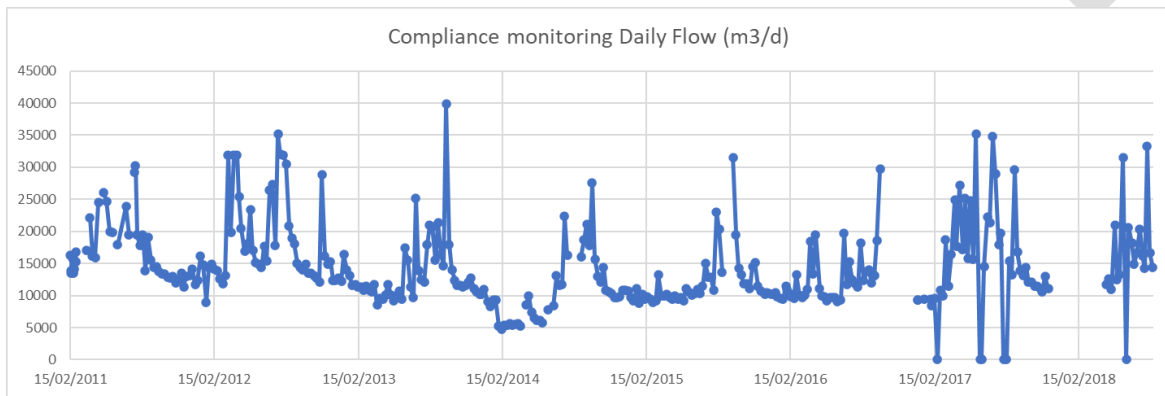


Figure 4-1: Long term flow profile – Domestic wastewater

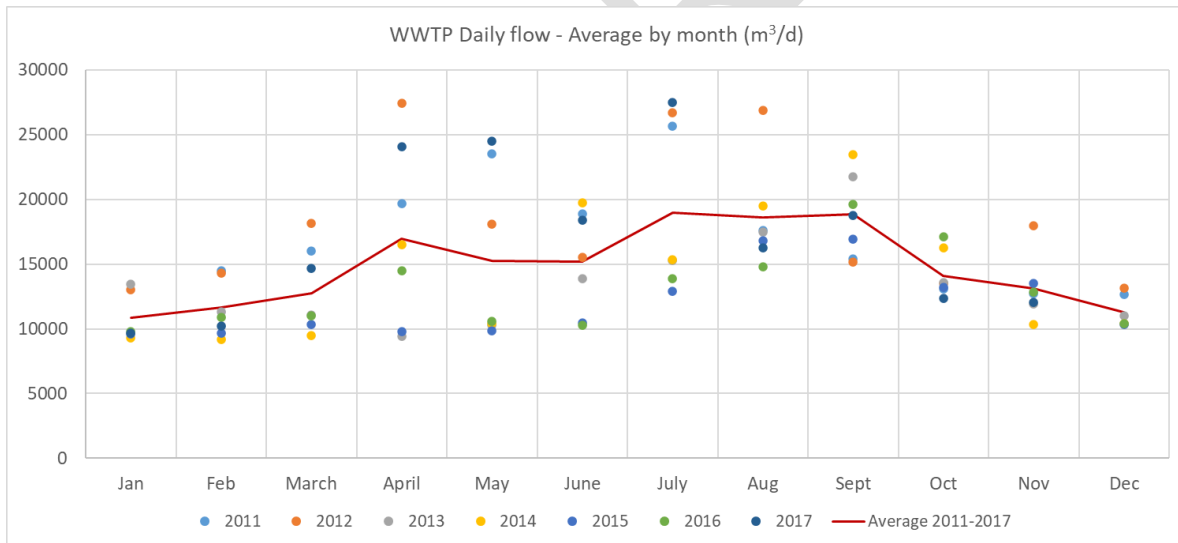


Figure 4-2: Domestic wastewater average daily flow (m³/d) by month

The average daily flows drop to approximately 11,000m³/d in January and peak at approximately 19,000m³/d through August to September.

Table 4-1: Average daily flow treated at WWTP (m³/d) by month

Month	Average Daily Volume (m ³ /d)	Average Monthly Volume (m ³ /month)
Jan	11,036	342,104
Feb	10,994	307,846
March	12,215	378,661
April	15,570	467,109

Month	Average Daily Volume (m ³ /d)	Average Monthly Volume (m ³ /month)
May	14,217	440,731
June	14,673	440,193
July	18,253	565,855
Aug	18,944	587,259
Sept	18,931	567,937
Oct	13,154	407,779
Nov	12,853	385,589
Dec	11,362	352,218
Annual	14,486	5,287,348 (m³/year)

The analysis indicates that there is more treated domestic wastewater discharged annually from the WWTP and potentially available for reuse than the actual annual consented water takes recorded in the study region. The quality of the wastewater relative to the specific crop will become the determining factor on the feasibility of replacing irrigation water with treated wastewater.

4.2 WWTP Expected Effluent Quality Following Stage 2 Upgrade

The plant is designed to meet the requirements of the resource consent for discharge to the marine environment. The consent places discharge limits on Total Suspended Solids (TSS), Total Oil and Grease (TOG) and Enterococci.

The upgraded WWTP will consist of inlet screening followed by biological treatment in the trickling filters, clarification to remove suspended solids, tertiary filtration using disc filters to polish the effluent suitable for UV disinfection. The expected effluent quality following tertiary filtration and disinfection is summarised in the Table 4-2.

Table 4-2: High level performance requirements of the liquid stream treatment processes (Ref: Beca Preliminary Design

Process Unit	Outlet/Effluent		
	Median	95 th %ile	99 th %ile
Tertiary filtration TSS (mg/l)	<10	<15	50
UV disinfection	1000cfu/100ml at 95 th %ile		

It is noted that the Victorian standards for reuse water additionally define quality requirements in terms of BOD, Turbidity, Bacterial (E.coli) and Pathogen load.

- BOD**
 The Stage 2 upgrade is not designed to improve the BOD performance of the existing plant. Removal of the sludge and TSS in the effluent will improve the BOD concentration, however the degree of improvement will be confirmed following commissioning.
- Turbidity**
 Turbidity and TSS are closely correlated. The disc filters will reduce the TSS of the effluent to a level suitable for disinfection.
- Bacterial Loads - E.coli**
 The UV disinfection plant has been specified based on achieving a 3 log reduction of Enterococci. Enterococci is typically used as the microbial indicator organism for discharges to marine environments. E.coli is typically used for freshwater or land discharges. The WWTP does not currently have an E.coli bacterial limit and as such does not specifically collect data for E.coli. For the purpose of this assessment, Enterococci will be considered as a proxy for E.coli. It is recommended that following commissioning of

the WWTP upgrade E.coli performance data is collected as this will be required for any future AUD assessment.

- **Pathogens**

The WWTP is not specifically designed for pathogen reduction. Typically, higher UV doses, chlorination or additional barriers such as membranes are required in order to reduce viral concentrations.

Nutrient removal (Nitrogen and Phosphorus) is not required by the Victorian standards and hence are not discussed further.

Interim Report

5 Effluent Quality Requirements

5.1 Background

With the introduction of the RMA in 1991, there has been an increase of consideration towards land-based discharges for treated effluent from WWTP, as an alternative to the typical discharges to freshwater and marine environments such as the current discharge method at the Gisborne WWTP. In New Zealand, these discharges are constrained through resource consents to ensure there are no adverse effects to the receiving environments. However, there are no standards or guidelines to govern these discharges if they are to be irrigated to crops for human consumption.

In the absence of any New Zealand standards or guidelines, the Victorian Guidelines for Water Recycling (Victorian guidelines for water recycling, 2021) (Australian) are used in this study to provide guidance on the requirements to discharge wastewater to crops. These standards have been recently released so they represent recent thinking and a proactive approach in reducing the risk of harm from the re-use of recycled water. The standards are in line with the new Victorian Environmental Protection Act, which moves from a compliance stance to a proactive prevention stance. The Victorian standards follow a risk based approach by putting in place controls that are proportionate to the risk posed by pollution and waste, and they address the requirements to understand and minimise the risk of harm to human health and the environment from pollution and waste. The standards present technical information on risks of recycled water for irrigation use, and references other standards such as ANZECC & ARMCANZ (2000), the Australian National Guidelines for Water Recycling (2006), the State Environment Protection Policy and the previous Environment Protection Authority publication 168, which is specific for the disposal of wastewater to land via irrigation.

5.2 Effluent Classes

The Victorian guidelines for water recycling define 4 classes of treated effluent which can be irrigated to crops and/or land. These classes have been adopted based on the quality and pathogen reduction requirements that must be met prior to final irrigation. These requirements have been summarised in Table 5-1 below.

Table 5-1: Effluent classification based on quality requirements

Class		A	B	C	D
Water Quality Objectives	Turbidity	< 2	-	-	-
	E.coli (E. coli org/100ml)	< 10	< 100	< 1,000	< 10,000
	BOD (mg/L)	< 10	< 20	< 20	<20
	SS (mg/L)	< 5	< 30	< 30	< 30
	pH	6-9	6-9	6-9	6-9
	Chlorine (mg/L Cl ₂)	< 1	-	-	-
Pathogen log Reduction Objectives	Helminth	6	5	5	4
	Protozoa	7	6	6	5
	Virus	6	5	5	3.5
Pathogen Quality Objectives	Helminth (per L)	< 1			
	Protozoa (per 50 L)	< 1			
	Virus (per 50 L)	< 1			

It is expected that the Gisborne treated domestic wastewater most closely aligns with Class C water, with the exception of the Pathogen reduction level.

5.3 Existing Crops and Quality Requirements

The 2020/21 summer crop survey in the Gisborne region identified 25 different crop types available for potential irrigation, covering a potential area greater than 3300 ha for the reuse of recycled wastewater. Each crop having different requirements of effluent treatment to meet the standards for further use and sale. The crops from the survey and their required level of effluent treatment were classified in accordance with the Victorian guidelines, and the results are summarised in Table 5-2 & Table 5-3.

Most of the crops in the Gisborne region may accept different effluent classes based on the irrigation method used. When using methods such as furrows, drips and subsurface irrigation, the potential contact of wastewater with produce is significantly reduced, lowering the risk of harm to human health. These irrigation methods have been highlighted in Table 5-2 and Table 5-3 below.

Table 5-2: Gisborne's crops and required effluent classes for irrigation

Crop	Acceptable Effluent Classes (refer notes)	Irrigation Methods
Apples, Pears, Kiwifruit, Persimmon, Stonefruit, Tamarillo and Olives	A ⁱ	Unrestricted
	(A , B , C) ⁱⁱ	Flood, furrow, drip, subsurface
Avocados, Citrus, Feijoa, Melons, Squash	A ⁱ	Unrestricted
	(A , B , C) ^{i, ii}	Flood, furrow, drip, subsurface
Cauliflower/Broccoli, Courgettes, Maize/Sweetcorn and Tomatoes		
- if cooked/processed	(A , B , C) ⁱ	Unrestricted
- if raw	A ⁱ	Unrestricted
Clover		
- if for honey/flowers	(A , B , C , D) ⁱⁱⁱ	Unrestricted
- if for animal feed	Same as for baleage (refer Table 5-3)	
Flowers	(A , B , C , D) ⁱⁱⁱ	Unrestricted
Grapes		
- Raw	A ⁱ	Unrestricted
	(A , B , C) ⁱⁱ	Flood, furrow, drip, subsurface
- Wine	(A , B , C) ⁱ	Unrestricted
Lettuce/Cabbage	A ⁱ	Unrestricted
Pine Nursery	(A , B , C , D) ^{i, iii}	Unrestricted

Notes

- i. Produce should not be wet from water when harvested
- ii. Dropped product not to be harvested
- iii. Restricted access to public

Table 5-3: Gisborne's available crops for cattle consumption and required effluent classes for irrigation

Crop	Cattle Type	Acceptable Effluent Classes	Irrigation Methods	Additional Requirements
Baleage, Leafy Turnip, Lucerne, Pasture/Unused Plantain/Chicory	Dairy Animals	A & B	Unrestricted	Requires helminth reduction targets met. Withholding period of 4 hours before collection
		C	Unrestricted	Requires helminth reduction targets met. Withholding period of 5 days before collection
	Beef Cattle	A , B , C	Unrestricted	Requires helminth reduction targets met. Withholding period of 4 hours before collection
	Sheep, Goats, Horses, etc	A , B , C	Unrestricted	No helminth reduction required. Withholding period of 4 hours before collection
	Pigs	None		

5.4 Possible Treatment Options

Published alongside the Victorian guidelines is a set of technical information which provides some suggestions on best practice for water recycling (Technical information for the Victorian guideline for water recycling, 2021). These best practise guides provide a list of treatment processes that can be used to achieve the required effluent quality grades for irrigation use. These processes have been summarised for each effluent class in Table 5-4 below.

Table 5-4: Summary of typical treatment technologies used to achieve effluent classes

Effluent Class	Treatment stages
A	Primary Treatment: Screens & grit removal, followed by sedimentation tanks
	Secondary Treatment: Activated sludge or trickling filters, followed by further sedimentation tanks/lagoons
	Tertiary Treatment: Coagulation, flocculation & sedimentation followed by a form of filtration, or membrane/standard filtration or RO
	Disinfection: UV or chlorination
B & C	Primary Treatment: Screens & grit removal, followed by sedimentation tanks
	Secondary Treatment: Activated sludge or trickling filters, followed by further sedimentation tanks/lagoons
	Disinfection: UV or chlorination
	If used for animal feed, then additional sand/membrane filtration, or 30 days retention time in non-aerated lagoons prior to disinfection (this can be from primary, secondary or tertiary lagoons)
D	Primary Treatment: Screens & grit removal, followed by sedimentation tanks
	Secondary Treatment: Activated sludge or trickling filters, followed by further sedimentation tanks/lagoons

6 Water Balance

6.1 Seasonal Water Balance

Describe here the seasonal balance from the modelled crop water demand and the flows from the WWTP (this is for final report only, not interim)

6.2 Pipeline Options

Describe possible pipeline routes, storage required, etc (for final report only)

Interim Report

7 Recommendations and Next Steps

The recommendations and next steps will be added here for the final report, once the water balance is completed.

Interim Report

8 References

- Aqualinc Research Limited. (2012). *Guidelines for Irrigation Water Requirements in the Poverty Bay Flats*.
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- Gisborne Chamber of Commerce. (2019). *We are pumping our wealth into the ocean: 'Wastewater Report'*. Gisborne.
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- Nga Mahi Te Taiao. (2015). *Options for alternative uses of Gisborne Turanganui a Kiwa treated municipal wastewater*. Gisborne.
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- USEPA. (2006). *Process Design Manual for Land Treatment of Municipal Wastewater*. Washington DC.
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Appendix A – Model Outputs

Interim

Table 8-1: Calculated water demand for all crops within the study area

Crop Grown	Water Demand (m ³ /month)												TOTAL
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Apples and Pears	0	0	0	36707	89628	117967	130911	85615	18116	2989	0	0	481933
Avocados	0	0	618	5781	13901	19782	22544	14465	8382	1965	367	87	87892
Baleage	0	0	1071	5466	9318	10824	11983	8927	5627	1330	0	0	54545
Cauliflower/Broccoli	4173	8601	16880	39922	48936	42284	50477	35578	33176	19513	9516	6294	315350
Citrus	0	0	4426	52116	138568	207138	238152	153097	88124	20475	3403	997	906496
Clover	0	0	2660	6868	10493	11883	12712	9659	6282	1886	0	0	62442
Courgettes	0	5235	11970	22625	33950	41379	45664	0	0	0	0	0	160824
Feijoa	0	0	98	752	1791	2495	2862	1835	1065	256	49	11	11214
Flowers	40	85	174	222	250	281	286	209	205	136	113	49	2051
Grapes	0	0	12550	91499	202153	271141	308738	198175	114461	26789	5287	1183	1231976
Kiwifruit	0	0	0	2932	35748	161446	254540	211099	142439	33171	0	0	841375
Leafy Turnip	743	1618	3157	8437	10354	8450	10821	7241	7124	4004	2023	1236	65210
Lettuce/Cabbage	927	2691	7531	16897	15993	20182	21228	15086	14027	6844	4726	1015	127147
Lucerne	0	0	2133	5076	7819	8978	9607	7269	4639	1413	0	0	46933
Maize/Sweetcorn	0	0	0	236933	448900	672457	175557	0	0	0	0	0	1533847
Melons	0	0	688	1498	2192	2790	3354	2688	1936	624	0	0	15770
Not Visible	0	0	13650	33525	50743	57423	61033	46535	30136	9381	0	0	302428
Olives	0	0	26	179	449	640	742	476	276	67	13	3	2870
Other	0	0	1656	4029	6136	6977	7447	5656	3658	1120	0	0	36679
Pasture/Unused	0	0	315346	762380	1159191	1318007	1406529	1067323	689174	213078	0	0	6931027
Persimmon	0	0	0	8547	20105	26099	28947	18816	3977	661	0	0	107153
Pine Nursery	49	149	480	1047	1012	1273	1335	1002	799	417	209	73	7845
Plantain/Chicory	138	414	1167	2644	2466	3132	3253	2432	2060	1039	617	178	19537
Squash	0	16689	40448	74553	114350	137742	153664	0	0	0	0	0	537446
Stonefruit	0	0	0	1440	2934	3585	3966	2507	527	91	0	0	15049

Crop Grown	Water Demand (m ³ /month)												TOTAL
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Tamarillo	0	0	0	302	847	1167	1297	865	184	30	0	0	4690
To be planted	0	0	82854	211383	323477	367214	392917	298247	193319	58198	0	0	1927609
Tomatoes	0	0	6396	11036	14185	16628	18486	15830	12013	4555	0	0	99129
Unknown	0	0	562	1509	2326	2641	2833	2149	1394	411	0	0	13824
TOTAL	6070	35483	526541	1646303	2768215	3542006	3381885	2212781	1383119	410442	26323	11127	15950292

Table 8-2: Calculated water demand for crops that typically require irrigation in the Gisborne region

Crop Grown	Water Demand (m ³ /month)												TOTAL
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Apples and Pears	0	0	0	36707	89628	117967	130911	85615	18116	2989	0	0	481933
Avocados	0	0	618	5781	13901	19782	22544	14465	8382	1965	367	87	87892
Cauliflower/Broccoli	4173	8601	16880	39922	48936	42284	50477	35578	33176	19513	9516	6294	315350
Courgettes	0	5235	11970	22625	33950	41379	45664	0	0	0	0	0	160824
Flowers	40	85	174	222	250	281	286	209	205	136	113	49	2051
Kiwifruit	0	0	0	2932	35748	161446	254540	211099	142439	33171	0	0	841375
Lettuce/Cabbage	927	2691	7531	16897	15993	20182	21228	15086	14027	6844	4726	1015	127147
Melons	0	0	688	1498	2192	2790	3354	2688	1936	624	0	0	15770
Olives	0	0	26	179	449	640	742	476	276	67	13	3	2870
Persimmon	0	0	0	8547	20105	26099	28947	18816	3977	661	0	0	107153
Pine Nursery	49	149	480	1047	1012	1273	1335	1002	799	417	209	73	7845
Stonefruit	0	0	0	1440	2934	3585	3966	2507	527	91	0	0	15049
Tamarillo	0	0	0	302	847	1167	1297	865	184	30	0	0	4690
Tomatoes	0	0	6396	11036	14185	16628	18486	15830	12013	4555	0	0	99129
TOTAL	5189	16762	44763	149134	280129	455505	583777	404237	236055	71063	14943	7521	2269079

Title: 22-109 DrainWise Programme Update

Section: Community Lifelines

Prepared by: Chris Hopman – 4 Waters Operations Manager
Neville West – 4 Waters Infrastructure Manager

Meeting Date: Thursday 7 July 2022

Legal: Yes

Financial: Yes

Significance: **Low**

Report to WASTEWATER MANAGEMENT Committee for information

PURPOSE

The purpose of this quarterly report is to provide the Wastewater Management Committee (WMC) with an update on the DrainWise programme for the last three months (1 January – 31 March 2022).

SUMMARY

In this reporting period we have had two overflow events – on 22 March during the declared state of emergency, followed by another on 13 May associated with Cyclone Fili.

Rapid inflow assessment of private property is ongoing – 172 properties have been inspected, 66 gully traps have been repaired and 10 downpipes into gully traps have been removed and connected to an approved outlet.

Public drains on private property: It is anticipated that only a third of the budget will be spent this year due to COVID-19, staff departures and ongoing wet weather. A carryover of unspent budget will be requested.

Rutene Road/Maki Street Upgrade is complete. Five other locations are being designed or being prepared for tender.

As a requirement of Council's resource consent for dry and wet weather discharges, a number of documents and actions need to be provided/undertaken by 16 May (six months following the consent being granted). These include appointing a Tangata Whenua Reference Group, Operating Maintenance Plan (OM Plan), Response Plan, and shellfish virus study methodology, and are all on track to be completed by the deadline.

Council is looking to increase its wastewater network performance monitoring equipment with the deployment of additional flowmeters and level sensing devices. This will provide greater granularity of inflow and infiltration information and allow more focused investigations leading to further reduction of stormwater into the wastewater network.

Stormwater and wastewater renewals are on target to be completed in this financial year.

The decisions or matters in this report are considered to be of **Low** significance in accordance with the Council's Significance and Engagement Policy.

RECOMMENDATIONS

That the Wastewater Management Committee:

- 1. Notes the contents of this report.**

Authorised by:

David Wilson - Director Lifelines

Keywords: DrainWise, WMC,

BACKGROUND

1. The DrainWise programme is made up of the following work streams:

Property Inspections

- minor public-funded works on properties (fixing gully traps and broken downpipes)
- compliance and enforcement; removing stormwater from downpipes and property flooding that enters or tops gully traps or wastewater pipes.

Stormwater Network Upgrades and Renewals

- stormwater public network extensions into private property.

Wastewater Network Upgrades and Renewals

- focus projects.

Education and Awareness

Engagement

- Tangata Whenua Reference Group.

2. The above workstreams aim to prevent wastewater overflows by reducing the amount of rainwater getting into the wastewater network. Rainwater can get into the wastewater network either by:
 - direct inflow, eg. through gully traps or downpipes into gully traps,
 - flooding on private property topping gully traps, or
 - ground water infiltration seeping through the soil and into broken private pipes or Council's pipes that are underground.
3. When too much rainwater gets into the wastewater network, our wastewater pipes become full and struggle to transport wastewater to the treatment plant. When this occurs, Council opens the scour valves to allow wastewater to discharge into the rivers in order to prevent wastewater overflows onto private property and out of manholes.
4. With 50% of the wastewater network on private property and privately owned, it has become apparent that a greater focus on this portion of the network is required if further reduction in overflows is to be achieved. A key success factor will therefore be property owners fixing problems on their privately owned wastewater and stormwater infrastructure. The Project Team is working to inspect and assist homeowners and educate residents about fixing issues with gully traps, downpipes and laterals on their properties.
5. At the same time Council is making sure that public infrastructure has adequate capacity and is in an acceptable condition, and it is looking for solutions that help with reducing the problems on private property (eg. public stormwater network extensions).
6. Council also manages a focused education and awareness programme that includes a revamped DrainWise website, videos, posters, billboards, infographics, news stories and a DrainWise Art Competition in schools. It also uses social media when appropriate.

DISCUSSION and OPTIONS

DrainWise Activity

7. In this reporting period we have had two overflow events. On 22 March the event was declared a state of emergency which lasted 13 days. This was followed by another on 13 May associated with Cyclone Fifi and was for one day.
8. These events were extreme rainfall events and overflows were not preventable, as they well exceeded 50% Annual Exceedance Probability (AEP) (2 Year Average Recurrence Interval [ARI]) and the 10% AEP(10 Year ARI).
9. The events did provide the opportunity to identify/confirm areas that flooded especially on private property as recorded through Council's Request for Service (RfS) system. Investigation of these have commenced.

Activity	Number
Properties inspected (rapid assessment)	172
Properties full inspection including smoke testing, CCTV	0
Gully traps repaired	66
Number of downpipes into gully traps identified	11
Downpipes into gully traps removed (last three months)	10
Number of stormwater RfS received for Gisborne City / (Resolved)	138 / (124)
Number of wastewater RfS received for Gisborne City / (Resolved)	82 / (83)

Public Drains on Private Property

10. It is anticipated that only a third of the budget will be spent this year due to COVID-19, staff departures, property access agreements and ongoing wet weather. A carryover of unspent budget will be requested.
11. Current status of On Property projects is:

Activity	Status
Rutene Road/Maki Street	Completed
De Lautour Road	Ready for Tender
Ida Road/Coldstream Road	Tender documentation completed. Property agreement and review under way
Craig Road	Tender documentation completed. Property agreement and review under way
Montrose Street/Oman Road	Investigations underway
Heath Johnson	Survey complete, design feasibility under way

Dry and Wet Weather Discharge Consent

12. As a requirement of Council's resource consent for dry and wet weather discharges a number of documents and actions need to be provided/undertaken by 16 May (six months following the consent being granted). These include appointing a Tangata Whenua Reference Group, OM Plan, Response Plan, shellfish virus study methodology – and are all on track to be completed by the deadline.

13. As part of the consent WMC has appointed the KIWA Group to the role of Tangata Whenua Reference Group (TWRG). A Memorandum of Understanding (MoU) has been developed and provided to the TWRG for review. Once agreed a copy will be tabled for this committee's information.

Network Performance Monitoring

14. Council is looking to increase its wastewater network performance monitoring equipment with the deployment of additional flowmeters and level sensing devices. This will provide greater granularity for identifying if the problem is inflow and/or infiltration and allow more focused investigations leading to further reduction of stormwater into the wastewater network.
15. Council has engaged a consultant to help confirm the location of these devices and undertake some performance review for the Kaiti catchment.
16. It is important to be able gather this information remotely from these devices, given their potential number. Low-cost options like Internet of Things (IoT) are being investigated as Council is developing its own low-powered network for transference of data.

Stormwater and Wastewater Renewals

17. Stormwater and wastewater renewals are on target to be completed in this financial year.
18. The wastewater renewals contractor has experienced a number of delays due to supply chain issues with the liners, staff contracting COVID-19, and wet weather delays due to elevated flows in the sewer network preventing work. The contractor is still confident to complete the work.

ASSESSMENT of SIGNIFICANCE

Consideration of consistency with and impact on the Regional Land Transport Plan and its implementation

Overall Process: Low Significance

This Report: Low Significance

Impacts on Council's delivery of its Financial Strategy and Long Term Plan

Overall Process: Low Significance

This Report: Low Significance

Inconsistency with Council's current strategy and policy

Overall Process: Low Significance

This Report: Low Significance

The effects on all or a large part of the Gisborne district

Overall Process: Low Significance

This Report: Low Significance

The effects on individuals or specific communities

Overall Process: Low Significance

This Report: Low Significance

The level or history of public interest in the matter or issue

Overall Process: Low Significance

This Report: Low Significance

19. The decisions or matters in this report are considered to be of **Low** significance in accordance with Council's Significance and Engagement Policy.

TANGATA WHENUA/MĀORI ENGAGEMENT

20. The WMC includes iwi representatives from Te Rūnanga o Tūrangānui a Kiwa (TROTAK), Te Aitanga a Māhaki, Rongowhakaata, and Ngai Tamanuhiri. The WMC has been kept informed for the duration of the wastewater consent, including DrainWise matters.

COMMUNITY ENGAGEMENT

21. The community has been consulted as part of the Long Term Plan 2021–2031 (LTP) process and gives a high priority to the DrainWise Programme.

CLIMATE CHANGE – Impacts / Implications

22. Rising sea levels and higher intensity rainfalls will impact the performance of the stormwater network. Any new or renewal works have adopted 2090 climate change levels.

CONSIDERATIONS

Financial/Budget

23. Budgets have been approved as part of the 2021–2031 LTP. The outcomes of the dry and wet weather discharge consent will require a review of existing budgets to meet the 10-year improvements. These will be promoted for the next LTP.

Legal

24. Council has a challenging discharge consent, requiring regular interaction and a number of procedural processes that cannot be overlooked. A robust management process needs to be in place to ensure compliance.

POLICY and PLANNING IMPLICATIONS

25. The requirements of the DrainWise Programme are likely to influence the LTP and spatial planning given the current constraints on the wastewater and stormwater capacity in places, until such a time as inflow and infiltration is reduced sufficiently to not cause wastewater overflows.

RISKS

26. There are legal risks associated with not complying with Council's resource consent.
27. Not meeting community expectations of having no overflows can impact adversely on Council's reputation.
28. On property overflows will continue to pose health risks for property owners.
29. Overflows to our rivers will continue to present health and environmental risks.

NEXT STEPS

Date	Action/Milestone	Comments
12 May 2022	Arrange first meeting of TWRG	Review MoU, Introduction to DrainWise
16 May 2022	Meet 6-month consent requirements	

Title: 22-113 Wastewater Treatment Stage 2 Update
Section: Community Lifelines 4 Waters Infrastructure - Capital Works
Prepared by: Ben McArthur - Civil Project Solutions
Meeting Date: Thursday 7 July 2022

Legal: Yes

Financial: Yes

Significance: **Medium**

Report to WASTEWATER MANAGEMENT Committee for information

PURPOSE

The purpose of this report is to provide the Wastewater Management Committee (WMC) with an update on progress of the Wastewater Treatment Plant (WWTP) Stage 2 Upgrade.

SUMMARY

Of note within the attached report is:

- Contract is progressing within budget. Currently there are no variations altering the tendered price.
- Milestone dates are provided with the plant starting to process the wastewater in April 2023, which is the start of hot commissioning. This includes a 25-day contingency allowance for programme slippage.
- Construction is programmed for completion in December 2022.

The decisions or matters in this report are considered to be of **Medium** significance in accordance with the Council's Significance and Engagement Policy.

RECOMMENDATIONS

That the Wastewater Management Committee:

1. **Notes the contents of this report.**

Authorised by:

David Wilson - Director Lifelines

Keywords: wastewater management, treatment plant, upgrade

ASSESSMENT of SIGNIFICANCE

Inconsistency with Council's current strategy and policy

Overall Process: Low Significance

This Report: Low Significance

The effects on all or a large part of the Gisborne district

Overall Process: High Significance

This Report: Low Significance

The effects on individuals or specific communities

Overall Process: Medium Significance

This Report: Low Significance

The level or history of public interest in the matter or issue

Overall Process: High Significance

This Report: Medium Significance

The decisions or matters in this report are considered to be of **Medium** significance in accordance with Council's Significance and Engagement Policy.

NEXT STEPS

Date	Action/Milestone	Comments
TBC	Site visit by WMC to WWTP	
Ongoing	Further quarterly Update	

ATTACHMENTS

1. Attachment 1 - WWTP Stage 2 Update WMC 26 May 2022 xls [22-113.1 - 8 pages]

Wastewater Management Committee Update Report

Project: Gisborne Wastewater Treatment Plant Upgrade Stage 2

Committee: Wastewater Management Committee 26 May 2022

Project Manager: Ben McArthur

Report Date: 2 May 2022

Health and Safety

Sign in and out protocols are in place for the site, including covid-specific registers and QR codes. Entering the clarifier pump station work zone also requires a full tag-in, tag-out procedure and staff are being craned in and out of the chamber in a fully certified man-cage.

MCD See Say Do's information is being supplied to GDC H&S manager regularly. This covers off all Non-Conformance Report (NCR), Opportunity for Improvement (OFI), incidents and accidents for the site. Within the last period no OFI, incidents or accidents have occurred.

General Update

We are up to Request For Information (RFI) #151 with the majority of the latest of these being electrical and structural related.

There have been just one Notice from the Contractor to the Engineer to Contract, and four Notices to the Contractor, all of which have been sent within the last period.

There has been one Non-conformance on site, regarding the pouring of a section of the internal walls within the clarifier pump station not filling with concrete fully during pouring. A remedy is being worked through for this between MCD and Beca.

Pre concrete pour inspections have been being carried out with Beca involvement both over Teams video calls, and for significant points they have been present on site to ensure signoff is obtained at completion.

Progress on site has been slowed with the two significant weather events the region was subjected to during April. Other factors have been the effect of Covid both directly with cases of personnel having to isolate from site, and the resultant supply chain issues from freight and other companies not able to meet delivery timeframes for the same reasons. However, MCD have been relatively fortunate in the fact that they have been hit with COVID progressively and not all at once.

Assembly of the Principal supplied (type P equipment) being the lamella clarifier support frame and hoppers has progressed and is looking impressive on site. There have been some issues with the fabrication quality of the product supplied and damage from cartage, which we are working through with the supplier.

Procurement of the remaining major Contractor supplied (Type C) equipment has been confirmed. Lead times for some items have also been extended, influencing the timeframe to completion. MCD are due to submit a revised construction programme for consideration this coming week.

Wastewater Management Committee Update Report

Construction Progress

March and April 2022

- Complete and pour clarifier pump station second lift.
- Complete and pour clarifier slab and support plinths (3 pours).
- Complete and pour slabs for pump shed, MCC building and generator.
- Complete and pour sludge tank storage slab.
- Continue works on UV clarification chambers.
- Continue works to construct internal walls within clarifier pump station.
- Complete assembly of lamella clarifier frame and begin assembly works of hoppers.
- Begin repairs to pump station internal liner.
- Site visit by Garry MacDonald (Beca) 2 March.
- Site visit by David Grace (Beca) 30 March.

Forward Programme

May - June 2022

Complete internal walls within clarifier pump station.

Continue with assembly of lamella clarifier, receive final deliveries of clarifier to site.

Installation of lamella clarifier packs into hoppers.

Continue lamella clarifier assembly on site, lift into place.

Complete clarifier pump station manhole works.

Construct tertiary filtration slabs.

Electrical building construction.

UV channel construction.

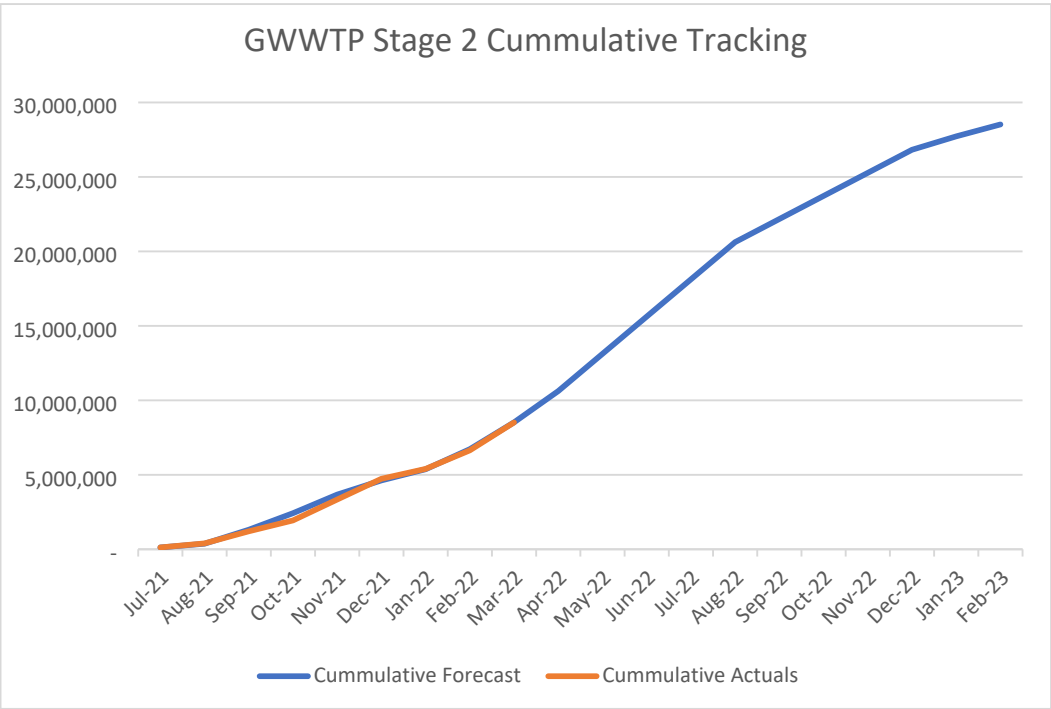
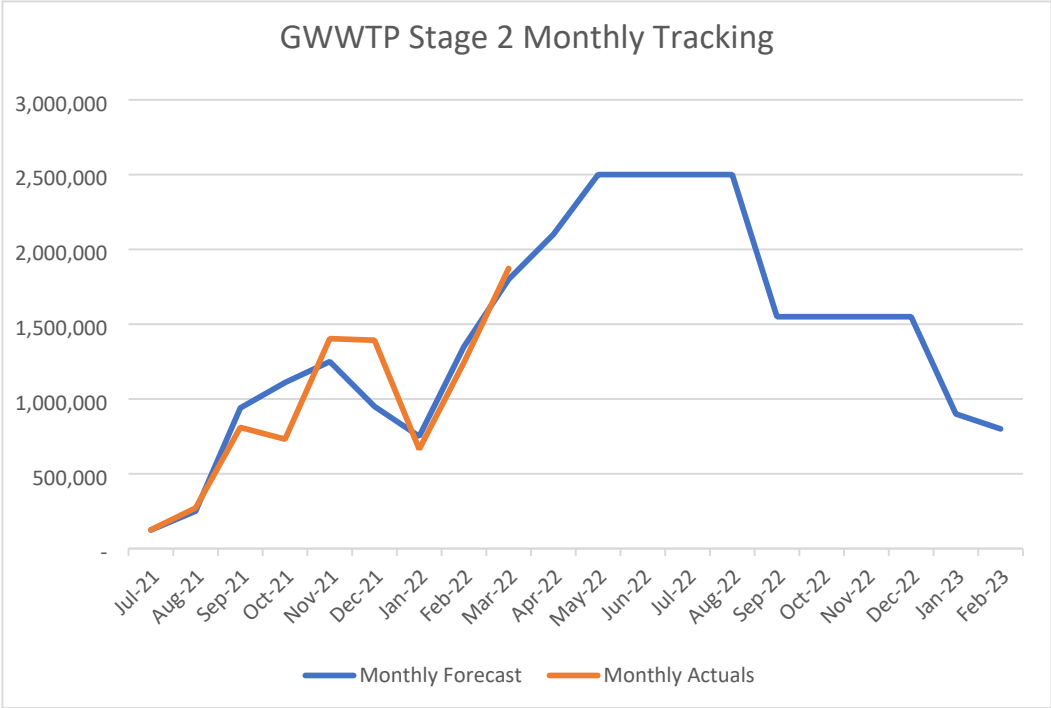
Procurement of MCC cabinets, drives and other electrical equipment.

Project Milestones Forecasted Dates

Construction period	Aug 2021 – Dec 2022
Cold commissioning	Jan – Feb 2023
Contingency allowance (mandatory 25 days)	Mar 2023
Hot commissioning	Apr 2023
Trial operating period (25 days allowed)	Apr – May 2023

Wastewater Management Committee Update Report

Financial Update



Wastewater Management Committee Update Report

Progress Photos



Crane access for inspections of clarifier pump station internal walls work.



Reinforcing steel for internal wall within clarifier pump station.

Wastewater Management Committee Update Report



Pre-assembly of lamella clarifier upper hopper walls.



Reinforcing steel for pump shed slab in place.

Wastewater Management Committee Update Report



Pump shed slab poured.



Reinforcing construction of UV treatment chambers.

Wastewater Management Committee Update Report



3

Scaffold around lamella clarifier frame being constructed.



Lamella clarifier hopper bases installed into frame.

Wastewater Management Committee Update Report



Sludge storage tank slab being constructed.



Sludge storage tank slab initial pour completed.

Title: 22-116 Three Waters Reform Update
Section: Community Lifelines
Prepared by: Gael Alderton - Executive Advisor
Meeting Date: Thursday 7 July 2022

Legal: No

Financial: No

Significance: **Low**

Report to WASTEWATER MANAGEMENT Committee for information

PURPOSE

The purpose of this report is to inform the Wastewater Management Committee (WMC) that Yvette Kinsella, Special Projects Manager, will provide a verbal report on the Three Waters Reform.

SUMMARY

Yvette Kinsella will provide an update on the current status of the Three Waters Reform and any changes of note.

The decisions or matters in this report are considered to be of **Low** significance in accordance with the Council's Significance and Engagement Policy.

RECOMMENDATIONS

That the Wastewater Management Committee:

- 1. Notes the contents of this report.**

Authorised by:

David Wilson - Director Lifelines

Keywords: Three Wates Reform

Title: 22-148 Wastewater Management Committee Meeting 26 May 2022
Section: Democracy & Support Services
Prepared by: Heather Kohn - Democracy & Support Services Manager
Meeting Date: Thursday 7 July 2022

Legal: Yes

Financial: No

Significance: **Low**

Report to WASTEWATER MANAGEMENT Committee for information

PURPOSE

The purpose of this report is to provide the Committee with the notes taken on 26 May 2022 following the failure to have a quorum of two councillors and two tangata whenua members.

SUMMARY

The Wastewater Management Committee meeting held 26 May 2022 failed to achieve a quorum as described in the Committee's Terms of Reference. The meeting went ahead without any resolutions being made however the reports were discussed.

The notes have been provided to update those not at the meeting on the discussion. The notes do not hold any official status as Minutes.

The decisions or matters in this report are considered to be of **Low** significance in accordance with the Council's Significance and Engagement Policy.

RECOMMENDATIONS

That the Wastewater Management Committee:

- 1. Notes the content of the report.**

Authorised by:

James Baty - Director Internal Partnerships

Keywords: quorum, discussion, notes

BACKGROUND

1. The Wastewater Management Committee was established as a requirement of the resource consents conditions.
2. Its membership consists of four councillors (including the Chairperson and four Tangata Whenua representatives).
3. The Co-Chair advised just prior to the meeting that he advised the Rongowhakaata Iwi Trust that he had resigned as its representative on the Committee in March 2022. This means there are currently only three iwi representatives.

ASSESSMENT of SIGNIFICANCE

Impacts on Council's delivery of its Financial Strategy and Long Term Plan

Overall Process: Low Significance

This Report: Low Significance

Inconsistency with Council's current strategy and policy

Overall Process: Low Significance

This Report: Low Significance

The effects on all or a large part of the Gisborne district

Overall Process: Low Significance

This Report: Low Significance

The effects on individuals or specific communities

Overall Process: Low Significance

This Report: Low Significance

The level or history of public interest in the matter or issue

Overall Process: Low Significance

This Report: Low Significance

4. The decisions or matters in this report are considered to be of **Low** significance in accordance with Council's Significance and Engagement Policy.

ATTACHMENTS

1. Attachment - Notes Wastewater Committee 26 May 2022 [**22-148.1** - 7 pages]

NOTES

Draft & Unconfirmed



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MEMBERSHIP: Shannon Dowsing, Larry Foster, Terry Sheldrake, Kerry Worsnop and Tangata Whenua members Pene Brown, Ronald Nepe, and Angus Ngarangioue.

NOTES of the WASTEWATER MANAGEMENT Committee

Held in Te Ruma Kaunihera (Council Chambers), Awarua, Fitzherbert Street, Gisborne on Thursday 26 May 2022 at 9:00AM.

PRESENT:

Crs Dowsing, Foster, Sheldrake, Worsnop and Ronald Nepe.

IN ATTENDANCE:

Mayor Rehette Stoltz, 4 Waters Infrastructure Manager Neville West, Senior Project Manager Ben McArthur (Civil Project Solutions), Democracy & Support Services Manager Heather Kohn and Committee Secretary Jesse Graham.

Secretarial Notes: Director Lifelines David Wilson attended via audio visual link.
The meeting commenced at 9am and adjourned at 9.03am to allow time for members to arrive to form the quorum.
The meeting reconvened at 9.15am.
As a quorum was not achieved, these notes have been recorded for the next Wastewater Management Committee Meeting scheduled for Thursday 7 July 2022.

The meeting commenced with a karakia.

1. Apologies

Pene Brown, and Angus Ngarangioue submitted their apologies.
LeRoy Pardoe recently advised staff that he tendered his resignation to the Rongowhakaata Trust in March 2022.

Secretarial Note: Cr Worsnop arrived 9:06am.

2. Declaration of Interest

There were no interests declared.

3. Confirmation of non-confidential Minutes

3.1 Confirmation of non-confidential Minutes 10 February 2022

These notes will be tabled at the Wastewater Management Committee meeting scheduled for 7 July 2022.

3.2 Action Sheet

No matters arising.

3.2 Governance Workplan

No matters arising.

4. Leave of Absence

There were no leaves of absence.

5. Acknowledgements and Tributes

There were no acknowledgements or tributes.

6. Public Input and Petitions

There were no public input or petitions.

7. Extraordinary Business

There was no extraordinary business.

8. Notices of Motion

There were no notices of motion.

9. Adjourned Business

There was no adjourned business.

10. Reports of the Chief Executive and Staff for INFORMATION

10.1 22-108 Alternative Use and Disposal Update

Director Lifelines David Wilson, Rachael Shaw (Beca), and Diego Valenzuela (Beca) attended via audio visual link.

Beca submitted an Interim Report and gave a presentation to update the Committee on progress to date.

Focus has been on:

- Adopting the Victorian (Australian) guidelines for water recycling. It is used to determine the quality of the effluent required to apply to crops (if further treatment is required).
- Using Geographic Information System (GIS) held by Council to spatially map the 8km radius zone from the Wastewater Treatment Plant (WWTP).
- Continuation of research into Alternative Use and Disposal (AUD) for effluent reuse and disposal of treated effluent from the WWTP.
- Developing a plan to present to the Committee moving forward.

The Victorian guidelines for water recycling define four classes of treated effluent which can be irrigated to crops and/or land. These classes have been adopted based on the quality and pathogen reduction requirements that must be met prior to final irrigation. It is expected that the Tairāwhiti treated domestic wastewater most closely aligns with Class C water (see Interim Report for definition).

Discussion was held regarding the 8km of the study area.

Responses to questions:

- Costs for running the treatment plant are yet to be defined, however they will be large and therefore co-investment into the plant is required. Currently, the information attained provides good insight into what improvements can be made to existing usage and new ways to use it moving forward.
- A significant industry where change could come from due to the amount of water they use, are some of the major industries such as Zespri and Fonterra. The Victorian guidelines demonstrate that crops such as kiwifruit, are able to use treated Class C water, however the large companies are reluctant to use treated water (Class C) for their crops/field. Council has requested that they put that in writing with the reasons why.
- Significant volumes of water are being under consumed. This is due to over-consenting and data needs to be accurately aligned to reflect true figures. This will form part of the plan moving forward.

In response to future focused questions around reuse, Council proposes to build it, demonstrate the various uses then approach co-investors. The costs to run the plant will be high, therefore co-investment is a priority. Meanwhile, Council will be using the treated water to wash down the plant to demonstrate that it can be used for a number of purposes once it has been through the treatment process. This is a work in progress.

Next steps:

- refine water balance and commentary
- assign classes to crops and map spatially
- review spatial distribution of irrigable crops for logical clusters that could be reticulated
- review possible rising main routes
- outline recommendations to progress
- provide recommendations for decision reports.

10.2 22-109 DrainWise Programme

Neville West provided summary of the report.

- Council has adopted a new approach to how they deal with drain pipes and gully trap issues. The programme allows the team to go in and repair with the property owner as opposed to issuing notices. It provides low cost solutions and technical support. Previously it was discharged to ground but now it is out to the road. It offers a permanent fix.
- Council now has a resource consent for the dry weather and wet weather overflows and over the last six months had deadlines to provide documents for consent for clarification for and other requirements. Council have met the deadlines and have another six months of information.

- Recent weather events have confirmed continued areas of focus and remain to be Kaiti and Whataūpoko. No significant change in identifying new areas of need. However, the weather event highlighted some isolated areas requiring attention. These were remedied quickly.
- The network performance is monitored however preplanning is the priority as opposed to 'after' the fact. Current construction standards with developers ensure properties are above the road. In the major event the flow comes down the road instead of down the properties.
- The focus is making sure compliance is achieved. Council has a freshwater plan which is dealing with storm water use and how it is discharged. There is a lot more required of the developer and more focus on compliance.
- Attenuation is a key component in stormwater management and part of consenting. It is more about the knowledge of the property owner.
- With an increase in housing density, we will observe more duplex dwellings and more people per section than seen before. The Tairāwhiti Regional Management Plan (TRMP) has additional constraints so it will require onsite attenuations, evidence that their build will not be adding to the current network and proof that the water has another way of being disposed of.

10.3 22-133 Wastewater Treatment Stage 2 Update

Ben McArthur summarised the report.

- They have been a little slow on site due to COVID, supply chain issues. Other than that, things are progressing well. They have bought all of the slabs. Looks good and the clarifier is standing on site very tall and strong. There are only two in the country and the other is in Auckland. It is the first one being used for wastewater treatment. It is well designed.
- They are looking at having the construction completed by the end of 2022 – hot and cold commissioning to be trialled next year.

Secretarial Note: Ronald Nepe left the meeting at 10am.

10.4 22-116 Three Waters Reform Update

Yvette Kinsella provided a verbal report via audio visual link.

Updates

- The intention of government is that we have better quality of drinking water.
- Government has invested a massive amount of money to understand the Three Water project over time.
- The goal is better quality, better environmental outcomes, better cultural outcomes (mana whenua for governance of water) and crucially flowing on from that, fast tracking and building the infrastructure that's needed for the Three Waters.
- Overall, their projections are that they are able to provide much more affordable delivery of water services across New Zealand by 2050.
- Currently there are 31 councils still sitting in the opposition camp, but government continues with implementation.

There are three core parts of the reform identified to date:

1. Establishment of a standalone drinking water services regulator, Taumata Arowai. It was completed/enacted in 2020 and became active in March 2021. David Wilson and his team have started working through that group to develop water quality and standards.
2. Establishment of the delivery of water services through 4 new water services entities.
 - The area Tairāwhiti is in contains 21 councils, multiple hapū and is a large area.
 - The role of the entity is to manage the water services and operate the networks for drinking water and some parts of stormwater. Yet to be finalised because stormwater networks particularly in rural areas are often part of drainage networks and also part of the catchment management of those areas, so it is a very grey area, but we have David Wilson on it seeking good outcomes for Tairāwhiti.
3. Water Economic Regulator: progress to date is unknown however the core part of that is to protect consumer interests and to ensure efficient running of the water services entity in regards to costs.

What has the government created so far?

- Established Taumata Arowai.
- An important decision was made in September 2021, is that the water services became a mandatory task. They released an exposure bill trying to put an initial proposal forward for what those water entities would look like.
- Detailed report provided by the Working Group on Governance and Accountability (comprised of council and mana whenua representatives) and have given recommendations about the governance of those water service entities to the government. There is a council report that outlines these and a copy can be made available. Government has responded and accepted most of them which is encouraging.
- Water Services Entity Bill to come out mid 2022 for consultation. In terms of the next steps after that, they are move quickly. They will be appointing Chief Executives and Board Members over the water services entities over the rest of this year. They will be fully operative by 1 July 2024.
- We are doing a lot of work internally already, identifying people and capacity issues, including digital, financial strategies. There has been significant investment by councils to support the transition already.

Governance of WSEs

Regional Representative Group (RRG) (highest level governance):

- Councillor and community influence occurs at this level.
- Establishes the governing constitution.
- Will comprise of equal mana whenua representation and local council representatives
- Will be responsible for oversight of the performance of the WSEs
 - appointing board members
 - monitoring and accountability role
 - representing views of local communities.
- Sets the high level strategic direction through the Statement of Performance Expectations for the Board to deliver on.

- There is likely to be sub-representation group that will feed information up, therefore enabling needs of the unique communities of the region to be captured.

Water Service Entity Board (WSEB) (governance of the Water Service Entity):

- Will be focused on the governance of the delivery of water services, determining investment priorities and deliverables.
- Will be responsible for employing/contracting independent skills-based staff, oversee decisions around maintenance and renewal of infrastructure and hold management to account for delivery of water services.
- Will operate by a commercial model.

Water Service Entity (WSE):

- Delivers the day-to-day drinking water, wastewater and stormwater services for the region.

Shareholding

- Entity assets remain in council ownership through shareholding - one share per 50,000 people (our region has two shares)
- Shareholding is a tool they have arrived at as a good way to do this, due to concern about assets being sold and privatisation. It's a mechanism to avoid and protect assets from being sold.
- Our area has two shares and there are many unanswered questions at the moment.
- Councils continue to own. Mana Whenua and Councils jointly provide high level governance through RRG.

Constitution

- A constitution addresses functionality and membership. That constitution will be prepared initially under the Water Services Entity statute. After that, when it comes to the review of the arrangements (every 3 years), the RRG itself will redevelop its constitution.
- The legislation does allow for a measure of regional or super regional input into strategic direction of the WSEs through the WSE Boards, however there is a clear separation between RRG and the operational decision-making of the WSE.

Funding

- There is some funding available. There are two parcels of funding to assist councils.
- We have "no worse off funding". Government is trying to ensure that councils are not any worse off from the reforms. We could use this to cover stranded costs and losses of economies as they essentially are taking a third of our operations away and a third of the rates away from council and diverting it to these water services entities. Costs that initially would have been shared across activities are now shared across fewer activities with no additional rates to support that, with the removal of those rates across the Three Waters.
- "Better off " funding, \$28m for Tairāwhiti, enables key projects to happen to support the Government's agenda to progress regional resilience, urban growth and development and place making and better living.
- There is a parcel of funding called He Pukenga Wai, for Iwi Māori to participate in the program. It is open now and purpose is to ensure that Māori can engage in the reform programme. \$18k/mandated iwi authorities is available and that information is on the website. Announced it for this year and will look into further funding moving forward.

Impact Assessment on Tairāwhiti

- Central government has a national level submission.
- A Castalia Report identified stranded costs for council.
- An Impact Assessment is currently being developed and will provide the following:
 - What is the impact on the community of the reforms now that we have a clear understanding of what that structure will look like? Try to put costs and benefits against it for more detail.
 - How does council continue to function and what are the impacts on council functioning internally?
 - Where we want to focus our efforts in terms of supporting the transition and moving the organisation forward.
- In June/July, the assessment will provide some recommendations for the 'better off funding' to ensure Tairāwhiti is better off. Additionally, it will feed into the legislation through submissions.
- There are transition teams around the country. Chief Executive (CE) Nedine Thatcher Swann will be a member of the local team. They will establish structural arrangements, discuss supports for staff during a period of uncertainty, and look at our programmes of work (i.e. DrainWise) and how they will work with the reforms (or not).

There being no further business the meeting was closed at 11.30am.

Terry Sheldrake

CHAIR

Title: 22-153 Tūranganui a Kiwa Water Quality Enhancement Project Update
Section: 4 Waters Infrastructure
Prepared by: Gael Alderton - Executive Advisor
Meeting Date: Thursday 7 July 2022

Legal: No

Financial: No

Significance: **Low**

Report to WASTEWATER MANAGEMENT Committee for information

PURPOSE

The purpose of this report is to present the KIWA Group Chairperson's update on the Tūranganui a Kiwa Water Quality Enhancement Project (**Attachment 1**).

SUMMARY

The Tūranganui a Kiwa Water Quality Enhancement Project is a construct of the wastewater consent. The project is a vehicle for integrated research, monitoring, planning and specific projects that will aim to improve the mauri and the water quality of Tūranganui-a-Kiwa.

The KIWA Group was formed in order to fulfil the above by providing expert cultural advice, stakeholder liaison and technical support.

The Wastewater Management Committee (WMC) provides the KIWA Group with guidance on its workplan, while the KIWA Group reciprocates with advice and recommendations, and provides mātauranga Māori, tikanga, and te ao Māori technical cultural input into relevant project work.

The KIWA Group Chairperson's Report provides an overview of key pieces of work previously undertaken and the current work focus of the KIWA Group

The decisions or matters in this report are considered to be of **Low** significance in accordance with the Council's Significance and Engagement Policy.

RECOMMENDATIONS

That the Wastewater Management Committee:

1. **Notes the contents of this report.**

Authorised by:

David Wilson - Director Lifelines

Keywords: KIWA Group; Tūranganui a Kiwa; Water Quality Enhancement

ATTACHMENTS

1. Attachment - May 5 KIWA Update report by KIWA Group Chairman [**22-153.1** - 2 pages]

Report by the KIWA Group Chairperson

<i>Manawa mai te mauri nuku</i>	<i>Embrace the mauri of the land</i>
<i>Manawa mai te mauri rangi</i>	<i>Embrace the mauri of the sky</i>
<i>Ko te mauri kei au, He mauri tipua</i>	<i>The mauri I have gathered is powerful</i>
<i>Ka pakaru mai te po</i>	<i>And shatters all darkness</i>
<i>Taumi te mauri</i>	<i>Come great mauri</i>
<i>Haumi e Hui e Taiki e!</i>	<i>Join it, gather it, it is done!</i>

1. Introduction

The Tūranganui a Kiwa Water Quality Enhancement Project is a construct of the wastewater consent. The project is a vehicle for integrated research, monitoring, planning and specific projects that will aim to improve the Mauri and the water quality of Tūranganui-a-Kiwa.

The KIWA Group was formed in order to fulfil the above by providing expert cultural advice, stakeholder liaison and technical support.

The Wastewater Management Committee (WMC) provides the KIWA Group with guidance on its work-plan, while the KIWA Group reciprocates with advice and recommendations, and provides mātauranga Māori, Tikanga, and Te Ao Māori technical cultural input into relevant project work.

2. Previous work

Key pieces of work previously undertaken by the KIWA Group:

- [KIWA Group Engagement Report](#)
- A Cultural Framework for Addressing Wastewater Management in Tūranganui-a-Kiwa ([KIWA Group Engagement Report](#) page 9 of 191)
- Development and use of the [Mauri Compass](#) in collaboration with Maumahara Consultancy Services and Gisborne District Council (Council)
- [Respect & Dignity Report](#) - A Cultural Assessment for Separating Mortuary By-products from the Municipal Sewage System which was a [catalyst for the bylaw](#) supporting tikanga-based solutions to the issue.
- [Freshwater Improvement Fund](#): Restoring the Mauri and Ora of the Tūranganui Estuary System. A \$4.95 million project to significantly improve Turanganui a Kiwa (urban) waterways and bring jobs to our region.
- Mātauranga Māori, Tikanga, and Te Ao Māori technical cultural input into:
 - Wastewater discharges from the marine outfall pipe into Tūranganui-a-Kiwa / Poverty Bay
 - [Wastewater overflows](#) into city rivers
 - The [wetland trials](#) and wastewater treatment processes from a Te Ao Māori perspective
 - Leachate issues from the Pa-o-Kahu landfill
 - Port pollution

- *Ad hoc* Mātauranga Māori, Tikanga, Mauri, and Te Ao Māori technical cultural input as required

3. Current work

The current foci of the KIWA Group includes;

- Location of **Te Ahu o Hine Tatari** [Wisconsin mound and associated landscaping surrounds]
 - The rationale, shape, form and whakapapa of Te Ahu o Hine Tatari respects both Western science and mātauranga Māori. Details of how the KIWA group developed this solution begins on page 84 of [2021-June-3-Wastewater-Management-Agenda.pdf](#).
 - The KIWA group continues to deliberate on the proposed location within the Taruheru Urupā (cemetery).
- Wastewater Overflows consent: virus persistence study
 - This relates to a condition in the consent that was granted last year July 2021 ('[DrainWise](#)'). That consent has a condition that requires GDC to assess virus persistence in shellfish in areas where shellfish are collected. A robust and relevant scientific method needs to be developed. GDC has appointed Cawthron (as experts in these types of assessments) to help and they are working on a suggested method.
 - The KIWA group is providing a mātauranga Māori lens to improve the scientific method and protocols.
- Freshwater Improvement Fund: Restoring the Mauri and Ora of the Tūrangānui Estuary System.
 - The KIWA group continues to provide input into the delivery of this project.

Conclusions and Recommendations

The WMC is thanked for their time in considering the information provided.

The KIWA Group will continue with their work tasks as outlined above and provide an update at the next WMC meeting.

Ian Ruru

KIWA Chairperson

Whakatauki

Toitu te marae o Tane

Toitu te marae o Tangaroa

Toitu te Tangata

Guiding Principle

Protect and strengthen the land

Protect and strengthen the sea

And they will protect and strengthen the people

