

**Appendix L:**

**KIWA Group Engagement Report**

# Wastewater Overflows in Wet Weather Storm Events and in Dry Weather

## Report on Tangata Whenua Engagement

KIWA Group members consider that this report reflects engagement to date and that wastewater engagement must be an ongoing process

15 June 2020



Photo: Ian Ruru



Photo: Murray Palmer

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## **Disclaimer**

This report has been produced by the KIWA Group in line with their Terms of Reference. The purpose of the Group is to provide expert cultural and technical advice as directed by the WMC to support the improvement of water quality and the mauri of the waters of Tūranganui a Kiwa. It is not to provide governance advice, and has no decision-making powers. Contributions to this report do not suggest or imply any support or endorsement of any other Council initiatives or processes (including legal processes), and does not detract from or prejudice any other engagement or legal processes that may have been, are, or will be underway in the future. The KIWA Group work will in no manner impact on anyone's ability to be involved in the formal consent process once that has started. Council will be following all statutory acknowledgment and consent notification requirements also, which will be further opportunities for Tangata Whenua input.

### **Note in respect of Te-Whanau-a-Kai**

This Iwi did not support the use of the Mauri Compass in the way it was used, but supported the conclusions and recommendations in the report (to be viewed alongside their additional appendices – Appendix 11).

### **Note in respect of broad-based Tangata Whenua consultation**

The issue of obtaining broad-based Tangata Whenua feedback was discussed in-depth in the KIWA Group hui on 18<sup>th</sup> May 2020. The group concluded that it would be left up to each Hapū or Iwi to decide whether this was required and how it would be done (if required). The outcomes of this KIWA Group engagement report can also be taken back to KIWA Group member Hapū and Iwi Tangata Whenua as a document for further discussion and input, as determined by each KIWA Group member.

## SUMMARY

Under the Tairāwhiti Resource Management Plan (TRMP), Gisborne District Council (Council) is required to obtain resource consent for overflows of wastewater from the public wastewater network.

As part of the consent process to meet the requirements of the TRMP, the Council undertook engagement with Tangata Whenua and key stakeholders. This consultation is in addition to that offered through the standard regulatory consenting process. This report summarises the engagement process and the outcomes.

The engagement was specifically in respect of wet and dry weather wastewater overflows into Gisborne City rivers and the connected coastal environment. While discussions focussed on wet weather overflows, the cultural effects of dry weather overflows were considered to reflect those of wet weather. The engagement plan (Appendix 1) provides more detail on the consent requirements, the overflows themselves, effects, affected Tangata Whenua, what Council is doing in respect of reducing and managing wastewater overflows, and the engagement approach and process. This formed the starting point of the engagement process.

Council partnered with the KIWA Group to undertake this consultation. The KIWA Group was mandated to undertake this work through the Wastewater Management Committee (WMC). An intensive engagement process was followed, with the intention of working together with relevant Iwi and Hapū to enable accurate and comprehensive assessment and reporting on the effects of wastewater overflows on Tangata Whenua.

This work focussed on Tangata Whenua values and perspectives, with dialogue between Iwi, Hapū and Council. Western science knowledge, values and perspectives also formed part of these discussions, primarily as supporting information within a mātauranga context. Tikanga and mauri were key points of discussion in respect of wai Māori and wastewater (waikino). The engagement process was supported in a practical sense through previous reports and use of the Mauri Compass (an environmental health assessment tool, used in this instance to identify and measure through collective engagement the effects of wastewater overflows upon Tangata Whenua and their customary rights and practises), used in this instance to promote korero and assessment.

Both wastewater and non-wastewater issues affect Tangata Whenua wellbeing and relationships with the rivers, coastal environments, and the bay. The wastewater overflows effects are summarised as below:

- The practice of allowing wastewater overflows is unacceptable to Tangata Whenua - it encroaches upon core fundamental principles of customary social and spiritual rights and practises, and it affects them deeply spiritually, socially, and culturally.
- Wastewater overflows produce significant negative effects for Tangata Whenua, directly impacting on key regulatory cultural practises, rendering it near impossible to apply fundamental processes that would return the waterbody to a safe balanced state.
- While the presence of human wastewater within a natural water environment is repugnant to Tangata Whenua ethics and values, the addition of mortuary wastewater is absolutely abhorrent both physically and spiritually.
- Tangata Whenua consider themselves unable to effectively fulfil their role as kaitiaki in terms of wastewater overflows into the city's rivers.
- While GDC's proposed reduction in wastewater overflows is considered as a step in the right direction, Tangata Whenua will continue to object to wastewater overflows, the desire being to work with Council to achieve total elimination of wastewater overflows.
- There are many non-wastewater issues that affect Tangata Whenua with negative cultural impacts, including broader catchment issues, land transformation and developments, the effects of colonisation,

a lack of governance structure and process that fully realise true partnership, participation, and protection. None of these issues reduce any of the wastewater concerns identified through this process.

*Te-Whanau-a-Kai reviewed the above bullet point and provided the below:*

- *There are many non-wastewater issues that affect Tangata Whenua with negative cultural impacts, including broader catchment issues, land transformation and developments, the ongoing effects of colonisation, a lack of governance structure and process that fail to recognise the Treaty of Waitangi. These issues have little effect on the wastewater concerns identified through this process.*
  
- The KIWA Group provided the following key recommendations:
  - Tangata Whenua need to be engaged on an ongoing basis moving forward, in a meaningful, authentic, and practical manner; this engagement reports reflects the Tangata Whenua the position at a point in time, and systems need to be put in place to ensure changes over time are addressed.
  - All possible avenues must be explored to bring forward the DrainWise Implementation Programme, including seeking alternate sources of funding and approaching the Trust Tairāwhiti (formerly the Eastland Community Trust), and involving Tangata Whenua in those discussions
  - Tangata Whenua should be provided with opportunities to work alongside Council to resolve these issues.
  - Monitoring related to wastewater overflows should be reviewed to include cultural elements, and make the monitoring relevant to kaihoe waka, shellfish gathering, and other Māori resource-use practices
  - Current public health monitoring procedures and locations should be reviewed to make sure they adequately capture health risks.
  - Management protocols related to dry and wet weather overflows should be reviewed by the KIWA Group, integrating tikanga aspects such as the placement of rahui and other processes.
  - Tangata Whenua need to be kept informed on the DrainWise Implementation Programme, and be given opportunities to input.
  - Projects to improve te mauri should be identified, rectified (implemented) and then ongoing protection provided.

Māori have stated they hope that this engagement process sets a platform for Iwi and Hapū to better influence change and work together more with Council, to make sure the required solutions to the problem are delivered, and the wastewater outcomes are achieved.

Note: This report summarises the engagement process up to 29 May 2020. Further consultation with the KIWA Group will take place after the consent has been submitted, and any further reporting that is produced as part of ongoing consultation will be provided as a supplementary report for the consent.

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## 1. Introduction

Under the Tairāwhiti Resource Management Plan (TRMP), Gisborne District Council (Council) is required to obtain resource consent for dry and wet weather overflows of wastewater from the public wastewater network.

The application covers the following activities:

- The point source discharge of untreated sewage/wastewater, resulting from overflows from wastewater reticulation, during wet weather to land or freshwater. Consent for this activity is sought as a restricted discretionary activity under Rule 6.2.3(10) of Part C6 of the TRMP.
- The point source discharge of untreated sewage/wastewater, resulting from overflows from wastewater reticulation during dry weather, to land or freshwater. Consent for this activity is sought as a non-complying activity under Rule 6.2.3(15) of Part C6 of the TRMP.
- The point source discharge of untreated sewage/wastewater, resulting from overflows from wastewater reticulation in both dry and wet weather, to the coastal marine area (CMA). Consent for this activity is sought as a non-complying activity under Rule 2.6.2(6) of Part D of the TRMP.

*Dry weather overflows* typically occurs as a result of a pipe blockage generally due to fat, sanitary wipes or foreign objects (such as clothing and children's toys) being put into the wastewater network. In rare instances dry weather overflows can result from failure of a system component, for example pump station faults or pipe breakages, or operational error (very rare). A large portion of the piped network is relatively flat, resulting in a build-up of material in pipelines and increasing the risk of dry weather overflows.

*Wet weather overflows* occur as a result of excessive rainwater / stormwater entering the wastewater network. A wastewater network is designed and sized to accommodate some stormwater as over time, stormwater ingress is inevitable. Where the volume of stormwater entering the wastewater network exceeds the capacity of the system, a combination of stormwater and wastewater will be discharged – either through formal (designed) overflow points or via informal overflow points such as manholes and private gully traps. The opening of formal overflow points into rivers is to prevent or minimise informal overflows especially on private property, which presents a greater health risk.

The impacts and risks associated with dry weather overflows is expected to be dependent on where they occur, how much sewage is discharged, and how often these discharges occur. Council's view has been that the cultural effects of the dry weather overflows are similar to those of wet weather events, and that these can be described by focussing on the wet weather overflows. This was only briefly raised in a KIWA Group meeting on 7 May 2020, as below:

Wolfgang: With the dry weather, my view is that we are going to know what the effects (*on dry weather*) are after going through the wet weather ones. The dry weather ones ordinarily have a lot lower volumes and are quite quickly controlled so I think if we are able to properly characterise and describe the effects for wet weather I think we will be able to deal with the dry weather ones.

The causes and effects were briefly covered in KIWA Group discussions on the information sheets and in the engagement plan. More detail is provided in Appendix 9 and 10.

Overflow frequency is not directly comparable from year to year as it is rainfall event related – overflows will occur more often in years with a larger number of heavy rainfall events and less often in years with fewer heavy rainfall events. There has been a maximum of four overflow events in any one year and the average number of overflows per year is approximately 2.4 (since 2006).

Council's DrainWise Implementation Programme is the umbrella programme that seeks to progressively reduce stormwater ingress into the wastewater network and reduce the frequency and volume of overflows. Information on the programme can be found at: <https://www.gdc.govt.nz/drainwise/>.

The programme is multi-faceted, and includes the following:

- Stormwater and wastewater network upgrades, renewals and extensions;
- Property inspections to identify problems and associated minor repairs;

- Enforcement of public-funded works on properties;
- Focus projects; and
- Education and awareness.

This work is supported by desktop and other investigations that serve to direct where Council does the work, and what aspects to focus on.

The DrainWise Implementation Programme has been set up to deliver the Long Term Plan (LTP) alternative that was adopted through that consultation process. The alternatives in Table 1 were considered within that process. Option 2 was adopted based on feedback from the community, the difference between public and private responsibility, and ratepayer affordability, and the DrainWise Implementation Programme has been set up in terms of that option.

In preparation for lodging the consent required in the TRMP, the Council undertook engagement with Tangata Whenua.

The KIWA Group was engaged for the purpose of Tangata Whenua consultation for the wastewater overflows, focussing on cultural impacts rather than technical water quality aspects. The KIWA Group is mandated to undertake this work, as described below.

**Table 1 Long Term Plan (2018 – 2028) options for reducing wastewater overflows**

Options	Explanation and Implications
Option 1: Council Funds Flood Reduction Projects	This option assumes that Council coordinates and funds all projects to address private property flooding that impacts directly on the wastewater network.
Option 2: Medium Level of Council Funding of Flood Reduction	Council would coordinate and fund projects to address flooding under limited conditions: where there is insufficient capacity in the public network, a lack of suitable stormwater connection in the vicinity or where development has been allowed in low areas with no suitable drainage solution.  Council could also use enforcement/regulation to encourage landowners to address flooding that contributes to stormwater inflow, providing partial subsidies.
Option 3: Lower level of Council involvement focused on public drains	Council would coordinate and fund public drain projects to address flooding in the limited conditions as above.  Council could also use enforcement/regulation to encourage landowners to address flooding. No subsidy would be provided for the project considered 'private'.

The Council wastewater consent includes the below clauses:

**Clause 18**

"The permit holder shall establish, administer, retain and be responsible for the Turanganui a Kiwa Water Quality Enhancement Project within three months of the issue of this permit or as soon as practical thereafter."

## Clause 19

"The project shall be defined and developed by the Wastewater Management Committee (WMC) as a vehicle for integrated research, monitoring, planning and specific projects that will aim to improve the mauri and the water quality of Turanganui a Kiwa."

As part of meeting the above, a terms of reference for a 'KIWA Group' was developed and approved by the WMC. The purpose of the KIWA Group is to provide expert cultural advice, stakeholder liaison and technical support in the development of Gisborne District's wastewater management. The KIWA Group provides regular updates on its work to the WMC. Detail is provided in the below links.

<http://www.gdc.govt.nz/assets/Uploads/Report-20-44-KIWA-Group-Terms-of-Reference-and-Work-Plan.pdf>

<http://www.gdc.govt.nz/assets/Uploads/11.2-Terms-of-Reference-for-the-KIWA-Group.pdf>

As part of this work, the KIWA Group produced a cultural framework. It also provided input into the Mauri Compass, used in this project. The KIWA Group terms of reference were refreshed in 2020, and a KIWA Group project set up specifically for cultural input into the consent for wastewater overflows into the city's rivers.

The KIWA Group has been engaged in a technical sense, as representatives of Turanganui A Kiwa Hapū and Iwi, for their expert cultural input and guidance.

## **2. Statutory Requirements**

### **2.1 Te Tiriti O Waitangi Ki Te Tairawhiti**

The KIWA Group preferred that detail on Te Tiriti o Waitangi Ki Te Tairawhiti (Treaty of Waitangi, Tairawhiti version) be excluded from this report, and this has therefore not been included.

### **2.2 Resource Management Act 1991**

The RMA provides a legal framework to promote the sustainable management of natural and physical resources. It also explicitly considers Māori issues and the Treaty of Waitangi. The definition of sustainable management in section 5(2), clearly includes the 'cultural wellbeing' of people and communities.

In addition, the RMA recognises the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga as a matter of national importance (Part 2 s. 6(e)), the protection of historic heritage sites of significance to Māori, including wāhi tapu (s. 6(f)), as well as provision for customary rights s.6 (g). Section 7(a) of the Act identifies kaitiakitanga as a matter that particular regard must be given in relation to managing the use, development and protection of natural and physical resources, and section 8 establishes that all persons exercising functions and powers under the Act shall take into account the principles of the Treaty of Waitangi. The Treaty of Waitangi provides for the exercise of kawanatanga (the right of the Crown to govern), while actively protecting tino rangatiratanga (self-determination) of Tangata Whenua with respect to their natural, physical and spiritual resources.

Tangata Whenua refers to the Iwi or Hapū who hold mana whenua, the traditional status, rights and responsibilities over a particular area in respect of their natural, physical and spiritual resources.

### **2.3 Local Government Act 2002**

The Local Government Act 2002 is the statute for local authorities. The provisions of this Act which require specific consideration of Māori interests and principles of the Treaty of Waitangi are therefore of fundamental importance. In particular, section 4 refers to opportunities for Māori to contribute to local government decision-making processes.

### **2.4 Conservation Act 1987**

In relation to the role of the Director General in the coastal marine area.

### 3. An insight into Tairāwhiti Tangata Whenua values

Tangata Whenua in Tairāwhiti have a long history of grievance in terms of wastewater, and have strong relationships with their awa and moana. Below are some extracts, in verbatim, which provide some context for this engagement.

This information is relevant to the current work, and was considered in terms of validating outcomes and recommendations.

#### 3.1 The Wastewater Consent

Gisborne's wastewater consent process is outlined in:

<http://www.gdc.govt.nz/assets/Uploads/16-520-Wastewater-Consent-Overview.pdf>

The 2014 consent included the below:

*Tangata Whenua have a long and well-known relationship with Turanganui a Kiwa (Poverty Bay) and its waters, fisheries and special sites. The waters have been identified as a taonga to local Iwi and as such their relationship should be protected as a matter of importance.*

*A major driver for the new wastewater system was to provide for Tangata Whenua and the wider community's values and interests in the coastal environment of the Bay.*

*The 2009 decision of the Independent Commissioners made clear:*

*"The effects on Tangata Whenua from the existing wastewater arrangements at Gisborne and of the upgrade proposals has been a paramount consideration.*

*It has been made very clear at all times, and over many years now, that the continued discharge of untreated wastewater to the waters of Poverty Bay violates Māori tikanga and is a major effect on the cultural and spiritual sensitivities of Tangata Whenua.*

*A key component of the on-going action to implement an improved wastewater treatment scheme is the input from Tangata Whenua, in partnership with the other interested parties ...."*

*As stated in the 2014 report from WTAG:*

*"Restoring the mauri is a key theme for Tangata Whenua and many others in the community, and this is reflected in the consent and other regional planning documents. It is integral to the management of waste streams and water bodies in the District. The restoration of the mauri should be seen, however, as an iterative process. That is, in the context of the current consent, the process of developing and implementing a wastewater management system is itself critical to the concept: both the journey and the destination contribute to restoring the mauri, and so both must be valued and supported by the consent holder."*

### 3.2 Tangata Whenua perspectives of wastewater

Ihaka et al (2000) produced a report titled 'Tangata Whenua perspectives of wastewater'. A number of conclusions were drawn from this review of information:

- *Water is perceived as a living entity, the source of life for all things - wai ora. Water is crucial to Māori life and custom. Different customs were associated with certain types of water such as bathing springs for rongoa, birthing springs, exhumation swamps, drinking water and food preparation.*
- *Water is valued not only intrinsically but also for the sustenance that it provides. Many instances of food gathering practices and areas within water demonstrate that Maori had regimes which controlled the amount taken, the means by which the food was harvested, and accessibility.*
- *Māori perceive that they have a special role in the management and protection of water - kaitiaki role. This role is inherited through whakapapa. Whanau, Hapū and Iwi have different areas within which they exercise this role. Certain groups and individuals can be mandated by the Whanau, Hapū and Iwi to take on extra responsibilities.*
- *Māori perceive that their value systems have been marginalised and the role of kaitiaki has been diminished. The interviewees have stated that little weight has been given to the Māori perspective and customs with regard to conservation matters, especially with regard to the management of waterways. Despite this diminishment of the role of kaitiaki, Tangata Whenua still perceive themselves as having the paramount role as guardians and stewards of the Gisborne Harbour, all other waters and springs, and all people who utilise the resources and live within the area.*
- *Māori recycled waste through the earth. Material apart from body product waste was placed in the earth to breakdown and compost. Waste was minimised. Most waste was biodegradable. Human waste was always separated from water sources, food areas, and other forms of waste. Water and waste were never mixed.*
- *Māori perceive that key waterways such as the Gisborne Harbour, have been polluted through the discharge of wastewater and therefore wastewater has had a negative impact on their ability to safely and sustainably manage kaimoana.*
- *Maori perceive the mixing of waste and water as abhorrent physically, culturally and spiritually. The Waitangi Tribunal found that the level of effluent treatment is irrelevant, to Maori, if it is to be discharged into waterways. The interviewees commented that scientifically the water may be "fine ... but you won't find a Māori drinking it."*
- *Therefore, based upon the above perceptions Maori find that the discharge of waste by way of the current ocean outfall is unacceptable and the expectation is for Council to move towards a land based sewage and wastewater treatment option.*

This report also provided insight into the disposal of mortuary wastewater:

- *The interviewees described contemporary and traditional methods of human waste management*
- *Human waste had it's own place and midden areas. In most cases these areas were dry places.*
- *The tutae dries, then powders, and quickly returns to the soil. Mimi was done in places where the soil was firm so that filtration was slow through Paptuanuku.*
- *The disposal of body products into the waterways either from tupapaku (people that have passed away), general public ablutions and hospitals was found to be repugnant to all the interviewees. Body parts and products are considered extremely tapu. These products were usually returned to the earth.*

### 3.3 Surveys of the Tairāwhiti community

Murray Palmer produced a report, titled 'Te Moananui o te Turanganui a Kiwa, Social outcomes evaluation of the Gisborne City wastewater treatment project 2010 to 2013, Part 1: Baseline Information, 2010'. The below are particularly relevant extracts from that report:

- *The waters of Te Moananui o Turanganui a Kiwa (the Moana), Poverty Bay (the Bay), are an extremely important resource for the people of Gisborne and the Tairāwhiti region, and are regularly used for recreation, education, the gathering of kaimoana, and as a visitor venue. This is especially so for the Tangata Whenua who are kaitiaki of the coastal environment, and for whom the Moana is a major source of physical and spiritual sustenance and who are charged with the responsibility of protecting the mauri (essential life force, life energy) of the area and its inhabitants.*
- *Indeed we truly are a coastal people and Te Moananui o Turanganui a Kiwa is a resource highly utilized and valued by us all. Further, with its embodiment of our histories and stories, and its unique and revered natural landscapes, the Moana is inseparable from our sense of identity and connection to place.*
- *The disposal of sewage, and particularly untreated sewage, into the Bay, although possibly expedient in the context of previous unacceptable urban wastewater practices, comprises a serious affront to the Tangata Whenua of Turanganui a Kiwa, and also to many non-Māori. Further, it has removed much of the availability of a major social, economic and cultural resource for the local people in terms of their shellfish beds, and other once abundant sources of kai moana.*
- *Nevertheless, Te Moananui is arguably one of the most valuable natural assets in the district, both in terms of current and potential use and value. Such an understanding of value also needs to include the social, economic and cultural importance of developing a wastewater treatment and disposal process that satisfactorily addresses the concerns of Tangata Whenua as kaitiaki of the coastal environment, and that supports ongoing community aspirations relating to restoring the mauri of these waters.*
- *Such an approach has tended to lead to a precautionary perspective in terms of health effects and risk assessment. Partly, this reflects considerable uncertainty regarding the exact nature of potential health effects from the outfall, and the efficiency of indicator organisms in ensuring public health criteria are satisfied, particularly in the context of Maori cultural values and customary practices.*

Murray Palmer produced a second report, titled 'The importance of the social components of biotransformation in the treatment of wastewater Part 2: Water user experiences, perceptions and aspirations Te Turanganui a KIWA, 2013'. The below are particularly relevant extracts from that report:

- *Especially strongly expressed was opposition to the discharges of untreated sewage, but the effects of stormwater, sediment, debris and diffuse run off from upstream activities, were also commented on as significantly impacting on water quality.*
- *The poor quality of the river water in the city was also a commonly reiterated theme amongst survey participants. Even where an improvement was noted, opposition to the use of the rivers as a discharge point for sewage was consistently made evident.*
- *The theme of rainfall increasing health risk was constantly reiterated by the representatives, with the most serious issue identified as the direct discharge of untreated sewage from the release stations into rivers, and from the treatment plant overflow out to the Bay during heavy rains.*
- *Recognition of the role of Māori cultural concepts of well-being, combining physical, spiritual and metaphysical elements, was expressed as an important component in the development of a precautionary approach to managing the health risks of wastewater management, both for local community members and visitors alike.*

- Although many focus group participants said they would not harvest kaimoana from the Bay, particularly bivalve shellfish, they acknowledged that many people do, and comments relating to the recent river discharge even (August 11th and 12th 2013) were consistent.

*“Yes, gathered kaimoana and took the kai to a tangi and a few people got sick. Also work friends got sick too”*

- When asked to describe specific experiences of untreated sewage overflows and discharges (Question 23), of the 50 people who answered that they had experience of such events, 45 gave details.

*“The very last discharge that was made I surfed at Pipe 2 days after I heard on the radio about the discharge. I really noticed the smell of the water was a thick aroma of rot and there was some discoloration of the water. The smell was the worst.”*

- A common theme amongst participants was the need for an integrated approach to management of the contaminants entering our river and coastal environments.
- Participants spoke of the high sediment levels in the water, and more frequent drift casts of shellfish. Most, however, referred to the contamination of shellfish beds, and the removal of the resource from human consumptive purposes.

*“Everything from the Island to Kaiti beach is not edible - as a young boy that was our kai moana grounds to gather for dinner.”*

*“I choose not to gather kai moana from the Bay anymore - don't think it's safe.”*

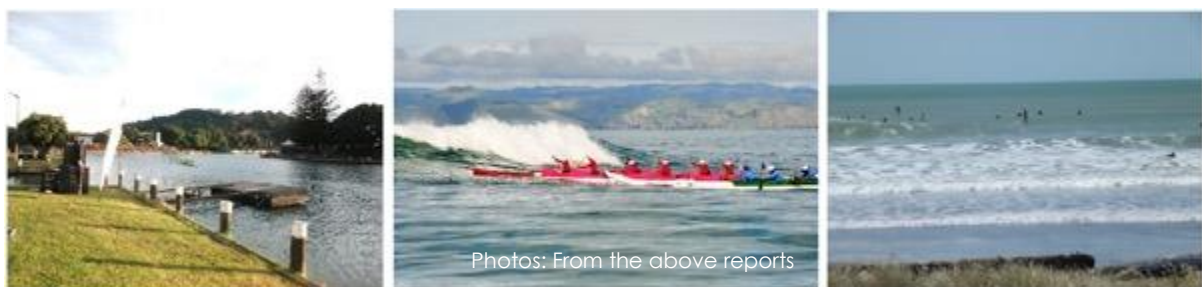
- Despite the recognised risks, a harvest of the bivalve shellfish from the Bay waters appears to continue.

*“Our uncle has got spots where he goes to get pipi and tuatua from along the beach here (Oneroa, Midway). He comes back with sackfulls.”*

- Participants reiterated, however, that these were traditional kaimoana gathering grounds.

*“In the 70s as kids we used to gather kaimoana (specifically bivalves) down by big river, I remember how upset my Whanau (especially my Nanny) was when the sign went up saying that shellfish could be contaminated. That was a traditional gathering site!”*

- A strong and consistent theme amongst participants, however, was the desire for better and more open communication about the risks associated with harvest and consumption of kai moana from the rivers and Bay.
- The theme of water quality in the Bay was the one that received the widest spread of responses. Many people simply do not swim or surf in the Bay and discourage their families from doing so because of perceptions around poor water quality and faecal contamination.





### 3.4 KIWA Group work

The KIWA Group cultural framework, endorsed by the WMC, was written by Ian Ruru, Ray Farmer, Anna Barber, Joanne Pere, and Mona Smith. This was approved by Ronald Nepe, Pene Brown, LeRoy Pardoe, and Tutekawa Wylie (Tangata Whenua members of the Wastewater Management Committee).

A key extract from the cultural framework is provided in Figure 1.



Figure 1 Foundations of the cultural framework for wastewater management

The KIWA Group also provided a 'Respect & Dignity Report', titled 'A Cultural Assessment for Separating Mortuary By-products from the Municipal Sewage System'. This cultural assessment for separating mortuary wastewater from the conventional wastewater system was produced by Ian Ruru through TROTAK in 2016. The below extracts are particularly relevant:

*The view to separate mortuary byproducts with land-based treatment was then presented at two hui for endorsement. Firstly at Te Runanga o Turanganui a Kiwa Hui a Iwi which was held at Tapuihikitia Marae on the 25<sup>th</sup> of June, 2016. And then a presentation, by Ray Farmer and Ian Ruru, was held at Te Runanga o Turanganui a Kiwa Kahui Kaumatua Hui which was held at Turanga Ararau on the 30<sup>th</sup> of June, 2016.*

*In both instances there was unanimous support for the separation of land-based treatment of mortuary byproducts.*

- *The body of the deceased is treated with the utmost care and respect. We recommend that all parts of the deceased are treated in the same manner.*
  - *This is consistent with respecting the dignity of our 'dearly departed' our deceased loved ones and treating their whole being with the same level of respect and dignity.*
  - *This is consistent with the Wastewater Treatment Project and associated Resource Consent requirements.*
- *Gisborne City is progressing an admirable Wastewater Treatment process. This recommendation is consistent with these plans and Consent Requirements.*
  - *This is consistent with the beliefs and views that Tangata Whenua have held since the municipal sewage system was built in 1965.*

### **3.5 Tairāwhiti Tangata Whenua and water: a preliminary background**

A preliminary background document (Appendix 2) was initially compiled by Council with the intention of it being further developed under the guidance of the KIWA Group. This document is seen as a working draft, to be added to over time.

The intention of the background document is for it to be a common resource for Hapū / Iwi and Council, as a tool to incorporate Tangata Whenua perspectives appropriately into any decision making about wastewater.

Effectively incorporating Tangata Whenua perspectives into Council decision making requires Māori to have an appropriate level of input, influence and information. Achieving this means the capability and capacity of Council staff and decision makers needs to be developed to ensure they have an understanding of the unique and distinct world views of Māori and their cultural protocols and identity. It also means that the capability and capacity of Māori needs to be supported and nurtured.

It is hoped that this background document provides the foundation for building that capability and capacity, and enables Council to provide a better service to Tangata Whenua and reflect a partnership approach. It is a starting point for ongoing discussions.

Council included historical information in this background document about the formal working and advisory groups that have been established between Te Kaunihera and Māori over the years and their shared water kaupapa. The end of the background document has a brief description of some of the challenges (in 2020) to working together on this stormwater and wastewater management kaupapa.

This information was reviewed by the KIWA Group and assisted in broad discussions and agreement on working together.

## **4. Methodology**

### **4.1 General**

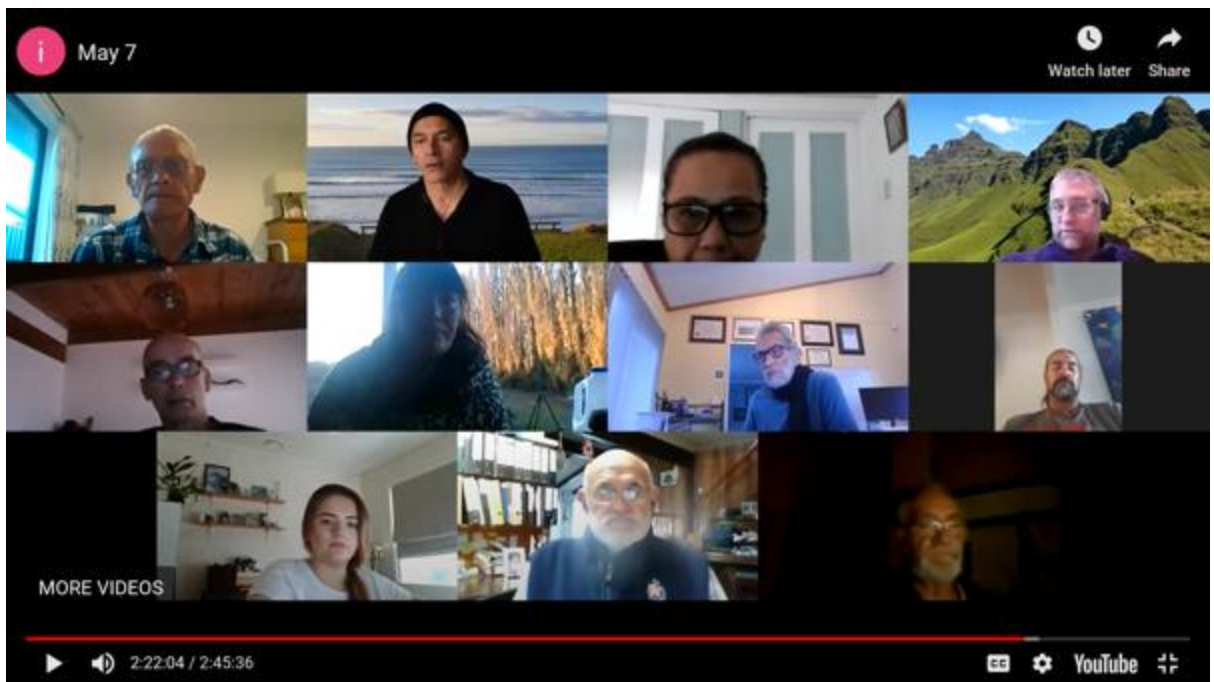
The engagement process is described in detail in the engagement plan (Appendix 1). This was approved by the KIWA Group. In summary, three work streams were identified, in order to provide for a good mix of engagement methods:

- Work-stream 1: Engagement at a high level with Hapū / Iwi chairs & kaumatua
- Work-stream 2: KIWA Group – specialist representatives of Turanga Hapū and Iwi – providing technical cultural input and guidance
- Work-stream 3: The broader Tangata Whenua collective (contacting them through websites etc.) – providing a general platform for feedback from Tangata Whenua

An engagement approach was proposed for each work stream. COVID-19 presented significant challenges, which unfortunately reduced the mix of engagement approaches proposed. The KIWA Group discussed the implications of this pandemic at length, and the team collaboratively ensured that no undue pressure was placed on anyone in the group during this time.

Unfortunately not all tasks in the approved engagement plan were able to be carried out due to COVID-19, and the team adapted as detailed below:

- All KIWA Group members agreed that any Marae meetings needed to be put on hold due to COVID-19.
- All KIWA Group members were initially set up with Microsoft Teams for ‘virtual’ hui, which was then changed to Zoom meetings, which was a much better platform. Initial ‘teething’ issues were overcome by the KIWA Group, with effective korero on this platform (Figure 2).



**Figure 2 A snapshot of a Zoom hui**

- While the original request was for KIWA Group members to post details of the engagement process on their websites and Facebook pages, and send out the information through their email distribution lists, this changed through discussions with the KIWA Group. The means of obtaining general Tangata Whenua feedback was subsequently left to the discretion of each KIWA Group member, as requested by them.

Council provided the following Hapū / Iwi members to facilitate this:

- Information Sheets in English and Te Reo Māori (Appendix 3)
- The link to the Council website, which included the information sheets and other text request as background to the engagement process
- A feedback form on the website and an email address for feedback to be submitted through
- KIWA Group members committed to conducting inter and intra-Hapū / Iwi consultations, according to the below scope:
  - Rather than set up meetings with Iwi chairs and chief executives, KIWA Group members reported back to their Iwi Chairs and / or Chief Executives (that nominated them) to obtain any relevant feedback.
  - KIWA Group members will make contact with specific people in their communities that they feel should be informed and can contribute to the mahi.
  - It was also an opportunity for Hapū / Iwi to talk to each other.
  - Individual KIWA Group members to report back to group on any important outcomes / information to record.
- The hui with Kahui Kaumatua was cancelled because they were an at-risk group.
- A website was set up to facilitate discussions and assist in coping with COVID-19 restrictions.
- Appendix 4 provides a snapshot of this website.

In respect of the cultural effects of wastewater overflows, these have been assessed and described by the KIWA Group through a people-centred approach, consideration of wastewater overflows with a Tangata Whenua lens, enabling information to be gathered and analysed through debate and discussion within and between Hapū / Iwi, and the use of assessment tools. Multiple hui (Appendix 5) were held with the KIWA Group to be able to comprehensively capture all of the issues important to Tangata Whenua. Consequently, many of the outcomes are based on discussion threads. The minutes of the hui are included in Appendix 6.

KIWA group members were provided with opportunities to provide verbal and written input.

While minutes of meetings comprise qualitative information, the conclusions and outcomes derived from this mahi are supported by the previous reports outlined in this document and the semi-quantitative assessments of mauri that were undertaken through the use of the Mauri Compass.

The KIWA Group terms of reference provides for one representative per Hapū or Iwi, and in its current form comprises representatives from Te Runanga o Turanganui a Kiwa (TROTAK), Te Aitanga-a-Mahaki, Rongowhakaata, Ngai Tamanuhiri, and Ngati Oneone, that being a consequence of the original wastewater consent. In recognition of the wide-reaching effects of the wastewater overflows into the rivers, the wide range of skills applicable to the subject matter, and the significance of these issues to Tangata Whenua, the KIWA Group was extended to include two representatives per KIWA Group Iwi / Hapū membership. Likewise, the KIWA Group was extended to include Te Whanau-a-Kai and Nga Ariki Kaiputahi to be part of the group for this assessment. Council was represented by the DrainWise Programme Manager, with further project management support.

As this KIWA Group included a number of new members and the terms of reference had been refreshed, the terms of reference and mandate of the KIWA Group were explained, and how the group would work together. The KIWA Group terms of reference include principles on how to work together. It was noted that vital to a successful process is that everyone must feel safe to contribute, opinion must be able to be provided without fear of being criticised, all should support each other in working together, showing aroha and manaakitanga. It was recognised that wastewater overflows can be a very emotive issue.

## **4.2 Key spatial areas of interest**

The areas considered in this engagement comprise the rivers and creeks that traverse the Turanga (Gisborne) urban area – all of which converge to flow to the ocean. These are the following rivers:

- Waimata
- Taruheru
- Turanganui
- Waikanae

The area includes Turanganui-a-Kiwa Poverty Bay, its beaches and associated environments and spaces. The Bay stretches for 10 kilometres from Te Kuri a Paoa in the southwest to Tuaheni Point in the northeast.

Information on statutory acknowledgements, as well as some information on Hapū / Iwi relationships with the awa and moana, is provided in Appendix 2 (this document is described earlier on in this report).

## **4.3 Technical information and other documentation**

In order to ensure that KIWA Group members had a sufficiently robust technical understanding of the issues, at a technical level appropriate to enable them to provide their expert cultural lens, key technical information was reviewed and discussed collectively. The information considered is listed in Appendix 7.

This information set a strong platform for KIWA Group member input, critical assessment and discussion.

#### 4.4 Applying Te Ao Māori approaches

The above technical western science information was used as supporting information on discussions on mauri, tikanga, mātauranga, which are detailed in the minutes of the hui.

Hikuroa (2017) provided the below in validation of mātauranga Māori and Māori knowledge:

*Māori Mātauranga Māori spans Māori knowledge, culture, values and world view. Pūrākau and maramataka, forms of mātauranga Māori, comprise knowledge generated using methods and techniques developed independently from other knowledge systems. Hitherto mostly ignored or disregarded by the science community because it seemed to be myth and legend, fantastic and implausible, mātauranga Māori includes knowledge generated using techniques consistent with the scientific method, but explained according to a Māori world view. Acknowledging this extends the history of scientific endeavour back to when Māori arrived in Aotearoa and Te Wai Pounamu, many centuries ago.*

Workshop sessions were held, which resulted in an overall agreement and collective understanding of mauri and tikanga between KIWA Group members. It was also agreed that differing experiences of mauri are able to be set side by side.

Below are some of the insights from those hui:

*David said ... he had been taught by the tohunga that mauri can come out in very different forms, especially when you don't have an understanding of it. Mauri has more power than people realise.*

*Samuel emphasised that everything living has mauri, including water bodies which are made up of multiple lifeforms each having their own mauri. Ecosystems work in harmony with themselves and everything else to provide life for everything and everyone who comes in contact with it. Tapu and noa are heavily involved with this.*

*Dianne noted importantly that water is not in isolation of things such as the maramataka. Māori have a strong navigational history, and the waters have a relationship with everything in the universe. Dianne stated that maramataka is hugely important to Māori in terms of water and marine life, regardless of the amount of pollution that is in the waterways.*

*Owen likened mauri to a spinning wheel in a contemporary context, explaining how when you put weight in the appropriate places on a spinning wheel, this keeps it balanced and stable. Owen stated we can all agree that balance is important, whether you are Māori or non-Māori. The meaning of life is balance and we require that balance to survive.*

*Ray stated that water comes from Ranginui the Sky Father. When he cries, his tears flow across Papatuanuku and into our rivers, lakes and streams for our sustenance. There is a spiritual aspect of all things living integrated into this, he stated.*

*Matawhero also added that water is much more than a resource. It embodies and carries principles of being, life, purpose and identity, therefore it is important to treat it meaningfully. Water is also culture, and when water becomes polluted, so does the culture.*

*Joanne noted that in terms of the Mauri Compass tool, she understands the intrinsic feeling Matawhero was referring to earlier in the meeting and understands that explaining this in words can be difficult.*

*Murray answered by sharing a story from when he was younger and used to walk around a lake in Auckland to get to school every day. He recalled that there was always a unique presence near this lake that was hard to describe. He recalled thinking about the area a lot throughout his life and explained that when he visited the same place years later, the feeling was exactly as he had remembered it.*

*Karena agreed with Owen and Samuel and shared that she personally feels that water is life. Karena witnessed many rituals and traditions during her upbringing that took place in and involved water, and as she still lives near the moana now, she feels she has an intimate relationship with the wai.*

An important outcome of these hui was the understanding that western science measures are different to Tangata Whenua measures, with the latter being functional / applied (what we do and feel) as opposed to scientifically measured (laboratory data). Below is a particularly relevant insight:

*Matawhero stated that he felt the questions themselves were focussed on the use of water as opposed to how overflows made him feel and he would like to see them framed more around how the overflows make people feel. Matawhero noted that this would help express the intimacy of the relationships people have with the water and how they use it.*

This sentiment was echoed by the rest of the KIWA Group.

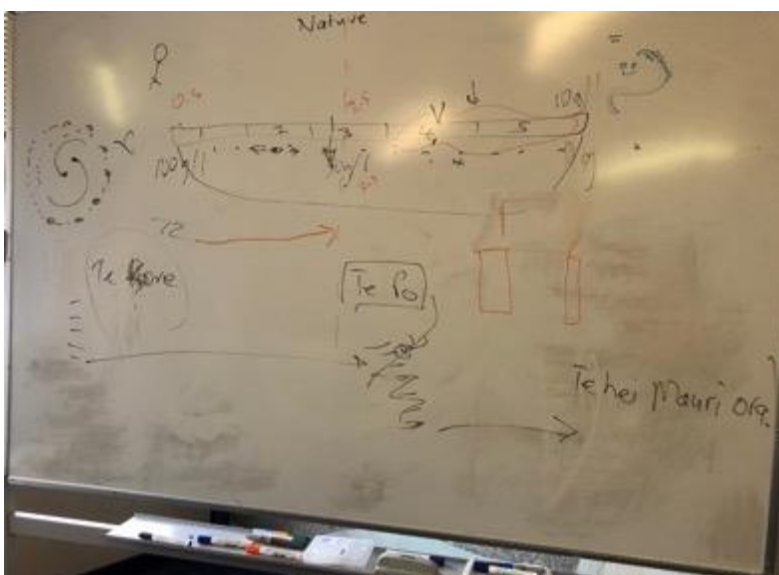
Ian Ruru provided an example of how the wai-mate and loss in mauri was inherently felt when in a boat over the marine outfall. Figure 3 was that day.



**Figure 3 Passing over the marine wastewater outfall**

Substantial discussions were held comparing Te Ao Māori approaches to western science approaches, particularly in respect of ‘bottom lines’. ‘Bottom lines’ were discussed, noting how the bottom lines in the Freshwater Plan and other western science reporting do not align with Māori’s perspectives. The western science ‘fail points’ were considered to generally be set at levels that do not achieve desired Māori outcomes. These were deemed unacceptable.

Māori considered that they do not philosophically have a bottom line, and that the objective is always to return to the optimal state, and all other states are sub-optimal. The optimal state could be considered a pre-European sustainable state with customary practices and philosophies alive and well. It is a never-ending process, it has to be an ongoing struggle. Figure 4 is a photo of the whiteboard session held when working through the above.



**Figure 4 Workshop on ‘bottom lines’**

Tangata Whenua were also strong on the point that dilution is not the solution, and that this is unacceptable from their Tangata Whenua viewpoint. This is particularly so when considering human wastewater and mortuary wastewater.

#### **4.5 Mauri as an indicator of cultural effects**

The concept of mauri was extensively discussed by KIWA Group members.

The concept of Mauri is described by Pohatu (2011), with this text quoted verbatim below:

*Mauri holds a central place in informing Māori, how and why our lives take the form they do. It imbues Māori thinking, knowledge, culture and language with a unique cultural heartbeat and rhythm. Angles to that heartbeat and rhythm are positioned by Māori principles (take pu), valued, applied and interpreted in our activities.*

*Mauri is crucial to the well-being of relationships and issues (kaupapa). It informs how and why activities should be undertaken and monitors how well these are progressing towards their intended goals.*

Rongowhakaata provided their perspective on mauri:

*Mauri cannot be measured however its presence relative to various lifeforms within the river environment can be assessed. The presence of the various lifeforms and health of such, is subject to the current practises of wastewater overflows and other contaminants entering the river systems which is repugnant to Tangata Whenua customary rights and practises.*

*The non-presence of expected healthy lifeforms within such a network of river systems subject to Tikanga o nga Tangata Whenua (Hapū) indicates there are serious issues, thereby placing the environment into a state of Tapu-restricted from use where Rahui is required to return the environment to a Noa state so that practices of customary rights (harvesting etc.) may again be ignited.*

*Due to the nature of contaminants and current practises regulated by local government the environment is suffering and Tangata Whenua regulatory practice of Rahui is totally impacted.*

There are a number of mauri / cultural assessment tools and there is a substantial volume of mauri-related documentation; a good summary is provided in 'Kaupapa Māori Freshwater Assessments, a Summary of Iwi and Hapū-based Tools, Frameworks and Methods for Assessing Freshwater Environments (Rainforth and Harmsworth, 2019). This report summarises a number of tools. In addition, there is 'Nga Waihotanga Iho - The Estuary Monitoring Toolkit for Iwi' (Rickard & Swales 2009), 'Indigenous Māori values and perspectives to inform freshwater management in Aotearoa-New Zealand' (Harmsworth et al. 2016), and 'Decision-support tools and the indigenous paradigm' (Morgan 2006). Roskrige (2017), in a peer review of a cultural assessment of the Managed Aquifer Recharge, was supportive of using mauri as an indicator of cultural effects. He also went on to state that no single tool will singularly capture the measure of Mauri as understood by individuals and groups who associate to the resource as their relationships are often on a very personal level.

There are also other ways to assess mauri, including whakapapa, whakatauki, pūrākau, and other means. These concepts formed part of the hui.

The Mauri Compass was developed in consideration of existing mauri research and tools, providing an authentic local view of mauri for Hapū and Iwi in Tairāwhiti. Figure 5 includes snapshots relevant to the process of producing this tool. It is however acknowledged that no single mauri tool will singularly capture the measure of mauri as understood by individuals or groups who associate with the resource. Relationships are often on a very personal level, difficult to express in words, and may differ between Whanau, Hapū and Iwi.

The application of the tool requires partnering with Whanau, Hapū, Iwi, Marae and community groups. While the tool is specifically for assessing the mauri of water, it can be used within Tangata Whenua engagement processes.

Attributes that are assessed as part of the tool relate directly to applied aspects of water bodies, wai values that affect people and relate to mauri.

Through a collaborative process, the historical, present, future, and desired state of mauri of a water body can be

determined – reflecting the understanding and aspirations of the community at a point in time. Extensive consultation processes, including active participation, is critical to the success of any assessment.

The tool enables a semi-quantitative assessment of effects on Tangata Whenua values, using mauri as an indicator. Where effects are being assessed, a key aspect is calculating BEFORE and AFTER values, enabling the assessor to describe the changes in mauri. Effects can be positive, neutral, or negative. The assessment is also a predictive exercise. It is not a substitute for broader discussions on mauri – it should be considered as an indicator of mauri.

The KIWA Group discussed the use of the Mauri Compass, and were comfortable using it in this process for the purpose of generating discussion, highlighting where customary practices may have diminished through the questions, having an ‘indicator’ of mauri that can be quantified (with comments), and identifying areas of potential improvement.

The Mauri Compass was used only as an indicator, in support of outcomes obtained through the korero. The conclusions and recommendations are not based on the outcomes of the Mauri Compass assessment, but rather taking a holistic view of effects on tangata whenua (recognising that this is only an indicator tool).

**Note in respect of Te-Whanau-a-Kai** – At the date of completion of this engagement report, this Iwi did not support the use of the Mauri Compass in the way it was used.

**Note in respect of Ngati Oneone** – At the date of completion of this engagement report, this Hapū recognized the value in using the Mauri Compass tool, but also noted that they would like to see the ongoing development and refinement of the tool, and therefore at this stage did not provide their own Mauri Compass assessment. This Hapū did however support the conclusions and recommendations of the report.

The KIWA Group was provided with tutorials on the use of the Mauri Compass (Figure 6).



**Figure 5 Working on the Mauri Compass**



Through engagement with the KIWA Group, a number of potential improvements to the tool were suggested, as follows:

- The first Te Ao Māori question, related to tikanga, was debated at length. The wording of this question will be reviewed.
- Regarding 'bottom lines', the Tangata Whenua lens will be applied to the tool, with this illustrated graphically.
- In the Te Ao Māori section, the KIWA Group agreed that the word 'soul' should be changed to 'wairua' in the relevant question
- The word 'Marae' would be changed to 'Tangata Whenua' in the relevant question
- While there was agreement that there is always mauri, it was felt that in some of the questions a zero score is possible. The tool will be amended to reflect this.

In light of the complexity of the Mauri Compass and the fact that some members of the KIWA Group were not familiar with the tool at the commencement of this project (Te Aitanga a Mahaki and Ngai Tamanuhiri representatives had previously received training on the tool), the Mauri Compass tool outcomes may be viewed as preliminary for Rongowhakaata, Nga Ariki Kaiputahi, Ngati Oneone, and Te Whanau-a-Kai. While a Mauri Compass outcome per Hapū / Iwi would have been preferable, this was not possible within this engagement process.

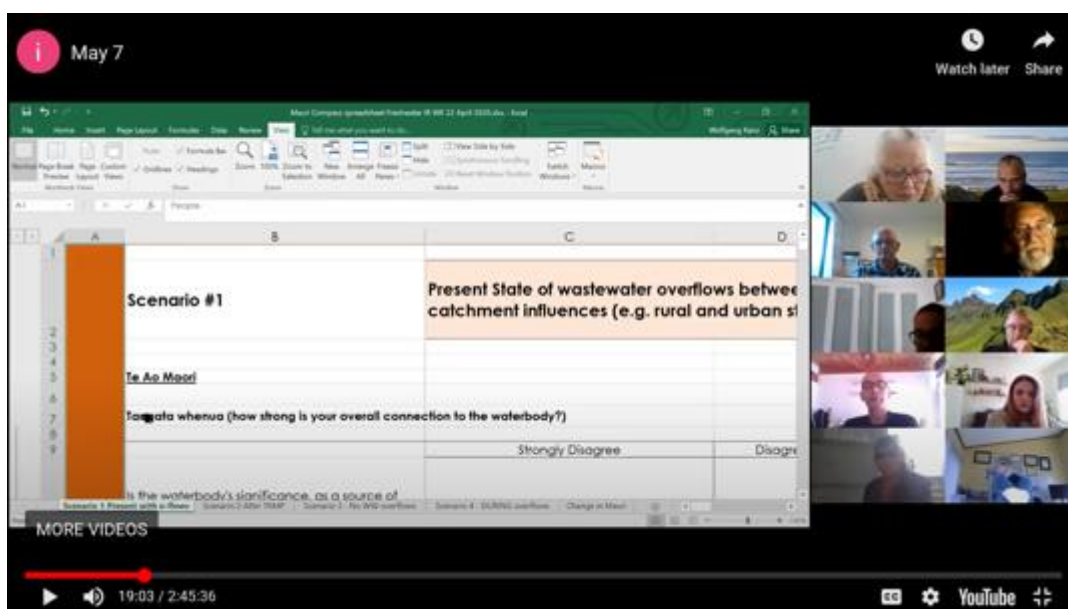


Figure 6 Screenshot of one of the tutorial sessions

The Mauri Compass was used to compare the following scenarios:

- Current state (average of 2.5 wet weather overflows per year, maximum of four per year)
- Once the TRMP conditions are achieved (wet weather overflows at an average of once every two eyars)
- Hypothetical scenario of no wastewater overflows at all
- The current state, but during an overflow event

The Mauri Compass was seen by KIWA Group members as a platform for ongoing discussion and action.

## 5. Results and Discussion

The outcomes of the Mauri Compass work were used in conjunction with the knowledge and understanding shared in the KIWA Group hui and technical sessions, and in perspective of previous reports relevant to the effects of wastewater on Tangata Whenua.

Some of the KIWA Group members considered that their comments in the Mauri Compass spreadsheets were personal to that Hapū or Iwi, and should be considered Intellectual Property. The spreadsheets in Appendix 8 therefore in some cases do not include additional comments from some of the Hapū or Iwi.

As a first step it was also recognised that overflows into rivers affect all Tangata Whenua communities with a connection to the rivers flowing through the city, the beaches, and Poverty Bay. The following are some of the effects initially identified by Council:

- Tapu / discomfort associated with human wastewater in areas the community use.
- Tapu / discomfort associated with mortuary wastewater in human wastewater.
- Negative impacts on Mahinga kai / food harvesting.
- Inability to undertake customary rights and practices.
- Negative impacts on swimming, waka ama, surf lifesaving, and kayaking.

Kaihoe waka (paddlers) are a key 'at risk' group and regularly express their concerns around the discharges and water quality in the tidal reaches of the rivers.

- Constraints on beach use during and after heavy rainfall events.
- Degradation of the mauri of the water.

The scores and comments obtained for the Mauri Compass are included in Appendix 8. Summaries are displayed in Figures 7 to 10.

Key outcomes in terms of mauri indicators are as follows:

#### Freshwater areas

- The mauri indicator scores are overall very low, particularly for Te Ao Māori values. These scores increase with improvements in respect of wastewater overflows, as follows:
  - Scenario 4 (During overflows) – 24.8% (4.8% above minimum)
  - Scenario 1 (Present State) – 33.4% (13.4% above minimum)
  - Scenario 2 (Reduced overflows) – 42.8% (22.8% above minimum)
  - Scenario 3 (No wastewater overflows) – 62.2% (42.2% above minimum)

It is important to note that the minimum score in the Mauri Compass is 20%, based on the scoring algorithm and the assumption that all things have mauri and it cannot be totally diminished. Through discussions with the KIWA Group, this is an aspect of the tool that will be revisited, considering amending the minimum score to better reflect potential reductions in mauri.

- The overall Nga Tini A Tangaroa (reflecting catchment health and kai species) scores are relatively higher in the present state, but very low; these remain the same for the various scenarios (it is however recognised with '+' and '-' annotations that some aspects do improve with reduced and eliminated overflows).
- The overall Te Ao Taiao (indicating the environmental state of the waterbody itself) scores are the highest when compared to Te Ao Māori and Nga Tini A Tangaroa, however the scores are still fairly low; these remain similar for the various scenarios, except for Scenario 4 (During overflows)(it is however recognised with '+' and '-' annotations that some aspects do improve with reduced and eliminated overflows).
- There is an improvement in mauri indicators moving from 4 through 1, 2 and 3.

- Substantial improvements can be seen between Scenario 4 (During overflows) and Scenario 1 (Present State), and between Scenario 1 (Present State) and Scenario 3 (No wastewater overflows).
  - While there is an improvement between Scenario 1 (Present State) and Scenario 2 (Reduced overflows), this is not as substantial as the other changes described above.
- The above highlights the significance of wastewater overflows for Tangata Whenua. Although the overflows would be much reduced in frequency and volume (as would be public health risks related to the wastewater overflows), the presence or absence of wastewater overflows is key. Human wastewater, particularly containing mortuary wastewater, mixing with natural water is extreme tapu for Tangata Whenua. This highlights the need to continue to aim for elimination of wastewater overflows.
  - The improvements are primarily in terms of Te Ao Māori values, which highlights the significant effect wastewater overflows have on people, particularly Tangata Whenua.
  - The Kai Species Abundance and Kai Species Health is disproportionately large compared to the Mahinga Kai score, with this difference an indicator that issues other than the physical environment are affecting these customary practices. This may be explained by the low scores in biohazards and catchment health.
  - Mahinga Kai scores particularly increase in Scenario 3 (No wastewater overflows). This reflects the significant tapu impact of human wastewater on customary practices. This is also reflected, although to a lesser extent, across the other Te Ao Māori mauri indicators, namely Tangata Whenua Connection, Tikanga Practices, and Wairua Connection.
  - In Scenario 3 (No wastewater overflows) the scores essentially hit a 'ceiling' beyond which other issues need to be resolved in order to progress towards the desired state (the Tangata Whenua 'bottom line'). These issues include broader catchment issues, historical land transformation and development, governance processes, the effect of colonialization, and a lack of provision for Māori culture within the above.
  - The relatively low Biodiversity and Kai Species indicator scores will be affected by the low Catchment Health, Habitat and Chemical Hazard scores.
  - The relatively small improvements for Tikanga Practices and Wairua Connection scores from Scenario 1 (Present state) to Scenario 3 (No wastewater overflows) are particularly affected by issues such as limited access, recognition and protection of important cultural sites, the effects of colonialization, and the physical transformation associated with urban development.
  - While the wastewater overflows will have some ecological effects, these were not big enough to result in changes in scores due to the ranges within the various 'bands' for the scores. These differences were then shown as '+' or '-' on the histograms. This is reflected in the specialist ecological reports that were discussed.
  - The overriding negative effect of wastewater overflows on Tangata Whenua is shown in the low scores for Scenario 4 (During overflows). This would be representative for areas affected by a dry weather overflow event.

#### Marine areas

- The mauri indicator scores are overall very low, particularly for Te Ao Māori values. These scores increase with improvements in respect of wastewater overflows, as follows:
  - Scenario 4 (During overflows) – 26% (6% above minimum)
  - Scenario 1 (Present State) – 39.8% (19.8% above minimum)
  - Scenario 2 (Reduced overflows) – 51.2% (31.2% above minimum)
  - Scenario 3 (No wastewater overflows) – 71.8% (51.8% above minimum)

It is important to note that the minimum score in the Mauri Compass is 20%, based on the scoring algorithm and the assumption that all things have mauri and it cannot be totally diminished. Through discussions with the KIWA Group, this is an aspect of the tool that will be revisited, considering amending the minimum score to better reflect potential reductions in mauri.

- The overall Nga Tini A Tangaroa (reflecting catchment health and kai species) scores are relatively higher in the present state, but also still very low; these remain the same for the various scenarios (it is however recognised with '+' and '-' annotations that some aspects do improve with reduced and eliminated overflows).
- The overall Te Ao Taiao (indicating the environmental state of the waterbody itself) scores are the highest when compared to Te Ao Māori and Nga Tini A Tangaroa, however the scores are still fairly low; these remain similar for the various scenarios, except for Scenario 4 (During overflows)(it is however recognised with '+' and '-' annotations that some aspects do improve with reduced and eliminated overflows).
- The marine assessment showed patterns similar to the freshwater assessment. Points of difference are reported on below.
- The scores in the marine environment were overall higher, reflecting the lower public health risks generally and a relatively healthier ecological environment.
- The marine environment is not or less subject to many of the 'ceiling' issues which need to be resolved in order to progress towards the desired state (the Tangata Whenua 'bottom line').
- The primary physical constraints to improvement appear to be the port area and human impacts on resources, while the primary non-physical constraints to improvement are catchment issues and the wastewater overflows themselves.
- The relatively low score for the practice of Mahinga Kai, in the presence of a relatively intact environment and low chemical contamination, is an indication of the overriding effect that human wastewater has on Tangata Whenua.
- Kai Species Abundance was relatively higher for the freshwater environment. This reflected the heavy over-utilisation of kai resources by the community. The relatively higher Kai Species Abundance in the freshwater assessment was also likely due to a reluctance to harvest the kai, because of more tangible health risks in the rivers.

The scores are overall lower for the freshwater environment than the marine environment.

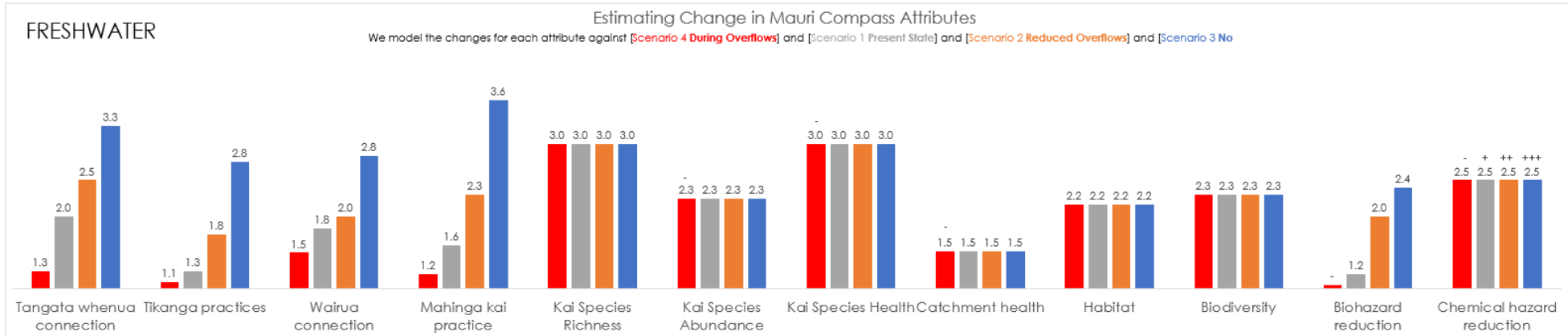
While scores differed slightly between KIWA Group Hapū / Iwi that provided scores, the same patterns were observed.

Future work could comprise producing an overall KIWA Group Mauri Compass scoring, representing all Hapū / Iwi views collectively.

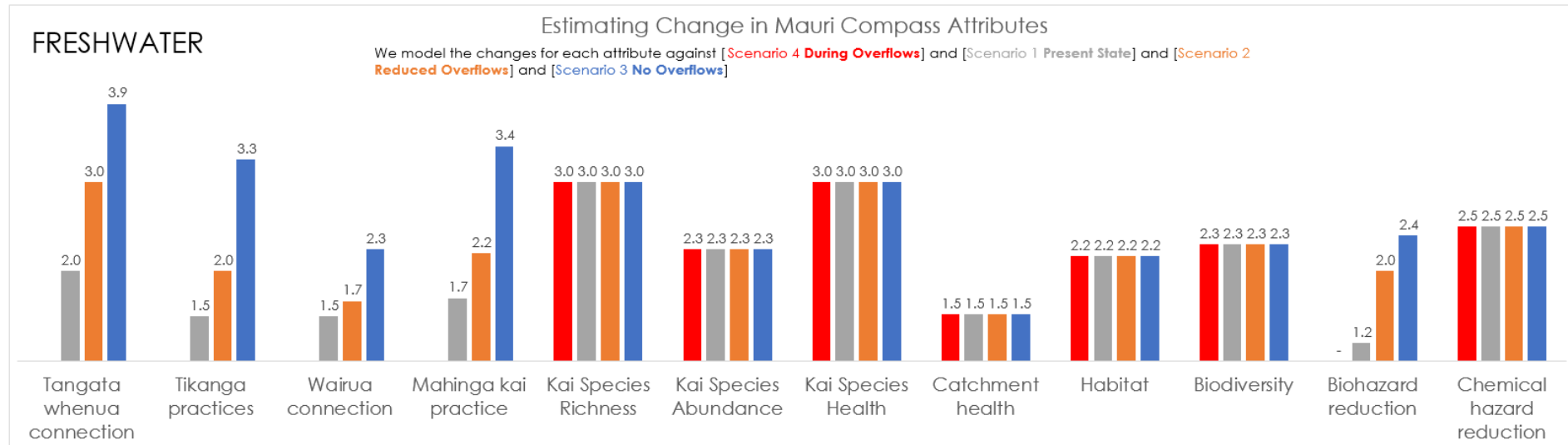
While scores differed slightly between KIWA Group Hapū / Iwi that provided scores, the same patterns were observed. Rongowhakaata provided much lower scores for the 'During overflows' scenario for the Te Ao Māori section; which is likely to be supported by the rest of the KIWA Group.

Figure 7 Histograms FRESHWATER Mauri Compass Scores

(i) Te Aitanga a Mahaki, TROTAK, Nga Ariki Kaiputahi, Ngai Tamanuhiri



(ii) Rongowhakaata



**(iii) Ngai Tamanuhiri**

Ngai Tamanuhiri is comfortable with the TROTAK and Te-Aitanga-a-Mahaki scores provided for the Mauri Compass, as their scores and comments are at this stage broadly in line with that provided by TROTAK and Te-Aitanga-a-Mahaki.

**(iv) Ngati Oneone**

At the date of completion of this engagement report, this Hapū recognized the value in using the Mauri Compass tool, but also noted that they would like to see the ongoing development and refinement of the tool, and therefore at this stage did not provide their own Mauri Compass assessment. This Hapū did however support the conclusions and recommendations of the report.

**(v) Te Whanau a Kai**

At the date of completion of this engagement report, this Iwi did not support the use of the Mauri Compass in the way it was used. Mauri Compass scores have therefore not been provided for this Iwi.

**(vi) Nga Ariki Kaiputahi**

Nga Ariki Kaiputahi is comfortable with the TROTAK and Te-Aitanga-a-Mahaki scores provided for the Mauri Compass, as their scores and comments are at this stage broadly in line with that provided by TROTAK and Te-Aitanga-a-Mahaki.

Figure 8 Dashboards of FRESHWATER Mauri Compass Scores

(i) Te Aitanga a Mahaki and TROTAK

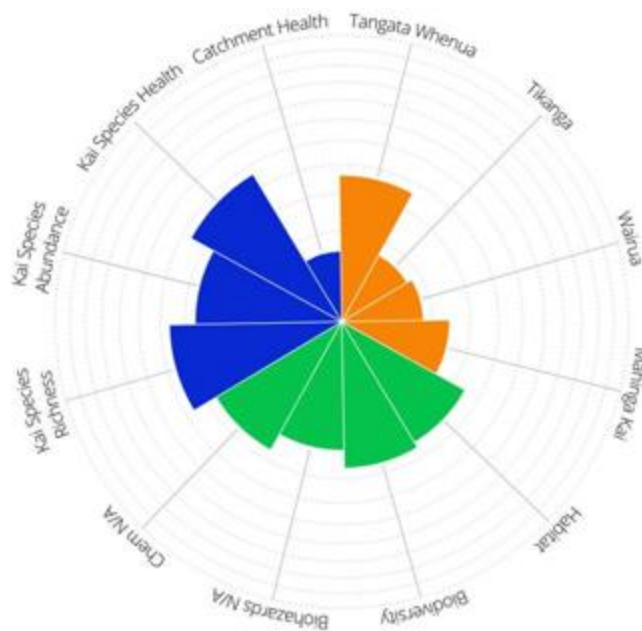
Scenario 4 During overflows



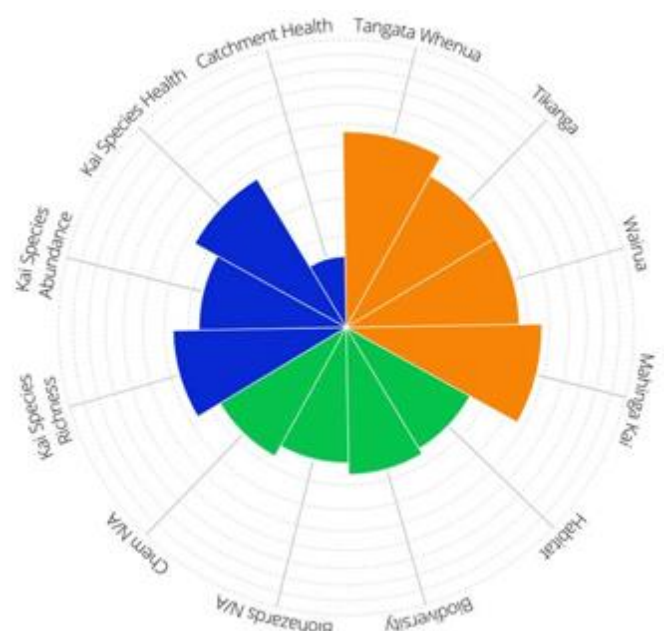
Scenario 1 Present State



Scenario 2 Reduced overflows

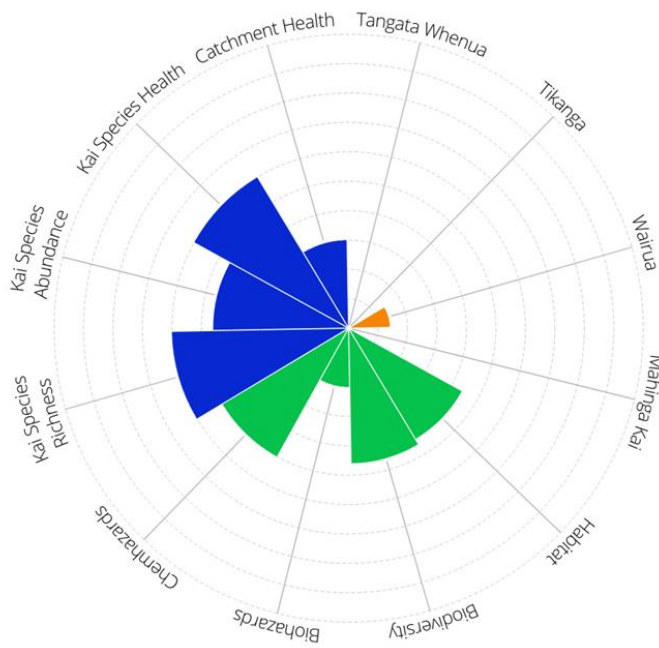


Scenario 3 No wastewater overflows

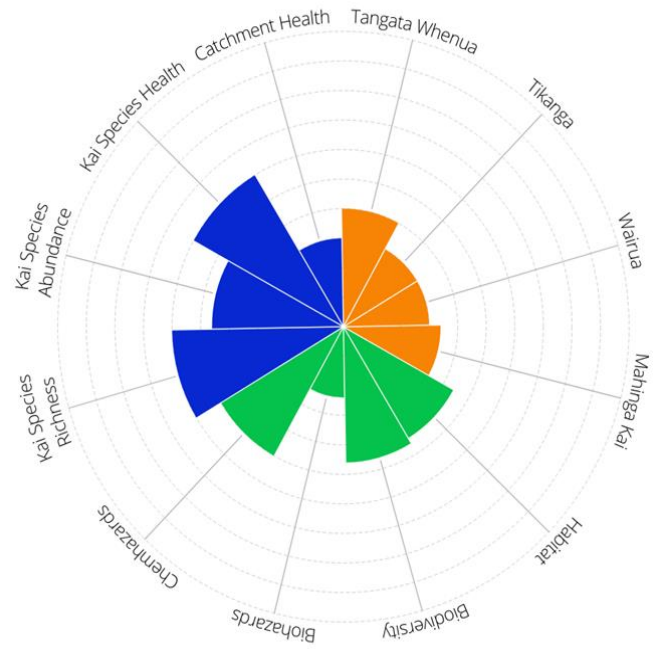


(ii) Rongowhakaata

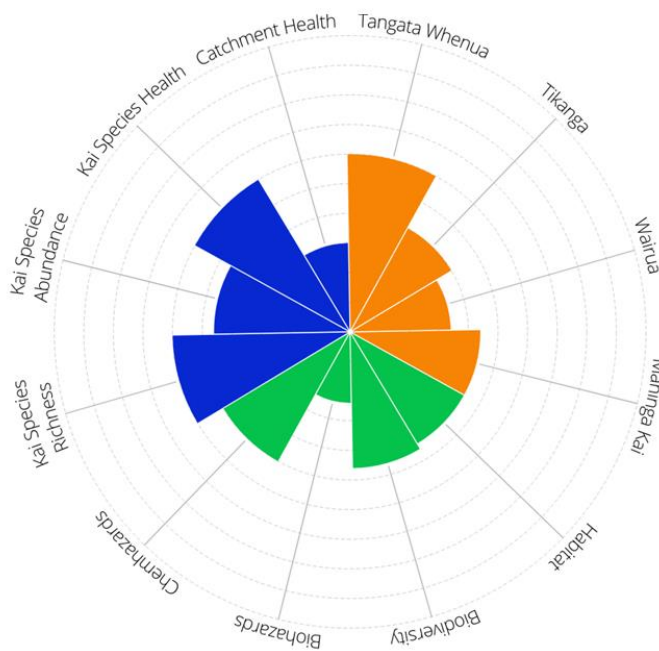
Scenario 4 During overflows



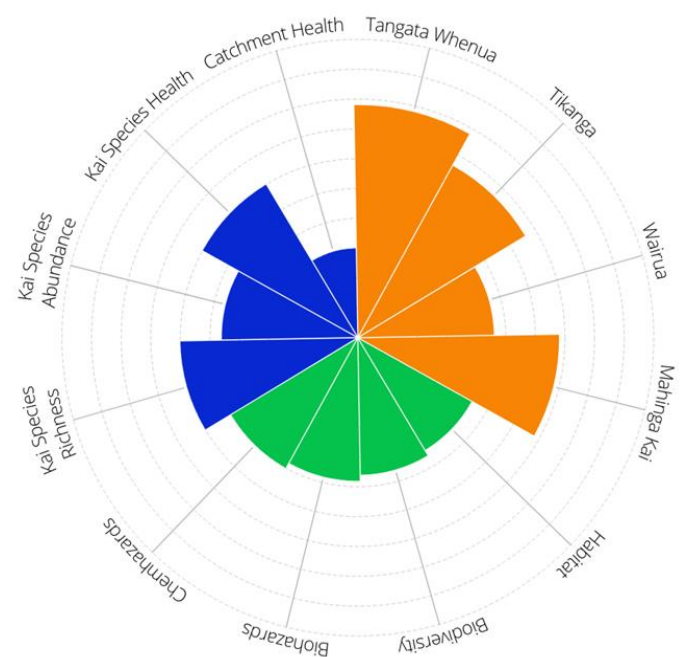
Scenario 1 Present State



Scenario 2 Reduced overflows



Scenario 3 No wastewater overflows





**(iii) Ngai Tamanuhiri**

Ngai Tamanuhiri is comfortable with the TROTAK and Te-Aitanga-a-Mahaki scores provided for the Mauri Compass, as their scores and comments are at this stage broadly in line with that provided by TROTAK and Te-Aitanga-a-Mahaki.

**(iv) Ngati Oneone**

At the date of completion of this engagement report, this Hapū recognized the value in using the Mauri Compass tool, but also noted that they would like to see the ongoing development and refinement of the tool, and therefore at this stage did not provide their own Mauri Compass assessment. This Hapū did however support the conclusions and recommendations of the report.

**(v) Te Whanau a Kai**

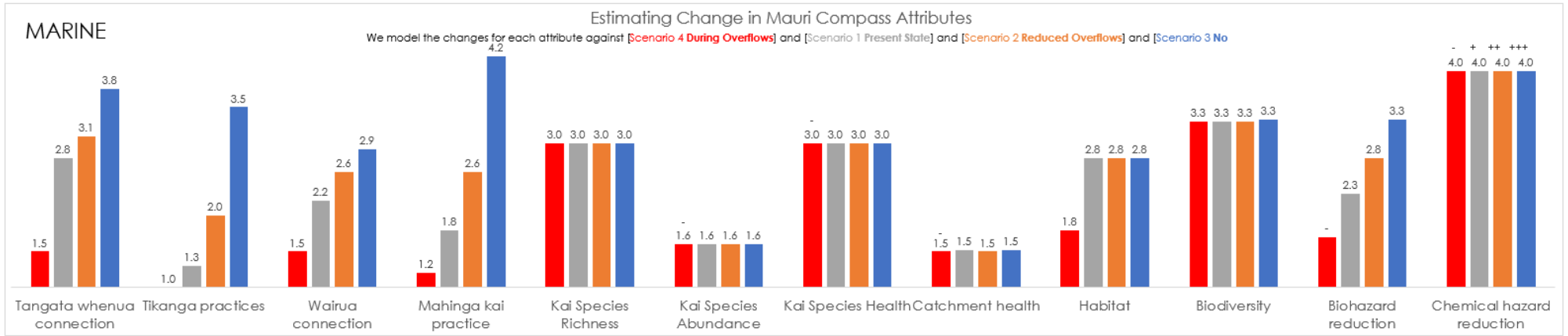
At the date of completion of this engagement report, this Iwi did not support the use of the Mauri Compass in the way it was used. Mauri Compass scores have therefore not been provided for this Iwi.

**(vi) Nga Ariki Kaiputahi**

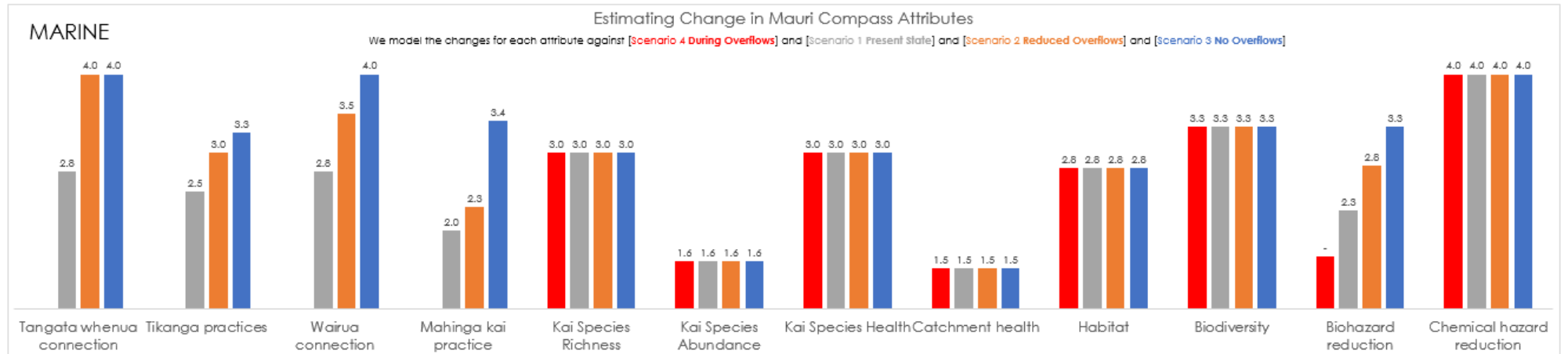
Nga Ariki Kaiputahi is comfortable with the TROTAK and Te-Aitanga-a-Mahaki scores provided for the Mauri Compass, as their scores and comments are at this stage broadly in line with that provided by TROTAK and Te-Aitanga-a-Mahaki.

Figure 9 Histograms MARINE Mauri Compass Scores

(i) Te Aitanga a Mahaki and TROTAK



(ii) Rongowhakaata



**(iii) Ngai Tamanuhiri**

Ngai Tamanuhiri is comfortable with the TROTAK and Te-Aitanga-a-Mahaki scores provided for the Mauri Compass, as their scores and comments are at this stage broadly in line with that provided by TROTAK and Te-Aitanga-a-Mahaki.

**(iv) Ngati Oneone**

At the date of completion of this engagement report, this Hapū recognized the value in using the Mauri Compass tool, but also noted that they would like to see the ongoing development and refinement of the tool, and therefore at this stage did not provide their own Mauri Compass assessment. This Hapū did however support the conclusions and recommendations of the report.

**(v) Te Whanau a Kai**

At the date of completion of this engagement report, this Iwi did not support the use of the Mauri Compass in the way it was used. Mauri Compass scores have therefore not been provided for this Iwi.

**(vi) Nga Ariki Kaiputahi**

Nga Ariki Kaiputahi is comfortable with the TROTAK and Te-Aitanga-a-Mahaki scores provided for the Mauri Compass, as their scores and comments are at this stage broadly in line with that provided by TROTAK and Te-Aitanga-a-Mahaki.

Figure 10 Dashboards of MARINE Mauri Compass Scores

(i) Te Aitanga a Mahaki and TROTAK

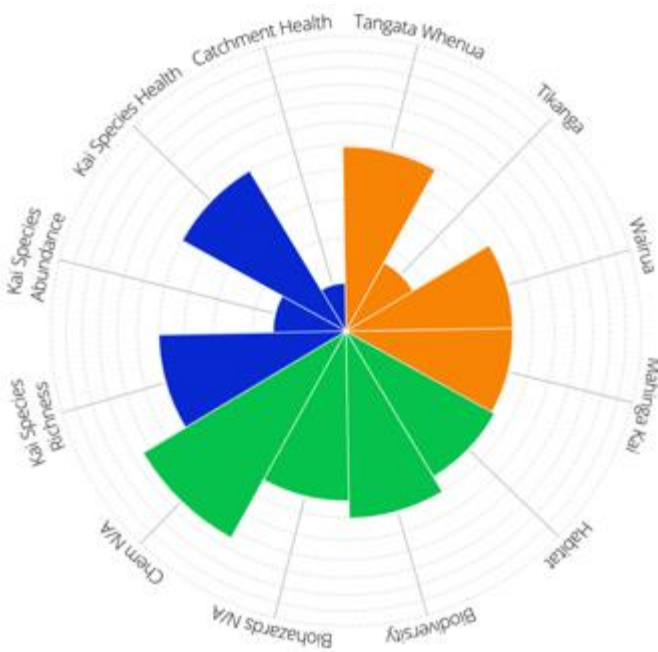
Scenario 4 During overflows



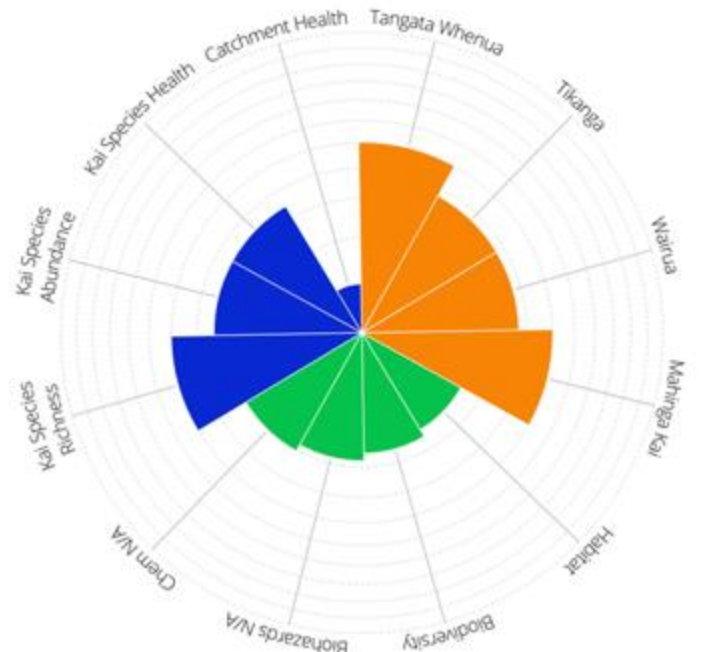
Scenario 1 Present State



Scenario 2 Reduced overflows

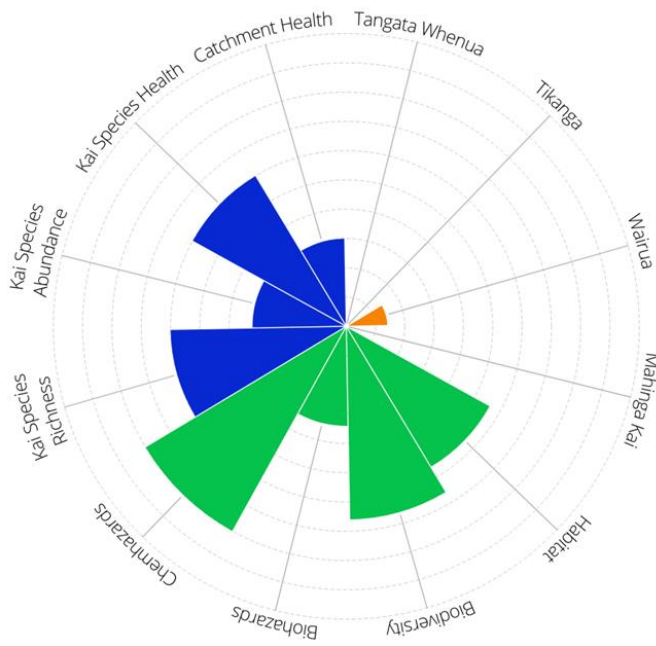


Scenario 3 No wastewater overflows

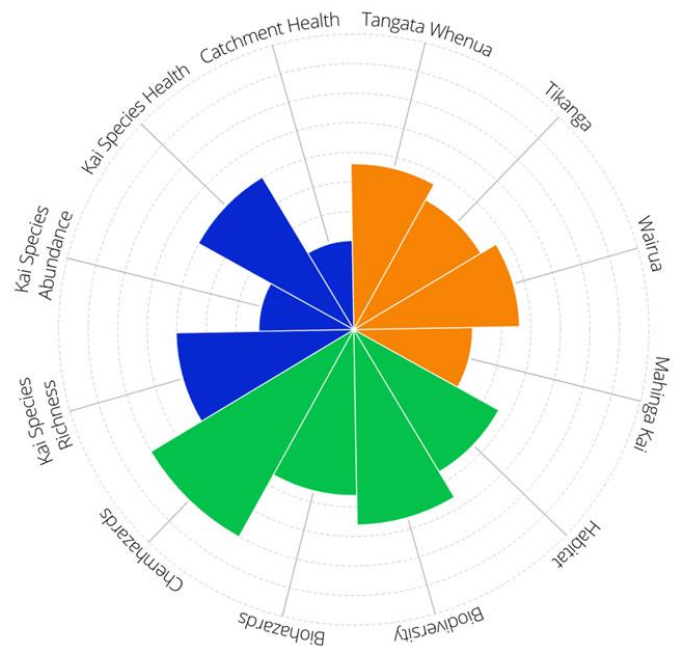


(ii) Rongowhakaata

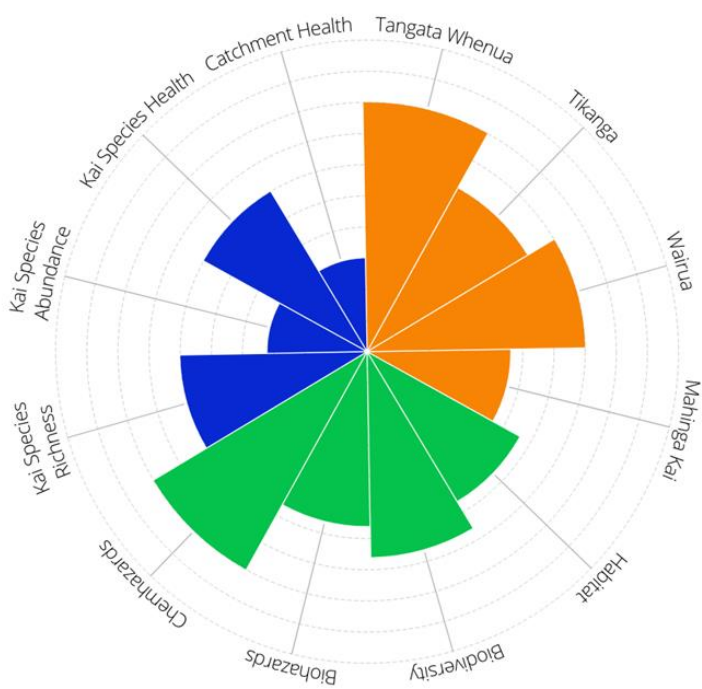
Scenario 4 During overflows



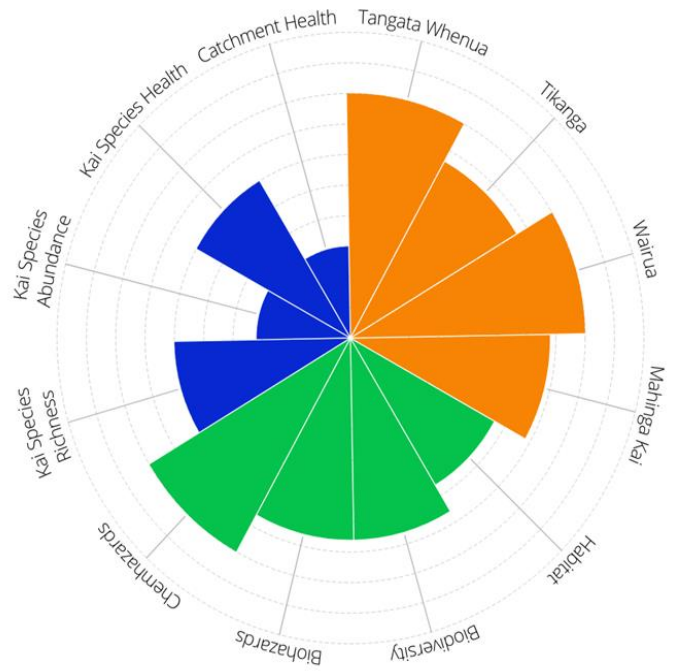
Scenario 1 Present State



Scenario 2 Reduced overflows



Scenario 3 No wastewater overflows



**(iii) Ngai Tamanuhiri**

Ngai Tamanuhiri is comfortable with the TROTAK and Te-Aitanga-a-Mahaki scores provided for the Mauri Compass, as their scores and comments are at this stage broadly in line with that provided by TROTAK and Te-Aitanga-a-Mahaki.

**(iv) Ngati Oneone**

At the date of completion of this engagement report, this Hapū recognized the value in using the Mauri Compass tool, but also noted that they would like to see the ongoing development and refinement of the tool, and therefore at this stage did not provide their own Mauri Compass assessment. This Hapū did however support the conclusions and recommendations of the report.

**(v) Te Whanau a Kai**

At the date of completion of this engagement report, this Iwi did not support the use of the Mauri Compass in the way it was used. Mauri Compass scores have therefore not been provided for this Iwi.

**(vi) Nga Ariki Kaiputahi**

Nga Ariki Kaiputahi is comfortable with the TROTAK and Te-Aitanga-a-Mahaki scores provided for the Mauri Compass, as their scores and comments are at this stage broadly in line with that provided by TROTAK and Te-Aitanga-a-Mahaki.

Key outcomes in terms of mauri indicators as described above, in combination with the comments that validated those scores, were used together with the outcomes of the hui and supporting background reports / information to create impact statements.

The mauri indicators reflected the key themes from the hui and technical discussions.

Key engagement outcomes (impact statements), supported by all KIW Group Hapū and Iwi that contributed to this engagement process, are provided in Table 2.

**Note in respect of Te-Whanau-a-Kai**

This Iwi did not support the use of the Mauri Compass in the way it was used, but supported the conclusions and recommendations in the report (to be viewed alongside their additional appendices – Appendix 11).

**Note in respect of Ngati Oneone**

At the date of completion of this engagement report, this Hapū recognized the value in using the Mauri Compass tool, but also noted that they would like to see the ongoing development and refinement of the tool, and therefore at this stage did not provide their own Mauri Compass assessment. This Hapū did however support the conclusions and recommendations of the report.

**Table 2 Key wastewater impact statements identified through the engagement process**

Current state of overflows – an average of 2.5 overflows per year, up to a maximum of 4 per year	Change	
	After achieving the TRMP requirements – an average of 1 overflow every 2 years	Assuming no more wastewater overflows
The practice of allowing wastewater overflows is abhorrent to Tangata Whenua, and Tangata Whenua feel that this has gone on for too long. Human wastewater, particularly containing mortuary wastewater, mixing with natural water is extreme tapu for Tangata Whenua.	While there is an improvement after the reduction of wastewater overflows, the overarching tapu of mixing wastewater with natural water remains. Tangata Whenua support the reductions but the aim must be to eliminate wastewater overflows.  This change would result in a shorter duration of negative effects, but the ‘chronic’ issue of tapu would remain.	Tangata Whenua consider this their ‘bottom line’ in terms of wastewater overflows.  This would be a substantial improvement.  Broader non-wastewater related issues require to be remedied to progress towards the desired Tangata Whenua state, and these should be addressed in parallel to the wastewater overflows.

	Mortuary wastewater must be removed from the conventional wastewater system.	
Human wastewater discharges are tapu, and their effects cannot be measured appropriately in western science terms - rather they need to be expressed in how they affect Tangata Whenua wellbeing and relationships with the water bodies, which is a true people-focussed descriptor of actual effects on a community. The wastewater overflows significantly diminish Tangata Whenua wellbeing.	<p>Tangata Whenua wellbeing would be improved, but only partially. The less frequent overflows would still impact on Tangata Whenua wellbeing.</p> <p>Better monitoring of effects on Tangata Whenua, and the integration of tikanga and mātauranga Māori into Council processes has the potential to contribute towards improvements in wellbeing.</p> <p>This change would result in a shorter duration of negative effects, but the 'chronic' issue of tapu would remain.</p> <p>Mortuary wastewater must be removed from the conventional wastewater system.</p>	<p>This would be a substantial improvement.</p> <p>Broader non-wastewater related issues require to be remedied to progress towards the desired Tangata Whenua state, and these should be addressed in parallel to the wastewater overflows.</p>
<p>Wastewater overflows have a significant negative impact on the mauri of affected waterbodies - this is felt by all Tangata Whenua, and in respect of wastewater overflows in Tairāwhiti, particularly by local Iwi and Hapū with intrinsic and historical connections to these waterbodies. This is an affront on the mana of Iwi and Hapū.</p> <p>KIWA Group comment: <i>If the mauri or life force of our natural environment is strong then we too as a people are strong.</i></p>	<p>A reduction in wastewater overflows, in combination with integration of tikanga, mātauranga Māori, and Māori values into Council management of overflows, will reduce impacts on Tangata Whenua.</p> <p>The aim must still be to eliminate wastewater overflows.</p> <p>This change would result in a shorter duration of negative effects, but the 'chronic' issue of tapu would remain.</p>	<p>Achievement of this would be significant for Tangata Whenua as kaitiaki of the waterways and the Bay.</p>
While the cultural significance of the water bodies is without doubt known, valued, and respected by Tangata Whenua, the overall Iwi and Hapū connections to these waterbodies and whakapapa (cultural identity) have been significantly diminished on account of the wastewater overflows	<p>A reduction in wastewater overflows, in combination with integration of tikanga, mātauranga Māori, and Māori values into Council management of overflows, may reduce impacts on Tangata Whenua.</p> <p>The aim must still be to eliminate wastewater overflows.</p>	<p>Achievement of this would be significant for Tangata Whenua as kaitiaki of the waterways and the Bay.</p> <p>Broader non-wastewater related issues require to be remedied to progress towards the desired</p>



<p>– the status quo makes Tangata Whenua feel alienated, estranged, and aggrieved.</p>		<p>Tangata Whenua state, and these should be addressed in parallel to the wastewater overflows.</p>
<p>Being able to operate in accordance with and across the full breadth of tikanga has been impossible for Tangata Whenua because of the overriding effects of wastewater overflows – wastewater overflows militate against interacting meaningfully with these waterbodies.</p>	<p>A reduction in wastewater overflows, in combination with integration of tikanga into Council management of overflows, may result in some improvements in tikanga practices. But the full breadth of tikanga requires a more significant change. This change would result in a shorter duration of negative effects, but the ‘chronic’ issue of tapu would remain.</p>	<p>Achievement of this would be significant for Tangata Whenua tikanga practice related to the waterways and the Bay.</p> <p>However, other broader non-wastewater related issues still require to be remedied to progress towards the desired Tangata Whenua state, and these should be addressed in parallel to the wastewater overflows.</p>
<p>The spiritual health of the waterbodies, wairuatanga, is greatly affected by wastewater overflows, and Tangata Whenua’s spiritual practices, protocols, and associations the awa and moana have been greatly undermined - this has been exacerbated by mortuary wastewater within the wastewater overflows.</p>	<p>A reduction in wastewater overflows, in combination with integration of tikanga, mātauranga Māori, and Māori values into Council management of overflows, may reduce impacts on Tangata Whenua.</p> <p>The aim must still be to eliminate wastewater overflows. This change would result in a shorter duration of negative effects, but the ‘chronic’ issue of tapu would remain.</p> <p>Mortuary wastewater must be removed from the conventional wastewater system.</p>	<p>Achievement of this would be significant for Tangata Whenua as kaitiaki of the waterways and the Bay.</p> <p>Broader non-wastewater related issues require to be remedied to progress towards the desired Tangata Whenua state, and these should be addressed in parallel to the wastewater overflows.</p>
<p>Mahinga kai, in respect of customary practices and protocols of a Marae community, is essentially no longer carried out on the waterbodies affected by the wastewater overflows; the water bodies are generally considered unfit for gathering kai for tangi, hui, and in expressing manaakitanga to manuhiri, kaumātua and whānau members, mostly because of the spiritual impacts of wastewater discharges.</p>	<p>A reduction in wastewater overflows, in combination with integration of tikanga in respect of overflows, may reduce impacts on Tangata Whenua. The possibility exists that after long periods of time post-wastewater overflow event that Mahinga kai could be practised – but this needs to be considered by Tangata Whenua in a mātauranga Māori approach. This change would result in a shorter duration of negative effects, but the ‘chronic’ issue of tapu would remain.</p>	<p>Achievement of this would be significant for Tangata Whenua.</p> <p>Broader non-wastewater related issues require to be remedied to progress towards the desired Tangata Whenua state, and these should be addressed in parallel to the wastewater overflows.</p>

	<p>The elimination of mortuary wastewater from the conventional wastewater system is an absolute requirement before mahinga kai practices can be considered.</p> <p>Tangata Whenua support the reductions but the aim must be to eliminate wastewater overflows.</p>	
<p>These challenges in exercising customary rights and practices in the awa and moana are also borne out in negative impacts on whānaungatanga, with the nature and quality of relationships within and between Whanau, Hapū and Iwi no doubt reduced because of the diminished state of these substantial elements in Māori culture.</p>	<p>A reduction in wastewater overflows, in combination with integration of tikanga in respect of overflows, may improve this.</p> <p>The fact that overflows still do occur, albeit less frequently, will significantly diminish the possibilities for use of wai resources in expressing whānaungatanga.</p>	<p>Achievement of this would be significant for Tangata Whenua.</p> <p>Broader non-wastewater related issues require to be remedied to progress towards the desired Tangata Whenua state, and these should be addressed in parallel to the wastewater overflows.</p>
<p>While some or parts of the waterbodies are still used by Tangata Whenua for collecting kai, this is generally as individuals and Whanau and not as Hapū and Iwi collectives, and this is done reluctantly and often out of necessity. Māori have historically and continue today to rely on the awa and moana for food and materials, and harvesting kai is part of the cultural identity and fabric of Māori communities - wastewater overflows have substantially negatively affected this integral component of Tangata Whenua life, affecting this fundamental element of Tangata Whenua life.</p>	<p>The reduction in overflow frequency and volume will provide a substantial improvement for Tangata Whenua.</p> <p>This would however depend on appropriate tikanga processes, including placement and lifting of rahui, and application of a Te Ao Māori lens in monitoring and notification processes.</p> <p>This change would result in a shorter duration of negative effects, but the 'chronic' issue of tapu would remain.</p>	<p>Achievement of this would be significant for Tangata Whenua.</p> <p>Broader non-wastewater related issues require to be remedied to progress towards the desired Tangata Whenua state, and these should be addressed in parallel to the wastewater overflows.</p>
<p>While Māori still use these waterbodies, they do so reluctantly and cautiously, in the knowledge that the water bodies are affected by wastewater overflows. This is reflective of the strong connections that Māori have with water, always seeking to interact with and engage with the awa and moana, even in such poor conditions. Tangata Whenua's frustration and disdain at wastewater</p>	<p>A reduction in overflows should reduce Māori concerns regarding use of the waterbodies, but it will not eliminate the concerns, particularly those related to human wastewater.</p> <p>This would however depend on appropriate tikanga processes, including placement and lifting of rahui, and application of a Te Ao Māori lens in monitoring and notification processes.</p>	<p>Elimination of wastewater overflows would with certainty have the greatest positive effect on Tangata Whenua connections with the waterbody and their use of these waterbodies.</p>

<p>overflows are reflected in their voiced reactions to wastewater overflow events, and having to use the rivers while aware that wastewater overflows take place from time to time.</p>		
<p>The role of Tangata Whenua as kaitaki, with mana whenua (authority), has not been acknowledged, recognised and provided for in respect of management of wastewater overflows.</p>	<p>The reduction in overflows will only improve this if tikanga, mātauranga Māori, and Māori values are integrated into Council management of overflows, with participation of Tangata Whenua in wai management.</p>	<p>The reduction in overflows will only improve this if tikanga, mātauranga Māori, and Māori values are integrated into Council management of overflows, with participation of Tangata Whenua in wai management.</p>
<p>Broader catchment issues do not lessen the significant cultural impact that human wastewater has on Tangata Whenua.</p>	<p>Human wastewater, particularly containing mortuary wastewater, mixing with natural water is extreme tapu for Tangata Whenua. It has an overriding effect.</p>	<p>Elimination of wastewater overflows will be a meaningful step in taking the awa and moana from tapu to noa.</p> <p>However, broader catchment-related issues also require to be remedied to progress towards the desired Tangata Whenua state, and these should be addressed in parallel to the wastewater overflows.</p>
<p>The wastewater overflows have imparted long term chronic negative impacts on Tangata Whenua, with acute impacts during overflow events.</p> <p>The above impacts span the breadth of environmental, cultural, social, and economic dimensions (the four 'pou' used in contemporary processes). The effects are intertwined, connected, and inter-dependent, and were therefore not separated into the four pou.</p>		

Tangata Whenua expressed frustration at the lack of progress by Council in reducing wastewater overflows. While the DrainWise Implementation Programme has been set up to achieve the TRMP reductions, Tangata Whenua want improvements to occur as fast as possible. Their view is that not enough has been done in the past regarding wastewater overflows.

Dry weather overflows result in the same impacts as wet weather overflows, but with the magnitude of the effect dependent on where the discharge takes place and the volumes discharged. The same issues therefore apply, however they are very unlikely to result in significant ongoing effects. Nevertheless, the tapu effects related to wastewater discharges apply. More information is provided in Appendix 10.

The Tāirāwhiti community overall is dissatisfied with the present state of wastewater overflows, and supports the elimination of the overflows. The community strongly voices their concerns regarding wastewater overflows every time there is a wastewater discharge event. While the concerns are not expressed in Te Ao Māori terms, there is a focus on health concerns, the impact on community activities, and that they want Council to fix the issues.

The topic of monitoring was frequently raised by the KIWA Group. The differences between western science and the mātauranga Māori / mauri approaches is also evident in how one measures and monitors the health of water. While western science focuses on data and science, the mātauranga Māori / mauri approach focuses on human elements. For example, the State of Environment monitoring generally currently focusses on water chemistry, hydrology, water quantities and levels, bacterial counts, and species richness, abundance and diversity. The mātauranga approach instead looks at the social, cultural, and spiritual outcomes, as illustrated in Figure 4. It also looks at ecological well-being and outcomes, which are intimately connected with those of a social, cultural and spiritual nature.

Robb et al (2015) found that cultural monitoring can be used to build capacity and capability of Māori communities, identify cultural values and priorities, strengthen connections between Māori and water resources, build skills and knowledge in both mātauranga Māori and western science and measure progress towards agreed goals to achieve desired water outcomes and Māori aspirations. Cultural monitoring is typically used to articulate values as well as assess, measure, and monitor changes to the environment from a Māori perspective, and report those changes. Cultural monitoring tools can be used to contribute to, or inform, some formalised assessment (qualitative or quantitative) or statement of cultural values through time and space. The KIWA Group was strongly in support of integrating cultural monitoring into Council monitoring processes.

Through the technical discussions, it was also recommended that the public health risks could be better investigated and monitored, establishing sampling for a wider range of pathogens, which may be longer lived than indicator organisms, in both the water column and sediments. Faecal source tracking was also recommended.



Figure 11 Tangata Whenua connecting with Tangaroa and Maru

A number of other cultural issues were raised through the engagement process. While these generally do not directly relate to wastewater overflows, they do contribute to the mauri indicator outcomes, and they are a record of cultural effects experienced by Tangata Whenua. Non-wastewater cultural issues / effects include:

- Engagement approaches with Tangata Whenua should be reviewed, and processes agreed for future engagement processes. These taking into account Tangata Whenua tikanga and customary practices.
- A history of limited opportunities to partner in decision-making as provided in the Treaty of Waitangi
- A lack of opportunities to practically participate in management of the awa and moana
- Tangata Whenua must be actively engaged on all matter related to wastewater and water in general, through of a meaningful partnership approach - mātauranga Māori must likewise partner western science. The protocol for testing and monitoring during and after wastewater overflow events was used as an example.
- There has been an erosion of Tangata Whenua community connections with, and understanding of, the awa and moana because of the societal impacts of development under western governance systems and colonisation
- A loss of access to the awa and moana on account of urbanisation and property rights
- A loss of culturally important sites due to transformation
- The lack of adequate mapping, recognition, protection and access to important cultural sites
- Extensive habitat transformation and degradation, particularly in the lower reaches of the city's rivers and around the port area
- Significant catchment issues affect these environments
- Smaller streams in the city, such as the Kopuawhakapata, Mangapapa, and Matokitoki, are in a poor state and their values are relatively unknown

The above highlighted the need for Hapū or Iwi to initiate processes to mitigate or remedy these issues / effects on Tangata Whenua.

## 6. Conclusions and Recommendations

The KIWA Group worked together effectively in this engagement process, and this report provides a record in time of cultural effects on Tangata Whenua as a result of the wastewater overflows. It also provides a broader view of issues affecting Tangata Whenua in their relationships with the awa and moana.

The work of the KIWA Group highlighted that for Tangata Whenua the effects of the wastewater overflows are felt at an individual, Whanau, Hapū and Iwi level, affecting all aspects of community wellbeing and health.

The effects on health and wellbeing may to some extent be illustrated through the Māori health model 'Te Whare Tapa Whā' (Durie 1994). This model takes a holistic approach to health and wellbeing, recognising the importance of the balance of multiple dimensions of wellbeing – each of these interconnects and contributes to the balance and strength of the whole. This is illustrated in Figure 5.



Figure 12 The Māori health model 'Te Whare Tapa Whā' (Durie 1994)

The KIWA Group discussions and outcomes reflect the spiritual, mental & emotional, family and social, and physical dimensions of wellbeing.

The practice of allowing wastewater overflows is unacceptable to Tangata Whenua as it affects them deeply spiritually, socially, and culturally.

The overall Tairāwhiti community, including Pākeha and Tangata Whenua, is unanimous in its desire for wastewater overflows to be ended.

The KIWA Group made a number of recommendations:

- Tangata Whenua need to be engaged on an ongoing basis moving forward, in a meaningful, authentic, and practical manner; this engagement reports reflects the Tangata Whenua the position at a point in time, and systems need to be put in place ensure changes over time are addressed.
- All possible avenues must be explored to bring forward the DrainWise Implementation Programme, including seeking alternate sources of funding and approaching the Trust Tairāwhiti (formerly the Eastland Community Trust), and involving Tangata Whenua in those discussions.
- Tangata Whenua should be provided with opportunities to work alongside Council to resolve these issues.
- Monitoring related to wastewater overflows should be reviewed to include cultural elements, and make the monitoring relevant to kaihoe waka, shellfish gathering, and other Māori resource-use practices.
- Current public health monitoring procedures and locations should be reviewed to make sure they adequately capture health risks.
- Management protocols related to dry and wet weather overflows should be reviewed by the KIWA Group, integrating tikanga aspects such as the placement of rahui and other processes.
- Tangata Whenua need to be kept informed on the DrainWise Implementation Programme, and be given opportunities to input.
- Projects to improve mauri should be identified.

Māori have stated they hope that this engagement process sets a platform for Hapū and Iwi to better influence change and work together more with Council, to make sure the required solutions to the problem are delivered, and the wastewater outcomes are achieved. This should also be seen as a starting point, with effort on continued improvement on understanding of culture and values, building on this knowledge base, and using this information to also improve the understanding of the general public.

The outcomes of this engagement will be used by the KIWA Group members to enable ongoing discussions within each Hapū and Iwi, and input into wastewater and other water-related matters going forward (including management and monitoring). The Mauri Compass tool outcomes, particularly the histograms and dashboards may provide a simple means of communicating effects to Tangata Whenua.

#### **Note in respect of Te-Whanau-a-Kai**

This Iwi did not support the use of the Mauri Compass in the way it was used, but supported the conclusions and recommendations in the report (to be viewed alongside their additional appendices – Appendix 11).

#### **Note in respect of Ngati Oneone**

At the date of completion of this engagement report, this Hapū recognized the value in using the Mauri Compass tool, but also noted that they would like to see the ongoing development and refinement of the tool, and therefore at this stage did not provide their own Mauri Compass assessment. This Hapū did however support the conclusions and recommendations of the report.

## 7. References

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# Wastewater Overflows in Wet Weather Storm Events and in Dry Weather

## Tangata Whenua Engagement Plan

### 1. Introduction

Under the Tairāwhiti Resource Management Plan (TRMP), Gisborne District Council (Council) is required to obtain resource consent for overflows of wastewater from the public wastewater network. Currently, these overflows are permitted under the Plan until mid-2020, at which stage a consent will be required.

The below plan text is relevant:

9. *Discharges of untreated sewage from the reticulated infrastructure network shall be managed to:*
- a) *Minimise the frequency of these discharges; and*
  - b) *Achieve performance of an overflow occurrence of no more than 50% probability in any given year;*
  - c) *Issue discharge permits for no longer than 5 years except where there is evidence from past performance to demonstrate that wastewater overflow events can reliably achieve the performance standard in clause b. above.*

<b>Rule Number</b>	<b>Rule</b>	<b>Status</b>	<b>Activity Standards; Matters of Control or Discretion</b>
6.2.3(1)	<i>Point Source Discharges of Untreated Sewage Resulting from Overflows from wastewater reticulation and pumping stations during wet weather events until 1 July 2020.</i>	<i>Permitted</i>	<ul style="list-style-type: none"> <li>a) <i>The overflow occurs only in periods of heavy rainfall events;</i></li> <li>b) <i>Regular monitoring of the impacts of the wastewater overflows on the water quality and environment of the receiving environment is undertaken and that the results of this monitoring are reported to the Consent Authority on an annual basis;</i></li> <li>c) <i>Public notification is undertaken in accordance with a public notification protocol agreed in writing with the Consent Authority;</i></li> <li>d) <i>Signage must remain in place until faecal contamination testing indicates that recreational use and food gathering activities are within health guidelines; and</i></li> <li>e) <i>An annual public report on the number and size of overflows, and progress towards their reduction is provided.</i></li> </ul>



Council therefore requires a consent post 1 July 2020 because the permitted activity status ceases on that date.

Council is therefore currently preparing technical reports and a resource consent application to support a consent application with the aim of lodging in May 2020. The Council is undertaking engagement with Tangata Whenua and key stakeholders as part of this application and the Assessment of Environmental Effects (AEE). This engagement plan is specifically for Tangata Whenua.

Turanganui A Kiwa Tangata Whenua uniquely identify (in terms of cultural, spiritual, historical and traditional association) to the three main rivers that traverse the Turanga (Gisborne) urban area – converging to flow to the ocean. These are the following rivers:

- Waimata
- Taruheru
- Turanganui
- Waikanae

They also associate with Turanganui-a-Kiwa Poverty Bay, its beaches and associated environments and spaces.

The wastewater overflows affect current and historical connections between Tangata Whenua and these waterbodies. It is recognised that the overflow of wastewater to Gisborne's waterways is not acceptable to Tangata Whenua and the community and Council is working to progressively reduce overflow frequency, volume and effects.

## **2. Background**

Council owns and operates a wastewater system that services the city of Gisborne, collecting wastewater from houses, businesses and other activities and transports this via a series of pipes and pump stations to the wastewater treatment plant. How this wastewater system operates affects the connections of Turanganui A Kiwa Tangata Whenua with their natural environment.

The public wastewater system is sized and operated in accordance with current engineering practice, with the main elements of the system being sized to cater for between four and six times the average flow of wastewater in dry weather (ADWF). This is to provide capacity for growth and to cater for the inevitable and largely unavoidable ingress of stormwater into the wastewater system during wet weather that occurs in any wastewater system. Councils across New Zealand and internationally grapple with this issue, with programmes to minimise the volume of stormwater entering the wastewater network.

### **Wet weather overflows**

Wet weather overflows (WWOs) occur as a result of excessive rainwater / stormwater entering the wastewater network. Where the volume of stormwater entering the wastewater network exceeds the capacity of the system, a combination of stormwater and wastewater

will be discharged – either through formal (designed) overflow points or via informal overflow points such as manholes and gully traps on private land.

Currently, Gisborne’s wastewater network overflows in wet weather on average three times per year in response to prolonged heavy rainfall. Wet years, or years with a series of significant rainfall events, will typically have a higher number of overflows and no overflows may result in dry years. The below shows the number of overflows per financial year.

Financial year	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Number of events	4	3	4	1	1	4	3	3	1

Management of overflows has changed significantly over time. In the past, overflows occurred automatically when volumes in the wastewater network exceeded system capacity resulting in widely dispersed and uncontrolled overflows, including on private property. In other words, there was no manual process in opening valves etc. to allow for overflows – when flows exceeded a certain threshold, then wastewater would automatically overflow.

From approximately 2009, Council blocked a number of overflow points and upgraded the network so that the overflow valves that direct overflows to Gisborne’s main rivers are required to be opened manually. This made it easier to manage and monitor overflows.

While overflowing to rivers is not desirable, managed discharges are preferable to overflows onto private property from gully traps, manholes or at toilets which lead to even greater social and public health risks. Council therefore opts for opening the wastewater scour valves in order to avoid sewage spilling into private property, which has much longer-lasting negative effects.

More recently, Council has implemented a range of further operational and infrastructure improvements to enable better management of overflows and enable reducing overflow volumes, including:

- Consolidating overflows to two primary overflow points (Wainui Road and Seymour/Turenne), unless the magnitude of the event requires additional, secondary valves to be opened to limit the extent of adverse effects. In very extreme events, discharges from tertiary overflow points may be necessary.
- Additional storage and interceptor and rising main works to reduce overflows.
- Improved management procedures, such as real-time flow analysis, to ensure overflows only occur when necessary to avoid uncontrolled overflows, and so that overflows can be ‘switched off’ as soon as practical.

The Discharge Reduction Plan (<https://www.gdc.govt.nz/assets/Files/Major-projects/DrainWise/DrainWise-Wastewater-Discharge-Reduction-Plan-v4.pdf>), produced based on wastewater and stormwater modelling, asset management information, and local network knowledge, was produced to guide how Council reduces the volume of stormwater

entering the wastewater network. This is supported by an implementation programme that is currently being rolled out, which is critical to remove the large volumes of stormwater that drive wet weather wastewater overflows - the DrainWise Implementation Programme.

### **Dry Weather Overflows**

This is something that is very difficult for a public network operator to control and manage. Council does not undertake / allow for planned dry weather overflows. These overflows occur as a result of unexpected events and issues in the public wastewater network, such as:

- Wet wipes from residential properties block up wastewater pipes, resulting in pressure increasing in the public network, leading to water coming out of gully traps or wastewater manholes.
- ‘Fatbergs’ arising from oil and fat discharges from private properties or business (such as fish and chips shops) block up wastewater pipes, resulting in pressure increasing in the public network, leading to water coming out of gully traps or wastewater manholes.
- The public network incurs an unexpected failure in a part of its pipe (e.g. a collapse into a tunnel under the pipeline), that causes wastewater to flow out of the pipeline.

Council has some measure of control over the causes described in last bullet point, through managing a good renewals and upgrades programme (that seeks to replace ageing infrastructure before it fails). It also has some control over blockages in the network caused by private residences or businesses, but this is very limited – Council undertakes periodic jet-cleaning of its pipelines, but the practicality of this is that cleaning cycles across such a large network are not frequent enough to mitigate a blockage that can take place / form over a couple of weeks or months.

Nevertheless, the DrainWise Implementation Programme also seeks to address dry weather overflows through engagement and awareness projects.

### **3. Adverse Effects**

#### **Social and cultural effects**

Overflows into rivers affect all communities with a connection to the rivers flowing through the city, the beaches, and Poverty Bay. The following are some of the effects:

- Tapu / discomfort associated with human wastewater in areas the community use
- Tapu / discomfort associated with mortuary wastewater in human wastewater
- Negative impacts on Mahinga kai / food harvesting
- Inability to undertake customary practices
- Negative impacts on waka ama, surf lifesaving, and kayaking
- Constraints on beach use during and after heavy rainfall events
- Public health risks
- Degradation of the mauri of the water

Concern around these effects is expressed by all sectors of the community.

Social and cultural effects will be informed by engagement with stakeholders and Tangata Whenua. Responses from engagement will be incorporated into the AEE. The aim of this engagement is to better understand and document the effects particularly on Māori, and to integrate a Mātauranga Māori approach into the consultation and assessment.

### **Water quality, ecology and public health**

Council has undertaken monitoring of water quality in Gisborne's rivers prior to, during and following overflow events.

The concentrations of indicator bacteria in the receiving environment that are attributable to a wastewater overflow event are typically significantly higher than national recreational water quality guidelines. The duration of adverse effects are generally short lived, with levels typically decreasing to pre-overflow levels within 24 to 48 hours.

Nutrients are also contained in wastewater overflows and contribute to increased nutrient loads during events. However, during large rainfall events nutrients concentrations in the urban stretches of Gisborne's rivers appear to be dominated by nutrients from up-catchment sources.

Western science specialist ecological and public health assessments have been commissioned and are currently being finalised. These have been supported by hydrodynamic modelling to assess the extent of contaminant dispersion during and following a rainfall event. A Mātauranga Māori assessment will also be carried out, which will focus on Mauri, and will be considered in partnership with the other specialist assessments.

The above western science and Mātauranga Māori information will be used in the engagement.

### **4. DrainWise Implementation Programme**

Given the multiple factors and the need to provide alternative stormwater drainage options, the programme has implemented a multi-faceted approach that includes:

- Stormwater public network extensions (public drains on private land) - \$6M over ten years.
- Regarding private property issues - investigation, computer-models, education, awareness, compliance, and enforcement work aimed at resolving illegal drainage and enabling better private property drainage by homeowners - \$400k per year (ongoing).
- Stormwater public network upgrades and renewals - \$14.4M over ten years.
- Wastewater public network upgrades and renewals - \$17.2M over ten years.

The programme started to be rolled out in 2017, focussing primarily on data gathering to enable further work. Since 2018 the Council has been implementing a well-coordinated and scheduled programme of works, aimed at reducing inflow and infiltration as fast as practically possible within the available budgets and social and economic constraints of the community. Council

has also focussed on education and awareness aspects that can assist with reducing the likelihood of dry weather overflows.

The engagement process will describe what is being done and why, how this relates to the target reductions in wastewater overflows.

## **5. Reduction targets**

### **Wet weather**

Wastewater networks around the world and in New Zealand experience the inflow and infiltration of rainwater into the wastewater network. Removal of all rainwater from the wastewater network is impossible – this is because of asset renewal programmes which plan for replacement of infrastructure once a certain stage of deterioration has been reached, and the age of infrastructure varies across any network because development has taken place over a considerable timeframe. Over time, cross-connections also arise (e.g. illegal connections of downpipes into gully traps).

Therefore at any specific point in time, the wastewater network is made up of assets that are at varying stages of ‘leakiness’, letting in rainwater through cracks, deteriorated joints, other structural issues, and illegal connections. Engineering codes of practice and guidelines therefore integrate inflow and infiltration into design, generally designing the capacity of wastewater pipelines to allow for four to six times average dry weather flow. The Gisborne public wastewater network complies with this general standard.

The inherent allowance for inflow and infiltration mitigates the risk of overflows, but only if sources if inflow and infiltration are less than four times average dry weather flow. The problem in Gisborne is that rainwater is entering the public wastewater network at a rate far exceeding four times average dry weather flow, which in some cases has been reported to be up to sixteen average dry weather flow. The DrainWise Implementation Programme is aimed at bringing Inflow and infiltration down to a manageable level.

Currently Gisborne experiences wet weather overflows up to four or five times per year. The aim is to stop overflows in all rainfall events up to and including the 50% AEP rainfall event (the 2-year Annual Return Interval (ARI) rainfall event). In other words, an overflow should only occur when we have rainfall events that have a theoretical likelihood of occurring once every two years (or heavier rainfall events).

In addition to reducing the frequency of overflows, Council is seeking to minimise the duration and volume of overflows.

### **Dry Weather**

Council aims for zero dry weather overflows, but recognises that this cannot be guaranteed because Council is unable to control all issues that can result in dry weather overflows.

Therefore, in addition to a robust renewals and upgrades, education and awareness, and practical maintenance (including jet cleaning) programmes, Council aims to be as responsive as possible to dry weather overflows when they do take place. The focus is on being able to stop these unexpected overflows as quickly as possible, mitigating health risks through notifications, and fully investigating the causes of any dry weather overflows when they occur.

## **6. Council's policy position on interactions with Māori collectives**

This was included as it provides a background to why we are doing what we propose in the engagement plan. Policy position to inform the practical engagement plan.

Council's interactions with Māori collectives (for example Whanau, Hapū, Marae, Iwi and Māori as communities with cultural perspectives) are evolving constantly. In part this is because we know we need to - as well as want to - move away from transactions into more relationship-based partnering.

Tairāwhiti is a tightly connected network so one Council work programme engaging with Maori partners will almost certainly be connected to another. We describe our commitment to fostering Māori participation in Council decision-making in our Tairāwhiti Piritahi policy - within the 2018-2028 Long Term Plan.

The policy articulates, amongst other things, the importance of acknowledging the Māori values described here, but it has been commented that the interpretation of these values - regardless of any proposal or resource consent process - is not something that Council does particularly well.

### **Mātauranga Māori values referenced in the Tairāwhiti Piritahi policy**

Kaitiakitanga (Intergenerational sustainability):

- Protect and guard our taonga (environmental assets).
- Recognise the mauri (life force and essence) of the environment

Tikanga (customs and traditional values):

- Conduct ourselves and our activities the right way.

Mana whenua (mana or power and authority that comes from the land):

- Traditional owners of the land

Rangatiratanga (Leadership and autonomy):

- Recognise, interweave and live Te Tiriti o Waitangi and its principles.
- Respect the notions of mana whenua, mana moana, mana taiao.

- Be guided by scientific, historic, local and traditional mātauranga.

## 7. Engagement approach

The relationship between the Crown and Māori enshrined in Te Tiriti o Waitangi is central to water management. Māori are critically important partners for Council, particularly in its management of water resources. This is increasingly recognised in legislation, particularly legislation that gives effect to Treaty settlements. However, many Iwi struggle to maintain consistent relationships with public organisations after a treaty settlement.

The current system for managing water and other natural resources is set out in the Resource Management Act 1991. This Act places obligations on all those exercising functions and powers under it, including regional councils, to recognise and provide for the relationship of Māori and their culture and traditions with water, to have particular regard to kaitiakitanga, and to take into account the principles of Te Tiriti o Waitangi.

The Crown, Māori, and local government need to have ways to work together to design effective and enduring solutions to our water management challenges.

Co-governance and co-management arrangements have been established and avenues created for Iwi and hapū to contribute to the management of water resources. A Māori worldview describes the interconnectedness of the environment and people and that the health and wellbeing of both are intertwined and deeply connected. Whakapapa (genealogy) is reflected in our environment, connecting people to place through ancestral connections, heritage and bloodlines. People draw sustenance from the natural environment in order to thrive, and the environment in turn must be taken care of by the people; the environment and people are both connected and co-dependent.

In Tairāwhiti we are fortunate to have a Wastewater Management Committee that includes four Iwi representatives. Council proposes to augment its current understanding of the effects of wastewater overflows on Tangata Whenua by adopting an engagement approach based on Mātauranga Māori and partnering with Iwi and Hapū – using the KIWA Group as a vehicle for effective and meaningful engagement.

We are fortunate to have the KIWA group, which is a technical group intended for *inter alia* Mātauranga Māori and Tikanga input on wastewater matters (and this group has been established as part of the wastewater consent, with a dedicated terms of reference). The terms of reference for this group include provision for additional expertise when necessary, which the overall project team includes.

It is proposed that the project team conduct technical and focussed engagement work to assess cultural aspects of wastewater discharges into the city's rivers. This work will consider mauri, and draw on multiple sources of information.

Our commitment is to apply a Te Ao Māori lens in this engagement, applying a holistic people-centred approach, to understand and express the implicit and inextricable connections between taiao (environment) and tangata (people) in the context of the wastewater overflows.

## 8. Project team

The team would be made up of the following:

- Gisborne District Council

- Walton Walker
- Wolfgang Kanz

GDC technical support staff (where required):

- Te Rina Whaanga
- Tee Montgomery
- Carrie White
- Peter Hancock
- Paul Murphy

GDC admin support staff:

- Ally Campbell
- Kay Hansen
- Helen Barbier

- KIWA Group – representatives from:

- TROTAK – Ian Ruru (Chairman)
- Te Aitanga a Mahaki – Ray Farmer
- Ngai Tamanuhiri – Karina Toroa
- Rongowhakaata – Samuel Lewis & Murray Palmer
- Ngati Oneone – Dianne Irwin

Also added:

- Te Whanau a Kai – David Hawea & Keith Katipa
- Nga Ariki Kaiputahi – Owen Lloyd

A minimum of three representatives (from the above) required for a meeting to proceed. KIWA Group members will be requested to nominate a replacement in good time should they not be able to attend. Council staff will assist in co-ordinating this.

Note: We have decided to extend the number of representatives invited to two per Iwi or Hapū. This is because we understand there may be times when some people are unable to attend, or when you may simply like an additional person to represent your views and values in this group. We therefore believe that



everyone should be given the opportunity to nominate a secondary contact, if they so wish to do so.

Please ensure that if you would like to nominate a second representative that you choose one person out of those two to act as your **key representative**. This person will actively input during the KIWA Group meetings, with the second person listening and inputting only if critical, to ensure that our skype sessions can still run smoothly with additional attendees.

- Wider Māori interests – **to be finalised at the first KIWA Group meeting**

Consider for KIWA Group input for this project:

- Ngati Porou
- Te Aitanga Hauiti

The involvement of Ngati Porou and Te Aitanga a Hauiti is a more long term goal rather than an immediate one and can be taken as work in progress.

- Specialists contracted as required, but including:
  - Maumahara Consultancy Services (work related to mauri)
  - 4Sight Consulting (work related to the consent)

Council would provide administrative support required for successful delivery of this work.

## **9. Methodology**

### **9.1 Considering the impact of Coronavirus**

We will be engaging remotely by Zoom or Skype (this option requires GDC staff to practically set up Zoom etc. on stakeholder computers) until central government and local advice confirms it is OK to meet in person again.

Working through options to make sure all can access the right systems.

The Coronavirus may result in changes in approach.

### **9.2 General**

The draft of the engagement plan will be sent to the KIWA Group for review and comment at the first KIWA Group workshop.

As a starting point, existing ‘cultural’ information will be summarised by GDC, as relevant to each Iwi or Hapū, with further information obtained through the engagement process. This will be provided to the KIWA Group before the first KIWA Group meeting.

An initial desktop review was undertaken by GDC and provided to the group for input. As mentioned above and in the document itself, this is a starting point and the outcomes of this engagement process will help make that more comprehensive and accurate.

Council will build on this existing information, recognising that this is only a starting point, and using engagement to improve our knowledge base.

What questions are we asking? To be workshopped with the KIWA Group at their first meeting. These questions will be used across all strands of this engagement plan.

- What is your relationship with the water? Contemporary and historical
- How do the overflows affect that?
- What do you understand about the causes of overflows?
- What do you understand about the effects of overflows?
  - Western science
  - Te Ao Māori
  
- What do you understand about the solutions for overflows?
- How will improvements affect that?
- Why will your feedback help and contribute to the management of wastewater overflows?
- How can Tangata Whenua and the overall community help?

The above questions are included to improve the community understanding of the issues etc. This is considered important also for potential ongoing management and monitoring. The above relative to the impacted waters and communities.

Engagement will include education, so that feedback is informed. Information will be provided to enable informed discussion / consideration of the above questions.

While the engagement will consider overall cultural impacts of the wastewater overflows, a key focus will comprise assessments of mauri and health. In terms of the latter, this will feed into overall health assessments being conducted as well as cultural aspects of health, such as mauri.

In terms of mauri, the Mauri Compass will be used as a tool to characterise this, while also paying heed to other information received through the engagement process. Should any Iwi or Hapū not be satisfied with the use of the Mauri Compass, those concerns will be taken into account and alternative processes could be explored. It is however hoped that through active engagement of all Iwi within a single collaborative process, with input in good faith, that any concerns on the assessment of mauri can be worked through.

Report writing, summarising the engagement process (including relevant appendices, such as the mauri assessment), and providing conclusions and recommendations, will be produced by Council through the KIWA Group, with outcomes recorded. If there are any points of difference between project team members, these will be recorded.

The entire KIWA Group (project team) will be asked to review the documentation and provide input. Consultation documentation will be provided in English and Te Reo Māori.

### 9.3 Assessment of mauri

It is acknowledged that no single mauri tool will singularly capture the measure of mauri as understood by individuals or groups who associate with the resource. Relationships are often on a very personal level, difficult to express in words, and may differ between Whanau, Hapū and Iwi.

The Mauri Compass will be used as a tool to assess mauri, as it has endorsement by the Wastewater Management Committee (WMC) and the KIWA Group was involved in and contributed to its production and testing. However, individual KIWA Group members will be able to integrate their specific perspectives into the assessment, making provision for information on mauri that may not be considered through the Mauri Compass. This will be provided for in the engagement process.

What are we assessing?

What are we considering in the assessment?

- Catchment context (agriculture, industry, port, SW, etc.)
- Different sources of pollution
- Drilling down into the wastewater overflows and their relative effect / impact

Mauri ‘question’:

*What is the effect of wet weather wastewater overflows on (i) the rivers and (ii) the marine environment (incl. beaches) as experienced by Tangata Whenua in Turanganui a Kiwa comparing the present state to (i) the state after achievement of the TRMP requirements and (ii) the desired state (no wastewater overflows). The dry weather context will also be explored.*

The options for and impacts of potential mitigation will be considered.

KIWA Group workshops will be held, working through the Mauri Compass as a collective. A draft assessment will be provided to the KIWA Group to enable effective discussion.

- Upfront review and written feedback requested from KIWA Group members
- Workshops to be held
- Put together a list of who attends each workshop; this for the purpose of ensuring we have the right expertise in the meeting, e.g.
  - Peter Hancock (GDC) where Council environmental data will be discussed
  - Local historians where historic use is relevant
  - Experts identified by the KIWA group

KIWA Group members will be requested to nominate a replacement in good time should they not be able to attend. Council staff will assist in co-ordinating this.

Information will be recorded at the meetings, and disseminated to all project team members for their records.

#### **9.4 Documentation for engagement**

The following applies:

- Mauri assessments will be completed as part of the engagement, as validated by the KIWA collective; this will form a starting point for discussions; the process of using the Mauri Compass tool with the KIWA group collective forms part of the engagement process
- Consultation documentation will be produced by GDC; these will be provided to the KIWA Group for review
- Additional documentation may need to be produced for social media, focus group meetings, and Marae meetings - GDC will produce draft documents for the KIWA Group to review; consistency will be sought across all platforms
- A process for document review (by the KIWA Group) will be developed to ensure timely review and approval of any documentation – this will be discussed at the first KIWA Group meeting
- The GDC communications team has engagement expertise that will be used – including production of graphics and other consultation collateral

Documentation will be produced to enable easy feedback and analysis.

Minutes of meetings, submissions, etc. will be analysed.

#### **9.5 Stakeholders**

An initial list of stakeholders relevant to this work comprises the below:

- At governance / senior level

Representatives on WMC

- TROTAK
- Te Aitanga a Mahaki
- Ngai Tamanuhiri
- Rongowhakaata

Other Iwi / Hapū representatives

- Ngati Oneone
- Te Whanau a Kai
- Nga Ariki Kaiputahi

Means of engagement:

Focus group meetings with all representatives together, allow all same opportunity and same space.

Invite Iwi / Hapū to a KIWA group meeting (if possible), for their input, and for KIWA Group response

While WMC members will as a first point be contacted, the Chief Executives / senior management of each group will be extended an invite to the same meeting.

- City Maraes / Maraes on waterbodies linking through to the Turanganui river
  - Tarere Marae
  - Te Poho o Rawiri
  - Te Kuri a Tuatai
  - Parihimanihi

Maraes that are located directly on the affected rivers have been included.

We are providing opportunities for feedback from other affected Hapū and Iwi through other components of this engagement plan.

Means of engagement:

Focus group meeting with each Marae separately (one meeting per Marae) – no longer recommended due to COVID-19.

KIWA Group Iwi representative(s) relevant to that Marae, Maumahara Consultancy Services (Mauri Compass components), and GDC to attend / manage each meeting

Approach each Marae to obtain details of anyone specifically required at the meeting.

- Kahui Kaumatua

Organised through TROTAK

Means of engagement:

Focus group meeting

Invite this group to a KIWA group meeting (if possible), for their input, and for KIWA Group response

- Inter and intra-Iwi / Hapū consultation

Provision will be made for Kiwa Group Māori Members to discuss amongst themselves.

KIWA Group members are supported in undertaking independent consultation within their Iwi / Hapū. Including the following:

- KIWA Group members reporting back to their Iwi chairs and / or chief executives (the senior Iwi leaders that nominated them).
  - KIWA Group members will make contact with specific people in their communities that they feel should be informed and can contribute to the mahi.
  - It is also an opportunity for Iwi / Hapū to talk to each other.
  - This should please be done over the next three weeks, to enable feedback to be included in the engagement process.
- Wider stakeholders will have opportunities to provide feedback via:

This is also for Tangata Whenua that are local and don't whakapapa to here; Tangata Whenua that may not be represented by members of the KIWA Group collective.

All focus group meetings are supported by another method of engagement – social media and website. Provide generic platform, but allow for differentiation between Tangata Whenua and other community members.

Facebook & Council website – have same information / portal.

- Facebook
    - Specific questions
    - To be developed in consultation with the KIWA group
  - Council website
    - Specific questions
    - To be developed in consultation with the KIWA group
- Local Leadership Board (LLB)

Involvement of this group is not proposed at this stage, as it is not currently operational.

## 10. Deliverables

The following apply:

- Draft and final reports
  - Discussion and analysis
  - Mauri Compass in an appendix
  - Engagement appendix
    - Engagement plan
    - Incl. Minutes of meetings
  - Assessment section
  - Impact section

- Conclusions
- Recommendations

- As informed through the first KIWA group meetings

## 11. Timeframes

The below are the working timeframes. This has been updated. COVID-19 has resulted in changes.

Grey text is for information only – these are other Tangata Whenua meetings etc. that may take place, that we do not want to conflict with.

Description	Timeframes / Dates	Comments
Joint management agreement forum and Joint governance group – details provided for information purposes only	17 March 2020	Date for pre-planned Iwi engagement
Preparation for KIWA Group work	Up to 20 April 2020 And Ongoing	GDC in collaboration with project team, incl. mauri assessment process; work on consultation documentation
KIWA Group workshop #1 VIRTUAL MEETING	Monday 20 April 2020, 2pm to 5pm	Administration, Welcomes, Co-ordinating activities, membership of KIWA for this project; setting immediate work activities / tasks for the team
Rongowhakaata Iwi Trust – details provided for information purposes only	25 March 2020	Pre-planned Iwi engagement
KIWA Group workshop #2 VIRTUAL MEETING	Wednesday 29 April 2020, 2pm to 5pm	Report back on tasks KIWA website detail Wastewater background – improving overall understanding of the various components The consent that GDC is applying for The DrainWise Programme
Facebook, website, and email distribution lists (Iwi / Hapū and GDC platforms)	Tuesday 28 April 2020	Using these platforms to obtain comment / submissions from Tangata Whenua; to be used as part of engagement processes
KIWA Group workshop #3	Thursday 30 April 2020, 2pm to 5pm	Report back on tasks

VIRTUAL MEETING		<p>Discussing the technical reports</p> <p>Discussing the cultural background document</p> <p>Mauri Compass intro – depending on time available</p> <p>Other items as required / informed by progress / previous discussions</p>
<p>Meeting with Iwi representatives (at WMC / Chair / CE level)</p> <p>VIRTUAL MEETING OR MEETING PHYSICALLY (IF SAFE TO DO SO)</p>	<p>PROVISIONAL DATE</p> <p>Monday 4 May 2020, 2pm to 4pm</p>	<p>High level engagement, explaining process, progress to date, and obtaining feedback</p> <p>Organised by KIWA Group Chairman</p>
<p>Ngati Oneone Co-management – details provided for information purposes only</p>	<p>Tuesday May 2020</p>	<p>Pre-planned Iwi engagement</p>
<p>Kahui Kaumatua</p> <p>VIRTUAL MEETING OR MEETING PHYSICALLY (IF SAFE TO DO SO)</p>	<p>PROVISIONAL DATE</p> <p>Tuesday 5 May 2020, 3pm to 4pm</p>	<p>Organised by KIWA Group Chairman</p>
<p>KIWA Group Workshop #4</p> <p>VIRTUAL MEETING OR MEETING PHYSICALLY (IF SAFE TO DO SO)</p>	<p>Wednesday 6 May 2020, 2pm to 4pm</p>	<p>Mauri Compass</p> <p>Other items as required / informed by progress / previous discussions</p>
<p>KIWA Group Workshop #5</p> <p>VIRTUAL MEETING OR MEETING PHYSICALLY (IF SAFE TO DO SO)</p>	<p>Thursday 7 May 2020, 2pm to 4pm</p>	<p>Mauri Compass</p> <p>Other items as required / informed by progress / previous discussions</p>
<p>Engagement report for KIWA Group review</p>	<p>Wednesday 13 May 2020</p>	<p>Engagement report completed and circulated to KIWA Group for their review; feedback requested to be provided by Wednesday 5pm on 20 May 2020</p>



Meeting with Iwi representatives (at WMC / Chair / CE level)  VIRTUAL MEETING OR MEETING PHYSICALLY (IF SAFE TO DO SO)	Monday 18 May 2020, 2pm to 4pm	High level engagement, presenting findings, and obtaining feedback
KIWA Group Workshop #6  VIRTUAL MEETING OR MEETING PHYSICALLY (IF SAFE TO DO SO)	Thursday 21 May 2020, 2pm to 4pm	Mauri Compass  Other items as required / informed by progress / previous discussions
Submit final report with consent application	On consent submission date (uncertain at this stage – the aim is to do so before June 2020)	Includes all deliverables
WMC meeting  VIRTUAL MEETING OR MEETING PHYSICALLY (IF SAFE TO DO SO)	Friday 5 June 2020	Presentation of outcomes
Joint Management agreement forum and Joint governance group – details provided for information purposes only	16 June 2020	Pre-planned Iwi engagement

## Tūranga Iwi and urban wastewater overflows: a background review

### About this background document

This background document was compiled by Te Kaunihera o Te Tairāwhiti – Gisborne District Council (Council) in early 2020. It was developed further, in parts, through contributions and guidance from the KIWA<sup>1</sup> group throughout the period of national lockdown (25 March- 25 May 2020) prompted by the COVID 19 global pandemic.

The reason for this timing was the requirement under the Tairāwhiti Resource Management Plan (TRMP), for Council to obtain resource consent for dry and wet weather overflows of wastewater from the public wastewater network. *See Tangata Whenua Engagement Plan, 27 May 2020 for detailed description.*

The intention is that the background review document be viewed as a starting point - showing what written knowledge Council is privileged to hold about the relationship that Tūranga Iwi- specifically Ngāti Porou, Ngāi Tāmanuhiri, Rongowhakaata, Te Aitanga-a-Māhaki, Te Whanau a Kai, and Nga Ariki Kaiputahi - have with the rivers (awa) and sea (moana) of Tūranganui a Kiwa (Poverty Bay). This background review document has been written in the context of Council trying to better understand Tūranga Māori<sup>2</sup> perspectives on wastewater overflows into the rivers and marine environments of the Gisborne (Tūranga) urban area. These being identified as the Waimatā, Taruheru, Tūranganui and Waipāoa rivers, the Waikanae stream and the Poverty Bay<sup>3</sup>.

To be clear, the relationships that exist with Tūranga Iwi and the awa and moana that traverse and surround the Tūranga urban area has many more dimensions than what is recorded in this document. Also the connections of Tūranga Iwi extend far beyond only these rivers and coastal marine environments.

Making this a public document means it can be a shared resource that can be added to over the years as Council works as partner with Tūranga Iwi on a shared water kaupapa. This work does not pre-empt any cultural assessment impact work that individual hapu or iwi may want to undertake.

Moving forward let's reflect on the whakatauki (proverb that reflects the guiding principles and aspirations of previous generations) presented by the KIWA Group to the Wastewater Management Committee (WMC) June 2017 as part of a report titled: *A Cultural Framework for addressing Wastewater Management In Turanganui A Kiwa*

***Toitu te marae o Tane. Toitu te marae o Tangaroa. Toitu te Tāngata***

***Protect and strengthen the realms of the land. Protect and strengthen the realms of the sea. And they will protect and strengthen the people.***

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<sup>1</sup> The KIWA Group was established by the Wastewater Management Committee (WMC is a standing committee of Gisborne District Council) as part of the Tūranganui-a-Kiwa Water Quality Enhancement Project (the Project). The Project is a construct of clauses 18 and 19 of the wastewater consent (CD-1208-02 ex CP-1208-01).

<sup>2</sup> 'Tūranga Māori' is taken to mean tangata whenua, mana whenua, iwi, hapū, marae, whanau or Māori collective organisational entities that associate with Tūranga (Gisborne).

<sup>3</sup> Outfall pipes only exist to the Waimata and Taruheru Rivers, but we have included the Tūranganui and Waipāoa rivers, Waikanae stream and the Poverty Bay (Tūranganui a Kiwa) in recognition of the wider water environment that can be affected by wastewater overflows.

## An acknowledgement:

Te Kaunihera o Te Tairāwhiti - Gisborne District Council (Council) recognises that the Māori perspective about the significance of particular water bodies varies and differs between different iwi, hapū, marae, and whānau, and that special roles in the management and protection of water (kaitiaki) are inherited through whakapapa<sup>4</sup>.

We also acknowledge that Māori have a unique perspective (Matauranga Māori) on ecosystems, habitats and species that has evolved and endured over many generations, through observation, experience and an intimate connection with the natural environment in local areas. We recognise that this perspective is not static, as at the time of colonisation, rather, it provides the concepts and values that shape contemporary perspectives and thinking.

Traditionally, freshwater resources were sustained, managed and regulated through local cultural practice, based on iwi/hapū values and principles such as kaitiakitanga, whakapapa, and rangatiratanga linked to and managed through spiritual atua (deity) domains.

This connection and knowledge provides Māori today with a “unique indigenous perspective for planning, policy, decision-making and other activities” (Tipa & Teirney 2003; Harmsworth 2005; Selby et al. 2010). Many Māori resource management issues will therefore be inherently different from those of other stakeholder and community groups.

As a way to be clear about Council’s understanding of the significance of waterbodies to Māori we write it here. That according to Te Ao Māori:

- Water is perceived as a living entity, the source of life for all things – wai ora.
- Water has a cultural, historic and spiritual importance to iwi and hapū of the region.
- The mauri of a waterbody represents the essence that binds the physical and spiritual elements of all things together, generating and upholding all life.
- Water is an important element of the spiritual relationship between Māori as Tāngata Whenua and the natural environment.
- While waterways can vary in expression from iwi to iwi and rohe to rohe - the common theme amongst all Māori is the holistic view that it encompasses both economic/consumptive and cultural/no-consumptive values.

## Where Council gets its information from:

Over many decades Council has been part of various formal and informal relationships with Te Tairāwhiti Māori. These have included co-governance and co-management arrangements, advisory and leadership boards, technical working groups, reference groups and commissioned reports and peer reviews from local consultant experts.

These formal arrangements have, in some cases, created the platform for relationship building, knowledge sharing, and opportunities for innovation (for example Tūranga biological trickling filtration wastewater treatment plant), when partners have been able to work towards a common vision or set of goals.

However the system is far from a perfect one. Many of these avenues are established under a raft of legislative and policy direction, including the Resource Management Act 1991 (RMA), Local Government Act 2002 (LGA) that articulate some of the principles described in Te Tiriti o Waitangi Act (Treaty of Waitangi), but have historically been viewed as disempowering for Māori with regard to resource management decision-making (Robb, Harmsworth & Awatere 2015). See Appendix One for an overview of the statutory mechanisms that are particularly relevant to the Māori – Council partnership in the context of wastewater overflows in Tūranga.

Even where the working arrangements of a genuine partnership have not happened well, there are a great many things to learn from the experiences. For example, in a report titled [Tangata Whenua Perspectives of Wastewater, prepared for GDC in January 2000 by Matua Ihaka and Deanna Harrison \(Te Kauere Partnership\) and Shaun Awatere \(Kiwa consultants\)](#) an interviewee comment that scientifically the water may be

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<sup>4</sup> Whakapapa ties are a unique attribute for drawing on economies of scale, and underpinning Māori capacity to act on some of the priorities whānau, hapū, and iwi identify as important in this programme of work.

“fine... but you won’t find a Māori drinking it” tells us strongly that it doesn’t matter what the amount of wastewater being discharged into waterways – it won’t ever be ok to Māori.

In this moment of time, Council is genuinely engaged in a partnership process with the KIWA Group as it prepares to lodge a resource consent application that, if approved, will enable to Council to continue to have the option to release wastewater into the rivers in times of very heavy rain – as an alternative to wastewater overflowing into people’s homes. It is a given that this is an entirely unsatisfactory outcome, and Council is committed to ongoing reduction in the frequency and duration that this happens.

This background review document sets out – where the written information is available to it - the relationship Tūranga iwi have with the affected water bodies specifically. The most detailed descriptions are those articulating the associations of from Ngāti Porou, Rongowhakaata and Ngāi Tāmanuhiri because this information was written in formal Statements of Association arising from their Treaty Claims Settlements. These are embodied in the Tairawhiti Resource Management Plan (TRMP) in *Nga Whakaetanga a Ture mo Te Tairawhiti – Statutory Acknowledgements for the Gisborne district*.

The fact that Council doesn’t hold a similar level of written information about the traditional relationships of Te Aitanga-a-Māhaki, Te Whanau a Kai, and Nga Ariki Kaiputahi with waterbodies of their rohe highlights that there are gaps in (Council's) knowledge and understanding about the cultural significance of these affected water bodies, which needs addressing.

Council must work much harder to develop partner relationships with those Tangata Whenua who have not yet arrived at a Treaty settlement, or who are organised in other ways (for example hapū and whānau). Possibly too Council needs to get its house in order. Doing this will have multiple benefits, not the least being the formation of genuine working relationships.

## Tūranga Iwi and the awa and moana of Tūranga

The relationships that exist with Tūranga Iwi and the awa and moana that traverse and surround the Tūranga (Gisborne) urban area has many more dimensions than what is recorded in this document. It should also be clearly stated that the connections of Tūranga Iwi extend far beyond the river and coastal marine environments of the Waimata, Taruheru, Turanganui and Waipāoa rivers, Waikanae stream and Turanga nui a kiwa – Poverty Bay.

These rivers, and the coastal marine environment are affected by wastewater overflows during heavy rains. That is the reason for attempting to document the unique relationship of individual Tūranga Iwi with these awa and moana.

## Ngāti Porou, the Turanganui and Waimata Rivers

An extract from *Nga Whakaetanga a Ture mo Te Tairawhiti – Statutory Acknowledgements for the Gisborne district*

The Turanganui River and the Waimata River that flows into it, form the south-western most extent of the Ngāti Porou tribal boundary, at Turanga (Gisborne). Successive generations of Ngāti Porou have occupied and utilised the land adjacent to the rivers on the eastern banks. Important Ngāti Porou ancestors are associated with and exercised kaitiakitanga over this area. They include Hamoterangi, the wife of Porourangi, Ueroa, Taiau himself, and his son Tamahinengaro and grandson Mokaiaporou, Rakaiatane, and Hauiti.

Ngāti Oneone, the hapū acknowledged by Ngāti Porou as occupying the eastern banks of the Turanganui River and lower Waimata River, descends from all these Ngāti Porou ancestors. Ngāti Konohi and Te Aitanga a Hauiti are associated with the upper reaches of the Waimata River.

The rivers have over time been a source of fish, shellfish and other sustenance for the resident hapū. They have provided a means of access to places along their banks and into the interior Ngāti Konohi and Te Aitanga a Hauiti lands. They were also a base for trading and commerce. The rivers were and continue to be places of recreation and sport.

The Turanganui River and the Waimata River are of great spiritual, cultural, traditional, historical and commercial significance to Ngāti Porou. They are integral to the identity of Ngāti Porou and the hapū traditionally associated

with lands along their banks. The rivers are natural features which Ngāti Porou regards as part of the boundary with neighbouring iwi of Turanganui-a-Kiwa.

## Rongowhakaata, the Turanganui and Waimata Rivers

An extract from *Nga Whakaetanga a Ture mo Te Tairawhiti – Statutory Acknowledgements for the Gisborne district*

The traditions of Rongowhakaata confirm the cultural, historical and spiritual importance of the Turanganui River to them. These traditions represent the links between the world of the Atua and present generations, reinforce Rongowhakaata tribal identity, and are continually expressed in whakapapa, waiata, korero and mahi toi.

The mauri of Turanganui River represents the essence that binds the physical and spiritual elements of all things together, generating and upholding all life. All elements of the natural environment possess a life force and all forms of life are related. Mauri is a critical element of the spiritual relationship of Rongowhakaata whanui to the Turanganui River to this day.

The Turanganui River, though very short, was profoundly rich in kaimoana. Te Wai Wehe Rua, the river of two estuaries, was the original name given to the Turanganui River. These watery corridors provided Rongowhakaata a transport route along and into the fertile plains of Turanganui a Kiwa. It was the sacred waters from Te Wai Wehe Rua which were used to bless the whare Matatuahu, on the western side of the Turanganui River.

The Waikanae Stream and the numerous rock formations sit within the Turanganui River, such as Te Toka a Taiao, combined with the tidal flows to make a habitat for a variety of; tuna, inanga, kahawai, fish, kina, paua, koura, pipi, kanae, patiki and kutae flourishing abundantly in its reef like environment.

Many generations of Rongowhakaata hapū have drawn sustenance from the Turanganui River. The hapū who occupied the land on the banks of the river are, Ngai Tawhiri and Ngai te Kete and Whanau a Iwi who shared these lands with their Turanga whanaunga.

The Turanganui River was the gateway into the fertile inland plains and was an integral part of the new Tairawhiti economy'. Ngai Tawhiri, Whanau a Iwi and Ngai te Kete and the other Rongowhakaata Hapū have exercised their custodial rights.

The Turanganui River is the repository of koiwi tangata Urupa and wahi tapu are places holding the memories, traditions, victories and defeats of Rongowhakaata tipuna and are frequently protected in secret locations.

Rongowhakaata consider that the values of mana, whakapapa, tapu and mauri are central to their relationship with the Turanganui River. Mana defines the kaitiakitanga responsibilities of Rongowhakaata, within which Rongowhakaata is charged with protecting the Mauri or life force of Turanganui River. Whakapapa defines the genealogical relationship, while Tapu describes the sacredness of the relationship between Rongowhakaata and Turanganui River. These values remain important to the people of Rongowhakaata today.

Rongowhakaata tipuna had considerable knowledge of whakapapa, traditional trails and Tauranga waka, places for gathering kai, rongoa Maori and other taonga and ways in which to use the resources of the Turanganui River. Rongowhakaata understood the dependence people had on the area and Tikanga for the proper and sustainable utilisation of resources. All of these values remain important to the people of Rongowhakaata today.

For Rongowhakaata, the Waimatā River is significant because it represents the relationship between gods and present generations, it strengthens identity, and whakapapa, waiata, korero, and mahi toi can be upheld. The mauri, mana (custodian or kaitiakitanga responsibilities), and tapu (sacredness of the relationship between people and water) of the Waimatā River signify the spirit which connects the physical and spiritual elements of all things and produces and sustains all life forms. Every natural entity also has its own life force and all life forms are interrelated (Rongowhakaata Iwi, N.Aa).

## Ngāi Tāmanuhiri, the Waipāoa River and Coastal Marine Area

Ngāi Tāmanuhiri and their Tūranga whanaunga Rongowhakaata and Te Aitanga-ā Mahaki, trace descent from a number of common ancestors, including Kiwa, after whom their takiwā, Tūranganui-a-Kiwa is named; Paoa, who explored the hinterland, and Ruapani, from whom many important lines of descent converge.

Ngai Tāmanuhiri is the first of the Turanga groups to have completed negotiations, with the Ngai Tāmanuhiri Deed of Settlement being signed on 5 March 2011. Ngai Tāmanuhiri Claims Settlement Act 2012 gained royal assent 31 July 2010. The follow are extracts from the Ngai Tāmanuhiri Statement of Association.

The Waipaoa River is culturally and spiritually significant to Ngai Tamanuhiri as it forms part of the history relating to the arrival of Paoa, the Captain of the Horouta Waka. Its creation is encapsulated in the Haka Taparahi, Haramai a Paoa, which was written and first performed by Ngai Tamanuhiri in 1863 –

"... Ki Kai Kama Kama, Ka mia mai tona mimi, Rere ana Motu, Rere ana Waipaoa Ko Kopututea, te putanga Kiw ahoki te moana	"... at Kai Kama Kama Paoa answered the call of nature hence the Motu River and the Waipaoa River Kopututea is the outlet of Waipaoa to the Pacific ocean ..."
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The Haka Taparahi identifies that in the time of Paoa, the Waipaoa River mouth was at Kopututea, which is the northern coastal boundary of Ngai Tamanuhiri rohe. The River mouth has changed its position many times over the years; at one time the River outlet was near Te Kuri a Paoa. These changes in course have impacted on Ngai Tamanuhiri in a number of ways. However, Ngai Tamanuhiri maintain that the land block known as Kopututea has not moved. Therefore based on the time of the writing of the Haka Taparahi, the mouth of the Waipaoa outlet in the 1860's was at Kopututea, which still exists today.

The Karaua stream is one of the many waterways that flow from the Waipaoa River. It is a northern inland boundary marker for Ngai Tamanuhiri. Karaua served as a spiritual protector. It possessed innate qualities that would disempower or kill Tohunga who tried to cross it and enter Ngai Tamanuhiri's rohe. It is said that Te Kooti knew of Karaua's protective qualities and never crossed it for fear of losing his spiritual capabilities.

#### **Ngai Tamanuhiri Coastal Marine Area**

Ngai Tamanuhiri is a coastal iwi that has a strong association to the Moana. Ngai Tamanuhiri considers it has continued to exercise mana whenua, mana moana and Kaitiekitanga over the coastal marine area in its rohe. The iwi coastal boundaries begin at Kopututea and extend to Paritu. The Hauraki stream, adjacent to Paritu, cascades from the height of the cliff face into the moana. This stream is the southern boundary marker for Ngai Tamanuhiri.

There are numerous Pa sites and urupa dotted along the coastline which is evidence of Ngai Tamanuhiri's ongoing relationship with the moana. In some places like Rangihaua and Umukehe the middens, terraces or kumara pits are still visually apparent.

#### c. Offshore kaimoana -

- i. Ngai Tamanuhiri has 21 taunga ika which carry names of Ngai Tamanuhiri ancestors or are named after events significant to Ngai Tamanuhiri. Today, the people of Ngai Tamanuhiri still maintain their customary fishing practices by using the historic coastal land markers to identify taunga ika.
- ii. The taunga ika are places where particular kaimoana, like koura, kina or fish are found.

#### d. Inshore Kaimoanai.

In past times, unique delicacies existed like the special paua with fluorescent pink qualities. Ngai Tamanuhiri Tipuna used the shell of this paua to make kahawai lures, jewellery and to adorn carvings. Titi were also abundant as were flounder, a variety of bubu and pipi. Karengo remains available today and some still practice the traditional harvesting methods to ensure regeneration.

- ii. Ngai Tamanuhiri is carefully managing a restoration project that may assist in the return, or increase of, these delicacies. The iwi is an ongoing advocate for the preservation and protection of the coastal environmental.

#### e. Kaitieki -

Ngai Tamanuhiri has various Kaitieki that protect the moana. These include the Moremore (Bob tail shark), Mango (white pointer), Mangopare (hammerhead shark), Whiore (tail-less shark), Wheke (octopus) and Whai (Stingray). There are different areas along the coast which have different Kaitieki specific to them.

#### f. Currents and tides -

Ngai Tamanuhiri tangata hi ika are adept in the currents and tides that flow within their mana moana. Knowledge of these tides provides measures of safety and has assisted in rescue and recovery.

g. Ngai Tamanuhiri has a cultural duty to protect its interest in the long term sustainability of the Turanga coastal marine area for future generations. Ngai Tamanuhiri seeks to increase its capacity to enable:

Land access to traditional fishing spots and kaimoana areas.

ii. Protection, rejuvenation and ownership of kaimoana.

iii. Retention of traditional methods of harvesting and preserving kaimoana.

iv. Retention of traditional knowledge of tangata hi ika.

v. Establishment of nohonga.

vi. Minimise environmental issues and participate in the conservation of the coastal marine area.

## Te Whānau a Kai

The rohe of Te Whānau a Kai has been described as extending from the headwaters of the Waioeka River at Koranga Forks and Waimaha in the west to Pipiwahakao in the south, and Waerenga a Hika in the east. Members of Te Whānau a Kai have interests in Mangatu through the ancestral Ngariki rights of Pakira and his son Paeko and these were maintained and occupied by the descendants of Te Haaki and Whareana.

## Ngā Ariki Kaipūtahi and the Waipāoa River

Ngā Ariki Kaipūtahi can connect with various kin groups in Tūranga through inter-marriage.

Their land rights are derived from a separate line of descent, back to the original occupants of the Mangatū region who predate the hapū of Te Aitanga a Māhaki. Ngā Ariki Kaipūtahi were present in the Mangatū area prior to contact with Pākehā and they have claimed an ongoing presence in the area since that time.

Nga Ariki Kaiputahi and Te Aitanga-a-Mahaki share the same ancestral mountain and rivers, Nga Ariki Kaiputahi call the mountain “Maungahaumia”, while Te Aitanga-a-Mahaki call it “Maungahaumi” traditional pā and uru pā sites overlooked the Waipaoa River.

Ngā Ariki Kaipūtahi have ancient ancestral connections to the middle and upper reaches of the Waipāoa River, the Mangatū River, and the Urukokomuka Stream. History tells of the intertwining of Nga Ariki Kaiputahi and Te Aitanga-a-Mahaki. During an unspecified period of time, in the proximity of the 15th century the eldest son of Tauheikuri arrived in Mangatu.

Te Aitanga-a-Mahaki recognise that Nga Ariki Kaiputahi were the original inhabitants of the Mangatu area. Some Nga Ariki Kaiputahi members are intermarried with other hapu of Te Aitanga a Mahaki creating close connections between the bloodlines.

Te Aitanga-a-Mahaki is linked to Nga Ariki Kaiputahi in the same way.

## Te Aitanga a Mahaki and the Waipāoa River

Te Aitanga-a-Mahaki and Nga Ariki Kaiputahi share the same ancestral mountain and rivers, Te Aitanga-a-Mahaki call the mountain “Maungahaumi” while Nga Ariki Kaiputahi call it “Maungahaumia”

Te Aitanga-ā Mahaki and their Tūranga whanaunga, Ngāi Tāmanuhiri and Rongowhakaata trace descent from a number of common ancestors, including Kiwa, after whom their takiwā, Tūranganui-a-Kiwa is named; Paoa, who explored the hinterland, and Ruapani, from whom many important lines of descent converge.

*An extract from Turanga Tangata Turanga Whenua The report on the Turanganui a Kiwa Claims VOLUME I (2004) A Waitangi Tribunal report*

“Hapu territories usually ranged over a number of different environments, including fertile flat lands, wooded hills, wetlands, lakes, inland waterways, estuaries, and the coast. People moved between different areas as the seasons shifted. Each area had specific resources: rivers had fish and eel; the bush had birds, fern, berries, and

timber; and fertile lands had kumara, to name but a few. Professor Murton in his evidence described these areas as 'resource complexes'.

He also pointed out that the fertility of the soil, the elevation, slope, and aspect of the land, and the frequency of frosts all impacted on cultivation patterns.

In Turanga, areas of intensive agricultural production included 'the alluvial fan area encompassing Ormond, Waituhi, Repongaere, and Waerengaa Hika to Waihirere'. The elevated terraces in the upper Waipaoa were also used for cultivation, as were flats along the Arai River. Near Muriwai, the Maraetaha River valley was a primary horticultural resource.

These rich alluvial flats were highly sought after and thus, understandably, closely held. This resulted in what might be described as tightly managed boundaries between the cultivations and kainga of different kin groups or communities. Obviously, boundaries would change over time owing to necessity, intermarriage, and the waxing and waning in strength of kin groups. In contrast, resources in the hills appear to have been less closely held, although management still normally rested with particular kin groups and their leaders. If there was a basic pattern, it was that areas of hunting and gathering were kept open to the wider kin group (although particularly good bird-hunting trees or rat runs could be individually allocated or access to them be restricted by rahui), while areas of cultivation were more closely demarcated."

## Council's policy position on interactions with Māori collectives<sup>5</sup>

Tairāwhiti is a tightly connected network so one Council work programme engaging with Māori partners will almost certainly be connected to another.

Council's interactions with Māori collectives are evolving constantly. We aim to move away from transactions into more relationship-based partnering with Māori.

We describe our commitment to fostering Māori participation in Council decision-making in our Tairāwhiti Piritahi policy - within the 2018-2028 Long Term Plan.

The policy articulates, amongst other things, the importance of acknowledging the Māori values described here "such as kaitiakitanga, tikanga, mana whenua, rangatiratanga, matauranga Māori and their role in solutions for our issues", but it has been commented that the interpretation of these values - regardless of any proposal or resource consent process - is not something that Council does particularly well<sup>6</sup>.

We acknowledge here that attempts to assimilate or interpret a Māori world view using pākehā language or scientific methods are fraught with difficulties, and as Council moves into developing its next Long Term Plan (2021-2031) we will be revising this policy. It may be more appropriate to include a commitment in the policy about the types of structures and agreements that will need to be developed when sensitive information is shared to be collected so that mātauranga Māori is not at risk of being misappropriated - aka intellectual property is protected in a manner that iwi and hapū feel comfortable with.

## On the ground – our relationships with Māori collectives

The 4 Waters Infrastructure group, within Councils Community Lifelines hub, have standing relationships with a number of Tūranga Māori collectives, most commonly at iwi and whanau level. These are described here sequentially because it is useful to understand the way our relationships morph and develop relative to emerging issues surrounding water and its economic and cultural value.

**The Wastewater Technical Advisory Group (WTAG)** was established in 2005 this group as part of the requirements of the wastewater resource consent. It had an active membership that included representatives from Te Runanga O Turanganui A Kiwa (represents the interests of Rongowhakata, Ngai Tamanuhiri and Te Aitanga a Mahaki) and Ngati Oneone (hapu of Ngati Porou), Medical Officer of Health, Tairāwhiti District Health

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<sup>5</sup> GDC Policy (LTP 2018-2028) -Tairāwhiti Piritahi: Fostering Māori Participation in Council Decision-Making defines Maori collectives as including Whanau, Hapu, Marae, Iwi and Māori as communities with cultural perspectives and as treaty partners with the Crown

<sup>6</sup> Dr Nick Roskrige (Te Atiawa/Ngati Porou) Peer review of the Gisborne Managed Aquifer Recharge Cultural Impact Assessment, February 2017



Board, Department of Conservation, environmental groups, industry representatives, Council staff and others who may have a contribution to make to the workings of the group. At the end of 2016 the WTAG considered its work in terms of the wastewater upgrade to have reached a point at which it would no longer need to be actively involved. The WTAG remains a part of the wastewater consent, its future role having been considered at the recent (2020) Wastewater Management Committee (WMC), and it may resume some of its functions.

This relationship created a platform for council and tangata whenua to have a continued dialogue (read: frank and robust discussions) relative to the water-related projects. For example in December 2006 the Wastewater Adornment Review Group (WARG) endorsed a [position statement on water quality as it related to discharge of treated wastewater into Turanganui a Kiwa \(Poverty Bay\) as part of the resource consent application process.](#)

The statement is available to view online, but it is useful to summarise because it demonstrates the application of Te Ao Māori values in the context of an RMA process where a standing relationship between council and iwi representatives afforded an alternative option to be settled upon.

*“3. The outcomes of the (WARG) review process was an agreement between those parties that instead of the activated sludge treatment plan, it would be culturally preferable to treat human wastewater through a low load biological trickling filter followed by additional treatment.... The main reason for this is the biological trickling filter, to some extent mimics the natural biological processes of traditional Māori ‘through-land’ practices of human waste disposal.*

*5. The parties recognise that the alternative proposal does not fully and immediately address the fundamental cultural issue to Māori of human waste disposal into the sea. The sea is regarded as representing life force (Mauri) and is a current and potential source of seafood (kai moana). To Māori, these roles are fundamentally inconsistent with receiving water for the discharge of human wastewater, even if this has been treated to remove its potential damage to human and environmental health, effects on kai moana and ecology.*

*11. the parties agree that the concepts of ‘feasible’ and ‘best endeavours’ should be interpreted against the background of cultural unacceptability of marine discharge to Māori who are kaitiaki (stewards) of the marine environment and... agree that these concepts should be interpreted alongside the wider goals of promoting economic and social opportunities for all communities living in the Gisborne urban area.”*

A requirement of the resource consent that was consequently granted for the upgrade and discharge of Gisborne’s municipal wastewater, was to establish a wastewater management committee as a standing committee of Council.

The Gisborne Regional Freshwater Plan (2015) (Freshwater Plan) was developed in collaboration with the **Freshwater Advisory Group (FWAG)**; a stakeholder group with vested interests in the management of the regions freshwater resources.

It was the stated view of the FWAG that (extract from Section 32 report to the then-proposed Fresh Water Plan) that *“Requiring a resource consent for Wastewater Overflows by 2020 is not seen as acceptable to Turanga iwi.”*

They sought that a consent be required by 2016 instead. The 2020 date was reached based on feedback from the Council Leadership Team and Wastewater Utilities that there would be difficulty in delivering a good standard of resource consent application, with a good level of understanding of actual environmental effects, by the 2016 date. This is partly because of budget, as well as time constraints. By bringing wastewater, water supply and stormwater utilities into sharper focus in the Freshwater Plan, additional financial requirements on planning, capital works and maintenance are across all utilities.

### **Wastewater Management Committee (WMC)**

The WMC are a standing committee of Council whose membership comprises four elected members and four iwi members who meet four times per year under Terms of Reference. The purpose of the WMC is specific to the implementation, commissioning and monitoring of the municipal wastewater treatment plant, in accordance with resource consent conditions – but as observed in the policy - Tairāwhiti is a tightly connected network so one Council work programme engaging with Maori partners will almost certainly be connected to

another, so cross over into Drainwise programme is not unusual. This said, outside of the development of a Mauri compass (Ruru, I & Kanz, W 2019) neither the WMC or WTAG have been engaged in river overflows.

### **Turanganui a Kiwa Water Quality Enhancement Project**

Turanganui a Kiwa Water Quality Enhancement Project was established as a requirement of the 2009 resource consent conditions to facilitate integrated research, monitoring, planning and specific projects aimed at improving the mauri and the water quality of Turanganui a Kiwa. To be developed under the aegis of the WMC, although for a time it was given to the WTAG to manage, until finally emigrated back to the WMC.

The KIWA group was established by the WMC in 2015 as a vehicle for integrated research, monitoring, planning and specific projects aimed at improving the mauri and the water quality of Turanganui a Kiwa, the KIWA group comprises representatives from Te Runanga o Turanganui a Kiwa (TROTAK), Rongowhakaata iwi, Ngai Tāmanuhiri iwi, Te Aitanga a Mahaki iwi, Ngati Oneone hapu and Gisborne District Council.

The purpose of the KIWA Group is to provide expert cultural advice, stakeholder liaison and technical support in the development of Gisborne District's wastewater management. The KIWA Group provides regular updates on its work to the WMC and revised its ToR in November 2019 to better express its responsibilities, guiding principles, membership, operational arrangements and delegations. Their responsibilities are to:

- provide advice to Gisborne District Council's Wastewater Management Committee relating to integrated research, monitoring, planning and specific projects that will aim to improve the mauri and the water quality of Turanganui A Kiwa
- guide the development of wastewater management for the Gisborne District
- help identify knowledge gaps
- facilitate the sharing of information between group members, their respective organisations and the community.

### **What's the Future Tairāwhiti (WTF) – 2018-2018 Long Term Plan consultation document**

In 2017 Council undertook targeted consultation with whanau about the Drainwise programme and the issues it seeks to resolve as one component of the WTF campaign to develop the LTP.

Over seven weeks, council staff, councillors and Rangitahi travelled to schools, marae, waka ama and surf lifesaving venues in the urban area to gauge their thoughts on how we proposed to reduce wastewater overflows into rivers.

The feedback gained – both verbal and (92) written submissions contributed to Council adopting its new LTP with a budget of \$5.4m (over 10 years) to public drains on private property alongside identified major pipelines upgrades and renewals and a high priority to delivering all seven streams of the Drainwise programme.

### **Drainwise education and awareness campaign January – August 2019**

The Drainwise Awareness and Education campaign aims to inform and challenge the people of Tūranga about wastewater discharges and drainage issues in the Gisborne district.

It is crucial that our community understands the causes of our wastewater discharge problem and also how they can be part of the solution to control it. A5 part mini-series, made up of five separate key messages derived from the 2016 Drainwise Plan, was developed - aimed at engaging the public and demonstrating Council's genuine desire to fix this problem together as a community.



Each key message is woven together by scripted dialogue from members of the community using sharp, no-nonsense graphics and confronting images, with strong calls to action.

The key messages relate to a city wide problem so the campaign aimed to be relatable for all parts of our community. Strategically the “face” of each message in the campaign represents a sector of people -from tradesmen to businessmen, youth to the older generation, Maori and non-Maori, intergenerational families, health professionals and scientists.

## Next steps – a summary of opportunities and challenges

The compiling of this background document has highlighted some significant gaps in the written information that Council is privy to – in relation to the spiritual, cultural and traditional connections held by some Tūranga Iwi, to the waterways that will be the subject of a pending resource consent application.

Loss of indigenous knowledge and barriers to the transmission of knowledge are significant issues well documented in New Zealand (Williams, 2001, Pihama, 2012, Royal, 2012). Council has a role to play, particularly in making sure barriers to accessing information and participation (also a source of knowledge) don't exist, but also in fostering the relationships necessary for Tūranga Māori to feel confident that any knowledge and experience they chose to share with Council will be treated correctly. It is our sincere hope that through the engagement process for the resource consent, and review of this background document by the KIWA group, that some of the gaps in this document may be filled.

In a parallel process to the Resource Consent application, Council has started the process to develop the 2021 Long Term Plan. This means there is opportunity to refresh priorities, budgets and policies. Revising the Tairāwhiti Piritahi- fostering Māori participation in Council decision-making is likely to be one of those priorities, particularly given the recent Office of Auditor General<sup>7</sup> (OAG) findings that “more can be done to involve Māori in water management.”

The OAG found that the commitment required to establish relationships and processes (with Maori), and to build and maintain a shared understanding of what everyone is trying to achieve, is significant and often underestimated. The OAG recommend that continued Crown engagement and resourcing is needed for the current and future arrangements that enable Māori involvement in managing water resources to remain effective. This recommendation has been echoed by the Waitangi Tribunal<sup>8</sup> who also recommended that:

- the Crown provide more funding to restore freshwater bodies and to help Māori participate in the Resource Management Act process;
- co-designing policy involving Māori interests with Māori be a standard process; and
- the Crown monitor councils to ensure that they meet their obligations under Te Tiriti o Waitangi.

In late 2019, Māori Development Minister Hon Nanaia Mahuta announced that a whole-of-government approach, called Te Pae Tawhiti, is being developed to address the issues raised by the WAI 262 claim and the Waitangi Tribunal report, Ko Aotearoa Tēnei. This means that the Government is shifting its focus to what this

<sup>7</sup> February 2020 OAG report titled Reflecting on our work about water management

<sup>8</sup> Waitangi Tribunal report into National Freshwater and Geothermal Resources, August 2019

relationship should look like in a post-settlement environment. This includes ensuring that the strong foundations created through Treaty settlements are maintained and built on, into the future.

## Resourcing

The importance of Council supporting kaupapa Māori meaningfully and financially is clear – especially when considering that iwi and hapū have multiple demands on their time and resources – not only from Council.

There are a range of tools, frameworks and methods available to iwi and hapū as Crown partners, and Council. These range from decision-making tools, to digitally-based assessments, to mapping approaches for understanding and recording cultural knowledge, preferences and monitoring requirements, to research around important species, through to kaupapa Māori assessments of the state and health of a waterbody.

In their 2019 report: *Kaupapa Māori Freshwater Assessments: A summary of iwi and hapū-based tools, frameworks and methods for assessing freshwater environments*, Rainforth & Harmsworth (Perception Planning Ltd) observe that:

Monitoring using mātauranga Māori needs to meet Māori aspirations and requirements, and answer questions that are important to iwi and hapū. It needs to be undertaken by Māori, for Māori, based on kaupapa Māori.

Most of these tools, frameworks and methods are able to be adapted to suit local priorities, preferences and protocols. Many are inter-related. The various approaches can be used in tandem to meet different aspects of kaupapa Māori-based monitoring needs. The local development and use of the Mauri Compass (Ruru & Kanz 2019) is an example of collaboration and good intent.

Given the developments in recent years (recent changes to the National Policy Statement for Freshwater Management (NPS-FM) now require that Councils include mātauranga Māori and Te Mana o Te Wai principles and obligations in their monitoring plans) and the resourcing now being put into mātauranga Māori-based assessment approaches, it is likely that even more tools, frameworks and methods will become available in the near future.

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## Appendix One

An overview of statutory mechanisms under the Local Government Act 2002 and the Resource Management Act 1991 that are particularly relevant to the Māori – Council partnership in the context of wastewater overflows. These are:

- environment
- culture
- health and well-being
- economic development and sustainability
- Te Tiriti o Waitangi (The Treaty of Waitangi).

Just as the Māori perspective about the significance of particular water bodies varies and differs between different iwi, hapū, marae, and whanau, the depth of concern felt by Māori about any impacts identified is most appropriately provided by those likely to experience those impacts. Some examples are provided here.

### *ENVIRONMENT*

Whether an activity will have a significant impact on the productive and life-sustaining quantity and quality (including the spiritually-based qualities and intrinsic values) of:

- traditional Māori food resources (mahinga kai)
- indigenous flora and fauna, or other flora and fauna valued by Māori
- water (inland, coastal and deep sea)
- land
- air
- natural habitats and ecosystems
- other natural resources valued by Māori
- other cultural heritage resources valued by Māori
- other cultural heritage relationships valued by Māori.

### *CULTURE*

This area of concern is about considering whether the activity may have a significant impact on mātauranga Māori and tikanga Māori including the kaitiaki role of Māori and the protection and enhancement of the mauri, mana and tapu of:

- Ngā tangata – people
- Ngā Taonga kōiora – native flora and fauna
- Ngā Taonga tuku iho – valued flora and fauna
- Whenua – land
- Ngā moana (ocean), ngā awa (rivers), me ngā manga – (waterways inland and offshore)

### *HEALTH AND WELL-BEING*

This area of concern is about considering whether the activity may have a significant impact on the protection and enhancement of:

- Taha wairua – spiritual health and well-being obtained through the maintenance of a balance with nature and the protection of mauri.
- Taha whanaunga – the responsibility and capacity to belong, care for and share in the collective, including relationships and social cohesion.
- Taha hinengaro – mental health and well-being and the capacity to communicate, think and feel.
- Taha tinana – physical health and well-being.
- These together express the holistic nature of hauora (Māori health and well-being) and this model is also known as the Whare Tapawhā model of Māori health.

### *ECONOMIC DEVELOPMENT AND SUSTAINABILITY*

This area of concern is about considering whether the activity may have a significant impact on the:

- ongoing capacity and ability of Māori to be economically sustainable.
- ongoing participation of Māori in the protection of economic potential and generation of economic benefit.

## TE TIRITI O WAITANGI (THE TREATY OF WAITANGI)

This area of concern is about considering whether the application may have a significant impact on:

- ongoing management by Māori of their cultural and natural resources.
- ongoing rights of Māori to develop economically, culturally, socially, spiritually, and physically.
- Māori rights and interests generally.
- implementation of the principles of Te Tiriti o Waitangi (The Treaty of Waitangi).
- any Treaty settlements.

## RESOURCE MANAGEMENT ACT 1991 (RMA)

**Purpose:** To promote the sustainable management of natural and physical resources. The RMA also regulates the effects of human activities on the environment.

**Relevance to Māori:** RMA provisions encourage Māori participation in the management of natural and physical resources and requires the consideration of Māori values, culture and tradition in resource management decision making.

Relevant provisions include:

Section 6: In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing resources, shall recognise and provide for the following matters of national importance ... (e) the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taonga (f) and (g).

Section 7: In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to (a) kaitiakitanga.

Section 8: In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of te Tiriti o Waitangi (Treaty of Waitangi).

The RMA directs Council to recognise and provide for the relationship of Māori and their culture and traditions with water as a matter of national importance.

In Te Tairāwhiti, there is a Joint Management Agreement over the Waiapu Catchment, which enables Council and Te Runanganui o Ngati Porou to jointly carry out the functions and duties relating to all land and water resources within or affecting the Waiapu Catchment.

Embodied in the Tairāwhiti Resource Management Plan (TRMP) are the Statements of Association from Ngāti Porou Claims Settlement Act 2012, Ngāi Tāmanuhiri Claims Settlement Act 2012 and Rongowhakaata Claims Settlement Act 2012. These articulate the relationship these iwi have with Tūranga generally, and the affected water bodies specifically.

However Council doesn't appear to hold a similar level of written information about the traditional relationships of Te Aitanga-a-Māhaki, Te Whanau a Kai, and Nga Ariki Kaiputahi with waterbodies of their rohe. This means there are gaps in (Councils) knowledge and understanding about the cultural significance of these affected water bodies, which needs addressing.

## LOCAL GOVERNMENT ACT 2002 (LGA)

**Purpose:** to provide for democratic and effective local government that recognises the diversity of New Zealand communities. The LGA also

**Relevance to Māori:** LGA has specific provisions that include:

Section 81: Contributions to decision-making processes by Māori. Requires Council to establish and maintain processes to provide opportunities for Māori to contribute to the decision-making processes of the local authority; and consider ways in which it may foster the development of Māori capacity to contribute to the decision-making processes of the local authority; and provide relevant information to Māori for these purposes.

Section 82: Principles of consultation. Council must ensure that it has in place processes for consulting with Māori in accordance with subsection (1).

## **STATUTORY ACKNOWLEDGMENTS**

A formal (legal and legislative) acknowledgement by the Crown of the mana of Tangata Whenua over a specified area, acquired through the formal process of Treaty Settlement.

## **IWI MANAGEMENT PLANS (IMPS)**

An IMP is a term commonly applied to a resource management plan prepared by an iwi, iwi authority, rūnanga or hapū. Elsewhere in New Zealand, IMPs have been prepared as an expression of rangatiratanga to help iwi and hapū exercise their kaitiaki roles and responsibilities.

An IMP is a policy statement that consolidates the intent of iwi regarding their social, economic, cultural and environmental development. These plans provide for iwi resource management strategies for sustainable development of natural and physical resources,

The plans are not a substitute for consultation or partnership.

IMPs have not been prepared through a First Schedule procedure like other Council Resource Management Plans, and do not have a democratic mandate. Nevertheless, they have an important status under the Resource Management Act 1991 (RMA).

In this regard, the plans:

- must be taken into account when preparing or changing regional policy statements and regional and district plans (sections 61, 66, 74)
- provide a starting point for consultation with iwi and hapū on council plans and policies (Schedule 1 clause 3(1)(d), clause 3B, and clause 3C)
- provide a starting point for understanding potential effects of a proposed activity on Māori cultural values when considering the effects of an activity requiring an application for resource consent (section 88 and Schedule 4)
- may be cited in submissions and/or evidence relating to applications for resource consent, and decision-makers may if relevant and reasonably necessary have regard to IMPs under section 104(1)(c).

The contents of an IMP will depend on the priorities and preferences of the hapū/iwi preparing the plan. IMPs are often holistic documents that cover more than resource management issues under the Resource Management Act 1991 ("RMA").

The Council has formally received an IMP from Nga Ariki Kaiputahi and Te Aitanga a Mahaki.

In the future, it is likely that the format of IMP's will evolve along with the development of iwi 'position statements' which are included as chapters. For example position statements around wastewater, the coastal environment, and freshwater.





# RESOURCE CONSENT WASTEWATER CONSULTATION



Gisborne District Council is required to apply for a resource consent to discharge wastewater into our city's rivers. This includes wastewater overflows that can take place in wet or dry weather. We've outlined the causes and impacts of overflows and what we're doing about them. We want your feedback to inform our resource consent application. The new consent will hold Council to a programme and timeframe to reduce overflows.

## WHAT CAUSES WASTEWATER OVERFLOWS DURING WET WEATHER?

### Issues on private property: homeowners' responsibility

#### HIGH IMPACT

- Roof water downpipes directed to the gully trap
- Deep flood waters over-topping gully trap
- Cracked/leaking gully traps

#### MED IMPACT

- Groundwater entering the network through leaking wastewater pipes

### Issues in Council's network: Council's responsibility

#### IMPACT LOW

- Council pipes
- Council manholes

### Wastewater overflows happen in wet weather when:

During intense or heavy rainfall, parts of the city's wastewater network gets inundated with stormwater and the network can't cope with the volume of water going through it.

It then causes wastewater to overflow onto private properties and out of manholes onto roads, causing dire health risks to people.

### What else happens in wet weather events?

Runoff from urban and rural areas flows into rivers and the sea. This runoff carries pollutants that can cause similar effects to overflows.

### What Council does to manage these impacts:

Council opens overflow valves when pipes are full to prevent wastewater overflowing onto private property. This makes wastewater flow into the rivers and sea. Occur around two to three times a year.

### How does this impact the community and the environment?

- The community and tangata whenua oppose overflows, as they affect activities such as swimming, surfing, waka ama and kayaking, shellfish gathering, mahinga kai and other Māori customary practices
- Health risks are greatest during the event and up to three days afterwards.
- Viruses and some substances can persist for longer than three days.
- Cultural practices can be affected for long periods.
- There is significant cultural and social sensitivity to human wastewater.

## WHAT CAUSES WASTEWATER OVERFLOWS DURING DRY WEATHER?

Wastewater overflows in dry weather are mainly caused by blockages, when pipes break unexpectedly, or through cracks.

Most blockages are caused by:

Foreign objects	Oil, fat and sediment	Broken pipes
<ul style="list-style-type: none"> <li>• Rags and wet wipes</li> <li>• Knives/forks/spoons etc.</li> <li>• Grass clippings, garden waste</li> </ul>	<ul style="list-style-type: none"> <li>• Oils from cooking and fat from roasting</li> <li>• Food scraps, tea leaves, coffee grinds</li> </ul>	<ul style="list-style-type: none"> <li>• Very old leaky pipes</li> <li>• Pipes under lawns where cars drive</li> </ul>

### What happens in dry weather?

- Overflows caused by unexpected wastewater pipe blockages or breaks.
- Wastewater flows out of gully traps, manholes or breaks.
- Generally discharges onto land but can reach waterways.
- Council responds straight away and fixes as soon as possible.
- Occur on average eight times a year.

### How does this impact the community and the environment?

- Public health risk when discharged to land or water.
- Ecology affected when wastewater enters a small water body.
- Effects depend on how much is discharged and for how long.
- They are generally small volumes and can be fixed quickly.

## CONTACT US

Send us your feedback by 31 May, 2020.

 [drainwise@gdc.co.nz](mailto:drainwise@gdc.co.nz)

For more information:

 [www.gdc.govt.nz/drainwise](http://www.gdc.govt.nz/drainwise)

Kua herea te Kaunihera o Te Tairāwhiti kia tonono mo te Whakaaetanga Rawa Taiao ki te tuku waikino ki roto i ngā awa o te taone o Tūranga. Āpiti atu, mo ngā take whakapūrena waikino i ngā rā marangai, rangi paki rānei. Kua whakaritea e mātau ngā take me ngā tūtukinga o ngā āhua whakapūrena wai me ngā mahi hei whakatikatika ai. E hiahia ana mātau i ōu whakaaro kia pai ai te hanga o te tonono Whakaaetanga Rawa Taiao. Mā te tonono nei, ka herea te Kaunihera ki tētehi hōtaka me te wātaka kia mana ai tēnei kaupapa.

## HE AHA NGĀ TAKE WHAKAPŪRENA AI TE WAIKINO I NGĀ RĀ MARANGAI?

**Ngā mea e pā ana ki te hunga whairawa: te takohanga kaiwhiwhi kāinga**

### PAPĀTANGA NUI

- Kia hāngai ngā paipa tuanui ki te pakohu mau wai
- Ko te waipuke e waipuketia ana i ngā pakohu mau wai
- Ngā pakohu mau wai e pakē, e tututuru ana rānei

### PAPĀTANGA ĀHUA NUI

- Wai ā-whenua e uru ana i te pūnaha waikino mā ngā paipa waikino e tututuru ana

**Ngā kaupapa Pūnaha ā-Kaunihera: He mea whakatika ma te Kaunihera**

### PAPĀTANGA ITI

- Ngā paipa a te Kaunihera
- Ngā kōwhao a te Kaunihera

## Ka tutuki te whakapūrena waikino i ngā wā huarere marangai hei ngā wā:

E kaha ana te marangai, e waipuketia ana ētahi wāhanga o te pūnaha waikino o te taone i te wai āwhā, ā, kāre e taea e te pūnaha te whakamahi i te wai e rere ana.

Mā reira, ka parati te waikino ki ngā whenua/kāinga ā-tangata, ki waho rānei i ngā kōwhao ki te rori, hei reira ka tūkina ai te hauora o te marea.

## Ka aha atu ngā tūtukinga i ngā wā huarere marangai?

Ka rere atu ngā wai nui rawa o te taone me te taiwhenua ki ngā awa me te moana. Ka mau te parakino ki te wai, ā, ka rite ki te pūrena wai tōnā āhua.

## Ngā whakahaere a te Kaunihera i ēnei momo āhuatanga:

I ngā wā ka kiki ngā paipa, ka huakina e te Kaunihera ngā katirere pūrena wai, kia kore te waikino e rere ki ngā whenua ā-tangata. Me kore, ka rere hāngai ai te waikino ki ngā awa me te moana. E rua ki te toru wā ia tau ēnei āhuatanga.

### Ka pēhea te papātanga ki te hapori me te taiao?

- E kore te hapori me te tangata whenua e whakaae ana i te pūrena wai i te mea ka aukatihia ngā mahi pēnei i te kaukau, te reti ngaru, te waka ama me te te kōretu, te kōhi kaimoana, te mahinga kai me ētahi atu tikanga Māori.
- Ka kino rawatia te hauora o te tangata i ēnei wā, ā, ka pēnei tonu mo ngā rā e toru ki muri.
- E tāea e ngā huaketo me ētahi atu mea kino te noho kino tonu tua atu i te toru rā.
- Ka whakarerekētia ngā tikanga mo te wā roa tonu nei.
- He nui ngā āhuatanga Māori me ngā tūtohutanga ā-iwi e pā ana ki ngā waikino ā-tangata

## HE AHA NGĀ TAKE KA WHAKAPŪRENA AI TE WAIKINO I NGĀ RĀ MAROKE?

Ko ngā pūrena waikino i ngā rā paki he mea nā te whakapūnanga paipa, ngā paipa pakaru ohorere nei, ngā paipa pakē rānei.

Ko te nuinga o ngā paipa whakapūnanga, nā:

Ngā tautaputapu	Te hinu, te hinu mīti me te parahinu	Ngā paipa pakaru
<ul style="list-style-type: none"> <li>• Ngā ruha kākahu me ngā ūkui mākū</li> <li>• Te naihi/whāka/pūne me ērā atu mea</li> <li>• Ngā tipī pātītī, ngā para māra</li> </ul>	<ul style="list-style-type: none"> <li>• Te hinu tao kai me te hinu tunu mīti</li> <li>• Ngā para kai, ngā rau tī, me ngā para kawhe</li> </ul>	<ul style="list-style-type: none"> <li>• Ngā paipa tino turuturu tawhito</li> <li>• Ngā paipa raro iho i ngā wāhi pātītī taraiwa motokā</li> </ul>

### Ka aha i ngā rā maroke?

- Ko ngā pūrena wai e āhei ana i ngā wā ka puni ohorere ai ngā paipa, ka pakaru rānei.
- Ka parati atu te pūrena wai i ngā pakohu, i ngā kōwhao, i ngā pakē rā anō rānei.
- Ka rukea noatia ki te whenua engari, e tāea noatia te maringi ki rō arawai.
- Kia whawhati tata te whakautu a te Kaunihera, ā, ka whakatika wawē tonu.
- Kia waru te toharite ia tau.

### Ka pēhea te papātanga ki te hapori me te taiao?

- Mēnā ka rukea te waikino ki te whenua ki te wai rānei, he kino tēnei mo te hauora hapori.
- Ka uru atu te waikino ki tētahi wāhi wai pāpaku nei, ka kino te hauropi taiao.
- Ko te rahinga o te kino e āhei ana ki te rahi o te rukea me te roa o te wā whakarukea.
- Mēnā e paku ana te pūrena waikino, ā, e tāea te kati me te whakatika

## WHAKAPĀ MAI

Tonoa ōu whakaaro hei te 31 Mei 2020.

 [drainwise@gdc.co.nz](mailto:drainwise@gdc.co.nz)

Mo ētahi whakamārama anō:

 [www.gdc.govt.nz/drainwise](http://www.gdc.govt.nz/drainwise)

# RESOURCE CONSENT WASTEWATER CONSULTATION



## WHAT IS COUNCIL DOING TO REDUCE OVERFLOWS?

- Limits overflows to a few places
- Only opens overflows where necessary and closes as soon as possible

- Inspects all private properties
- Fixes small problems on the spot (for free)
- Requires owners to fix poor plumbing (at their cost)

- Works with the community, tangata whenua and stakeholders to improve drainage
- Provides assistance to improve drainage

- Raises awareness
- Encourages community responsibility and action over private drainage problems

- Plans to improve stormwater drainage at a catchment level
- Invests in infrastructure to reduce property flooding

- Maintains Council networks
- Builds new pipes where required

- Responds quickly to overflows and cleans up where possible
- Warns community about overflows and monitors effects



**7,500** properties to be inspected in five years



**15,000** properties to be inspected in 10 years



**85%** of stormwater inflow to be removed from wastewater network



**LESS THAN 1** wet weather overflow every two years (average) in the future



**LESS THAN 9** dry weather overflow per year (average) in the future

## WHAT ARE OUR CHALLENGES?

---



### Private property

- Contributes most of the rainwater that gets into the wastewater system.
  - Leaking pipes have to be fixed for us to achieve our goals.
  - Homeowners' responsibility to fix, which can be expensive.
- 



### Ageing infrastructure

- 60% of homes are more than 60 years old and 22% are more than 100.
  - Few privately-owned pipes have been replaced or repaired.
  - Drainlayers and plumbers need time to fix issues.
- 



### Geography

- Flat land and clay soils make drainage difficult.
- 



### Community

We need to get the messages through:

- Don't flush wet wipes or other objects down the toilet.
  - Put fat and food scraps in the bin, not the drain.
- 



### Complexity

- Lots of pieces to the puzzle need to be solved to achieve our aim.
-

## WHAT ARE THE OPPORTUNITIES?



### Affordability

- Adopt a considerate approach for homeowners to rectify their drainage problems.
- We will work with homeowners and ensure they have time to budget for their improvements.



### Advice

Provide advice and help homeowners get the work done by:

- Identifying practical fit-for-purpose solutions.
- Considering innovative technologies that could reduce costs.
- Assisting homeowners to work together to reduce costs.



### Construct

- Build more pipes and sumps to improve private property drainage.
- Make it easier and cheaper for homeowners to fix their issues.
- Schedule construction work to be in line with what drainlayers and plumbers can practically build within available timeframes.



### Collaborate

- Landlords to improve drainage on 60% of Gisborne's private properties.
- Drainage will improve as public health officials implement the Healthy Homes Act.
- Find solutions by partnering with our community.

## CONTACT US

Send us your feedback by 31 May 2020.

@ drainwise@gdc.co.nz

For more information:

www.gdc.govt.nz/drainwise



## HE AHA NGĀ MAHI A TE KAUNIHERA KI TE WHAKAHEKE WAI PŪRENA?

- Whakatepea te pūrena wai ki ngā wāhi ruarua nei
- Tukuna te pūrena wai i te wā tino ohorere ai anake, ā, ka oti kia tere rawa te kati

- Mātātakina ngā whenua/kāinga ā-tangata katoa
- Whakatikahia ngā raru iti a taua wā tonu (mo te kore utu)
- Ma te hunga whairawa e whakatika a rātau ake raru paipa (ma rātau tonu e utu)

- Mahi i te taha o te haporī, te tangata whenua me te hunga whairawa ki te whakapaipai waikeri
- Awhinatia te hunga ki te whakapaipai waikeri

- Te whakamārama ake
- Te whakatitina i te haporī ki te whakatika me te awhi i te hunga raruru paipa

- Whakaritea he mahere ā-rohe ki te whakapai ake i te pūnaha pūrena wai
- Urua he pūtea ki ngā mahinga whakaheke waipuke ki te whenua/rawa rānei

- Kia pūmau tonu ngā pūnaha Kaunihera
- Hangaia ngā paipa hou i ngā wāhi e hiahia ai

- Kia tere te whakautu ki ngā mahinga pūrena wai, ā, kia whakatikala mēnā e tāea
- Whakatūpatohia te haporī i ngā wā whakapūrena wai me te aroturuki anō hoki



**7,500** ngā wāhi noho e mātātaki ana raro iho i te rima tau



**15,000** ngā wāhi noho kua mātātaki ana tae te tekau tau



**85%** o te wai-āwhā kua tangohia mai i te pūnaha waikino



**HEKE IHO I TE 1** te whakapūrena wai i ngā wā marangai ia rua tau (te toharite rānei) ki mua



**HEKE IHO I TE 9** ngā whakapūrena wai i ngā wā o te maroke ia tau (te toharite rānei) ki mua

TE WHĀRANGI 1 O TE 3



## HE AHA NGĀ TAUWHĀINGA?



### Mana whenua ā-tāngata

- Ko te nuinga o ngā wai marangai kei te pūnaha pūrena wai nā ngā mana whenua ā-tāngata.
- Mā te whakatikatika i ngā paipa pakaru kā ū ai o tātau hiahia.
- Kei a te hunga mana kāinga te mana hei whakatikatika, engari, he mea utu nui tēnei.



### Te Tawhitotanga o Ngā Hanga

- E ono ōrau ngā kāinga tua atu i te ono tekau tau te tawhito, ā, rua tekau mā rua ōrau e tua atu i te kotahi rau.
- E iti rawa ngā paipa ā-kāinga kua whakatikatika, kua whakahou rānei.
- Kia ngāwari te wā whakatikatika ki ngā kaiwaikeri me ngā kaiwhakatika paipa.



### Mātai Matawhenua

- He uaua te whakaawa wai mai te whenua mania, kerematua hoki.



### Te Hapori

Kia wawe te pānui atu ki te tangata:

- Kua e whiu ngā ūkui mākū, ētahi atu mea rānei ki te wharepaku.
- Kuhu atu te hinu me ngā parakai ki te pararāpihi, kua ki te waikeri.



### Te Uauatanga

- E nui ngā take hei whakatika kia pai ai te haere o tēnei kaupapa.

## HE AHA NGĀ ĀHEINGA?



### Te Whakangāwari Utu

- Whakaritea he huarahi whakatika raru waikeri mo te hunga whai kāinga.
- Ka mahi tahi tātau i te taha o te hunga whai kāinga kia whai wā rātau ki te whakarite tahua mo ngā mahi whakatikanga.



### Te Tohutohu

Te tohu me te awahi i te hunga whai kāinga ki te whakaoti mahi whakatika mā:

- Te whakarite mahi e hāngai ana ki ngā mea e hiahia ai.
- Te aro atu ki i ngā momo hangarau auaha kia heke ngā utu.
- Te awahi i te hunga whai kāinga kia mahi tahi kia heke ngā utu.



### Te Waihanga

- Me hanga paipa me ngā kōrua anō kia ngāwari te rere o te wai mai ngā wāhi kāinga.
- Kia ngāwari te whakatika me te utu i ngā take a te hunga whai kāinga.
- Whakaritea ngā mahi a ngā kaiwhakatakoto paipa me ngā kaiwhakarite paipa wai kia hāngai ki ngā wā e wātea ana rātau.



### Te Mahi Tahi

- Kia tae ki te ono ōrau ngā kāinga kua whakatikaia mahi manga e te hunga kaitukurihi o Tūranga.
- Mā te whakatutuki i te ture Healthy Homes Act e ngā āpiha hauora tūmatanui, ka whai hua ai te kaupapa manga.
- Kimi whakatikanga mā te mahi tahi i ngā rōpū kei te hapori.

## WHAKAPĀ MAI

Tonoa ōu whakaaro hei te 31 Mei 2020.

@ drainwise@gdc.co.nz

Mo ētahi whakamārama anō:

www.gdc.govt.nz/drainwise

## KIWA GROUP

[KIWA GROUP](#)

[OVERVIEW](#)

[MAURI MODELS](#)

[PREVIOUS CONSENTS](#)

[NGATI MUTUNGA](#)

[LOG IN](#)

### KIWA GROUP (2020)

[LINK TO OUR NEXT](#)

**MAY 21ST 2020: 2 PM KIWA GROUP ZUI**

1. MAURI COMPASS HOMEWORK

+

2. TASK TRACKER

+

ALL YOUTUBES OF OUR MEETINGS

+

### ADMINISTRATIVE MATTERS

KIWA CALENDAR

+

YOUTUBE TUTORIALS

+

ZUI MINUTES

+

AGENDA 14TH MAY

+

### KIWA's FOUNDATIONS

CULTURAL FRAMEWORK

+

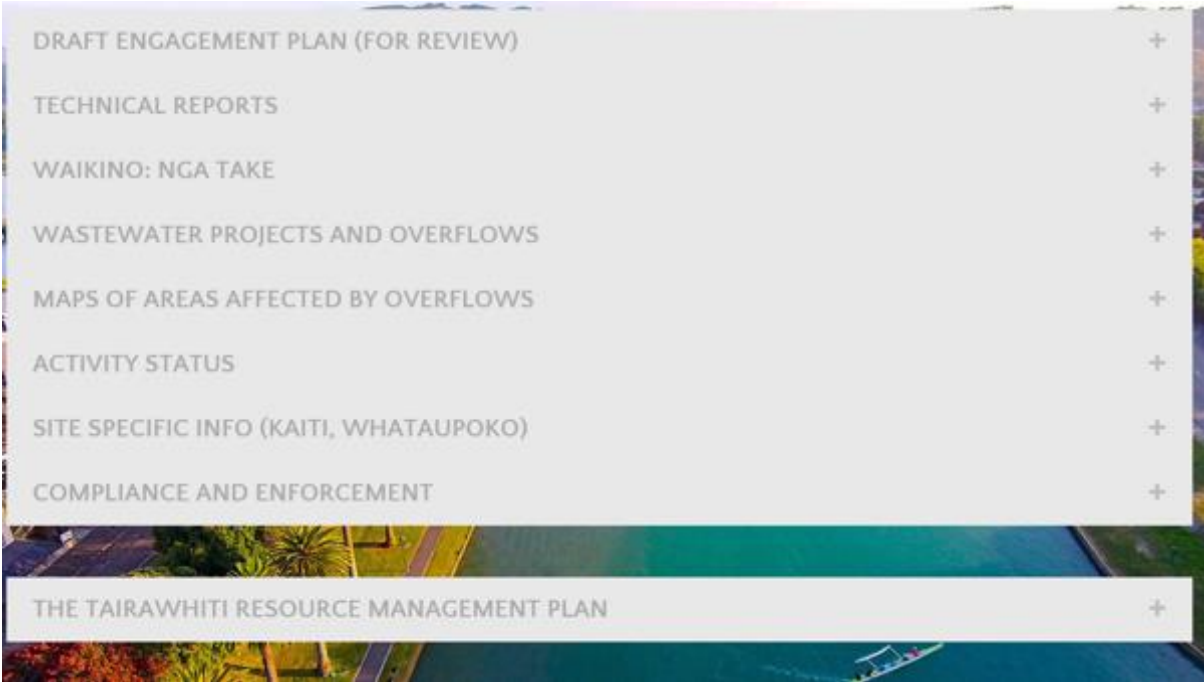
KIWA GROUP HISTORY

+

NEWS

+

### WW OVERFLOWS TO RIVERS (2020)



DRAFT ENGAGEMENT PLAN (FOR REVIEW)	+
TECHNICAL REPORTS	+
WAIKINO: NGA TAKE	+
WASTEWATER PROJECTS AND OVERFLOWS	+
MAPS OF AREAS AFFECTED BY OVERFLOWS	+
ACTIVITY STATUS	+
SITE SPECIFIC INFO (KAITI, WHATAUPOKO)	+
COMPLIANCE AND ENFORCEMENT	+
THE TAIRAWHITI RESOURCE MANAGEMENT PLAN	+



<b>MAURI COMPASS</b>	
INTRODUCTION	+

Appendix 5 Meetings held during the engagement

Meeting:	Date:	Time:	Venue:	Attendees:	Apologies/left early:
KIWA Group Meeting 1	4/20/2020	2.00pm to 5.00pm	Virtual - Microsoft Teams	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell; Carrie White; Tee Montgomery; Walton Walker; Neville West.</li> <li>• Consultants: Ian Mayhew - 4Sight Consulting.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Dianne Irwin - Ngati Oneone; Ray Farmer - Te Aitanga-a-Mahaki; Murray Palmer; Samuel Lewis - Rongowhakaata; Karena Toroa - Ngai Tamanuhiri; Owen Lloyd - Te Whanau-a-Kai; David Hawea - Nga Ariki Kaiputahi; Keith Katipa - Ngariki Kaiputahi</li> </ul>	
KIWA Group Meeting 2	4/29/2020	2.00pm to 5.00pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Dianne Irwin - Ngati Oneone; Ray Farmer - Te Aitanga-a-Mahaki; Murray Palmer; Samuel Lewis - Rongowhakaata; Karena Toroa - Ngai Tamanuhiri; David Hawea - Te Whanau-a-Kai; Keith Katipa - Te Whanau-a-Kai</li> </ul>	<p><b>Apologies:</b> Owen Lloyd - Nga Ariki Kaiputahi</p> <p><b>Left early:</b> Dianne Irwin - Ngati Oneone</p>
KIWA Group Meeting 3	4/30/2020	2.00pm to 5.00pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Murray Palmer; Samuel Lewis - Rongowhakaata; Karena Toroa - Ngai Tamanuhiri; David Hawea - Te Whanau-a-Kai; Keith Katipa - Te Whanau-a-Kai; Owen Lloyd - Nga Ariki Kaiputahi</li> </ul>	<p><b>Apologies:</b> Dianne Irwin - Ngati Oneone</p>
KIWA Group Meeting 4	5/6/2020	2.00pm to 5.00pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Karena Toroa - Ngai Tamanuhiri; David Hawea - Te Whanau-a-Kai; Keith Katipa - Te Whanau-a-Kai; Owen Lloyd - Nga Ariki Kaiputahi; Matawhero Lloyd - Nga Ariki Kaiputahi; Joanne Pere - Te Aitanga a Mahaki</li> </ul>	<p><b>Apologies:</b> Dianne Irwin – Ngati Oneone</p> <p><b>Late:</b> Murray Palmer; Samuel Lewis - Rongowhakaata</p>

KIWA Group Meeting 5	5/7/2020	2.00pm to 5.00pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Karena Toroa - Ngai Tamanuhiri; David Hawea - Te Whanau-a-Kai; Murray Palmer; Samuel Lewis - Rongowhakaata; Owen Lloyd - Nga Ariki Kaiputahi; Matawhero Lloyd - Nga Ariki Kaiputahi; Joanne Pere - Te Aitanga a Mahaki; Dianne Irwin – Ngati Oneone</li> </ul>	<b>Apologies:</b> Keith Katipa - Te Whanau-a-Kai
Mauri Compass homework session 1	5/11/2020	12.00pm to 1.00pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Murray Palmer - Rongowhakaata; Dianne Irwin – Ngati Oneone; Keith Katipa - Te Whanau-a-Kai</li> </ul>	
Mauri Compass homework session 2	5/12/2020	12.00pm to 1.00pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Murray Palmer - Rongowhakaata; Dianne Irwin – Ngati Oneone; Keith Katipa - Te Whanau-a-Kai</li> </ul>	
Optional technical information session	5/13/2020	11.00am to 12.00pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Murray Palmer – Rongowhakaata; Samuel Lewis - Rongowhakaata; Keith Katipa - Te Whanau-a-Kai; David Hawea - Te Whanau-a-Kai</li> </ul>	
Mauri Compass homework session 3	5/13/2020	12.00pm to 1.00pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Murray Palmer; Samuel Lewis - Rongowhakaata; Keith Katipa - Te Whanau-a-Kai; David Hawea - Te Whanau-a-Kai</li> </ul>	
KIWA Group Meeting 6	5/14/2020	2.00pm to 5.00pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Karena Toroa - Ngai Tamanuhiri; David Hawea - Te Whanau-a-Kai ; Keith Katipa - Te Whanau-a-Kai; Murray Palmer; Samuel Lewis - Rongowhakaata; Dianne Irwin – Ngati Oneone; Owen Lloyd - Nga Ariki Kaiputahi</li> </ul>	<b>Apologies:</b> Matawhero Lloyd - Nga Ariki Kaiputahi Joanne Pere - Te Aitanga a Mahaki <b>Left early:</b> Murray Palmer and Dianne Irwin

KIWA Group Meeting 7	5/18/2020	11.30am to 2.00pm	TROTAK	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; David Hawea - Te Whanau-a-Kai; Keith Katipa - Te Whanau-a-Kai; Owen Lloyd - Nga Ariki Kaiputahi; Murray Palmer – Rongowhakaata (by phone); Samuel Lewis - Rongowhakaata; Dianne Irwin – Ngati Oneone; DJ Irwin – Ngati Oneone</li> </ul>	<p><b>Apologies:</b> Karena Toroa - Ngai Tamanuhiri</p> <p><b>Left early:</b> Murray Palmer</p>
KIWA Group Meeting 8	5/21/2020	2.00pm to 3.30pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Karena Toroa - Ngai Tamanuhiri; David Hawea - Te Whanau-a-Kai; Keith Katipa - Te Whanau-a-Kai; Murray Palmer; Samuel Lewis - Rongowhakaata; Owen Lloyd - Nga Ariki Kaiputahi; Matawhero Lloyd - Nga Ariki Kaiputahi; Joanne Pere - Te Aitanga a Mahaki</li> </ul>	<p><b>Apologies:</b> Dianne Irwin – Ngati Oneone</p>
KIWA Group Meeting 9	5/29/2020		Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Keith Katipa - Te Whanau-a-Kai; Samuel Lewis - Rongowhakaata; Owen Lloyd - Nga Ariki Kaiputahi</li> </ul>	<p><b>Apologies:</b> Murray Palmer - Rongowhakaata; Dianne Irwin – Ngati Oneone; Karena Toroa - Ngai Tamanuhiri; Matawhero Lloyd - Nga Ariki Kaiputahi; Joanne Pere - Te Aitanga a Mahaki</p> <p><b>Left early:</b></p>
KIWA Group Meeting 10	6/10/2020	2.00pm to 4.30pm	Virtual - Zoom	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ian Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Keith Katipa - Te Whanau-a-Kai; Murray Palmer; Samuel Lewis - Rongowhakaata; Owen Lloyd - Nga Ariki Kaiputahi</li> </ul>	<p><b>Apologies:</b> Karena Toroa - Ngai Tamanuhiri; David Hawea - Te Whanau-a-Kai; Matawhero Lloyd - Nga Ariki Kaiputahi; Joanne Pere - Te Aitanga a Mahaki</p> <p><b>Left early:</b> Dianne Irwin – Ngati Oneone</p>

KIWA Group Meeting 11	6/11/2020	11.30am to 1.15pm	At GDC offices	<ul style="list-style-type: none"> <li>• GDC Staff: Wolfgang Kanz; Ally Campbell.</li> <li>• KIWA Group Representatives: Ilan Ruru - TROTAK; Ray Farmer - Te Aitanga-a-Mahaki; Keith Katipa - Te Whanau-a-Kai; Samuel Lewis - Rongowhakaata; Owen Lloyd - Nga Ariki Kaiputahi</li> </ul>	N/A
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## First KIWA Group Meeting

### Meeting minutes

**Date:** Monday 20th April 2020, 2pm to 5pm

**Time:** 2pm to 4pm

**Venue:** Virtual –Microsoft Teams

#### Attendees:

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor;  
Ally Campbell – Junior Wastewater Advisor;  
Carrie White – Senior Policy Advisor;  
Tee Montgomery – Maori Liaison Advisor;  
Walton Walker – Senior Maori Engagement Officer;  
Neville West – 4 Waters Infrastructure Manager
  
- Consultants:  
Ian Mayhew - 4Sight Consulting
  
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Dianne Irwin - Ngati Oneone  
Ray Farmer - Te Aitanga-a-Mahaki  
Murray Palmer; Samuel Lewis - Rongowhakaata  
Karena Toroa - Ngai Tamanuhiri  
Owen Lloyd - Nga Ariki Kaiputahi  
David Hawea - Te Whanau-a-Kai  
Keith Katipa - Te Whanau-a-Kai

#### Please note:

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

- **Karakia**

Walton Walker opened the meeting.  
Wolfgang asked if we could go through the tikanga of virtual hui before all introduced each other.

- **Tikanga / kawa of 'virtual' hui**

- Tee Montgomery proceeded to provide guidance, with input from Wolfgang Kanz and Ian Ruru.

The following key principles were discussed:

- Meetings have to be highly structured
- Turn off microphones when not speaking
- Allow everyone to have a turn
- Raise hands if possible (if the IT platform allows this)
- Take notes to record your questions
- Make sure the question is a question for the entire group
- Pass questions mostly through the chairs of the meeting
- We need to be patient and allow lots of time

It was made clear that the group would likely not get through the entire agenda, but that it was OK as anything missed would be addressed later on, with additional meetings if necessary. It was more important to conduct the first meeting properly to set the scene for ongoing work.

- **Welcome and introductions**

- Wolfgang Kanz (as GDC project manager)
- Walton Walker (As GDC tikanga expert)
  - Ian Ruru (as KIWA Group Chairman)
  - KIWA Group members and GDC project team

- **Working together**

Some time was spent on talking about how the group would work together. The KIWA Group terms of reference include principles on how we work together. <http://www.gdc.govt.nz/assets/Uploads/Report-20-44-KIWA-Group-Terms-of-Reference-and-Work-Plan.pdf>

Vital to a successful process is that everyone must feel safe to contribute, and we support each other in working together.

- As soon as someone does not feel safe, they stop contributing and the team ethos is lost – this goes for both Council staff and Tangata Whenua representatives
- We need to be able to talk frankly and honestly, and respect each other's opinions
- When we talk about safe, no-one should be afraid to ask a question, provide their opinion, or do their work at fear of being criticised
- Mutual respect is essential

Key to success will be working together effectively, showing aroha and manaakitanga. It was recognised that wastewater overflows can be a very emotive issue.

- **COVID-19**

Wolfgang discussed the implications of this pandemic at length. The groups contributions, especially at this difficult time, were greatly appreciated. It was noted that not only will the members have other pressures (e.g. work, kids, and essential workers), but a new way of working.

The project managers, including both the KIWA Group Chairman (Ian Ruru) and GDC project manager (Wolfgang Kanz) emphasised that any undue pressure will not be

placed on anyone in the group during this time. It was requested that KIWA Group members please tell us where or when they need more time or if some meeting times don't work for them, so that everyone can be accommodated.

As alert levels go down meetings can gradually become less reliant on technology. One thing Council is looking at is setting up a 'meeting space' at GDC or elsewhere (like TROTAK), where at least some of the team can meet while obeying social distancing rule and where all are safe; this will hopefully solve any IT and connectivity issues also.

*If we can take a leaf out of our prime minister's book – let's all be kind to each other.*

- **Working as the KIWA Group**

- Wolfgang explained how the KIWA Group fits into the consenting process, as follows:
  - This group is set up through existing wastewater consents. Council is collaborating / partnering with the KIWA Group to do pre-consent lodgement engagement. This is being done before the consent application will be submitted. Further engagement is possible also after that.
  - The KIWA Group work will in no manner impact on anyone's ability to be involved in the consent process once that has started. Council will be following all statutory acknowledgment requirements also, which will be another opportunity for Tangata Whenua input.
  - We are carrying out this engagement to get a better understanding of Tangata Whenua cultural impacts and perspectives, and the outcomes of the KIWA Group work will be included in the consent.
- Wolfgang explained that the engagement plan includes three work-streams:
  - Work-stream 1: Engagement at a high level with Iwi / Hapū chairs & kaumatua
  - Work-stream 2: KIWA Group – specialist representatives of Turanga Iwi – providing technical cultural input and guidance
  - Work-stream 3: The broader Tangata Whenua collective (contacting them through websites etc.) – providing a general platform for feedback from Tangata Whenua

These three work-streams provide opportunities for Tangata Whenua to engage at different levels on this consent – we recognise that all feedback is valuable and important, so want to give everyone an opportunity to speak on this topic.

We discussed potential Marae meetings. All agreed that any Marae meetings be put on hold at this stage due to COVID-19.

Murray Palmer noted that

Rongowhakaata had discussed the possibility of establishing some digital platforms for such hui as Marae/Hapū based research gatherings. That is something that is still a work in progress. Wolfgang requested Murray to contact Tee Montgomery and discuss with her any platforms/distribution lists that could be used at this stage as part of the overall Tangata Whenua engagement (Work-stream 3).

Tee Montgomery has been contacting KIWA Group members to identify which platforms are used so we can provide information for Iwi to send out and can reach as many people as possible – so that we don't only rely on conventional council platforms such as website and Facebook page.

- Ian Ruru provided background to the KIWA Group
  - Firstly acknowledging Walton for his karakia, those attending to tangihanga and to those caring for vulnerable Whanau.
  - Finally thanking past KIWA members and those attending today's hui for their contribution.
  - A key clause in the Wastewater consent was referred to.
  - This is the below:

Clause 18

The permit holder shall establish, administer, retain and be responsible for the Tūranganui a Kiwa Water Quality Enhancement Project within three months of the issue of this permit or as soon as practical thereafter.

- Ian explained that the KIWA Group was set up in 2015 through the WMC to work on the above. It was set up to be technical, tight and tactical. The KIWA Group terms of reference outline its functions.
- The purpose of the Group was discussed by Ian Ruru and Wolfgang Kanz. The below information is provided in the minutes as additional information for KIWA Group members. The function of the KIWA Group is to:
  - Provide expert cultural and technical advice as directed by the WMC to support the development of wastewater management in Gisborne.

The WMC has approved that the KIWA group assist with the engagement in the AEE for the wastewater overflows into rivers in the city.

- This work may require members of the group to liaise with and to seek the advice of wider kaumatua, Hapū, Iwi and other technical experts (such as those within Council).
- As this is such a significant issue for Tangata Whenua, and Tangata Whenua from across Turanga use the city rivers and beaches, we have included further afield Iwi including Ngā Ariki Kaiputahi and Te Whanau-a-Kai. Wolfgang noted that Ngati Porou and Te Aitanga-a-Hauiti are not yet included in the KIWA Group work, although they will have opportunities through the general Tangata Whenua consultation processes. The KIWA Group was asked whether they should also be included.

On Owen Lloyd's suggestion, the group advised that we should let those groups determine their involvement. Tee Montgomery to contact Ngati Porou and Te Aitanga-a-Hauiti in this regard. It is a korero for the Tangata Whenua reps and a decision to be made by the Tangata Whenua reps - the outcomes should then be fed back to the larger Group at meetings.

- Wolfgang advised that Council would like to provide for 2 representatives per Iwi / Hapū to attend KIWA Group meetings if Iwi / Hapū would like this. It is also good from a practical perspective, because then if one member cannot attend, then the other one can.

Council asked KIWA Group members to consider if they would like a second person to attend the meetings, even if just for some of the meetings. KIWA Group members will then need to provide GDC with their details please as soon

as possible (all contact details, including telephone numbers and email addresses).

- It was noted that the KIWA Group will also be assisted by relevant experts in meetings, depending on the content of the meetings. (Note after the meeting: For example, Dr Bruce Duncan (public health aspects)).
- Wolfgang advised that the KIWA Group will have time amongst themselves to hui – this is a crucial part of understanding where different Hapū and Iwi are sitting on this topic. The group strongly supported this. The outcomes of those hui will be brought to the KIWA Group meetings.
- Wolfgang noted that the KIWA Group has been engaged for the purpose of Tangata Whenua consultation. The focus is on assessment of cultural impacts rather than peer review of technical science reports. While all members are asked to read through the reports, the engagement will be on a technical level that is appropriate engagement and consultation. We will use future meetings to look at the technical information as a group.
- Wolfgang noted that KIWA group members will have an opportunity to provide verbal and written input.
- Murray Palmer expressed concern that there may be a scenario where there is a disagreement between Mātauranga Māori and Western Science perspectives – where these perspectives may be in conflict. Wolfgang responded that he was expecting and welcoming these differences, and that through collaborative effort we will explore how these perspectives differ. Wolfgang noted that hopefully through the use of the Mauri Compass the group will have a level of comfort in what we are trying to achieve. The compass is a tool that we are going to use to enable the korero and get all perspectives recorded. Ian Ruru added that this is an exciting project as Mātauranga Māori is being elevated to its correct status and the reason we have the KIWA Group is because everyone present is bringing their own expertise and knowledge together. Having these hui and the point of bringing people together is to give people a chance to express their views, and record why Tangata Whenua find wastewater overflows abhorrent. The group was supportive of the process, and that we can address concerns on perspectives as they arise, as we go through this process collectively.

- **Administration**

- Wolfgang provided information on administrative components of the KIWA Group. These are provided below.
  - KIWA Group members will be reimbursed for their meeting time as per the rates in the KIWA Group Terms of reference
    - \$150 for a 2 hour meeting
    - \$250 for a 3 hour meeting
    - Review time charged at the same rates depending on time allocated
  - This will require some admin work, incl. setting up in the systems, invoicing, etc.; Ally Campbell will be contacting all to set this up
  - Everyone on group was in support of this – no concerns raised.
- Wolfgang noted that KIWA Group members will be provided with opportunities for independent consultation within and between Iwi – we recognise that that is up to Iwi to decide how they want to do that. We are looking at empowering members on the KIWA Group with some budget to conduct this korero – with the understanding that GDC will require feedback and updates from this

korero. Everyone on group was in support of this approach – no concerns raised.

- The group agreed to use Zoom next time, as Microsoft Teams presented some virtual hui difficulties. It was considered likely that Zoom is a better platform.

- **Background to the work**

- Wolfgang provided a brief background to the issues. He noted that insufficient time was available to do this properly, and the next meeting will be used to go through this properly.
- Detail on the DrainWise Programme also needs to be provided at the next hui.
- Carrie White advised that she put together the cultural background document as a starting point for the KIWA Group and would greatly appreciate feedback from the group.

- **Setting immediate work activities / tasks for the team**

Wolfgang went through a number of items where KIWA Group assistance was needed. This included:

- Identification of a second Iwi / Hapū representative per Iwi / Hapū on the KIWA Group – individual KIWA Group Iwi / Hapū that currently have one representative only to please let GDC know what they would like
- A priority is proceeding with general Tangata Whenua consultation – review of that documentation is therefore the highest priority. KIWA Group members will be asked to provide feedback urgently.
- Involving Ngati Porou and Te Aitanga a Hauiti – this is something for Ngati Porou and Te Aitanga a Hauiti to consider themselves i.e. it is their decision, other Iwi can't speak for them – Tee Montgomery will contact them to discuss this
- Finalise getting information from the Iwi / Hapū reps about their electronic (website, Facebook, email lists) avenues that we can use to get the documentation out to Tangata Whenua (Tee's work)
- KIWA Group members are supported in undertaking independent consultation within their Iwi / Hapū. Council foresees this including the following (this was not discussed in the first KIWA Group meeting):
  - KIWA Group members reporting back to their Iwi chairs and / or chief executives (the senior Iwi leaders that nominated them).
  - KIWA Group members will make contact with specific people in their communities that they feel should be informed and can contribute to the mahi.
  - It is also an opportunity for Iwi / Hapū to talk to each other.
  - This should please be done over the next three weeks, to enable feedback to be included in the engagement process.

This will be discussed at the next KIWA Group meeting.

- Mauri Compass – this is ongoing work. Timeframes for this work will need to be set.

- **Karakia**

David Hawea kindly closed the meeting with a Karakia

## **Second KIWA Group Meeting**

### **Meeting Minutes**

**Date:** Wednesday 29<sup>th</sup> April 2020

**Time:** 2pm to 5pm

**Venue:** Virtual -Zoom

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor;  
Ally Campbell – Junior Wastewater Advisor
  
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Dianne Irwin - Ngati Oneone  
Ray Farmer - Te Aitanga-a-Mahaki  
Murray Palmer; Samuel Lewis - Rongowhakaata  
Karena Toroa - Ngai Tamanuhiri  
David Hawea - Te Whanau-a-Kai  
Keith Katipa - Te Whanau-a-Kai

#### **Apologies:**

Owen Lloyd - Nga Ariki Kaiputahi

#### **Left Early:**

Dianne Irwin

#### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

- **Karakia**
- **Recap of last week**
  - Ian Ruru gave walkthrough of KIWA Group website and outlined the 4 main pieces of mahi for this meeting which are as follows:
- Go through previous meeting minutes
  - Minutes moved – Ray Farmer
  - Minutes seconded - Samuel Lewis

- Discussion on working together and the common tipuna Ruapani
  - Samuel Lewis started a discussion on the common tipuna Ruapani.
  - There was general agreement regarding the common tipuna Ruapani, and that all around the table would like to work together with a common purpose.
  - Dianne Irwin noted that she would have to wānanga with Ngati Oneone to verify if that Hapū was in agreement with referencing back up to Ruapani
  - Keith Katipu confirmed he would also have to wānanga with his Iwi as at the moment he was present in terms of the Te Whanau-a-kai rohe.
  - It was agreed that as a Tangata Whenua group a statement on how we work together as different Iwi / Hapū would be formulated, for all Iwi / Hapū to approve.
  - This would be dealt with in subsequent KIWA Group meetings.

**Action Item for Iwi / Hapū representatives on the KIWA Group: To discuss this as part of the Independent Iwi Consultation process.**

- Finalise draft engagement plan
  - Feedback was received from the KIWA Group.
  - The KIWA Group was satisfied with how comments have been articulated in the draft. All agreed Wolfgang can now finalise the Engagement Plan based on comments received to date.
  - Keith stated more content / background is needed for him to contribute fully which was covered later during second part of this Hui.
  - The final engagement plan will be posted on the KIWA Group website.
  
- Explain tasks tracker process to group
  - Ian Ruru explained the task tracker.
  - This contains information on each piece of mahi the KIWA Group has been asked to do, by when, and for how much.
  - Wolfgang made the point that the cultural background document is classed as ongoing because there is opportunity for everyone on group to input into this and bring their knowledge together, and that it is a starting point.
  - The document will also be useful for other cultural water matters moving forward.
  
- Provide background on the DrainWise programme
  - Wolfgang to explain what the DrainWise programme is, how this relates to overflow issues, and what GDC is proposing to do to address them.
  - This was deferred to later on in the Hui.
  
- **Independent Iwi consultation**
  - Wolfgang stated that KIWA Group members are supported by GDC in undertaking independent consultation within their Iwi / Hapū, and between Iwi / Hapū.
  - Dianne posed a question about decision making as a collective.
  - Group members were encouraged to have Hui amongst themselves and formulate their own cultural understanding of the information GDC provides, with views presented collectively or independently as deemed appropriate by Iwi / Hapū. Wolfgang acknowledged that there may be some common ground and some differences between Iwi / Hapū, that this was expected, and that it is important that this is all recorded.



- GDC would not be party to these discussions but need to be aware of the outcomes. It is important that Iwi / Hapū provide detailed feedback to the KIWA Group including GDC.
  - Wolfgang also clarified that the KIWA Group work has full endorsement from the WMC to look at these overflows and undertake Tangata Whenua engagement.
  - Dianne will have a second representative join her and will let us know who that is after she Hui with Ngati Oneone /Ngati Porou.
- **What is DrainWise?**
    - Wolfgang presented PowerPoint slides with detail on the various wastewater projects that exist to show how they all relate to each other.
    - The KIWA Group was informed that the Wastewater Treatment Plant Upgrade is a separate project focusing on treating wastewater to a better standard. This has no effect on overflows into rivers.
    - Karena asked a question about the upgrade in Banks Street and whether this involves increasing capacity at the treatment plant. Wolfgang stated that the plant has been designed to cater for the current population and population growth.
    - Wolfgang stated that the problem is not the capacity at the treatment plant but rather the volume of rainwater in the network exceeding the system's capacity.

**Action for Wolfgang: Present to the KIWA Group the analysed flows after DrainWise is successful.**

- Keith asked if the wastewater treatment plant can be future-proofed without compromising treatment efficiency. Wolfgang said the BTF (biological trickling filter) won't perform as well and adding a second BTF (which is on council plans) would split/ increase flows.

**Action for Wolfgang: To report back to the KIWA Group on BTF loading, costs of a new BTF, and the possibility of running all wastewater through two BTFs and through solids removal and clarification.**

- DrainWise is about the wastewater conveyance network and getting wastewater through the pipes and pump stations to the treatment plant. Network issues do influence what happens at the treatment plant, because this determines how much wastewater gets to the treatment plant and it determines how much wastewater is bypassed without treatment out to sea through the marine discharge pipe.
- Keith asked whether the capacity of the plant is an issue or not. Wolfgang explained that the treatment plant has a set capacity of 450L per second. The capacity would be sufficient if less rainwater entered the wastewater network. The DrainWise project is about fixing the leaks upstream, which will then reduce bypasses at the treatment plant.
- Keith asked what the length is of an overflow storm event i.e. how often and how long the bypass operates for.

**Action for Wolfgang: To provide the KIWA Group with more information on this.**

- Mortuary wastewater was raised.
  - Wolfgang advised that work on the separation of mortuary wastewater from the domestic system has an approved budget and it is proceeding. The KIWA Group will be consulted on this in the future also. That separation will affect both DrainWise and WWTP projects because it will mean mortuary wastewater is not discharged to the sea or city rivers.
  - The KIWA Group discussed the treatment process for mortuary wastewater in the future and what this would involve in terms of design and costs. The KIWA Group concluded that this is a positive development that the group is interested in discussing further in the future.
  - The Te Karaka treatment upgrade is an ongoing project which involves looking at treatment to improve the mauri of the water on its way to the Waipaoa River by routing it through a wetland. It will also have a water quality benefit, although the consent water quality requirements are currently being met.
  - Murray asked if wastewater from these oxidation ponds and future wetland could be considered as a trial for alternate use and disposal. Wolfgang confirmed that this is the case.
  - Wolfgang also advised that GDC has applied for Crown Infrastructure Funding which would bring forward implementation of the Te Karaka wastewater treatment improvements. At the moment this work is only proposed for around 2022/23 in the LTP.
  - Keith asked if there have been any calculations made regarding the Bushmere pickup supply. Wolfgang said there are no issues with the discharge water quality from a western science perspective and that the wastewater is diluted to levels that they do not pose a health risk within a short distance downstream of the discharge point. Wolfgang noted that this does not diminish cultural concerns.
- **Wolfgang presented on the PowerPoint video on wastewater overflows and answered the below questions from the Group.**
    - Murray asked for clarification on whether more money would speed up the process of reducing the number of discharges per year. Wolfgang confirmed that money is a limitation and the program has been programmed over a timeframe to keep rates low and make the work affordable for the community.
    - The KIWA Group was informed that more money would also not result in all actions being completed immediately as addressing issues on private property will take some time. A key challenge for council is making sure improvements on private property are completed, without imposing financial hardship on the community. Council does not rate the community for private property infrastructure, and so cannot undertake private works.
    - Keith asked a question about funding and why it isn't spent on fixing these inflow issues on private property.
    - Wolfgang advised that there is an issue of equity in Council undertaking works on private property i.e. there is a concern that the general ratepayer pays for what is private responsibility, and that one homeowner should not have to pay for someone else's private infrastructure. Through the LTP Council was however able to allocate \$6m over ten years for additional public stormwater infrastructure that will help private homeowners.
    - Wolfgang addressed funding questions from the KIWA Group. He explained the Crown Infrastructure Projects applications that have just been applied for.

Considering the Eastland Trust -Wolfgang advised that his manager has suggested that this is not an issue that Eastland Trust is willing to fund. Wolfgang also advised that he had spoken to the Provincial Development Unit for PGF funding, and this work does not fall into their criteria.

- Keith asked if we have identified areas of greater need than others. Wolfgang responded that Council have looked at the wastewater networks and the most inflow came from Kaiti. Therefore the work has been focused on that area for the last 2 years. Council is also focusing efforts on inflow rather than infiltration, because that is the biggest source of rainwater getting into the wastewater system.
  - Ray asked for clarification on contamination monitoring and whether it is conducted at the exit site of the pump. Wolfgang advised that Council only monitors volumes of wastewater at the pump stations which indicates whether there will be an overflow or not (and informs whether we open the scour valves or not). Water quality is measured at the treatment plant. Water quality is also measured during and after a wastewater overflow event, with samples taken at specific points in the rivers.
  - Wolfgang advised that it is important to note that in terms of wet weather discharges we are not looking at total elimination of wastewater overflows as the DrainWise program is based on reducing rainwater inflow to a specific level of service. The aim is to reduce inflow by 85%, and work towards reducing overflows to take place only once every two years.
  - Ian clarified that the KIWA Group is being asked to discuss what this information actually means culturally. For example, is there a difference culturally if overflows went from 8 times every two years to once every two years? These are the questions the group will be discussing.
  - David stated that the sewage system sounds like it needs a full rework as this seems like an impossible task. Wolfgang advised that GDC has assessed the council network and that the public wastewater network is mostly adequate with the exception of three upgrades that are scheduled to be completed. Rather the problem is the volume of rainwater that gets in from private property infrastructure.
  - Samuel asked about making this a compliance issue and putting the information onto LIMs and ensuring homeowners fix their problems before they sell their properties. Wolfgang advised that Council have looked into making it so people can't sell their properties until they fix their drainage issues but legally this is not enforceable / possible.
  - Council is however adding this to LIMs (Land Information Memoranda) to increase community awareness and let the market also drive change. So when someone gets a LIM they ask the seller to fix the drainage issues before the sale goes through.
  - Also 60% of Gisborne homes are rentals so Council have initiated a property manager forum to engage with landlords, and use the Healthy Homes Act to drive change also.
- **Wolfgang presented PowerPoint video on the Drainwise Programme and answered the below questions from the Group.**
    - Samuel raised a question about the state of stormwater infrastructure in Gisborne. Wolfgang said it has been assessed and the majority is okay, some areas require improvements, and so will be extended/upgraded as part of renewals and upgrades programme. The stormwater system includes the primary system, which

is the pipes, and the secondary system, which are the overland flow paths. GDC manage stormwater using both.

- Wolfgang explained that Gisborne has fairly unique situations where roads have been built higher than adjacent residential land in flat areas making it difficult for bigger flows to get away. Also we have clay soils and much of Kaiti was built on wetlands. Open drains have historically also been changed to piped systems, which has reduced conveyance capacity. Council undertaking work to mitigate these issues.
- Samuel asked whether we will have another problem with stormwater capacity. In other words, if we now drain all of these areas better – will the stormwater system cope? Wolfgang advised that this is unlikely but will look into that and report back at the next KIWA Group Hui. So far council has put in 12 public stormwater network extensions in Kaiti which is the highest priority area, to improve drainage.
- Keith and Dianne asked about stormwater issues and if the ground is saturated due to stormwater not getting away, wouldn't having a soggy ground add to the issue of leaking pipes? Wolfgang agreed that water on the ground would travel down into the wastewater pipes if they are cracked or broken, and then contribute to the rainwater in the wastewater pipes. The wastewater modelling however shows that if we achieve an 85% reduction of fast inflow, not infiltration, then we achieve our target of having one overflow every two years. Wolfgang noted that this is theoretical, and the aim is of course to reduce rainwater as much as possible, and that the infiltration part also needs to be fixed.

**Action for Wolfgang: to show the KIWA Group some of the modelling council have done which shows where we have standing bodies of water and how we are going to address them at next meeting.**

- Murray asked a question about whether Infill housing and new subdivisions would be exacerbating this to some degree. Wolfgang advised that he did not consider this to be the case, stating that rather this creates opportunities as all new wastewater pipes are PVC rather than clay or earthenware and so one would expect no inflow or infiltration from those pipes, so improvements may take place. Redevelopment of areas like suggested by Housing NZ (now Kainga Ora) presents a great opportunity to 're-plumb' old areas. Kainga Ora is looking at intensifying which could lead to areas being totally re-developed which has the potential to solve a lot of these problems.
- **Any other matters**
  - The KIWA Group Collectively discussed next meeting agenda and was in agreement that next meeting will focus more on cultural aspects.

**Karakia**

## Third KIWA Group Meeting

### Meeting Minutes

**Date:** Thursday 30<sup>th</sup> April 2020

**Venue:** Virtual –Zoom

**Time:** 2pm to 5pm

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor;  
Ally Campbell – Junior Wastewater Advisor
  
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
Murray Palmer; Samuel Lewis - Rongowhakaata  
Karena Toroa - Ngai Tamanuhiri  
David Hawea - Te Whanau-a-Kai  
Keith Katipa - Te Whanau-a-Kai  
Owen Lloyd - Nga Ariki Kaiputahi

#### **Apologies:**

Dianne Irwin – Ngati Oneone

#### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

- **Karakia**  
Owen Lloyd opened the Hui with a Karakia.
  
- **Recap of last meeting**
  - Wolfgang clarified that information presented at yesterday's meeting on dry weather overflows was incorrect and he will update the KIWA group on the regional plan and permitted activities at the next meeting.

**Action for Wolfgang: to provide the regional plan and discuss the permitted activities at the next KIWA Group meeting.**

- Group asked if they have any specific questions or feedback following yesterday's meeting
- No questions were raised at this stage.
  
- **Review of technical reports**
  - The KIWA Group was in agreement that it is important to discuss the technical aspects of wastewater overflows at a level suitable for this engagement.
  - Wolfgang stated that the specialist reports we will be discussing are specific to wastewater overflows, however there is a much bigger picture which is the catchment that needs to be looked at a later stage also.
  
- **Technical Report 1: Ecological effects of wastewater overflows**
  - This technical report shows that when discharges occur out of the scour valves during overflow events, contaminants are released into the receiving environments.
  - Wolfgang stated that as part of this research, receiving environments were sampled and other data on the City Rivers was considered.
  - The report concludes that wastewater overflows are unlikely to result in adverse ecological effects that can be measured. Wolfgang emphasized that it is important for the KIWA Group to note that these findings are different from cultural and health perspectives, and in no way diminish cultural concerns.
  - Wolfgang clarified for the group that ecological effects are the effects measured against health and survival of species in the awa, such as fish and bugs. The researchers brief was specifically to look at the wastewater overflows and the environments effective by these.
  - Murray Palmer asked a question about whether the ecological testing that had been done as part of this process included full effluent toxicity testing.
  - Wolfgang stated that council has not conducted a full effluent toxicity test because of what the water quality results have shown.
  - Murray and Wolfgang discussed the potential effects of overflows on cockles. Wolfgang doubted that they would be negatively affected by the overflows but stated that there are also health risks associated with them.
  - Owen added to this conversation and mentioned that the potential ecological effects are different when discharges occur during high tides and in low tides, as there is a different dilution process and chance of contaminants going into the mudflats and joining up with the river.
  - Wolfgang agreed with Owen that factors such as the tide, wind and river flows do make a difference and stated that a hydrodynamic assessment has been done as part of this work which looks specifically at these factors during rainfall events. Based on this council have predicted where the wastewater gets to and what the concentration of the wastewater components are in those areas after rainfall events.
  - The KIWA Group agreed to move on and discuss the other technical reports which are more relevant to the work the KIWA Group has been asked to focus on for today.

- **Technical Report 2: Ecological risk assessment of emerging organic contaminants in Poverty Bay from wastewater overflows**
  - The KIWA Group was asked to look at this report as it contains information on the bad substances that have been found in our wastewater which hadn't previously been considered, and that locally council have done a lot of work on recently.
  - This report is relevant to wastewater overflows as these bad substances are present and untreated during overflows and can also pass through the wastewater treatment plant undetected.
  - This report predicts the concentrations of emerging organic contaminants in the environment and it considered shellfish which is very important from a Tangata Whenua perspective.
  - Wolfgang advised the KIWA Group that there is uncertainty in regard to emerging contaminants because there is not yet enough research internationally, and we are not able to quantify the risks associated with emerging organic contaminants (as this is an area of ongoing research). What this report does suggest however is that in the absence of knowing we should assume these contaminants do pose a risk.
  - Keith raised a point about manufacturer's responsibilities to clarify and conduct this research themselves.
  - Ian added to this point that consumer awareness could be increased on the dangers and associated effects of different substances.
  - Wolfgang stated that the Wastewater Technical Advisory Group and previous KIWA Group had discussed this but there was lack of proven negative effects and manufacturers are likely currently not obliged to do anything until these effects are proven.
  
- **Technical Report 3: Quantitative Health Risk Assessment for Wet-Weather Wastewater Discharges into City Rivers and Poverty Bay, Gisborne**
  - Wolfgang emphasized the importance of this report to the KIWA Group's work and that this type of report is considered best practice on how to assess human health risks throughout the world.
  - However, Wolfgang also stated that it is important to note that this report looks at pathogens but not bioaccumulation (persistence) and pathogens in the sediments that may get released over time.
  - As Wolfgang mentioned earlier in the meeting, the model in this report used a hydrodynamic assessment to look at different rainfall scenarios (and variable tide, wind, and river flows), including before and after proposed improvements on wastewater overflows.
  - The findings of this assessment show that risks will reduce substantially but will not go away after improvements.
  - Wolfgang emphasised to group that this is a reduction, not an elimination.
  - Similarly to the other technical reports, this report also discusses water quality during overflow events but does not make strong conclusions on contaminants in shellfish.

- Wolfgang suggested that the KIWA group should consider that there will be lingering effects on water quality after wastewater overflows for periods of time that we don't really know.
- Ian stated one of the main groups affected in terms of sediment would be waka ama and asked if any health studies had been done on this.
- Wolfgang stated that this report covers water quality during an overflow event but not effects due to pathogens persisting for longer in sediments.
- However council do know that viruses persist for much longer in sediments than water.
- Wolfgang suggested that the key takeaway from this report is that improvements will reduce the overall risks compared to existing conditions.
  
- Murray noted that the author of this report points out that overall catchment issues have not been included and actual health risks cannot be assessed. Wolfgang, Owen and Murray are in agreement on this.
- Keith added that even though we are only assessing one part of discharge release, the issue is that we don't know what part this plays in the larger context as we have nothing to assess it against.
- Wolfgang clarified that later discussions will help to place this issue within the context of the catchment.
- A resulting action for KIWA Group from this discussion was suggested by Owen for Tangata Whenua to discuss rahui and its effects, times and reasons as part of this process.
- Keith added that Tangata Whenua should also discuss their concerns about obligations on companies producing harmful substances that get into the wastewater system, and the idea that manufacturers can do what they like unless negative effects can be proven.
- Wolfgang noted that community pressure is often required before some of these issues are addressed by suppliers. The KIWA Group agreed that this could be looked at in the intra and inter Iwi discussions detailed in the task tracker on the KIWA Group Website.

- **Detail on wastewater treatment plant bypasses and broader issues**

- Wolfgang presented a Suitability for Recreation assessment to give more context on this issue, as the KIWA Group agreed further information was required on this following our last hui.
- This assessment was applied to marine outfall, beaches and rivers to get an understanding of what the water quality was like both during and in between wastewater overflow events.
- The results of this showed that for the area around the marine outfall before 2011, the suitability for recreation grade was 'very poor', after 2011 when the wastewater treatment plant was built this grade improved from 'poor to fair', and after the next upgrade in 2019/20 the quality is predicted to be classed as 'good' based on this standard.
- Ray asked a question about how we determined this difference.
- Wolfgang said that the prediction of water quality after the next upgrade is based on taking out the solids and running the water through UV, but as the upgrade has not been built yet the 2019/20 standard is only a prediction.
- Wolfgang also stated that it is important for the KIWA Group to note that just because there are high levels of pathogens and bacteria in some of these



environments already, this does not in any way diminish the cultural impact of wastewater overflows.

- Wolfgang also addressed the KIWA Group's questions from our last Hui about Biological Trickling Filters and has since included two documents on the KIWA Group website with information on this topic.
- These documents look at the effect the Drainwise program would have on the wastewater treatment plant and out to sea.
- The conclusions of these documents also show the frequency and duration of overflows.
- The KIWA Group agreed that this topic can be revisited and discussed further at a later stage.
  
- Samuel raised a question about how much water the treatment plant requires to function.
- Wolfgang clarified that the amount is a lot and that in the treatment plant upgrade, recycled water is going to be used for washing processes.
- Wolfgang did not have a figure for this amount but will be able to provide this for the KIWA Group.
  
- Samuel asked about current water use from the Wainaki dams and wanted to know how much that is.
- Wolfgang stated that he would get that information for Samuel and will present once available.

**Action for Wolfgang: to provide information on the Wainaki dams at the next KIWA Group meeting**

- Wolfgang made an important point for the KIWA Group to note that whilst there is a daily volume that the treatment plant can handle, there could still be peak flows that are too high.
- This is where the idea to store peak flows and route them through the treatment plant in a controlled way makes sense.
  
- Owen asked a question about engineering and the possibility of creating a storage pond which could potentially solve the problem.
- Wolfgang asked to make this an item for discussion at a separate date and the KIWA Group agreed to this.
- Wolfgang stated that he has looked at some storage options for this volume of water and predicted costs are between 150-200million.
  
- The KIWA Group is in agreement that the discussions around storage can be revisited at another time.

• **Stormwater detail (flood areas and capacity)**

**Addressing Samuel's question about Stormwater capacity and ponding**

- Samuel asked at our previous meeting about surface ponding and whether this can be stopped from happening on private properties then water will not get into the wastewater system.
- Wolfgang is in complete agreement with this statement and emphasised that this type of work forms part of the Drainwise program.
- The stormwater network has been looked at and modelled by council, and Wolfgang showed a map that illustrates ponding in Kaiti. This map was based on half of the rainfall falling on gardens and half piped into the network, and it was based on a 1 in 10 year storm event.
- The results of this showed that during a big rainfall event, there was a substantial amount of water ponding on private properties.
- Part of the problem is that Gisborne has very flat land and therefore water cannot get away easily.
- Wolfgang stated that there are proposed upgrades to council stormwater networks in some areas which aim to address the above issues.
- Karena asked whether council upgrades have made a significant difference yet.
- Wolfgang stated that some recipients of upgrades that have already been conducted have thus far reported a decrease in flooding issues.
- Wolfgang also emphasized however that council needs to better monitor the success of upgrade projects to determine whether these are resulting in improvements.

**Action for Wolfgang: To put monitoring the success of Stormwater network upgrades on the monitoring radar and report back to the KIWA Group on this.**

- Ray asked a question about Sponge Bay and how flooding and ponding issues are dealt with in this area.
- Wolfgang stated that because it is a modern development area, they have better infrastructure and all appears to be ok, however there were some flooding issues initially.
- Keith asked a question about seepage into sewage pipes running through these areas and whether DrainWise will fix the problem.
- Wolfgang stated that in terms of seepage in winter, we have a base flow going through and into the public and private networks as all seepage into the system is impossible to stop.
- This seepage comes from both private and public systems and in between rainwater events there is no problem with capacity at all, even in winter.
- Wolfgang emphasised that direct inflow during heavy rainfall events is the primary reason for capacity issues in the network and subsequent overflows. Infiltration needs to be addressed, but is much less of a problem.
- Most infiltration comes from private property and this will take a while to resolve but it is being addressed by council.

**Action for Wolfgang: to have hydrograph during rainfall event ready for the next meeting to show the KIWA Group.**

- Keith asked a question about how much water would have to be held back during big events to prevent these issues.
- As an example, Wolfgang mentioned that the maximum discharge recorded at Gladstone Road Bridge in the last 3 years was 25million liters. This indicates the amount that would have to be stored to prevent overflows into the City Rivers.
- Wolfgang clarified that this estimate was worked out by measuring flow rates and time at the wastewater valve. There is also modelled information available.
- Keith rephrased his previous question and asked how much stormwater, rather than wastewater would need to be stored to stop overflows.
- Wolfgang stated that we would need to stop 85% of stormwater from getting into the system to stop overflows.
- This is an issue of rainwater getting into the wastewater system on a private property scale, which makes storage impossible as this is occurring all over the city.
- Council is focussing on improving private property stormwater over time through the DrainWise program to minimise the risk of ponding on private properties which leads to water getting in to the wastewater system.
  
- Samuel asked how many improvement projects council has completed and how many more they plan to do.
- Wolfgang confirmed that council have completed approx. 2 of these projects in Kaiti thus far and that they will likely do at least another 12 in this area before moving on to other areas in the city.

**Action Point for Wolfgang: to present a map of the area council are investigating which includes where council plan to make solutions at the next Hui.**

**Action Point for Wolfgang: to provide more detail on the DrainWise programme and how council is looking at inflow and infiltration at the next meeting to increase the KIWA Group's general understanding of these issues.**

- **Engagement questions**

- The KIWA Group agreed that given time constraints, Iwi / Hapū representatives would look at the questions below after the meeting.
- The KIWA Group was also in agreement that the outcomes of these considerations will be discussed collectively at next week's hui.
  
- Questions:
  - What is your relationship with the water? Contemporary and historical
  - How do the overflows affect that?
  - What do you understand about the causes of overflows?
  - What do you understand about the effects of overflows?
    - Western science
    - Te Ao Māori
  - What do you understand about the solutions for overflows?
  - How will improvements affect that?
  - Why will your feedback help and contribute to the management of wastewater overflows?
  - How can Tangata Whenua and the overall community help?

- **Mauri Compass introduction**

- Wolfgang stated that whilst it is proposed that the KIWA Group representatives will be looking at the Mauri Compass in this process, going forward there will be great benefit in KIWA Group members doing the Mauri Compass training for potential future work that could include the Mauri Compass.
- Wolfgang clarified that whilst this tool can be used by any Iwi or Hapū, the outcomes depend on that Iwi and Hapū, and while the details will vary between any Iwi or Hapū, the end mauri values could be compared.
- This tool is proposed to be used to get the KIWA Group thinking about the issues that affect Tangata Whenua and reflect on what needs to be done to address them.
- It is a people-centered approach and involves asking applied questions about relationships between the community and water bodies.
- It is intended that the KIWA Group goes through the Mauri Compass assessment process thoroughly at the next hui to further understand the cultural effects of these issues.
- The KIWA Group was informed by Wolfgang that the Mauri Compass tool was designed to be comparable to the western science processes of cause and effect.

However council is not suggesting that mauri is the only factor that should be assessed culturally, rather it is being viewed as a good indicator of views and as a way to get this korero going. Also the Mauri Compass is just one of the tools available, and is itself only an indicator of mauri.

- David stated that from his perspective, we will never be able to fully restore the mauri to Gisborne's waterways as the fish and marine life are no longer there.
- Wolfgang stated that when the Mauri Compass was being designed it was discussed with the previous KIWA Group and these issues were carefully considered. One point that they were very clear about was that everything has mauri regardless of what state it is.
- This work is primarily about the change in mauri and about figuring out how we can improve the mauri and meaningfully improve our water bodies.
- Ian emphasised that we are looking for feedback from the KIWA Group on how accurate they feel this perspective is and are also asking the following questions:
  - Is council going to improve the mauri from a cultural perspective through this process or won't they?
  - What can be done by council to improve it?
- David made a statement that he does not think there is a clear understanding within the group about what mauri really is, and what happens when tapu gets broken.
- David also stated that he appreciates that council want to make improvements to water standards, however he does not think we will ever get close to fully restoring Mauri from his understanding of what mauri is.
- As mauri is very difficult to explain and there are many different interpretations of its meaning, David suggested that mauri as a concept, must be treated carefully.
- Ian agreed with David that this is a fair assessment and that there are different models and thinking about mauri which exist so it will be important to hear everyone on the KIWA Groups thoughts about this.
- Samuel added that the KIWA Group should have a deeper discussion on what mauri actually is in order to move forward with a collective understanding. This is something Samuel would like to give deeper consideration to.

- The KIWA Group agreed with Samuel, Ian and David that once we have a clear common understanding of mauri then we will have a scale for comparison and definition.

**Action for Iwi representatives: to discuss the concept of mauri independently before the next KIWA Group hui.**

**Action for the KIWA Group at next meeting: to report back on the above tasks and have a collective discussion about mauri and its definition.**

- Wolfgang stated that council will be guided by Tangata Whenua on this discussion of mauri.
  - The rest of the KIWA Group agreed with this and supported the idea that it is important to have this discussion.
  - Karena stated that last year when the KIWA Group discussed their differing views on the concept of mauri that this resulted in a really effective, robust discussion which allowed the group to move forward with a collective understanding.
  
  - The KIWA Group agreed to allocate time at the next meeting to discussing the concept of Mauri and forming a collective understanding.
  - Wolfgang suggested that as a result of the next hui, the KIWA Group comes to a conclusion on how or if we use the Mauri Compass going forward.
  - What is important is that the right korero happens and council are able to capture the sentiments of the different Iwi and Hapū, and what would be great is if the KIWA Group reaches a level of consensus and can capture any concerns and sentiments.
- **Any other matters**
    - Ray stated that he feels that this korero is important for Tangata Whenua and he is grateful that he has been included in this decision-making process.
    - Ray also appreciated that a Māori tool is being incorporated to assist in cleaning up our waterways.
    - Karena and Samuel agreed with Ray and extended their gratitude for being involved, and for what they have learnt from the discussions that have been had during these hui's thus far.

- **Karakia**

Owen closed this hui with a karakia.

## **Fourth KIWA Group Meeting**

### **Meeting Minutes**

**Date:** Wednesday 6<sup>th</sup> April 2020

**Time:** 2pm to 5pm

**Venue:** Virtual –Zoom

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor;  
Ally Campbell – Junior Wastewater Advisor
  
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
Karena Toroa - Ngai Tamanuhiri  
David Hawea - Te Whanau-a-Kai  
Keith Katipa - Te Whanau-a-Kai  
Owen Lloyd - Nga Ariki Kaiputahi  
Matawhero Lloyd - Nga Ariki Kaiputahi  
Joanne Pere - Te Aitanga a Mahaki

#### **Late:**

Murray Palmer; Samuel Lewis - Rongowhakaata

#### **Apologies:**

Dianne Irwin – Ngati Oneone

#### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

- **Karakia & Welcome for new members (Joanne Pere and Matawhero Lloyd)**
  - David started this meeting with a Karakia.
  - Joanne and Matawhero introduced themselves to the group and provided some background on previous mahi they have done.
  - Ian agreed to give Joanne and Matawhero an induction to the group as KIWA Chairman to get them up to speed with what the group has done thus far.
  - Wolfgang reiterated to the KIWA Group that Council is not looking for them to endorse wastewater overflows, rather Council want to have productive korero

about the cultural impacts of these overflows and record these to better understand the effects and make decisions. This is a pre-consent lodgement engagement that will in no way affect the members of the KIWA Group's ability to comment on the consent at a later stage.

- **Recap of last meeting**

Wolfgang requested that we first discuss the administrative tasks below.

- Setting up KIWA Group members in the Council accounts system
  - Ally reminded the KIWA Group that creditor forms have been sent out to those who are not yet set up in Council's accounting system. Forms have also been sent to those who are already in Council's accounting system, but whose details need to be updated and verified.
  - The KIWA Group members agreed to provide Ally with these details.
  - Ally will send these forms to Joanne and Matawhero to also complete.
- Optional Technical Session
  - Ian will send a Zoom meeting invite for an optional technical information session to all KIWA Group members, who have been advised that they can attend if they would like more background on the technical aspects of this work.
- Actions from the previous KIWA Group meeting
  - Wolfgang presented the KIWA Group with maps of areas affected by overflows. These maps show the primary discharge points which are opened as a first step during big rainfall events. The secondary discharge points were also located on this map, these are opened when bigger rainfall events take place.
  - Wolfgang presented a map to the KIWA Group of historical and current overflows. In recent years Council have managed the overflow points to be limited to only a few, and now it is unlikely tertiary overflow points will need to be opened if primary and secondary discharge points are carefully managed. Wolfgang stated that this is a procedure council have been doing to try and reduce the number of locations at which overflows occur.
  - Wolfgang also presented the hydrodynamic assessment work which council used to predict where wastewater and concentration of pathogens occur after an overflow event, based on tides, winds and other factors.
  - Council have asked their wastewater engineers to model what this would look like if 85% of rainwater was reduced from the wastewater system. The results predicted that if the Drainwise program is successful, there would be significant overall reductions in the dispersion and concentration of pathogens.
  - Wolfgang emphasised that this is modelled information and not measured information. However, this does show that what council are proposing to do will likely have a significant impact on water quality.
  - Wolfgang informed the KIWA Group that more information on the legal aspects of this process, and why council require consent, has been provided on the KIWA Website. This is available for anyone to discuss and read through if they would like to do so.

- Wolfgang addressed Samuel and Keith's questions from the last Group hui about the focus areas of this work and how Council is approaching them. Wolfgang presented a map of Whataupoko with focus areas identified. Maps of Gisborne South and Kaiti's focus areas were also shared to show where council are going to further investigate and assess ponding issues on private properties. Wolfgang clarified that council are trying to get to high priority areas first, and are currently focussing upgrades and assessments in the Kaiti area, as was previously mentioned during last week's hui.
  - Wolfgang presented information on wastewater storage options which shows that as current volumes are so high, the costs for storage are unachievable for ratepayers at this stage. Wolfgang shared information on the size of the area that would be needed to store current wastewater volumes. This shows that the size of site required would be logistically extremely difficult and impractical to build in an urban area and would lead to even larger costs.
  - Wolfgang presented modelled wastewater volume information based on actual data from Council's monitoring records. These models show that volumes will significantly reduce over the 2 year and 10 year periods if the DrainWise Programme is successful. Wolfgang clarified that storage options will become more feasible once we have significantly reduced the wastewater volume by addressing rainwater inflow and infiltration issues.
  - Wolfgang explained Council's strategy to address private issues on private property (the issues for which homeowners are responsible) to the KIWA Group. This strategy document has been provided on the KIWA Website in the compliance and enforcement section for KIWA Group members to look at further if they wish. Wolfgang stated that council are taking an empathetic approach as private infrastructure issues can cost a lot of money to fix and there will be affordability issues for homeowners. How Council can assist people with these costs is part of that strategy.
- Wolfgang stated that other technical information will be addressed during the optional technical session next week. The KIWA Group agreed that cultural aspects and views on mauri should be the focus for today's hui.
    - Wolfgang clarified how the KIWA Group is being included in the consent application process. The outcomes of this engagement will be captured and a document will be produced by the KIWA Group collectively, that fairly shows the views and opinions of Iwi. This KIWA Group report will sit as an appendix to the consent application and will be used to describe the effects of wastewater overflows and of reducing wastewater overflows from a cultural perspective.
    - Ray asked whether there has been any input from the Wastewater Management Committee on this. Wolfgang stated that the Wastewater Management Committee have endorsed the decision to engage the KIWA Group as part of this consenting process. Council will report back to them at the next Wastewater Management Committee meeting to notify them of the progress that has been made. There will also be an additional meeting with the Wastewater Management Committee where council will again present on the work that has been done to make sure they are happy with the process.



Ian confirmed that he will be organising this senior management meeting between the Wastewater Management Committee and Iwi representatives.

- **Mauri Discussion / Whitiwhiti Kōrero**

The Group took a 5 minute break before moving on to the mauri discussion whilst waiting for Murray and Samuel to join in.

- Setting the scene (Owen Lloyd)



Ian shared his screen and Owen presented in conjunction with this information. Owen stated that he has done some research into mauri and has collated this with his own knowledge. Owen broke this discussion down into 12 blocks for the KIWA Group to focus on and discuss in relation to mauri.

<p>1.</p> <p><b>Mauri</b></p> <p>life Principle.</p> <ul style="list-style-type: none"> <li>Celestial Energy</li> <li>All things have Mauri</li> <li>Mauri tu,</li> <li>Mauri ora.</li> </ul>	<p>2.</p> <ul style="list-style-type: none"> <li>Tane's Ascensions to Tihi o Manono.</li> <li>3 x Kete o te Wananga.</li> <li>Iho Matua.</li> <li>Ahu Raua <ul style="list-style-type: none"> <li>Huka Tai</li> <li>Rehu Tai</li> </ul> </li> <li>Papatatani (inscribed Tablet!)</li> </ul>	<p>3</p> <p>Kauae Runga (Celestial)</p> <p>Kauae Iaro history, people, whakapapa Journeys &amp; People etc.</p> <p>Hoani Whakaro 1844-86 Mehi Te Mahatorohanga 1800-1884</p>	<p>4</p> <p>Mauri: life Principle</p> <ul style="list-style-type: none"> <li>Energy: allows Kaitiaki to bring abundance &amp; life to areas.</li> <li>All things have Mauri</li> <li>Celestial/Physical</li> <li>Kohatu: Symbol/Talisman</li> <li>Rehu Papatatani.</li> </ul>
<p>5</p> <p>Mauri = Venerable needs Protecting.</p> <p>Mehi o te Tohunga</p> <p>No Mauri no life!</p> <p>Cursing (Scurfew) / blessing of land</p>	<p>6</p> <ul style="list-style-type: none"> <li>Mauri its role + uses</li> <li>Kohatu the vehicle.</li> <li>Power to protect material Mauri.</li> <li>Creation of Hine Ahuone</li> <li>Tiri<sup>1</sup> Kopa<sup>2</sup> te Pae<sup>2</sup> Ka kaha te iwa Tangaroa ki te whaiiao Te heu Mauri ora!</li> </ul>	<p>7</p> <p>Tapu/Noa</p> <ul style="list-style-type: none"> <li>Protector of Mauri</li> <li>loss of Mauri</li> <li>Man suffers.</li> </ul>	<p>8</p> <p>Tohunga</p> <ul style="list-style-type: none"> <li>Makutu</li> <li>Tapu/Noa (Balance)</li> <li>God gives it away</li> <li>Water fall</li> </ul>
<p>9</p> <p>Tohunga</p> <ul style="list-style-type: none"> <li>ability to read Mauri stones</li> <li>under stood the Power + Principle</li> <li>migrate, disapear</li> </ul>	<p>10</p> <p>Violation of Tapu.</p> <ul style="list-style-type: none"> <li>so bad tohunga suggested me hoki te Mauri ki Hauaiki.</li> </ul>	<p>11.</p> <ul style="list-style-type: none"> <li>Korowai + Rapaunui</li> <li>Forest - Birds - soil erosion</li> <li>River dirty - silt -</li> <li>Commerce</li> <li>from Mauri ora to Mauri Mate.</li> </ul>	<p>12.</p> <p>Mauri: life principle, mauri transfer</p> <p>Kohatu: Rapa Inua</p> <p>Restoration of Mauri = wai ora!!</p>

- Block 1 focussed on mauri the life principle and where this life principle came from. Owen stated that mauri is a celestial energy and all things have mauri.
- Block 2 provided detail on Tane's ascension to Tihi o Manono and the reason for this which was to seek out the 3 kits of knowledge and also the 2 rocks which were called Rehu Tai and Huka Tai, which held within them the ability to create life on this earth.
- Block 3 described the celestial realm, history, people, whakapapa, and journeys.
- Block 4 looked at the mauri life principle and how energy allows Kaitiaki to bring an abundance of life to areas. Owen reinforced that all things have mauri, whether it be celestial or on earth.
- Block 5 explored the vulnerability of mauri and the principle that if there is no mauri, there is no life. Owen stated that mauri needs protection from harmful influences and it is the responsibility of the ariki, rangatira and tohunga of the people to provide that. All creation is endowed with mauri.
- Block 6 detailed the role of mauri and its uses, and how mauri represents and facilitates life.
- Block 7 discussed why tapu was instituted to protect mauri. Owen emphasised that when you break tapu, there is a price to pay. Violating it weakens the mauri so the land becomes ill and therefore the people also become ill. Man suffers when mauri is opened up to negative influences.

8. Block 8 discussed tohunga and the balance that exists between tapu and noa. How this balance works is God giveth, God taketh away explained Owen.
  9. Block 9 explained the ability tohunga have to read mauri stones and understand the power and principles. Owen stated that driving the mauri out of a place leads people to move and this was often used by tohunga to invigorate or to dissipate the mana and mauri.
  10. Block 10 explained why violating tapu is considered really important as if the tapu is broken, the mauri is rendered weak and unable to fulfil its function.
  11. Block 11 explored Korowai, Papatuanuku and the effects of breaking the tapu in the case of deforestation, which has led to a loss in bird life and has impacted on the abundance and vigour of pine forests. Owen emphasised that the land cannot sustain the pressure that is being put on it, and the ways of colonist's constantly violating mauri ora has led this to be replaced by mauri mate.
  12. Block 12 explored how mauri being a life principle enables the mana to be transferred.
- Owen stated that these blocks explore some of what drives the mauri. If the mauri is not well or is weak, then our land, people and rivers will become weak emphasised Owen.
  - These blocks provide a brief overview of the concept, from which questions can be answered using the Mauri Compass tool. Owen gave an example by addressing the question on how the water body affects cultural practice, to which he answered "if you affect the water, then you affect me".
  - Ray and David commented that they feel this was a very good and fair explanation of mauri.
  - David explained that he sees the mauri as Owen explained it, but also that in his experience, mauri can be very unforgiving. David shared a story about 3 tohunga who came to his Marae when he was young, and they stopped at a site where maize was growing in the paddock. David stated that there was one spot in this paddock where maize never grows, and they had karakia there on their way down to the river. The ground then opened up and these things came out of the hole and dived into the river. Like Owen explained about the principles of mauri, David stated that this had happened because the mauri had been desecrated in such a way, and that the spot where this had happened was where all the pito had been buried.
  - David explained further that he sees mauri and tapu as interchangeable, however he thinks the name Mauri Compass is a well-chosen name for a tool that is being used to try and lift the mauri of our waters. He does still believe that this will be a very difficult job as we can never get the water back to its previous state because the mauri has been so heavily desecrated.
  - David also shared another encounter he had whilst building his home. One day he woke up with a fright and knew there was something wrong at the pa. When he got there he found that a carpenter had cut a hole in the bench because someone had told him to put a mauri stone in there. David said no, because he had been taught by the tohunga that mauri can come out in very different forms, especially when you don't have an understanding of it. mauri has more power than people realise and this is David's perception of mauri.

- David reaffirmed that he does however agree with Owen's perspective and can see that there is potential to go a long way and make this issue better through this mahi.
- Samuel agreed with Owen and shared that he has had his own experiences with mauri, as a major part of his father's mahi involved lifting tapu. Samuel learnt from a young age that mauri is a very dangerous thing when we don't know why it has been put somewhere, and when we are unaware of how we should act and behave in alignment with its purpose, then we are in a dangerous situation.
- Samuel emphasised that everything living has mauri, including water bodies which are made up of multiple mauri. Ecosystems work in harmony with themselves and everything else to provide life for everything and everyone who comes in contact with it. Tapu and noa are heavily involved with this.
- Samuel believed that having this conversation collectively was very important and mentioned that in addition to mauri, the word tikanga is also central throughout all Iwi documentation and yet there is no explanation for it. Samuel noted that it is important for us at this level and for these consultation purposes to discuss this more in the future.
- Samuel also noted that mauri's tangible aspects have a place in whakapapa. Samuel recalled from a previous discussion he had years ago about mauri, that Māori are born with mauri and the tangible part of it exists within DNA coding.
- Samuel reaffirmed that he has no problem with the name the Mauri Compass and noted that he sees it as an assessment tool, but felt the need to qualify separate to that, what mauri is.
- Owen likened mauri to a spinning wheel in a contemporary context, explaining how when you put weight in the appropriate places on a spinning wheel, this keeps it balanced and stable. Owen stated we can all agree that balance is important, whether you are Māori or non-Māori. The meaning of life is balance and we require that balance to survive.
- Ray agreed with these views and emphasised to the KIWA Group that there are two compasses - the Western World Compass and the Mauri Compass. Ray suggested that the first letter of each direction (North, East, West and South) stands for 'Natures environment welcomes sustainability'. Ray also suggested that these directions stand for the following views:
  - North: Nationalities of the World must observe and respect the habitat so that the,
  - East: Environment can be assessed, screened and tabulated where,
  - South: Science outcomes are understood for the health status,
  - West: wisely, ethically, and second-to-none.
- Ray suggested that the above is what the KIWA Group have just discussed and noted that mauri and clean mean similar things, however in Māori culture people strive to achieve more than just making something 'clean'.
- Ray also noted that the Mauri Compass has 12 sections like Owen's Korero, and they always start and end with Tangata Whenua.
- Ray shared that was his perspective on how he envisages these two compasses to work, after receiving direction from Wolf and Ian, and listening to today's Korero.

Ian noted that he appreciates the robust conversation that took place today, despite the challenges of having to meet online and under abnormal circumstances due to COVID-19.

The KIWA Group is in agreement that we are all now on the same page about the meaning of mauri, and the use of it in the name Mauri Compass.

- Owen stated that because we now have a reasonable understanding of mauri, the key thing to discuss moving forward is how the different components of the Mauri Compass can be measured and understood. Owen emphasised that the KIWA Group will need to understand how both Western Science and Māori lore sit together in this process, as the parallels between the scientific and cultural aspects of this work will help to emphasise its importance.
- Owen suggested that this is now about having the right ingredients to enable the outcome and to ensure that this outcome is reached safely and has benefits for the whole community.
- The KIWA Group agreed with Owen's point of view.
- Samuel asked Wolfgang if he felt better informed after being included in today's conversation. Wolfgang stated that he found it highly beneficial and privileged to be party to this korero as it provided him with a deeper insight into Te Ao Māori and the meaning of mauri.
- Samuel noted that it is important to recognize how adaptable Tangata Whenua are, especially in their ability to use one kaupapa for another.
- Ray stated sincerely that Papatuanuku has been abused and it is time to move forward collectively and give her back the dignity and respect she deserves.
- David read the definition of mauri from one of his books to the rest of the KIWA Group. Mauri is a term used to describe a life force or life principle and ethos, of all objects both animate and in-animate within the universe. This life force can be focused into a material object. Carved mauri stones were buried in tribal lands to maintain the mauri. Mauri could be strengthened or diminished, or transmitted like mana, and is closely associated with other cultural concepts such as atua, tapu, and wairua.
- Owen stated that it is clear that the Mauri Compass is an important aspect in the planning of this work and he is happy to move forward. The KIWA Group agreed with Owen that we are ready to address the Engagement Questions presented at the last hui.

- **Questions from the Engagement Plan**

- Ian asked the KIWA Group if they would like to participate in breakout rooms in groups of 3 to further discuss these topics. The KIWA Group decided collectively that everything has been covered thoroughly and everyone has developed a good understanding so can continue on.
- **What is your relationship with the water? Contemporary and historical.**
  - Ray answered that to him, it is the health and survival of flora, fauna and people.

- Matawhero stated that he views this as identity, history and sustainability.
- Owen stated this his view is kou te wai ko te wai ko ou.
- Murray answered by sharing a story from when he was younger and used to walk around a lake in Auckland to get to school every day. He recalled that there was always a unique presence near this lake that was hard to describe. He recalled thinking about the area a lot throughout his life and explained that when he visited the same place years later, the feeling was exactly as he had remembered it.
- Matawhero also added that water is much more than a resource. It embodies and carries principles of being, life, purpose and identity, therefore it is important to treat it meaningfully. Water is also culture, and when water becomes polluted, so does the culture.
- Ray stated that water comes from Ranginui the Sky Father. When he cries, his tears flow across Papatuanuku and into our rivers, lakes and streams for our sustenance. There is a spiritual aspect of all things living integrated into this, he stated.
- Matawhero also noted that water has a personality, and gave the example of clean water from the sky which has a clear personality and purpose. He noted that sometimes when these personalities clash it creates challenges and forcing those personalities and water bodies into the same space does have an impact. Knowing this helps can help us better direct them and keep them safe, he stated.
- Owen added that a prime example of what Matawhero has said is what happens at Cape Reinga where the seas meet and don't mix, rather they fight and cause an imbalance.
- Samuel shared that he feels, sees, and understands his connectivity to water, in line with what Owen said earlier – I know I am the water and the water is me. An important aspect is recognising that a divinity belongs there, and recognising Māori philosophy about particular spaces by bringing in the practice of tapu and noa, and not mixing things.
- Owen acknowledged that this is similar to what we are trying to achieve now by taking water from one point and trying to move it to another. He noted that this is like a contemporary version of a rahui and until certain rituals and learnings have been absorbed, that water is not ready to be utilised until such time when the rahui has been lifted. There are some elements within the water that we are not capable of separating at this time, which poses the need for the rahui suggested Owen. The water is unusable in this state and needs to go through a process, whether chemically or naturally, to make it safe and ready to be reincorporated into the world.
- Karena agreed with Owen and Samuel and shared that she personally feels that water is life. Karena witnessed many rituals and traditions during her upbringing that took place in and involved water, and as she still lives near the moana now, she feels she has an intimate relationship with the wai.

Wolfgang clarified that this is not the only opportunity the KIWA Group will have to discuss these questions, rather this is just a starting point to get the conversation going.

- **How do the overflows affect the water?**
  - Ray shared that he feels the overflows affect the whole of Aotearoa because an overflow of sewage into any waterway leads to a large scale of contamination and makes it unsafe to use.
  - Owen stated that just the thought of it occurring is unacceptable to Tangata Whenua, and we have to take collective responsibility to create change, otherwise this will have negative impacts for the entire community.
  - Members of the KIWA Group then shared more childhood memories related to growing up near, around and interacting with water. Stories of fishing and cooking associated with the regions waterways were shared, and the KIWA Group agreed that the wastewater overflows and catchment issues have largely taken these aspects away from the City Rivers.
  - Owen stated that these are the things which have been big losses culturally for Tangata Whenua, who are no longer able to rely on the water to supply food and sustenance.
  - Matawhero noted that some of the obvious effects of overflows are on the health of the community, and that catchment level overflow impacts are significant.
  - David and Ray shared similar stories from their youth during times where they had relied on being able to catch fish and live off the sea during difficult financial times.
  - Matawhero shared his view of the effect that overflows have on mauri in his area of Mangatu, as river overflow events lead to water merging with the bodies in the cemetery, from which the pipe sucks water straight up into the community. Although this is not related to the river overflows, the same principles apply.
  - Owen emphasised that they see the effects of the pollution and of mauri being desecrated and violated at Mangatu, and pointed out that the average age of those buried in the cemetery there are 37. Owen emphasised that any pollution in the water has drastic effects, whether they be spiritually or physically, we are talking about the same thing.
  - David noted that at Waituhi they have a community water scheme. Last year David got a sample of the water analysed and found there were certain elements in the water that the filtering system wasn't handling. There is a significant amount of people in that area who source their water from the river and through this system, and that is why David has a lot of interest in this issue because he recognises that everyone needs and rely on this water source in his community. David also noted that NZ Health discussed this issue with the council and they agreed to take water from Bushmere and connect it to the Waituhi system. However, Council hasn't moved on this decision at this stage.
  - Wolfgang clarified that these are some of the bigger issues that also need to be addressed separately, however the thought process behind them is relevant to these discussions as they are about water pollution and how it leads to water becoming unusable.
  - Karena stated that she also experienced similar issues to those that Owen, Matawhero and David have discussed in Muriwai, and their biggest concern is people from town going out there and eating the

Kaimoana which those in the community know may not be safe, but the general public don't necessarily know that.

- Ian noted that Covid-19 is driving forward a lot of the issues for Tangata Whenua around Aotearoa about the affordability of supermarkets and food delivery services, and also the displacement that occurs when people are not able to fish and source kai in those ways, meaning many are having to rely on Whanau.
- Samuel also noted the cycle of shellfish and stated that you no longer see them coming in seasons anymore because people have upset the natural cycles of marine life. Ian agreed and added that when people intervene and mess up the balance of those cycles, there are ongoing effects for everyone.

The KIWA Group agreed that we will address other questions and Mauri Compass work at the next group hui tomorrow.

- Karakia

David Hawea closed this hui off with a Karakia.



## **Fifth KIWA Group Meeting**

### **Meeting Minutes**

**Date:** Thursday 7<sup>th</sup> May 2020

**Venue:** Virtual –Zoom

**Time:** 2pm to 5pm

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor  
Ally Campbell – Junior Wastewater Advisor
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
Karena Toroa - Ngai Tamanuhiri  
David Hawea - Te Whanau-a-Kai  
Murray Palmer; Samuel Lewis - Rongowhakaata  
Owen Lloyd - Nga Ariki Kaiputahi  
Matawhero Lloyd - Nga Ariki Kaiputahi  
Joanne Pere - Te Aitanga a Mahaki  
Dianne Irwin – Ngati Oneone

#### **Apologies:**

Keith Katipa - Te Whanau-a-Kai

#### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

#### • **Karakia**

David opened this meeting with a Karakia

#### • **Recap of last meeting**

Ray asked if we plan to answer the remaining engagement plan questions we started answering at yesterday's hui. Ian confirmed that this is on today's agenda.

- **Previous minutes**

The KIWA Group was informed that the previous meeting minutes will be sent out in due course and posted on the KIWA Website for all to review in due course.

- **Any Actions from previous meeting**

No actions identified

- **Brief outline of today's topics**

Ian presented the Mauri Compass dashboard to the KIWA Group and explained how this tool works.

- Ian explained that there are three main sections which relate to People: Te Ao Maori, Water: Nga Tini A Tangaroa, and land: Te Ao Taiao which have additional topic streams. Ian explained to the KIWA Group that this tool will be used primarily to show the impacts of overflows on Tangata Whenua.
- The main section the KIWA Group has therefore been asked to focus on is the Te Ao Māori section.
- As part of today's Hui, the KIWA Group will be presented with questions to go through from this section and will be asked to use the Mauri Compass dashboard to guide them.
- More detail on this task will be given later on in the Hui.

- **Mauri Compass Discussion**

- Setting the scene (Ian Ruru)
  - Ian presented a map of the area of influence affected by wastewater overflow related issues. Wolfgang explained that this map has been extended to include the whole bay within the area of influence, as cultural effects are not necessarily measured the same as western science effects.
  - Wolfgang explained to the KIWA Group that when doing this Mauri Compass assessment, answers need to be made relevant to a specific water body. For this reason, both a freshwater environment and marine environment assessment will be done.
  - Samuel asked why part of the area outlined in the map cuts through Kaiti. Wolfgang clarified that this is because the outline follows the Waimata River, and that this was just a rough 'doodle'.
  - Murray asked about the two main overflow areas and whether we are only looking at one river or two as part of this assessment. Wolfgang clarified that we are considering all rivers together and these have been assessed collectively. It is difficult to separate the effects on each separate river, and the effects will likely be similar for all of them. The Nga Tini A Tangaroa and Te Ao Taiao components will include high level work to get a general idea of the overall state of the rivers. This is not being used as a detailed scientific assessment of the water bodies.
  - Wolfgang clarified that we are looking at this information at a level appropriate for assessing the effects on Tangata Whenua.

- Wolfgang presented the Mauri Compass spreadsheet to the group and explained that this has been developed to help compare different scenarios. Wolfgang explained the 4 hypothetical scenarios and the differences between them as follows:
  - Scenario 1 is the current state of wastewater overflows which occur on average 2.5 times a year and a maximum of 4 times a year. This relates to wet weather overflows.
  - Scenario 2 is after improvements have been made through the DrainWise program where wastewater overflows would be reduced to being likely to occur on average once every two years.
  - Scenario 3 is no more wet weather wastewater overflows, however catchment issues and other pollution sources stay the same.
  - Scenario 4 is during active wastewater overflows. This scenario was included so the KIWA Group could explore the worst case effects.
  
- Wolfgang explained that through this process, Council is trying to measure the change between different scenarios, and provide insights into how the proposed improvements alter cultural issues / effects, shown in terms of the indicators in the Mauri Compass tool.
- Questions and scoring systems have been included in the Mauri Compass spreadsheet to help indicate change, the direction of change, and whether these changes are positive or negative.
- Wolfgang stated that he understands we cannot put a score or numbers on mauri. The scoring system is therefore being used only to compare the scenarios and indicate the significance of differences between them. While the scores are numbers and can be shown even with decimal points, all recognised that one cannot use the scores down to that level of granularity.
- Wolfgang also emphasised the importance of noting that each question will always have a minimum score of 1, as everything is considered to have mauri. The scoring range is between 1 and 5, so there will always be a minimum percentage of 20%.
- These questions and scores will be used as indicators of mauri and to better understand the cultural effects of wastewater overflows. The Mauri Compass tool is also considered to only be an indicator of mauri.
- Wolfgang and Ian have answered and scored each question across the different scenarios as a starting point to show the KIWA Group members how Mauri and the effects on mauri will be compared.
- Comparison of the scores for scenario 1 and scenario 3 show that a significant difference would be made to the quality of the mauri of the water if wastewater overflows could be stopped completely. However, Wolfgang emphasised how these scores also show that even if Council could prevent all wastewater overflows, there are still bigger catchment issues which would impact on the mauri of the water.
- Comparison of the scores for scenario 1 and scenario 4 highlight that during an overflow event, effects and the impact of those effects are significantly worse than in between events.
  
- Owen suggested that the question technique being used should be discussed further so that the KIWA Group members understand what kind of answers they are being expected to give.

- Owen asked whether council are wanting answers from KIWA Group members themselves, or from the Iwi they represent to these questions. Owen emphasised that some of the questions are fairly ambiguous and the KIWA Group should have a deeper understanding of the kinds of answers they are being expected to give.
- Wolfgang clarified that it was a significant challenge trying to get these questions right and they were discussed and formulated with the previous KIWA Group last year, to try and make them as unambiguous as possible. That is why there will be substantial discussions on these questions.
- Wolfgang also noted that it is very important for group members to record their thinking and thought processes so that everyone can see how they got their answers. The comments are almost more important than the scores.
- Wolfgang used the first question in the Mauri Compass spreadsheet as an example to provide further clarification for the KIWA Group.  
Wolfgang also explained that we have used a semi-quantitative scale to answer the questions from 1 to 5 .
- **Question One: Is the waterbody's significance as a source of tribal identity and whakapapa, reflected in terms of Tikanga practice?**
  - Wolfgang stated that if the KIWA Group members have a korero with their community about this question and hypothetically decide that whilst it is important, they practice tikanga on the river because it is so polluted, then this question would be scored as a 1.
  - In comparison, if through their korero they decided that quite a bit of tikanga in respect of the river does occur, even though they disagree, then the score may be a 2.
  - If they are unaware or unsure then this could be scored a 3. This would then be something to further explore.
  - If there is a waterbody that is very significant to them and the full suite of tikanga in terms of customary rights and practices pertaining to a waterbody are undertaken, then they may score it a 5.
  - Wolfgang emphasised that there is an additional comments section where KIWA Group members can explain how they got to their answer, which forms a very important part of this process and will help to address the concerns raised by Owen. This comments section has been provided so everyone can easily track how answers to these questions change over each scenario, and over time.
  - Owen stated that his response to the above question would be yes, as it sits in his pepeha and tribal identity. Their waters of significance have whakapapa and therefore the answer for him would be yes.
  - Wolfgang stated that as Owen has pointed out, the answers to these questions are dependent on the community and water body being affected.
  - Wolfgang also clarified that this question is about tikanga practice, and whilst waters may be considered significant, this question is asking about whether it is being reflected in tikanga practice. Pollution of the water may mean that the answer is no, even if the waterbody is very significant.
  - Wolfgang again emphasised that this is a subjective scale, and that this question is really about showing how it is reflected in the tikanga practice and to what extent.

- Owen emphasised that there could be multiple answers to these questions depending on a person's perspective.
- Owen stated that if you wanted to score it in terms of mauri, the mauri may be very weak if it is polluted and not achieving the goal that it was created for, however someone else could simply say that because it is dirty they don't interact with it anymore which in itself is what kills the mauri.
- Wolfgang stated that the question should be viewed in its simplest form, as it is just an indicator of mauri.
- Owen stated that these different views show how some do not understand the significance of the river, as they have not been educated about it, and the same concept can be applied to the maunga.
- Wolfgang clarified that the question is not asking about whether the waterbody is significant, rather it is asking whether it is reflected in tikanga practice. Wolfgang emphasised that this is really being used as a tool for reflection and it might be that some of those connections have been lost due to pollution, overtime, or due to other factors. It is a matter of asking, is tikanga related to the water body carried out?
- The KIWA Group was reminded that there is no right or wrong answer to this question, as long the answers are about whether it is reflected in terms of tikanga practice.
- Dianne stated that she sees where Owen is coming from, however she believes that Iwi representatives cannot separate themselves from their maunga, awa, and tribal connections as they form part of their tribal identity.
- Dianne shared that she thinks this is a difficult question because it is a challenge for Iwi/Māori to separate themselves out from what the significance of that awa in terms of tribal identity and sense of whakapapa. Dianne stated that she will wananga with her Iwi/Hapū on these questions so she can provide a collective response from them.
- Ian clarified that seeking feedback and comments, and this is exactly what this process is about.
- Wolfgang also emphasised that these questions are designed to get people thinking about the issues and whether some customs and traditions are still being practiced today. The answer to this would not change the significance, but it may get people thinking about what may have been lost or left behind in practice that has resulted in a low score on this scale.
- Matawhero emphasised the difference between practice and principle. Principle is extremely valuable in terms of tikanga, however sometimes practices cannot be conducted because there are so many things that have influence on the water.
- Matawhero stated that some values associated with the rivers for Maori are food, water, food travel, and ceremony, however it is difficult to use them for any of these given their current state.
- Owen added that people lack belief in mauri. Mauri's power started to diminish and change came to a point where things that were important to the people could no longer be practiced because the water is so polluted. These things now no longer register as important to some people because they cannot practice them, and they do not recognise their importance until someone reminds them that it is in their blood to protect these things.
- Owen emphasised that it is really about how the questions are framed as council will receive different answers depending on who they are asking.

Owen also emphasised that Council need to be aware of whether the answers are reflective of all Maori or not.

- Wolfgang agreed with Owen and emphasised that everyone on the KIWA Group throughout this engagement process are being asked to give their views and make decisions as representatives of the people in their community.
- Wolfgang noted that what the scoring system in the Mauri Compass aims to do, is to make this information measurable and one can then look at what needs to be done to improve it, and then monitor the change. This is why the comments section is extremely important.

**Action point: KIWA Group members to look at the scores Ian and Wolfgang have given in each section and report back their views and ideas on these. Group asked to remember that these scores are specific to the areas in the assessment – Poverty Bay and the rivers affected by the wastewater overflows.**

- Owen stated that he believes this is really a two part question. The first part is about the waterbody's significance as a source of tribal identity and whakapapa – which he would answer as 'yes', and the second part is about whether it is reflected in terms of tikanga practice – which he would answer as 'no'.
- Owen stated that when you add the scores up it would clearly show that the waterbody has an identity and has significance, but it is not reflected in practice which prompts the question of 'why?'. Is it because the waterbody is polluted, or is it because people are no longer practicing or being taught about these practices enough to enable its continued significance?
- From Owen's perspective it is very significant to him personally, however it is not really reflected in the tikanga and practice of his people anymore because of the above reasons.
- Wolfgang and Ian completely agreed with Owen and recognised that this is going to be the challenge for everyone on the KIWA Group to reflect their own community and views through this tool.
- Ian suggested that the question be reframed to ask only if the waterbody's significance is reflected in tikanga practice, as we already understand that the waterbody's themselves are very significant.
- Dianne added that one of the main areas of conflict for Tangata Whenua is that western research tools don't reflect where Tangata Whenua sit. Dianne noted that the KIWA Group is being asked to use a western research tool to measure different aspects and may find this difficult, as views must be expressed in terms of how Māori wananga and should be voiced in that way.
- Ian agreed and stated that this is why the comment section is very significant and gives everyone the opportunity to safely express these views and come to the same understanding, outside of the scoring system.
- David agreed with Dianne and Owen that the question is ambiguous. The importance of the rivers can be stated, but he suggested that some tikanga is no longer practiced because they are no longer widely known. David emphasised that the KIWA representatives are part of this group because they understand these issues deeply, and not everyone in the general public has the same level of understanding.

- Ian stated that that is why this mahi is important. Council are trying to record this information to identify gaps in knowledge and understanding.
- Wolfgang stated that he believes we now all understand the question and have reached a point where we know the answer. Owen agreed and stated that he understands why the comment section is so important, as it can be used to explain why the scoring is either low or high.
- Owen emphasised that the comment section can also help show what needs to be done, identify where the weaknesses are, and how we can strengthen those weaknesses and in-turn strengthen the mauri to ensure that a long-term legacy is left behind for future generations.
- Samuel further elaborated on our discussion from yesterday's meeting, and stated that the word tikanga is just as difficult to refine as mauri. In terms of this question, Samuel noted that tikanga practice takes place all the time and Tangata Whenua are connected to it, but it is happening and being practiced in a different light.
- Wolfgang agreed and further addressed Dianne's point that this is not about western science and the key to this tool is for every group member to go away and record their personal experiences of these questions with their Iwi.
- Ray commented that we haven't spoken about the marine life or flora and fauna, only people. Wolfgang clarified that this is covered further down in the document.
- Murray asked the group whether they would view whakapapa and tribal identity as values. The KIWA Group agreed yes.
- Samuel also suggested that 'reflected' may not be the most accurate word to use in this question. Owen and Samuel suggested that changing this word to 'applied' or 'practiced' may be better.
- David stated that if the word was changed to 'practiced' then his answer would be 'no', as Tikanga practice is no longer widely known.
- Owen stated that in this context we have to be aware that tikanga itself can be confusing as one Marae has a different understanding to another Marae.
- Owen suggested that the KIWA Group may need to have a universal understanding of the tikanga of the wai, so that they understand the significance of the water for everyone and the effects which are all connected.
- Owen suggested that we really need to stress that the waterbody has significance, as this is what will lead other people to practise tikanga of the wai.

**Action Item: Wolfgang to change the question based on what Owen has stated above.**

- Wolfgang also emphasised that these questions are only being used as indicators of mauri, not as definitions of mauri.
- The KIWA Group agreed to move on to the next question.
- **Question 2: How often do Tangata Whenua swim play and recreate in the water?**
  - The KIWA Group was reminded that for this assessment, the question is focussing on the rivers and not the sea. The marine environment will be done also.

- Wolfgang and Ian scored this question a 3 because during overflows there is no use, but during summer there is a lot of use. The KIWA Group was asked to think about this and decide whether they agree or not, in much simpler terms than the previous question.
  - Owen asked if there is a section on Mahinga Kai, or whether that is included in recreation. Wolfgang confirmed that there is a section on Mahinga Kai included further down in the document.
  - Wolfgang emphasised to the KIWA Group that whether or not recreational use of the waterbody is advisable due to the health risks involved is not the question being asked at this point. The KIWA Group members can however note their opinions on this in the comments sections for this question.
- **Question 3: How regularly are archaeological sites associated with the waterbody accessed?**
- Wolfgang and Ian scored this question a 2, as the ones they are aware of are rarely accessed and many have been lost due to urban development, and because access to the river bank can be difficult.
  - Owen commented on the issue of access and used the lagoon as an example of something which is no longer accessible because it has been destroyed and barricaded off. This is different to access at the Waikanae stream where access is restricted. Wolfgang agreed and clarified that this is what the question is referring to.
  - Samuel asked Wolfgang if this question is only in reference to registered archaeological sites. Wolfgang clarified that it can be both, and can include whatever the community considers to be an archaeological site.
  - Samuel noted that there are not many archaeological sites located in the area anymore, and there is a lot of mahi that needs to take place in relation to this, as urban and industrial development is impacting on them from all angles.
  - Owen stated that this question is somewhat difficult to answer as many people may not even be aware of what archaeological sites are or where they are.
  - Wolfgang agreed and stated that that is why it is important to talk to the right people about this, the people that know.
  - Samuel shared that in relation to Historical places of significance that are needing to be recorded and registered as such, there are hundreds that his people are aware of which have korero attached to them, and they will always be archaeological and wahi tapu.
  - Owen agreed and stated that the word wahi tapu is important as it means that there is a restriction placed on something, which does not necessarily mean that it is tapu, rather that it has been set aside as something that is sacred and ceremonial.
  - David shared that when the wharf was being built in the 1960s he had been working there and they came across a boat ramp that went down to the beach. He stated that it was made of manuka and must have been where they used to tie up canoes, however they were still instructed to continue digging it up.
  - David noted that in terms of significance, there are a lot of sites of significance that are unknown and not recognised, or destroyed.
  - Wolfgang suggested that he feels the KIWA Group have answered this question through group discussion and the exchanging of stories between Owen,



- Samuel and David, and concluded that this justifies scoring this question as a 2. These stories that have been exchanged help to add weight and evidence to why this score is low.
- Wolfgang emphasised that how we use this information is what's important following this engagement process. If we can identify what all the issues are, then we can target our efforts to address them also.
- **Question 4: Tangata Whenua feel they are achieving their aspirations as kaitiaki of the waterbody.**
    - The group agreed that the score for this question would be a 1 given the current environmental and political climate, as Tangata Whenua have very little say on what happens to and around these waterbody – such as the rubbish dumps which Ray pointed out.
    - Owen and Samuel agreed that this is the first opportunity Maori have had to address and be involved with these kinds of issues, and to fulfil their role as kaitiaki. The KIWA Group agreed that the appropriate score for this question is a 1, however Wolfgang asked the group to please add their views to these comments when they review them
  - **Question 5: How often are tikanga wai maori management practices and protocols carried out.**
    - This is about 'how often'. Wolfgang noted that this question relates to what Owen said about rahui – is there a proper process 'owned' by Tangata Whenua on placing rahui's on the waterbody after a wastewater overflow event?
    - Owen agreed stated that this is not something that currently happens, however perhaps this highlights that maybe there should be.
    - Wolfgang and Ian scored this question a 1.5, and again encouraged the KIWA Group to voice their views in the comments section of this question.
    - Owen and Ray suggested this question could be a 1, because Tangata Whenua have been pushed off of the waterways due to the contamination and many other factors, including transformation of the city. Owen highlighted that these things have been shifted due to development and Tangata Whenua were never given a say in these matters. This consequently led to some of these practices no longer being used or passed on through generations.
    - Murray asked if the work we are doing now is informing a mauri assessment of the rivers, or is it informing an effect of the discharges on the mauri of the rivers.
    - Wolfgang clarified that we are doing both which is why we have the different scenarios. The scoring of different scenarios will help to show the changes in effects based on wastewater, in comparison to other effects.
    - Ian and Wolfgang only shared the scores given for the first scenario to show the KIWA group what questions they are being asked. When the KIWA Group does their individual review and answers the questions themselves, we will then review the results collectively at a later meeting.
    - Owen stated that it is not only culture, but health that is affected by overflows and there shouldn't be any justification of this as overflows affect all human beings.

- Owen shared that he is slightly concerned that even if we were to say that culturally the overflows are not creating a major issue, this could be seen or used in a way to justify them.
- Wolfgang clarified that Council are not using these responses to justify the overflows themselves or even to justify the reduction, rather council is trying to record and report on Tangata Whenua's views and thoughts relating to the water that is affected by them.
- **Question 6: What range of tikanga wai Maori or wai tai is practiced**
  - Wolfgang noted that the question above is asking about how often, whereas this question is about the range.
  - Wolfgang also noted that a lot of the questions in the spreadsheet are similar but framed differently to get people thinking slightly differently.
  - The KIWA Group members may find they have the same or similar answers for some questions and that is okay.
  - Wolfgang and Ian scored this question a 1.
- **Question Section on Wairua: How strong are your spiritual connections with the waterbody**
  - This question relates to wahi tapu and taniwha so may be connected to the previous question about archaeological sites.
  - The KIWA Group was asked to provide feedback on the scoring and additional comments for these questions, as with others above. The KIWA Group agreed to do so.
  - Wolfgang also clarified that these questions may not all just be about wastewater. Some of them are simply about what goes on in the river and they may be influenced by other things such as access and awareness.
- **Question 7: Wahi Tapu and taniwha are well known**
- **Question 8: Wahi Tapu and taniwha sites associated with the waterbody are regularly visited**
  - Wolfgang noted that these are separate questions because whilst we may know where they are, we might not visit them. These could be linked to some of the other tikanga aspects that were previously discussed, and to issues of access.
  - Wolfgang and Ian scored question 7 as a 2, and question 8 as a 3.
- **Question 9: Is the waterbody a place that nurtures and nourishes the soul**
  - Wolfgang clarified that this question is specific to the current scenario and waterbody being discussed. We have established that all waterbody's are significant and can be nourishing, but the KIWA Group is being asked to answer this specifically in relation to the current state of our rivers. The condition of the rivers is a separate aspect.

- Wolfgang and Ian scored this a 1 for the freshwater environment, however they scored this a 4 in the marine environment. Wolfgang based this scoring on the fact that the marine environment gets used by people significantly more and people seem to have a deeper connection to it.
- The KIWA Group agreed that the word 'soul' should be changed to 'wairua' in this question.
- **Question 10: Places of taniwha and wahi tapu are protected**
  - Wolfgang and Ian scored this question a 2 and provided a very simple statement.
- **Question 11: How often is the waterbody used for providing rongoa Maori for Tangata Whenua**
  - Owen and Matawhero noted that scores for this question would be very low, as there is nothing left.
  - Wolfgang and Ian agreed, which is why they scored this a 2 and stated that is it rarely used due to poor quality of the water.
  - This assessment could be used in this way to reflect on such practices.
- **Question 12: How often is the waterbody used for purification / cleansing and for ceremonial / ritual purposes**
  - Wolfgang and Ian scored this question as a 1.
  - Owen clarified that people are now starting to use the rivers in some places for these purposes. Some are collecting the water and taking it away, and others conduct at the site of the river.
  - Karena and Wolfgang discussed how some of the questions may be different for her given that she is located at Muriwai and they have different factors / access / wastewater influences there. Wolfgang emphasised that this information will be different for each Iwi / Hapū and that these are important to record.
  - David Hawea noted that he has not seen rivers used for ceremonial events or purposes for many years.
  - Wolfgang emphasised that some of these questions may raise other issues that are not entirely wastewater related which Iwi may want to address.
- **Question Section: Mahinga Kai (is mahinga kai practiced?). This is about the customary practices and protocols of a Marae community; this is not about day-to-day gathering of resources**
- **Question 13: What Mahinga Kai species are relevant (past and present)**
  - The KIWA Group clarified the relevant species that would be found in the urban rivers and streams.
  - Karena, David and Murray added some species to the list and the group agreed with these additions. Wolfgang clarified that these lists have been divided by the marine and freshwater/river areas.
  - Murray stated that people have many different names for certain species which is also important to note.

- Murray questioned why the use of Mahinga Kai has been restricted to customary practices. Wolfgang clarified that they considered Mahinga Kai to be a customary aspect of collecting kai and taking it back to the Marae.
  - Kai availability and abundance is covered further in the section on abundance and health of kai from a general perspective, and there may be some overlap between sections.
  - Wolfgang also noted that the Mauri Compass looks at the sentinel species of kai and in terms of freshwater, it has been grouped together by eels, flounder and estuarine shellfish.
  - Further down in the document other species and specific questions relating to their health have also been included. Assessing the health of these species will help to indicate if the environment around them is healthy.
  - Wolfgang noted that whilst we cannot go through every species, these are being included and used as indicators of the health of kai.
  - David mentioned the practice of catching eels seasonally, and explained that this used to be one of the main sources of kai for people.
- **Question 14: How often is the waterbody used to provide kai, for hui, tangi or other gatherings**
    - The KIWA Group agreed that this question should be scored as a 1. Wolfgang emphasised that whilst this is a simple question, it also has a much bigger meaning and can help give an indication of the issues.
    - David noted that this used to be practiced all the time, however it is no longer practiced as widely anymore in relation to the river.
- **Question 15: How often is the waterbody used for other customary natural resource gathering**
    - Wolfgang and Ian scored this question a 2. This is a fairly general question and the KIWA Group was asked to provide their scores and comments on this as part of their review.
    - The group considered a score of 2 may be too high.
- **Question 16: Is mahinga kai affected by human sewage or mortuary waste discharges into the water**
    - This question has been included because it is such a significant issue.
    - Wolfgang and Ian scored this as a 1 represents 'Always' for this question. The KIWA Group agreed with this scoring.
    - Wolfgang noted that in this context, the answer is obvious but as we go through the different scenarios it will be interesting to see if the KIWA Group believes this answer could change.
- **Question 17: Are pukenga and kaitiakitanga of mahinga kai known and engaged in the Marae**
    - This question has been included because it relates to knowledge and skill.
    - David stated that most people within the community do not know about these things and therefore they do not practice them.

- Wolfgang clarified that the question is asking whether people who are experts on water matters are known, and whether they have a role to play within the Marae. The inference is that if they are known and do work within the Marae, this points towards value and connection to the awa by the Marae. If they are not known then this shows that there may be a disconnection to those skills.
- Matawhero asked if there is a reason why this question only refers to the Marae, and Wolfgang agreed to change this question to 'engaged by Tangata Whenua'.
- Ray asked the KIWA Group if he could please read out a dedication to Bill Ruru.
- Wolfgang emphasised that the aim of this session has been achieved as the discussions had today about these questions is what Wolfgang and Ian were hoping for.
- Wolfgang also stated that he hopes the KIWA Group understand why these questions have been asked and how they are being used to better describe the effect on Tangata Whenua, and use that as an indicator of mauri.

**Action for the KIWA Group: to review and provide feedback on the two spreadsheets of questions, for the 4 different scenarios. These will be discussed further at our next group meeting.**

- Wolfgang explained how the KIWA Group members should formulate their scores. He also noted that everyone should provide comments in order for everyone to understand and form a collective view on these issues.
- Wolfgang also clarified that these questions and scenarios are specifically related to wet weather overflows, not dry weather.
- Ray asked for clarification regarding how this work fits in with the consent.
- Wolfgang clarified that this is all pre-engagement work and is not about getting support from Iwi, rather it is about data collection recording Iwi's position on this issue. It is also about improving our understanding and knowledge of the issues.
- In terms of how Tangata Whenua can influence or contribute to this process, a Te Ao Māori lens can be applied to this work to help improve what council is doing. One way this can be done is through responses to overflows and discharges, not just from a western science perspective but from a Māori perspective.
- One key aspect Wolfgang has realised as a result of this consultation is that future monitoring of cultural affects needs to be developed further.
- Ray asked what assurances the community would have to ensure that overflows will stop. Wolfgang stated that there are no assurances of that, however the Drainwise program has been set up and is trying to achieve a reduction in overflows to once every 2 years.
- Wolfgang clarified that the consent application is to meet the rules and conditions in the regional plan.
- Owen noted that challenge for the KIWA Group from a Maori perspective is that they have a group of leadership through the LLB (local leadership board) and he believes it is important that Maori are vigilant and must sit alongside council to

ensure that the decisions being made are in harmony with their tikanga, views and requirements.

- Owen suggested that if council are going to have the final say, then Māori need to make sure that they are sitting at the table with them and the challenge is to get that group up and running to ensure that the mauri of the wai will be much better for their mokos.
- Wolfgang noted that if those are some of the outcomes that come from this engagement, then they need to be recorded which is why we are going through this process.
  
- Ray also noted that there is a complaint on page 3 of the resource consent for the wastewater treatment plant Gisborne, which shows that this issue has been dragged on for quite a long time. Ray noted that he does not want to see this continue here, which is why he asked his previous question of when overflows into the waterway are going to be stopped.
- Wolfgang emphasised that turning off the overflows into the waterways completely is a monumental task and is not what will be applied for through this consent. Whilst Council is obviously aiming to achieve that, it has not been programmed into Council's works over the next 10 years because of various reasons.
- Owen emphasised that council won't do it alone because Tangata Whenua are not involved enough.
- Wolfgang suggested that there is a much wider debate to be had about this, and it is important to remember that ratepayers pay for this work. This is where it becomes a long term plan discussion, where Iwi and broader community input become the drivers of what council does.
- Owen agreed with Wolfgang and again noted that Tangata Whenua need to work on getting the LLB set up and working alongside Council. Owen stated that it is important, which is why they should find a way of investing in the programme, not expending in the programme, and the investment is mokopuna and the future, which is a long term goal we can all ascribe to.

- **Matters arising**

- Karena stated that she has an additional person who will be involved as of next week.
  
- Wolfgang highlighted that the membership stated in the KIWA Group terms of reference will need to be looked at again moving into the next financial year, as currently only one member per Iwi/Hapū is described. This may be dependent on the projects that take place.
  
- Ian confirmed dates for the KIWA Group hui scheduled for next week. The KIWA Group agree to trial these meeting as 1hour sessions on Monday, Tuesday and Wednesday. KIWA Group was informed that if people cannot attend all of these sessions that is okay, as these sessions will be used to assist group members with Mauri Compass work and questions.

- Samuel asked for clarity around the minutes. Wolfgang clarified that these will be provided in due course to the KIWA Group for review and will be discussed at later meetings.

- **Karakia**

David closed this hui with a Karakia.

## **KIWA Group tutorial session minutes**

Three 1 hour sessions were provided for the KIWA Group to attend and raise any questions they had regarding current KIWA Group work and tasks, and raise specific Mauri Compass questions.

### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

### **Session 1: Monday 11<sup>th</sup> April 2020**

**Time:** 12pm – 1pm

**Venue:** Virtual via Zoom

### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor;  
Ally Campbell – Junior Wastewater Advisor
  - KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
Murray Palmer - Rongowhakaata  
Dianne Irwin – Ngati Oneone  
Keith Katipa - Te Whanau-a-Kai
- 
- Wolfgang and Ian introduced Keith to the scoring system in the Mauri Compass spreadsheet as he was unable to attend the previous KIWA Group meeting.
  - Ian shared with the attendees that there is a video recording of the last meeting available on the KIWA website if they would like to revisit what was discussed.
  - Wolfgang explained the differences between the four wastewater scenarios in the Mauri Compass spreadsheet and explained that they are representative of different overflow occurrences (present day occurrences, less overflows, during an overflow, and no overflows).
  - Wolfgang clarified for Keith that the preliminary scores and comments for each scenario provided by Ian and Wolfgang and should be used as starting points for discussion and review.
  - Keith was informed that the KIWA Group have been asked to go through both the freshwater and marine spreadsheets and provide comments on whether the scores in each scenario are right or wrong, and provide their own additional comments explaining their views.



- Wolfgang emphasised that differing views and perspectives on these scores are welcomed, and it is understood by all that the scores will likely not be the same for everyone on the KIWA Group.
- Wolfgang clarified for Ray and Keith that water testing is done in the water body, not at the end of overflow pipes, and that Council has various monitoring points. Wolfgang also stated that measuring at the mouth of the pipe would measure the quality of the overflow itself, before dilution. Wolfgang stated that the quality of the wastewater overflow itself was used in the hydrodynamic model to predict contaminant concentrations in the environment after dilution and after dispersion.
- Monitoring has been done in the receiving environment, at various points along the rivers and sea to get representative samples of the water quality in the river after dilution. Keith asked if there are some monitoring points above the outlets. Wolfgang confirmed that there are some points higher up in the rivers, however this work is using a general assessment to get an understanding of the conditions.
- When comparing the mauri of pristine waterways and the level of contamination in them, Ray emphasised that the risks and affects may be acceptable from a western science perspective, but any contamination at all would be considered unacceptable by Tangata Whenua. Wolfgang stated that western science is only part of the picture being assessed, which is why the KIWA Group work is being undertaken.
- Ray stated that the Māori view would be to not put any contamination into the waterways and have no effects at all. Wolfgang emphasised that Council is not proposing to eliminate all overflows through this consent, is seeking to reduce overflows, and Council is trying to quantify the change due to these reductions, from a cultural perspective. The scoring system in the Mauri Compass tool is being used to show change over time and provide an indication of changes in mauri.
- Wolfgang also clarified that the blue and green sections are measured by western science methods. The Te Ao Māori section is where the cultural views will really be captured, which is where the KIWA Group has been asked to focus their review and provide commentary.
- Dianne noted importantly that water is not in isolation of things such as the maramataka. Māori have a strong navigational history, and the waters have a relationship with everything in the universe. Dianne stated that maramataka is hugely important to Māori in terms of water and marine life, regardless of the amount of pollution that is in the waterways. Wolfgang acknowledged this view.
- Dianne also noted that when she talks with Ngati Oneone about these questions, they will bring these kinds of connections and cultural elements into the discussion.
- Wolfgang clarified for all attendees that each scenario in the spreadsheet has a summary of scores at the bottom. These scores then feed back into the 'Change in Mauri' spreadsheet. Wolfgang emphasised that once all KIWA Group members have reviewed these spreadsheets the scores between these scenarios can be compared collectively.
- Murray asked about the summaries and how the subgroup score would be achieved with multiple inputs from all members. Murray questioned whether the scores would be collated or left individually. Wolfgang stated that he will leave this decision on how to present the summaries up to the KIWA Group, however his thoughts are that they could be kept separate to allow for comparisons, combined, or both.
- Wolfgang noted that having different Mauri Compass scores per Iwi/Hapū would allow the KIWA Group to identify and note points of difference, enable discussion, and an opportunity for consensus.
- Keith stated that he understands the Mauri Compass spreadsheet and questions, however he feels like he is being introduced to a new measuring stick and must trust

that it has value and is accurate. Keith noted that measuring sticks were much different in the old days, and people used to find messages in nature and in things that they observed, not in what they measured, therefore this measurement system is entirely new to him. Wolfgang acknowledged Keith's view and understands his concerns regarding measurements. Wolfgang clarified that the measurements in the Mauri Compass tool are not intended to be about measuring western science aspects, rather they are intended to be about measuring connections and experiences.

- Dianne noted that she will consult with Ngati Oneone on some of the questions. Wolfgang also encouraged Dianne to watch the video of the previous KIWA Group meeting along with Keith, to ensure that they are familiar with how Ian and Wolfgang have envisioned this tool being used.
- Keith emphasised that he feels he will need to read through the information further to gain a better understanding of the scoring and measuring system.
- Wolfgang clarified for all attendees that the Mauri Compass tool is only being used as an indicator, and forms part of the work that will be reported on.
- Wolfgang noted that there is a gap in the system for cultural monitoring, and acknowledged that this is often an impediment for integrating Tangata Whenua concerns into RMA and local government processes. The KIWA Group agreed.
- The KIWA Group agreed to reconvene tomorrow.

## **Session 2: Tuesday 12<sup>th</sup> April 2020**

**Time:** 12pm – 1pm

**Venue:** Virtual via Zoom

### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor;  
Ally Campbell – Junior Wastewater Advisor
  - KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
Murray Palmer - Rongowhakaata  
Dianne Irwin – Ngati Oneone  
Keith Katipa - Te Whanau-a-Kai
- David led the group in Karakia before the group began this work.
  - Wolfgang emphasised that the next step for the KIWA Group is to go through and answer questions in the Mauri Compass spreadsheet.
  - Murray confirmed that he has reviewed the spreadsheets and provided his own scores for each question, however he has not provided additional comments at this stage. Murray also confirmed that he has shared these questions with some of his colleagues to get their feedback and opinions.

- Wolfgang emphasised that providing comments on the scores is the most important part of this review, as this helps to show the meaning behind differences in scores.
- Murray shared his view with the group that a lot of this work is about putting themselves in the position of the people who use the water all the time, and this is quite a serious endeavour. Wolfgang agreed with this point of view.
- Wolfgang also clarified for the group that the key section they are being asked to review and provide comments on is the Te Ao Māori section, however they are welcome to comment on the other two sections if they wish.
- It was decided that due to Covid-19 the KIWA Group will not be having Marae meetings at this stage, so Council are relying on the knowledge of the KIWA Group members to represent Iwi in making these discussions, and for KIWA Group members to engage with their communities and leaders.
- Wolfgang and Ian suggested that the attendees go through some of the questions collectively. Everyone agreed.
- The attendees revisited the following question that was discussed at the previous KIWA Group meeting: **Is the waterbody's significance as a source of tribal identity and whakapapa, reflected in terms of Tikanga practice?**
- In addition to Wolfgang and Ian's original comments, the KIWA Group decided that they needed something to measure this against. Murray suggested that they look at what was previously undertaken on these rivers. Wolfgang stated that in pre-colonial times, there would have definitely been much more that was practiced on the rivers.
- Ian suggested that himself and Wolfgang could provide the group with examples of what this question scored as a 5 and scored as a 1 would look like, to help give them a clearer idea of how they envisioned this being measured. The attendees agreed that this was helpful.
- David shared that he was partly brought up near the river and used to fish near the harbour. David stated that in his time as a child, many of these things were still being practiced and personally, he views the current situation as a 1 which is worst, however when he was younger this would have been scored a 5.
- Samuel expressed that he thinks the question is still worded incorrectly. He stated that he would rather it say customary practices instead of tikanga, as tikanga attaches to mauri to regulate the tapu and noa. Samuel stated that it is about the application and the way we apply ourselves to a process, as there is a tikanga for everything. Māori today are trying to practice tikanga, but are limited because they are living inside another world.
- Wolfgang clarified that this question was meant to be about the higher practices Samuel described, not about customary practices, as there are questions on this later in the spreadsheet.
- David stated that he thinks tikanga practiced has significantly reduced from when he was younger, because it has been pushed out. David resonated with what Owen said in a previous meeting - I am the water and the water is me. He stated that he admires what Wolfgang is trying to do, but also thinks that the reality of this situation is that nothing can be done to restore mauri, however we can try and manage it much better. David expressed that from his perspective, at the end of the day getting a resource consent will override tikanga.
- Wolfgang stated that he appreciates what David has said and encouraged the group to record comments such as these in the different spreadsheets.
- Wolfgang explained that Council has a programme of work dedicated to improving on what is currently happening. The consent Council is applying for is based on improving the situation, not for keeping it as it currently is. What Council are asking from

the KIWA Group is for comments on the impacts these proposed changes will have from a cultural perspective.

- Wolfgang stated that if their view is that reducing overflows will not have a significant cultural impact and things will only improve once wastewater overflows are stopped completely, then that is okay and KIWA Group members should state that in the comments of these questions.
- Samuel stated that he understands both perspectives of David and Wolfgang. He also shared that he views tikanga as a wonderful thing which used to be a living philosophy. Samuel expressed that the society of Tangata Whenua has been broken down somewhat, as they are subject to other laws which have become greater powers, although internally for Māori these will never be greater than what they were born with. Samuel noted that similarly, tikanga has been reduced to the restrictions Tangata Whenua have been subjected to.
- Samuel suggested that this is why tikanga and processes are practiced on the Marae, as they are able to take them to certain places to perform certain rituals. Samuel stated that tikanga is very much about what it says it is, and goes hand in hand with philosophy. Samuel shared that he regards tikanga as the answer to the future, but we must get back to it and he thinks that this project is part of that journey.
- Samuel regarded that the previous wananga between David and Owen was the best one he has been part of since he has been home. He stated that it flowed beautifully and was filled with wisdom on a wide category of things and from Samuel's perspective, that is tikanga, where one respects the other and everyone applies themselves as best as they can.
- David clarified that he is not against what Council are proposing to do and he understands that it is very difficult. David acknowledged that whilst it is not the fault of anyone present, we have to be the ones to clean it up, improve it, and try get it right.
- David outlined that there are a lot of other issues that where the tikanga has been takahē and the Council had the ability to do something about it. David spoke about the petrol station built on Crawford Road which was Ngati Oneone owned land, and expressed his views on this issue.
- David compared this situation to the work that is being done on wastewater overflows and acknowledged the difficulty of this. David acknowledged that reducing overflows to once every 2 years is good first step and stated that he is happy that Council are engaging with Tangata Whenua as part of this work to improve it which is important.
- Wolfgang agreed with David that there is a much bigger picture and that wastewater overflows only form one part of it. Urbanisation has created significant issues and Wolfgang noted that he fully understands what David has said.
- Wolfgang emphasised that through this process he is trying capture and truly reflect what Tangata Whenua feel, and this is why the Mauri Compass spreadsheets and comments are really important. The aspiration should be to improve scores over time. Through this work the overarching issues for Tangata Whenua can be summarised which then provides a platform for improvements to also be addressed.
- Keith commented that he also spent a lot of time in Tairāwhiti throughout his youth and took part in many activities in and around the city's waterways. Keith noted that now that he is a great grandparent, he shudders at the thought of his grandchildren going near or using those same waterways, and feels that he doesn't have or need a measuring stick to indicate this, he simply does not want people in that water now.
- Keith stated that the fact that the water quality has deteriorated is obvious and whilst any improvement would be great, he is hoping to see significant improvements being made.

- Keith emphasised that from his perspective the tikanga is not dead, but has been suppressed by the virus of colonisation as the practices have not had the space they need to breathe, and to achieve what they are meant to achieve.
- As a final note, Keith expressed that he feels we cannot take things in isolation because it is a holistic issue involving all sorts of things. Keith noted that he does feel cramped in these conversations that the focus is on the subject matter, and he feels that if the KIWA Group was allowed to spread their views out which he believes would be more profitable.
- In support of what Keith expressed above, Murray stated that he has been thinking that as part of the resource consent there could be a commitment to address some of the wider issues that have been brought up.
- Wolfgang stated that there are processes in place to address those wider issues and that this is only one bit of work that Council is doing to improve the overall issues. Wolfgang clarified that he is not sure how broader catchment issues could be integrated into a wastewater consent and that this would likely sit within overall planning.
- Murray stated that he is thinking about situations where an activity conflicts with a value, and there is a difficulty in avoiding that affect, that the person undertaking the activity can be asked to provide a remedy. Murray emphasised that he raised this because of the points both David and Keith have brought up.
- Wolfgang acknowledged this and explained to Keith that the bigger questions about the catchment are not being deliberately avoided. These things are also being recorded, however as we are applying for a consent for the wastewater overflows, reference does need to be made back to the wastewater issues.
- Wolfgang noted that the scenarios in the Mauri Compass tool were chosen to try and incorporate the context of some of those bigger catchment issues and provide the KIWA Group with an opportunity to comment on these through the different scenarios.
- Wolfgang stated that he sees the wider catchment issues as forming part of the reporting outcomes of this engagement.
- Wolfgang addressed Murray's statements and emphasised that Council's Drainwise programme is intended to be the remedy to meet the requirements of the regional plan.
- Ian reminded the KIWA Group that they will also be consulted on other projects and issues such as the mortuary wastewater, the wastewater treatment plant, and others which all have budgets and will be worked on over time.
- Wolfgang acknowledged the feedback from Tangata Whenua that there may be other things which they feel should be done from a cultural perspective that Council are not yet doing, such as improving access to the waterbody, and Wolfgang's intention is to record these issues very clearly through the engagement process.
- Keith clarified that he did not mean to suggest that this work have been deliberately confined, rather he was acknowledging that there is a modus operandi that Wolfgang is aware of and part of that Keith is not.
- Keith stated that he believes this does not put Wolfgang in the position he needs to be in to see it in the same way, and drew on what he said earlier about colonisation having the effect of bringing about a usurping power that is an authority right down to the Council which still exists. He explained that this is why Te Whanau-a-Kai have taken the Council to task through the Environment Court over the ownership of the water.
- Keith stated that he is hopeful that these changes will take place, but believes that the change will not be made by a specific group of people, rather that change is what God allows which is why he follows his heart and sometimes finds it difficult to express himself in the confined areas of these conversations.

- Wolfgang acknowledged the points made by Keith above and thanked him.
- Murray posed a question to the KIWA Group about the tohu in the rivers and asked how this sits from a mauri perspective.
- Samuel noted that tohu are about different signs at different times of the year and that is what ignites tikanga, as it brings it into a space of practicing. For example, the kotuku will come at a certain time and are a sign of something that is ready and that it is a time to do certain things. These signs can be seen all the time, and this is basically what a tohu is.
- Wolfgang also noted that the Mauri Compass contains blue and green sections which are not intended as detailed biodiversity or western science assessments, rather they are intended to provide a level of understanding of the state of the environment necessary for indicating mauri and being able to assess the Te Ao Māori components.
- Wolfgang noted that the third scenario provides a good opportunity for KIWA Group members to address wider issues and explore these issues.
- Wolfgang stated that he plans to summarise the results of this engagement into important impact statements which not only show the significance of the wastewater issues, but also acknowledge that there are wider catchment issues which also need to be reported on from a cultural perspective.
- The final document will be circulated to the KIWA Group for approval.
- David closed this Hui with a karakia.

### **Session 3: Wednesday 13<sup>th</sup> April 2020**

**Time:** 12pm to 1pm

**Venue:** Virtual -Zoom

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor;  
Ally Campbell – Junior Wastewater Advisor
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
Murray Palmer – Rongowhakaata  
Samuel Lewis - Rongowhakaata  
Keith Katipa - Te Whanau-a-Kai  
David Hawea - Te Whanau-a-Kai
- Samuel stated that as the KIWA Group have clarified their understanding of both mauri and tikanga, the focus of this work is now about using the Mauri Compass as a tool and

he expressed interest in hearing more about what this tool is assessing and the complexities of how this will be put into words.

- Wolfgang agreed with Samuel and noted that figuring out how to put things into words accurately will be the challenge. Wolfgang noted that next week he will begin the process of writing about this engagement.
- Wolfgang informed Samuel that Ian will explore the possibility of hosting these meetings at TROTAK next week for those who are comfortable meeting in person during COVID-19. Ian confirmed that he is looking into this option.
- Ian presented the attendees with 2 graphs representing 2 different states – the optimal state and present state (as estimated by Wolfgang and Ian). Ian stated that the questions being posed through the Mauri Compass are being used to indicate how far the optimal state is from what we have today. The optimal state could be considered a pre-European sustainable state with customary practices and philosophies alive and well. Wolfgang added that the questions are just being used to get KIWA Group input and illustrate these views in a simple manner.
- Ian clarified that the graphs are being used to help show the scorings relatively and easily identify the lowest attributes, and how they relate to each other.
- Ian explained the way the scores for each question have been converted into percentages in the graphs and dashboards.
- Keith asked why the scoring range does not go down to 0. Ian clarified that this is because as a collective, it was decided by the KIWA Group in the previous year that everything has mauri and therefore these questions cannot be scored 0.
- Keith mentioned that in the case of questions about tikanga, if tikanga is being ignored then they should be scored as 0. Keith suggested that if tikanga practice is adopted, there would be a corresponding rise in some of the adjacent levels.
- Keith suggested that the question is going to be whether Tangata Whenua are going to have the ability to re-establish those practices, which will bring things back to a better state of being. Keith expressed that he feels by trying to work out a percentage or score for this, we seem to be bartering with the tikanga all the time.
- Wolfgang agreed that what Keith said makes sense, and noted that when we look at graphs of the other scenarios, Wolfgang and Ian have assumed that there will be some improvement in the tikanga score, but that improvement will be capped by all sorts of wider issues which will also be impacting on it, like the access, governance, etc.
- Wolfgang suggested that the KIWA Group members may note that in order to achieve a score of 5, there are multiple things which need to be addressed and can then use the comments section to create an action plan.
- Keith clarified that being asked to rate the most important part of their tikanga that is missing here is not a good thing to do. However he noted that it does not surprise him that people still practise taking food from those areas, despite it likely not being safe.
- Wolfgang agreed and added that doesn't take away the issues, which is why the mahinga kai score is so low. Keith agreed.
- Samuel added that the potential here is to actually ignite tikanga as part of the KIWA Group's recommendations, and part of how they might do that is by exercising mana and authority and declaring a rahui every time there is an overflow which Council will recognise.
- Samuel also noted that if Council supported Tangata Whenua in doing that then that may in effect increase this score. If that essence can be captured and the ability to support this for the benefit of everyone, then that is one place where Tangata Whenua's authority and relationship with Council can begin to be ignited.
- Wolfgang agreed with Samuel and stated that this is where himself and Ian envisioned the questions in the Mauri Compass tool leading to. It is about looking at all these issues

and looking at how to practically expand outwards following this engagement. This provides a way of reporting on these issues and adding targets for future work.

- Keith wanted to note that in his personal experience, he did not think that the environment was perfect when he was younger as many had discussed in our previous meeting, and believes that a lot of invasive practices have been going on for a long time, they are just at a breaking point now.
- Keith emphasised that for this understanding, the removal of the flushing point for the Taruheru River, by putting up the stop bank in the Ormond dip, resulted in a lack of flush-waters coming down into the Taruheru and now there is heavy agricultural use on the flats. Wolfgang asked for clarification from Keith that by flushing is he referring to when there would have been a big flood event in the Waipaoa River which would have flowed through the Taruheru and reset it. Keith confirmed that this is what he was referring to.
- Keith suggested that as an example of something that could be done to reverse this, there could be an outlet at the start of it and decide in high waters if we are going to let a certain amount flow down there. Wolfgang agreed with Keith that there are many different factors involved with catchment management.
- Wolfgang stated that the Council is working on developing catchment management plans for 2025, and this will provide an opportunity for the KIWA Group to look at these issues.
- Murray noted that whilst working through the Freshwater Plan, it was challenging to get agriculturalists to keep back a metre from the stream on the flats. Wolfgang agreed with Murray and reflected on his previous environmental work in other countries.
- Keith agreed and related this to the arguments which are still going on over the Mangatu forest.
- Wolfgang stated that the dashboard which Ian has walked the KIWA Group through shows the sort of thing they are hoping to get through this engagement process, as it is something they can present to Council and show that things have been assessed and quantify the effects. This tool can be very useful to show the areas of improvement that need to be addressed, and could influence future work by providing a base-line.
- Wolfgang stated that the aim could be to create these for each Iwi/Hapū as was discussed yesterday and this is up to each Iwi/Hapū. However if they would only like to comment and not provide scores then that is up to them. Wolfgang also noted that it would be effective if the KIWA Group could present this information collectively, however they can keep this separate if they wish.
- Murray stated that he is unsure how the consent is going to require the overflow changes to occur once every 2 years, or if this is going to be an aspirational target. Murray suggested that Rongowhakaata might see this as being a requirement.
- Wolfgang stated that based on the DrainWise implementation Programme and modelling, Council think that they can achieve the goal of once every 2 years and in the period of 10 years and Council are suggesting this should be a performance measure in the consent. The first 5 years is going to be difficult to measure progress because it relies on many different things coming together and real change will likely only be seen from year 5 onwards because of how long the private property issues may take to solve.
- Wolfgang stated that if Council gets funding from the Crown Infrastructure Partners fund, then they may be able to achieve these things much quicker. Council have applied for around \$ 60 million to fix people's private wastewater and stormwater systems which if awarded, it will likely take at least 5 years to complete this work.



- Samuel suggested that Council should partner with Iwi and make use of the bill that is before the house and move forward and access some funding to drive this kaupapa. Wolfgang asked Samuel to elaborate further.
- Samuel suggested making applications for assistance from the government to drive big infrastructure initiatives which are heavily based on environmental sustainability. Samuel noted that there is wisdom in partnering with Tangata Whenua groups to drive those kaupapa and secure funding.
- Wolfgang agreed with Samuel and noted that there may be opportunities for Council and Tangata Whenua to partner right now. Samuel agreed and noted that they are working in this space currently and it is wise to partner and drive these initiatives collectively.

**Action for Wolfgang: to approach Nedine and David Wilson and state that through this mahi Tangata Whenua have been made aware of this application and have suggested that there may be a key opportunity to partner.**

- The KIWA Group supported Wolfgang in exploring this option.
- Wolfgang agreed that a letter from Iwi speaking from a common voice be included as an appendix to the funding applications may help give Council an advantage in securing this funding.
- Wolfgang stated that he will report back to the KIWA Group the results of this action.
- Keith and Wolfgang noted the employment opportunities this would provide for the wider community if funding was awarded.
- Samuel agreed and suggested that a meeting to discuss and clarify this would be necessary, however he does not see this as a problem and would like to do that.
- Ray noted that the mortuary wastewater bylaw which involves the Wisconsin mound could be used as another point to present to the government in relation to how we may address the Covid-19 situation.
- Wolfgang noted that mortuary wastewater was not included in the funding application that was put forward because the criteria was for large projects with significant employment opportunities, however mortuary wastewater already has an approved budget within Council so this is progressing as fast as it can. Future steps for this project will include engagement with Iwi through KIWA Group consultation.
- Ian presented a different way of showing the scorings in the Mauri Compass spreadsheet. Wolfgang noted that potentially in the future, the minimum could be reduced to 0.5 which would be a lower percentage of 10% as opposed to 20%, which seems intuitively better for situations where there are significant impacts on mauri. Ian agreed, and both Wolfgang and Ian noted that this could be discussed at another stage. The important thing at this stage is that these graphs show change and therefore the results can be compared.
- Samuel asked whether the chem hazards is showing a positive or negative measurement. Wolfgang clarified that the chem hazards is based on LAWA data, which compares water clarity throughout the country and our score puts Gisborne in the lowest quartile in the country for some sections. Wolfgang stated that this is a measurement of chemicals and the inference is that we know if it is above a certain level that it is bad. The life-sustaining capacities of the environment relates to these factors that are being measured.
- Wolfgang emphasised that this is a journey and the aim could be to try and achieve a full score and keep trajectory in the right direction.

- Wolfgang also clarified that in the pre-European scenario, it is not being insinuated that there was no effect on the environment as there is some effect with all human inhabitation, however this would have been a sustainable level of effect in this case.
- Samuel noted that in terms of this work, balance is the key and for measurement purposes the most value is in tikanga, practices and philosophy. For scoring purposes, the highest applicable score is at the balance point where that philosophy is being practiced.
  
- Wolfgang notified that attendees that in the next hui, the KIWA Group will be asked to report back on progress that has been made with the intra / inter Iwi consultation and the questions in the Mauri Compass spreadsheet.
  
- The KIWA Group agreed to reconvene tomorrow.
  
- David closed this Hui with a karakia.

## KIWA Group Optional Technical Session

### Important Notes

**When:** Wednesday 13<sup>th</sup> May 2020

**Venue:** Virtual via Zoom

**Time:** 11am to 12pm

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor  
Ally Campbell – Junior Wastewater Advisor
  - KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
Murray Palmer; Samuel Lewis - Rongowhakaata  
Keith Katipa - Te Whanau-a-Kai  
David Hawea - Te Whanau-a-Kai
- 
- Wolfgang shared a site specific info-graph which shows what happens in the wastewater network during a storm event. Wolfgang used this info-graph to explain why Council have chosen to focus current work on addressing inflow issues rather than infiltration.
  - Murray asked if the level of saturation in the soil matters in terms of the speed at which water will infiltrate. Wolfgang shared his assumption that this does affect it as during a rain event there may be hydrostatic pressure that pushes water down more. Wolfgang also added that this would be dependent on the rain event. Wolfgang however did note that he was not an expert in groundwater dynamics.
  - Keith asked a question in relation to inflow and stated that the readings cannot differentiate between what is coming from private and public properties, however he would have thought that not much infiltration happens from all the runs off on roads, etc.
  - Wolfgang clarified that it is not possible predict the percentages coming from different areas.
  - Keith asked about the proximity of stormwater pipes to sewage pipes. Wolfgang stated that these pipes have longitudinal separation and while there is potential for cross connections from both the public and private networks, it is highly unlikely that this would be coming from public as this wouldn't be done on purpose. In some cases deliberate private cross-connections have been found where the stormwater is plumbed into the wastewater network.
  - Wolfgang summarised that Council cannot measure what water is coming in from private or public, however there are strong indicators to suggest that private issues are causing the inflow problems. This is because there are very few places where the public wastewater network infrastructure are at ground level, whereas lots of private wastewater infrastructure is at ground level, such as gully traps and inspection pits. The public wastewater network only has manholes at ground level but these are sealed

and normally located in the road at the crest of the road. So ponding and inflow is very unlikely there.

- Wolfgang clarified for Keith that he had checked with Neville West (GDC Infrastructure Manager) about a vacuum type wastewater reticulation system and concluded that Council would likely need to replace the entire network to do that and this would also require collection tanks. This would likely be very expensive and would affect the entire network because as soon as you have cracks in the system it won't work.
- Keith expressed that he has been in discussions with personal contacts about this option and thinks it has potential to be an effective solution.
- Wolfgang stated that he can discuss this option with Neville further, however based on their previous discussion he has concluded that it would cost hundreds of millions of dollars to implement. Wolfgang stated that he could take this idea back to Neville and present it as a possible option worth exploring further in the renewal strategy.
- Samuel asked about the inflow that takes place around all the old piping and questioned whether when all flows have stopped if seepage could occur going the other way, flowing out of wastewater pipes and into the surrounding soil. Samuel asked whether Council has done any testing on the contamination of soils around the pipes to determine whether some flow is going in and around that area.
- Wolfgang stated that he is not aware of any testing that has been done around the pipes on exfiltration, however he noted that it is highly likely that some exfiltration is occurring during summer. Council does have some anecdotal information on tomos that may have formed around some stormwater pipes, however Wolfgang does not think that this would be the case for the wastewater pipes.
- Wolfgang noted the following action point: **To put investigations into exfiltration on Council's radar.**
- The contamination levels in the Kopuawhakapata were discussed. There is a potential that there are ongoing wastewater discharges into this stream. Cross-connections may be the cause. Wolfgang noted that no surveillance is currently done by Council on private infrastructure and that homeowners generally don't do surveillance on their underground assets, however it is possible that one of those is discharging directly into the stream.
- Wolfgang also noted that Council is trying to find these cross-connections by doing smoke testing and CCTV investigations as part of the DrainWise programme.
- Wolfgang addressed Murray's question about the use of LAWA data in the Mauri Compass spreadsheet. Wolfgang clarified that the data was estimated using the Turanganui River monitoring site by the Gladstone Road bridge, which scored very low.
- Wolfgang noted that previous testing looked at norovirus and adenovirus and the results showed both human and animal based viruses in the samples taken.
- Murray and Wolfgang agreed that an important outcome of this work will be for Council to look closely at what is being monitored and how, both from a western science and Tangata Whenua perspective.

## **Sixth KIWA Group Meeting**

### **Meeting Minutes**

**Date:** Monday 18<sup>th</sup> May 2020

**Venue:** Virtual via Zoom

**Time:** 2pm to 5pm

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor  
Ally Campbell – Junior Wastewater Advisor
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
Karena Toroa - Ngai Tamanuhiri  
David Hawea - Te Whanau-a-Kai  
Keith Katipa - Te Whanau-a-Kai  
Murray Palmer; Samuel Lewis - Rongowhakaata  
Dianne Irwin – Ngati Oneone  
Owen Lloyd - Nga Ariki Kaiputahi

#### **Apologies:**

Matawhero Lloyd - Nga Ariki Kaiputahi  
Joanne Pere - Te Aitanga a Mahaki

Murray and Dianne had to leave early near 3pm

#### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

- **Karakia:**  
Owen started this hui with a Karakia
- **Administrative tasks/Group questions:**

- Wolfgang informed the KIWA Group that the meeting minutes will be sent out next week and has requested that KIWA Group members read through these minutes and provide any feedback.
- Owen asked whether the wastewater treatment plant upgrade going ahead will make a significant difference to overflow issues. Wolfgang stated that it will not impact on this work, however the upgrade will result in a significant improvement to the treatment of the wastewater that gets to the treatment plant.

- **Homework Tasks Update:**

- Each Iwi/Hapū was asked to report back to the rest of the KIWA Group about any progress that has been made on intra/inter Iwi/Hapū consultation.
  - Dianne stated that she has spoken with some people from Ngati Oneone about this work, however now that we have progressed to alert level 2 they will begin planning for Marae meetings. Dianne noted that this is all she can say at this stage as she is after a collective response to this korero/kaupapa.
  - Wolfgang thanked Dianne for her update and acknowledged that this is good progress. Wolfgang also acknowledged the point Dianne raised about the challenges people are currently facing when it comes to meeting face to face because of Covid-19.
  - Wolfgang emphasised that himself and Ian can provide administrative support for KIWA Group members if necessary to help them with meeting collectively.
  - Samuel asked whether Wolfgang or Ian could direct the group to a website or an online information sharing site that can be used for a meeting next week with their Rongowhakaata Whanau.
  - Wolfgang stated that having an online evening forum like what Samuel proposed is a great idea, and also shared that there is a Council website where the information has been made available in the form of information sheets.
  - Wolfgang noted that the link to this webpage has already been sent out to the KIWA Group, along with some suggested text to direct people there which Council asked the group to share through their Iwi communication channels.
  - Samuel suggested there should be a common space where the questionnaires can be submitted with feedback and such included.
  - Wolfgang clarified that the section on Council's website where the info sheets are located explains how the wastewater overflow issues impact on the community and the environment which is really important and is where Council are wanting input most.
  - Wolfgang also noted that the Mauri Compass spreadsheet could be used to generate discussion during the intra/inter Iwi consultation process, and from that scores could then be determined.
  - Murray asked whether using the headings in the spreadsheets to generate discussion would be appropriate. Wolfgang agreed with Murray that that could be a good approach.
  - Samuel asked about data collection in relation to the Mauri Compass assessment tool, and questioned whether the information Council is relying on is only coming from the KIWA Group for this kaupapa. Wolfgang confirmed that only the KIWA Group has been included for this assessment and the results will be the opinions of KIWA Group members and the Iwi/Hapū they represent.

- Samuel asked Wolfgang if it should then be made clear that these are the results of individual Iwi/Hapū, compared to the collective of the KIWA Group. Wolfgang stated that a decision on how to present the results has not yet been made, however as the group discussed on Monday, the results could be presented separately per Iwi/Hapū and could also have a collective document of all views for consensus.
- Samuel stated that as the KIWA Group members have now been exposed to the technical information and expertise available through this consultation process, this may cause a variation in results from those who haven't been privy to these conversations. Wolfgang agreed but expressed that he is not sure how this would be recorded in the results.
- Owen agreed with Samuel that there should be 2 levels of information available for people who have the ability to learn in depth about these issues, and for others who don't have as much time. Owen suggested that creating a survey could help to ask the same questions and share the same information, but in a way that makes it accessible to all and more understandable.
- Samuel added that in terms of mauri, the KIWA Group have come closer together and have developed a collective understanding of what mauri is, whereas the wider community has not. Samuel suggested that the differences in understanding may result in more variation and this could skew the data being collected. Samuel noted that this data may not be used for now, but it would help indicate where the wider community stands on these issues.
- Wolfgang stated that he likes this idea and understands that the KIWA Group members have the expertise and background needed to understand these issues at a deeper level.
- Wolfgang clarified that there are 3 levels of engagement being conducted as part of this engagement process. There are the Iwi/Hapū representatives present on the KIWA Group, there are also the higher level Iwi/Hapū chairs, and then there is the general Tangata Whenua population. Wolfgang noted that if engagement at these different levels shows different results then that is fine, as the results will still indicate the different areas in need of improvement and understanding.
- Samuel asked whether everyone on the KIWA Group would like to do this consultation and information sharing collectively and if so, what the delivery of that would be. Wolfgang stated that he would only be involved as a technical resource for people and is happy to join in any meetings or information sharing session if they would like him to. Samuel thanked Wolfgang for his offer.
- Ray asked Wolfgang when he would like the results from the intra/inter Iwi/Hapū consultations. Wolfgang stated that the KIWA Group was originally asked to provide these results by the 21st of May which is now a week away, however he understands these processes are not always that quick. Wolfgang emphasised that the KIWA Group should still do the best they can to have these conversations and aim for completion by the end of next week.
- Wolfgang also noted that there may be an opportunity to continue this work and submit supplementary information after the consent has been applied for if it is noted in the report that this consultation is ongoing. Murray agreed with Wolfgang that this may be possible and stated that he supports this as a planner and does not think this would be a problem.
- Ray noted that it may take him longer to complete this task. Wolfgang acknowledged and supported this.
- Wolfgang stated that he will still need to have something to provide his managers with by the end of May, however whatever has been achieved by that stage can be presented.

- Wolfgang expressed his support for the ideas that have come out of today's meeting to have combined or online sessions as part of wider Iwi/Hapū engagement.
- Samuel stated that he would prefer everyone on the KIWA Group participated in an information session for all Tangata Whenua. Wolfgang suggested 3 potential session times could be planned for to provide enough opportunity for people to participate when they are available.
- Dianne noted that she will have to speak to some people and get back to the group on whether Ngati Oneone supports this approach.
- Wolfgang clarified that the KIWA Group members can still have private consultation with Tangata Whenua and having a collective session would not take away from that, rather it would simply help to broaden Tangata Whenua involvement in this discussion.
- Keith stated he finds through his own experience when it comes to consultation that if the people present are Whanau, then Iwi/Hapū tend to be more open and the options being suggested are not always the most effective way to bring things up that come from the heart.
- Keith noted that he does not see the point in asking people outside of the KIWA Group about these questions, as he has been appointed as a representative of his Iwi on this group and that forms part of his role. Wolfgang acknowledged this view and stated this process can be done in any way that the KIWA Group representatives would like.
- Samuel explained the current conversation and ideas being debated to David who arrived late. Samuel noted that any data collected from Whanau could be kept separate from the KIWA Group data, as Whanau won't have been subject to the in-depth information that the KIWA group has through this process and therefore there will be different measurements and responses. Samuel clarified that this information could be used for measurement purposes in the future.
- David asked for some time to consider this before offering his opinion.
- Owen stated that he agrees with Keith and noted that this consultation needs to be about letting people know what is happening and give them an opportunity to report back to the KIWA Group representatives if they would like to, but that the KIWA group should avoid anything more which may disrupt the kaupapa they are trying to fulfil.
- Owen stated that he thinks giving people the opportunity to get involved by speaking to the KIWA Group representatives is enough and will help prevent issues arising due to differences in understanding of the material.
- Samuel stated that he agrees the information being shared needs to be uniform as everyone needs to be delivered the same korero.
- Ray added that simplicity at its best will help get the message across. Letting people know what the KIWA Group is doing, why the Council is consulting with the KIWA group, and that Council want to know if they have got permission to allow for reduced overflows through this consent.
- Wolfgang clarified again that through this consultation process Council is only asking for information and to accurately relay this information through the consent. Council is not asking for acceptance or permission from Tangata Whenua to reduce overflows.
- Wolfgang stated that going forward, the KIWA Group members will be asked to decide how they would like to conduct this consultation and let Council know.



- Wolfgang also noted that he will make himself available to attend any meetings, but will leave it up to the KIWA representatives to decide how this is done and who is involved.
- Owen stated that it is important to remember that we are after quality rather than quantity through this process, and those who understand the territory and subject matter can provide feedback that is more useful than other more general perceptions.
- Owen emphasised that we should not undermine those who are already in the position of knowledge on this subject, and should make sure that whilst everyone is given the opportunity to contribute if they would like to do so, this should be managed by the KIWA Group representatives themselves.
- Owen also noted that he appreciates Wolfgang making himself available to be part of this consultation if necessary.
- David added his view on this that everyone on the KIWA Group knows what the kaupapa is and as himself and Keith have been sent to do this mahi on behalf of their Iwi, he cannot think of anyone else who would like to join and participate in addition to them.
- David noted that it wouldn't worry him if Samuel or anyone else on the KIWA Group wanted to include their people in this discussion.
- Samuel stated that he agrees totally with what David has said in terms of representation, however Council would like wider engagement and he understands the reason for this in terms of data and measurement, as it is more powerful and consistent if they show that they have informed more people.
- Owen suggested that the KIWA Group is going on the right track with this, and shared that through other consultation he has recently been involved with, he found that they continued surveying people because it was a topic that had emotional interest.
- Owen asked why in terms of this work, do we really need to go this wide and ask the question to more people when the answer is already clear that everyone thinks wastewater overflows are bad for the waterways.
- Keith agreed with Owen and expressed that he sees his role as part of this group is to report back to his Iwi, and that involving them more closely may create two perceptions going back. Keith stated that he hopes he can understand the questions and take them back to share them with the people he is representing, his question is if the information gathered is going to be used properly.
- Samuel stated that if one person goes to a tangi, everyone goes. He acknowledged that the KIWA Group representatives have been put into this position and are mandated.
- Owen stated that he speaks for his people, and everyone on this group does not speak from a personal perspective, they speak as representatives of their people. Owen shared the following quote: "Though I may appear as one man, yet behind me there are hundreds."
- Wolfgang again emphasised that there are good ideas here and Council are going to be guided by the KIWA Group on this decision. Whatever way each representative would like to conduct this consultation is up to them, however Wolfgang suggested that people should possibly be given the opportunity to provide feedback through Council's website. Wolfgang noted that through consultation processes it is important to make sure that everyone has been given the opportunity to participate.
- Owen expressed that the KIWA Group representatives are here is because they have some understanding and knowledge of this issue within their Iwi, and therefore Council are consulting with Māori and getting the Māori view through

them. If Council would like to do wider citizen engagement then they can, however everyone on the KIWA group brings the view of their own people and these are the tribal views of Turanganui a Kiwa.

- Wolfgang suggested that this task then be left up to each Iwi/Hapū to consult internally and in whichever way they see fit. The KIWA Group agreed that they should let people know that there is information available on Council's website.
- Each Iwi/Hapū agreed to let their people know through their own channels, and are aware that if they do not want to post about this information then they do not have to.
- Keith expressed that they will handle their own people and will provide their own expertise.

Wolfgang also raised the topic of building capacity. **Action point for Wolfgang: put this on the radar to speak about with managers and found out how this fits in to the terms of reference of the KIWA Group. To look at this later on.**

- David expressed that this is the only thing / committee he has ever been asked to be part of where all the tribes of Turanganui a Kiwa have been represented, which is why he has asked what the Wastewater Management Committee is and who is on that committee.
- Ian clarified that there are 4 Iwi chairs and 4 councillors on the Wastewater Management Committee.
- David stated that he will always stand up for his own people and feels that they are left out of everything. David stated that he felt he had to bring this issue up because this is the first time he has been included on something.
- David also noted that the KIWA Group have not been able to focus very heavily on the actual kaupapa today because they have been dealing with so many other issues, but that this is important to address.
- Samuel shared that he recognises what David has said and would like to express that this is why he is particularly excited about this group and the opportunity it has created for everyone to sit together and bring awareness to these issues.
- Samuel also noted that the land and people will never progress unless these bigger issues are addressed, and noted that Rongowhakaata recognise Te Whanau-a-Kai and Samuel will continue to drive this message.
- Samuel agreed that this issue extends right across the board and noted that only Iwi themselves can sort it out.
- Ian agreed and stated that he understands all these issues and where they come from. The aim of the KIWA Group is to unite people and provide advice to Council and a voice for Iwi on the topic of wastewater.
- Wolfgang informed the KIWA Group that in today's budget speech they are going to give detail on regional spending. Wolfgang noted that he may find out if they have been successful in securing more budget by this evening, and therefore the meeting with David and Nedine that was discussed at the previous KIWA Group meeting has been delayed until after the results are released.
- Wolfgang stated that he will be back in touch with the KIWA Group to progress this further once decisions have been made and announced.
- Keith asked of the budget that will go to this project from the funding that was applied for. Wolfgang clarified that \$80 million of the approx. \$200 million that

Council has applied for through the Crown Infrastructure Projects fund is intended to go to wastewater projects.

- Wolfgang stated that if there is still a chance for Iwi to support these applications through the representatives on the KIWA Group then we would need to act quickly and he will know more information on this by tomorrow morning.
  
- Administrative note:  
Wolfgang stated that Council want to be able to pay the KIWA Group representatives for the work they are doing. The KIWA Group was therefore again asked to provide Ally with what she needs to everyone set everyone up in Councils system. Ally showed everyone the creditor form and walked them through what is required.
  
- The KIWA group agreed to take a 5 minute break before moving on to Mauri Compass work again.
- **Mauri Compass work**
  - Ian presented multiple graphs and explained to the KIWA Group that these graphs show a different view of the data and scores collected in the Mauri Compass spreadsheet. Ian emphasised that these graphs help to show change occurring across the different scenarios and how significant that change really is.
  - Ian also informed the KIWA Group that he has booked a room at TROTAK to go through these spreadsheets in person. The KIWA Group agreed that this would be a good way to approach this work and answer these questions.
  - Ian walked the KIWA Group through the different scenarios in the Mauri Compass spreadsheet again and explained how the scores from all these scenarios come together in the last page which shows the changes in mauri that have occurred.
  - Ian presented graphs with the results from Wolfgang and Ian's scorings for each scenario and the specific sections within those - Tangata Whenua connection, tikanga practices, wairua connection, mahinga kai practice, etc.
  - Mahinga kai was one of those attributes which improved significantly, representing what would happen if wastewater overflows reduced or were eliminated and as a result, Whanau would feel safer about eating kai from the rivers.
  - Wolfgang noted that these scores wouldn't reach a maximum of 5 because of the other catchment issues which would continue to impact on the water quality, even if wastewater overflows stopped or were reduced. Ian agreed.
  - Biohazard reduction is another attribute that Ian and Wolfgang identified would improve significantly across the different scenarios.
  - Keith asked about the difference and whether any work has been done on identifying where the pollution is coming into the system from that prevents the scores from reaching a 5.
  - Wolfgang confirmed that Council has a number of programmes to address catchment issues and a lot of this work relates to farming, stormwater, pets, landfills and more.
  - Wolfgang noted that this particular score is about the practice of mahinga kai, so the score is also influenced by aspects such as access to the river and traditional avenues of connection with that practice.

- Wolfgang clarified that it is not possible to say what percentage of these issues are impacting on the water quality itself.
  - Wolfgang explained why the change in some of the western science bands is not clear due to the quartiles used for the LAWA information.
  - Wolfgang explained that the Mauri Compass tool doesn't allow for differentiation between small changes because of the range of being used to measure them. So comments are critical.
  - Wolfgang also noted that the above may also apply to the recreation grades as scores cannot go down to the absolute level, but this kind of information can still be captured in the comments section.
  - Ian noted that as some of these improvements cannot be captured in the tool, which is why there are + symbols that have been added to his graphs.
  - These kinds of smaller changes can be signaled by adding in a - or + symbol in the outcome graphs to indicate that that changes have occurred, even if those changes are not clear through the scoring system used.
  - Ian clarified for the KIWA Group that there is no set measurement for using these symbols and that common sense should be used to decide whether it is necessary to include these symbols.
  - Ian also let the KIWA Group know that the scoring minimum may be changed to allow for a score of .5, as this will help to indicate change more effectively.
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- The KIWA Group discussed meeting times for next week and agreed to meet at TROTAK on Monday at 11.30am to 2pm.
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- Samuel emphasised that all members of the KIWA Group are also welcome to take part in the Rongowhakaata information session on Wednesday evening if they would like to.
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- **Karakia**  
David closed this hui with a Karakia.

## **Seventh KIWA Group Meeting**

### **Meeting Minutes**

**Date:** Monday 18<sup>th</sup> May 2020

**Venue:** TROTAK

**Time:** 11.30am to 2pm

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor
  
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
David Hawea - Te Whanau-a-Kai  
Keith Katipa - Te Whanau-a-Kai  
Owen Lloyd - Nga Ariki Kaiputahi  
Murray Palmer – Rongowhakaata (by phone)  
Samuel Lewis - Rongowhakaata  
Dianne Irwin – Ngati Oneone  
DJ Irwin – Ngati Oneone

#### **Apologies:**

Murray had to leave part way through the meeting

#### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

#### • **Karakia**

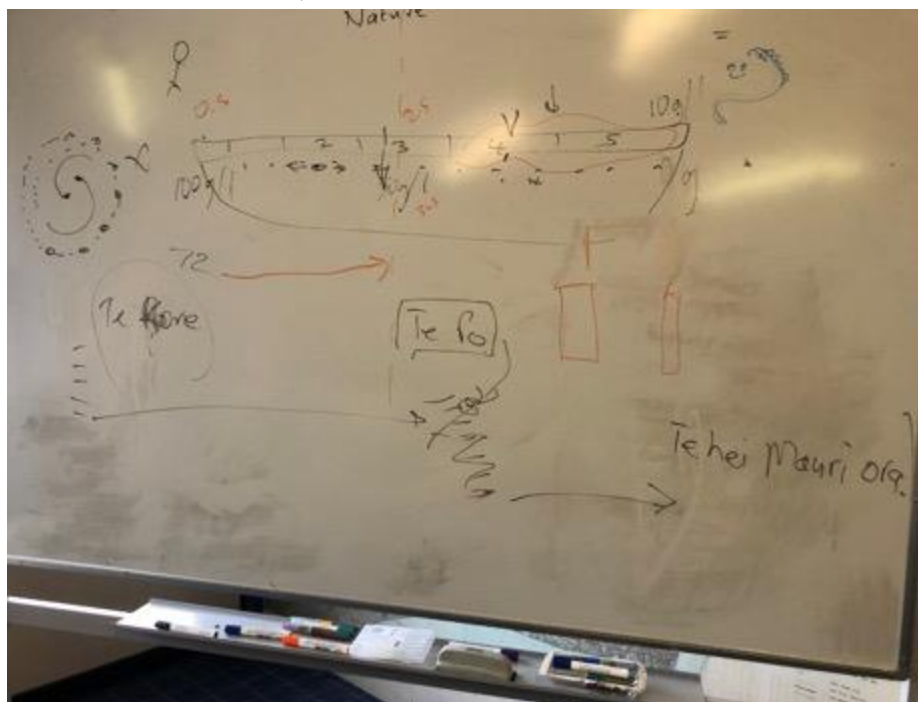
David opened this meeting with a Karakia

#### • **Kaupapa / mahi**

This meeting was specifically scheduled to make progress on the Mauri Compass.

- Hard copies of the Mauri Compass spreadsheets were handed out.
- The KIWA Group proceeded to look at the freshwater spreadsheets.
- Wolfgang re-capped on how the spreadsheets are used, going through each question scenario-by-scenario.

- The discussion focussed on the first question – *Is the waterbody's significance reflected in terms of tikanga practice?*
- The group noted that the question may still need revision. The discussion revolved around the practice of tikanga and what this looked like. Discussions were held on whether this score should be a zero. Wolfgang noted that if some tikanga is still practiced, then it cannot be a zero. The suggestion was made to rather have 0.5 as a lowest score. A comment was made that perhaps it is better to not score the first question in this assessment, and then the consensus was that it would be OK to retain if it was made clear that the question was only in terms of these water bodies.
- Wolfgang noted that he viewed the tikanga as the 'glue' that enables the practices to occur, and for that reason in his opinion it should be retained.
- The lowest score of 0.5 was considered to perhaps still be too high for the first question. The point was made by some members that the score for this question also relates to education and passing on knowledge and tikanga etc. Improvements in such aspects, although not always related to wastewater in this case, would improve the score for this question.
- A score of 0.5 was considered plausible only because of oratory, pepeha etc. practices in terms of tikanga.
- A concern was raised that giving any score could imply tacit approval of the current situation. A session was held comparing western science scoring systems versus Māori value systems.
- Wolfgang explained that a score below 3 is essentially a fail. Western science monitoring of e.g. water quality is the same – there are fail points, and values below these are deemed unacceptable. It also depends on what the baseline or benchmark is – different fail points exist for different objectives and targets.
- Wolfgang explained that there are 'bands' within western science that are used as indicators for the quality of the environment and therefore life supporting capacity, which is related to mauri. Wolfgang explained how the National Policy Statement on Freshwater Management uses bands, and this was compared to the scoring in the Mauri Compass. This was done by means of a whiteboard session, as below.



- Owen, Dave, and Keith, and other KIWA Group members provided input into this workshop, relating how the Te Ao Māori view applied to such a scale. 'Bottom lines' were also discussed, noting how the bottom lines in the Freshwater Plan and other western science reporting do not align with Māori's perspectives.
- In discussions on setting bottom lines, the KIWA Group members unanimously agreed Tangata Whenua have had little or no say. The group as a whole however agreed that the current KIWA Group process was a positive in all working together and Tangata Whenua hopefully being heard better.
- Māori considered that they do not philosophically have a bottom line, and that the objective is always to return to the optimal state, and all other states are sub-optimal. The optimal state could be considered a pre-European sustainable state with customary practices and philosophies alive and well. It is a never-ending process, it has to be an ongoing struggle. Samuel spoke of balance being critical.
- Wolfgang and Ian agreed that these concepts could be integrated into the Mauri Compass as improvements to the tool.
- Tangata Whenua were strong on the point that dilution is not the solution, and is unacceptable from their Māori viewpoint. This is particularly so when considering human wastewater and mortuary wastewater.
- The discussion went onto the DrainWise Implementation Programme. While it was understood that the immediate programme was about improvements, the goal must remain to be elimination of overflows altogether.
- Keith asked about the pace at which the improvements are proposed, and if it can be done quicker. Wolfgang advised that the pace is currently set at what Council has planned into the Long Term Plan (LTP), which is based on a number of things including the ability of the ratepayer and homeowner to afford the improvements.
- The meeting ended at 2pm.

- **Karakia**

David closed this hui with a Karakia.

## **Eighth KIWA Group Meeting**

### **Meeting Minutes**

**Date:** Thursday 21<sup>st</sup> May 2020

**Time:** 2pm to 3.30pm

**Venue:** Virtual via Zoom

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor  
Ally Campbell – Junior Wastewater Advisor
  
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
Karena Toroa - Ngai Tamanuhiri  
David Hawea - Te Whanau-a-Kai  
Keith Katipa - Te Whanau-a-Kai  
Murray Palmer; Samuel Lewis - Rongowhakaata  
Owen Lloyd - Nga Ariki Kaiputahi  
Matawhero Lloyd - Nga Ariki Kaiputahi  
Joanne Pere - Te Aitanga a Mahaki

#### **Apologies:**

Dianne Irwin – Ngati Oneone

#### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

- **Karakia**

David opened this hui with a karakia

- **Minutes**

- Wolfgang informed the KIWA Group that the minutes for the previous meetings will be sent out on Friday. The group has been asked to look at these minutes when they have time and to provide any feedback or changes that need to be made.



- Wolfgang noted that he is currently writing the report for this engagement. This will be provided for the KIWA Group for review and feedback by close of business on Friday or Monday.
- Wolfgang emphasised that it will be very important for the KIWA Group members to read through this report and ensure that it accurately represents everyone's views and thoughts.
- The KIWA Group was asked to allocate between 4-8 hours to reviewing this document by next Thursday.
- Wolfgang noted that this will be an interim report as this consultation will continue after the consent application has been lodged.
- David asked when the consent has to be in by. Wolfgang noted that there is no date for the consent, however if this is not submitted and approved by end of July and Council has an overflow they will likely be non-compliant which is why they are aiming to get this done by the beginning of June.
- Wolfgang noted that a draft consent application has been completed and is now waiting for this engagement report to be integrated.
- Wolfgang stated that the report he is writing will incorporate important information and statements that have come from this Tangata Whenua consultation. It will also include comments from the KIWA Group and would like confirmation that what has been captured is accurate.
- Keith asked if from the 1st of July Council will need a consent to have an overflow. Murray noted that a consent is needed for overflows from the first of July so theoretically Council may be in breach if an overflow occurs after this time.
- Wolfgang asked Murray if the breach would occur when the next overflow happens or at the beginning of July. Murray stated that he was not sure.
- Keith asked for clarification on the time-frame between consent submission and the consent being heard.
- Wolfgang noted to Keith that once the consent application is submitted, they likely will not get consent before the first of July as this process may take between 2 and 5 months, but this will depend on the submissions from affected parties, like Tangata Whenua. Murray confirmed that that is a realistic timeframe when considering hearings and decision making timeframes.
- Murray noted that even if Council are non-compliant there are emergency powers under the act to allow for an overflow if it had to occur.
- Wolfgang clarified that he does not have extensive knowledge on this process and noted that he is trying to make sure this process is done correctly and this consultation is done meaningfully, which is why he has recommended that consultation with the KIWA Group on this matter continues after this application has been submitted.
- Wolfgang also noted that there are other Council projects where KIWA Group input and consultation would be appreciated, including mortuary wastewater in June if the group is available for this.
- Keith stated that his impression is that the commissioners will make the call depending on the strength of the opposition and what they see are the likely damages being done, and this will really be their call. The only thing that could change this possibly would be a strong opposition to make it more urgent.
- Wolfgang noted that once the consent has been lodged there will be various notifications and that will provide a second opportunity for Tangata Whenua to input if they would like. However, KIWA Group members would then essentially be wearing two hats in this space and it may be more appropriate that the pre-engagement be finished and each Iwi/Hapū engage directly - this approach has not been determined yet.

- Ian clarified that the KIWA Group is involved in the pre-engagement part of this process, but once the consent is lodged all KIWA Group members can also partake and comment as members of the general public on the consent.
- Wolfgang agreed with Ian and clarified that once the consent is lodged, the role of the KIWA Group as part of this project may reduce quite significantly, and Iwi and Hapū will have the opportunity to submit on the consent individually.
- Ian added that consultation with the KIWA Group has been to help Council determine and best describe the effects of overflows from a cultural perspective, which does not at all change anything in terms of KIWA group members' individual abilities to submit on the consent once it has been lodged. This can still be done and is not affected by this consultation process.
- Wolfgang reiterated that Council is not seeking support from Iwi through this KIWA Group consultation, only advice and information.
- David noted that he is confused by this and asked if once Council get the consent they will no longer worry about the KIWA Group.
- Wolfgang stated that that is not what he meant and clarified that the KIWA Group is not being used to gain Iwi support or endorsement, the KIWA group's role within this consent is simply to inform Council on the effects of overflows. After the consent has been lodged the KIWA Group will continue to be consulted on various matters.
- David noted that the effects of overflows will be ongoing. Wolfgang agreed and noted that this is why the KIWA Group has been set up with their terms of reference as part of the Turanganui a Kiwa Water Quality Enhancement Project, and why the KIWA Group has been tasked to discuss the cultural impacts of reducing the number of wastewater overflows.
- Ian added that this consultation is being conducted to get an honest and accurate view of these effects from the KIWA representatives, not to gain Iwi/Hapū support.
- Matawhero noted that the KIWA Group is not an authorised governing body for Iwi/Māori, rather it is there for group members to advise and provide feedback on Māori values to some degree. Ian agreed.
- Matawhero also noted that the KIWA Group as a whole cannot speak authoritatively, but some individual group members may be able to as governing bodies.
- Keith noted that what he was referring to is that the process has been governed by the need to submit the consent, and as this is not going to be perfect and will be ongoing, Keith doesn't necessarily see a clear picture forming of what the group does and does not agree with. Keith noted that if the consultation will still be ongoing after the consent is submitted, there may be important issues which come up later that the KIWA Group should discuss as they may not necessarily file in opposition to the consent, but this needs to be discussed prior to the consent hui. Keith stated that this means that the KIWA Group can keep the discussion going and may come to a collective agreement on it, rather than just opposing the consent.
- Wolfgang agreed with Keith. However he noted that this is potentially stepping outside the mandate of the KIWA Group and these discussions would occur at a governance level, rather than within this group.
- Samuel noted that it makes sense that the KIWA Group are here to recommend and that these recommendations are submitted to the WMC at some point.

- Samuel also noted that once the recommendations have been made, each Iwi/Hapū will have the ability to raise concerns at a higher level.
- Owen noted that from a treaty perspective it is not about asking for opinions to advise, it is about asking for their opinion on whether to do something or not because advice can be taken or left.
- Owen stated that the KIWA Group is here to stand and to speak on behalf of Māori as per the treaty, and not to advise an organisation that has the mandate to do this because they have the vote, rather the treaty says that they must consult with Māori and make a decision together for the consent to go through.
- Owen stated that the KIWA Group need to be mindful that they are using their intellectual knowledge and positions as Tangata Whenua to keep the balance when making these decisions together.
- David added that he feels this group should not have an end date and his view is that the KIWA Group should be in a position where they are always on board with these decisions going forward. This is something that he feels wary of.
- Ian noted that the KIWA Group is not going to go away after the consent has been lodged as there are other projects that Council will consult with them about in the future. Ian stated that this is a long term game for the KIWA Group.
- Wolfgang also noted that from a legal perspective, the wastewater consent from 2009 has a 35-year term which provides for the Turanganui a Kiwa Water Quality Enhancement Project, so legally Council have to continue with this project and the KIWA Group has been set up to work as part of that.
- Wolfgang noted that this work will be ongoing until at least the end of the consent, but that wastewater is a constantly evolving issue that Council will always need advice and input from Tangata Whenua on and there are no plans to finish consultation with the KIWA Group once the consent has been submitted.
- Owen noted that he personally acknowledges Wolfgang's efforts to ensure that this consultation is meaningful, however there is a value being put on the opinion of Māori at such a deep level that there has never been before which is why some of the group feel gun-shy about this work sometimes.
- Keith added that he supports what has Owen said and noted that what he is trying to say is that he understands the pressures Council have from a legal perspective, but that they also have legality dating back to 1840 and not being able to exercise that for a long time is the gun-shyness that Owen referred to.
- Keith noted that he looks forward to the opportunity to participate, but he does not think this should be stuck on a timeframe that has been set by when the consent needs to be submitted. This is an old system and he would like to look at the whole issue, not just the piece that wastewater makes up.
- Samuel added that he thinks it is important to note and understand that the Wastewater Management Committee is composed of TROTAK, Mahaaki, Rongowhakaata, Ngai Tamanuhiri, and 4 Councilors as Wolfgang noted.
- Wolfgang also noted importantly that in this space he is only a project manager and a lot of the conversations being had speak to a much higher level for which he has no mandate. Whilst Wolfgang does believe that these conversations need to be had, the KIWA Group work is supposed to be technical, tight and tactical to provide cultural input, as Ian had stated before. The KIWA Group is not the right group to address these bigger discussions and they should be dealt with separately.
- Wolfgang had to leave the meeting for 10 minutes due to a personal commitment.

- Samuel noted that in terms of the functions of the KIWA Group, it is set up to recommend and provide advice and it is the Wastewater Management Committee that makes the bigger decisions. Samuel noted that the KIWA Group has been called in for their expertise in regards to tikanga and other cultural aspects to make the recommendations.
- Owen expressed his view that the problem is that the KIWA Group is an advisory group in terms of their understanding and experience, however there are two groups within the KIWA group that are not also sitting on the decision making group and that is the issue.
- Matawhero noted that that is a kaupapa that does not fit in with this particular task. Owen agreed and noted that this is why the KIWA Group are getting off track with the mahi, but that he thinks this is worth talking about outside this meeting.
- Samuel stated that a recommendation could be made that the KIWA Group feels there is a missing element and those two groups should be represented as part of the Wastewater Management Committee. Samuel noted that he completely agrees that this conversation needs to be had outside of this hui.
- Keith also noted that the reason Te Whanau-a-Kai have gone to the Environment Court is because they are asking who has governance over that and who has the right to claim governance. Keith noted that he is here because they have a right to talk about this and he feels like they are being sidelined as part of this to simply advise.
- David noted that this issue is worrying to him because they are not being recognised in more areas than just this, and it seems like on this issue they are just being included to give the Māori voice more strength but after this they won't be included.
- Matawhero noted that the KIWA Group is not about making governance decisions for Iwi, rather it is to provide co-creation advice for Ian and Wolfgang on the Mauri Compass so it can go to the governance who will make those decisions. Those positions of authority need to come at the Council level, but the KIWA Group is not about governance issues and that is a different forum that needs to be created.
- Matawhero noted that his time is very tight and he has feedback on the Mauri Compass and the way it is designed for Ian and Wolfgang, but he is not in a position to offer advice on governance. Wolfgang and Ian acknowledged Matawhero's time commitments and Matawhero proceeded to offer the following feedback on the Mauri Compass spreadsheet.
- Matawhero stated that he felt the questions themselves were focussed on the use of water as opposed to how overflows made him feel and he would like to see them framed more around how the overflows make people feel. Matawhero noted that this would help express the intimacy of the relationships people have with the water and how they use it.
- Owen added that when looking through the Mauri Compass spreadsheet, he also found that a lot of the questions were about the use of water and felt they should be more about how we give knowledge back to people and enable the mauri to start thriving again.
- Owen noted that some information may be physically accessible, like that which is at the museum, but mentally it is not because a lot of people still don't know that it exists. Owen stated that people cannot connect to what they do not know and how that affects people is what should be recorded using this tool.
- Ian shared an image with the KIWA Group from one morning when he was out on the water and felt the mauri in the water. Ian noted that this influenced why

they wanted to create this tool, and he now uses that image on the cover of appeals when they are put forward because it helps him capture and record those feelings.

- Matawhero also noted that the Mauri Compass brings in a psycho-social aspect and it can be difficult to create a statistic around this, however in terms of mauri the tricky part is capturing the social, yet internalised aspects of it.
- Matawhero suggested that there are really two parts to the question about swimming in the river after an overflow – part one is about utilisation and part two is about how that makes people feel.
- Wolfgang noted that in cases with questions like these, the comments are very important as they can help express these views and feelings accurately.
- Wolfgang reminded the group that there are a few things that have been discussed today which should be captured in the comments section of the Mauri Compass spreadsheet, to make sure that there is a record of these feelings and not just a number or a score.
- Owen noted that there were some questions in the Mauri Compass spreadsheet which he did not know how to answer and struggled to comprehend as they were quite technical. Owen noted that ¾ of the questions were quite reasonable, but some had different values attached to them.
- Owen noted in regards to the question about whether Tangata Whenua feel they are achieving their aspirations as kaitiaki that many Tangata Whenua have not been taught about this so they themselves may not know this value. Owen expressed that Tangata Whenua have not been enabled know what it is they are feeling because they haven't been taught about it.
- Owen stated that he commends Ian and Wolfgang on the complexity of the work and the different scenarios, but sees that the challenge is trying to turn around and say what the principles are and what needs to be understood.
- Wolfgang noted that this is the challenge he is currently facing trying to put the information from this consultation into words in a report for the KIWA Group.
- Ian added that it may be a good idea to include an executive summary stating that this is what it looks and feels like, and have the questions below to show what underpins that view. This would help to show where the ideas in the report have come from and will also show the process.
- Wolfgang noted that the Mauri Compass is just an indicator tool and it is important for the KIWA Group to ask whether this tool is getting them to ask the right questions and then describe the effects.
- Wolfgang acknowledged that going through these questions is a struggle and he understands that everyone is trying to figure out how to capture all this information, so the comments are a key area which can help explain this.
- Owen noted that he can see the challenge for Wolfgang and Ian to capture this information and translate the spiritual and metaphysical parts of this into words, but he thinks they are on the right track.
- Matawhero noted that on the spreadsheet there are two parts - your opinion which is represented by the scores, and your satisfaction which can be represented in the comments. Wolfgang noted that these two things can be different because the complexity of these issues is difficult to describe.
- Ray noted that there are some similarities between some of the Mauri Compass questions. Ray also stated that the KIWA Group needs to correlate their scores and discuss how as a group, they can be effective as a decision-making team in supporting these questions.
- Ian noted that the Mauri Compass tool itself is definitely evolving and the complexity of the questions raised today can help to improve it.

- Ray also noted that he agrees with the questions that have been included in the Mauri Compass spreadsheet because they give the KIWA Group a path to follow and the decision makers are responsible for that.
  - Wolfgang clarified again that the KIWA Group are not the decision-makers on this consent, they are only operating as a technical tactical group. Wolfgang stated that he thinks the information put together by the group will likely be able to be integrated into how these issues are managed going forward. What happens with the information that is collected is something that the KIWA Group is often talking about, and in terms of who the decision makers are and how this is done is not our focus.
- **Update on next Zoom hui and work required**
    - Ian asked the KIWA Group if anyone has something to submit in terms of the Mauri Compass spreadsheet.
    - Owen noted that he did his scoring and agrees overall with Ian and Wolfgang's scores but has made a few minor comments. Owen stated that he thinks their comments have justified their scores quite well.
    - Wolfgang noted that there is no debate needed for the KIWA Group in the blue and green sections as they are actual data on the environment, and our focus is on the Te Ao Māori component.
    - Wolfgang also noted that when the KIWA Group gets the report hopefully they will see that a lot of the concerns around how this information is being used will be made a lot clearer.
- **Members to provide an update on creditor forms**
    - Ally to provide a list of people who have not done this yet and those people will need to get this information in.
- **Other matters arising**
    - Wolfgang reminded the KIWA Group of the information and work that will be sent out in the coming days for review.
    - The KIWA Group confirmed that they are happy to meet next week Thursday at 2pm.
    - Joanne noted that in terms of the Mauri Compass tool, she understands the intrinsic feeling Matawhero was referring to earlier in the meeting and understands that explaining this in words can be difficult. Joanne also noted that as she has used the Mauri Compass before she may find it easier to work with, however she has enjoyed being part of this korero and listening to everyone's perspectives and knowledge. Joanne noted that simplicity is best when dealing with this kind of mahi.
    - Samuel also noted that despite not having achieved much through today's korero, everything is okay. Samuel stated to the KIWA Group that he is not under any illusion as to why he is here. He took this position understanding that they were going to make recommendations to the Wastewater Management Committee and he accepted it on those terms. He fully investigated what his role was prior to joining this group and he is committed to that.
    - Wolfgang noted that he understands that this process can be difficult and he appreciated the efforts made by the KIWA Group. Wolfgang emphasised again that everything is meant well through this process and hopefully the reporting reflects that and validates the KIWA Group's trust in this process.

- Ian thanked the KIWA Group for the discussions had today.

- **Karakia**

David closed this hui with a karakia

## **Ninth KIWA Group Meeting**

### **Meeting Minutes**

**Time:** 12-1.30pm

**Venue:** Virtual via Zoom

**Date:** 29th May 2020

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor  
Ally Campbell – Junior Wastewater Advisor
  
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
David Hawea - Te Whanau-a-Kai  
Keith Katipa - Te Whanau-a-Kai  
Samuel Lewis - Rongowhakaata  
Owen Lloyd - Nga Ariki Kaiputahi

#### **Apologies:**

Dianne Irwin – Ngati Oneone  
Karena Toroa - Ngai Tamanuhiri  
Matawhero Lloyd - Nga Ariki Kaiputahi  
Joanne Pere - Te Aitanga a Mahaki  
Murray Palmer - Rongowhakaata

#### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

- Karakia  
David started this hui with a karakia
  
- Administrative duties
  - Wolfgang asked Ally to confirm with the KIWA Group who has not yet sent their creditor forms in. Ally confirmed that everyone present at today's hui had done this, and asked Ian to follow up with those who could not make it today.
  - Wolfgang noted that the KIWA Group was sent the meeting minutes at the beginning of the week and asked that if everyone had reviewed them, if we



could move and second them today. Ray noted that he has read them and would be the mover.

- Wolfgang asked if anyone else aside from Ray had finished reading the meeting minutes. As no one moved to second these, Wolfgang noted that this will be done at another time and asked the KIWA Group to please review these by the next group meeting. The KIWA Group confirmed that they would do that.
- Wolfgang addressed Murray's request from our previous group meeting for more information on the effectiveness of the DrainWise education and awareness programme.
- Wolfgang presented the group with a document containing the results of engagement through Facebook posts. The KIWA Group was informed that this document had also been uploaded to the KIWA Group Website.
- Ally and Wolfgang explained to the group what the data and statistics in the document meant.

**Action point for Murray: To also look over this document on the KIWA Group Website as this was originally his query.**

- Report notes
  - Wolfgang asked the KIWA Group if anyone has finished reviewing the report.
  - Ray asked Wolfgang about the key stakeholders mentioned in the report summary. Wolfgang informed Ray that the key stakeholders, such as surf clubs, were engaged separately to the cultural engagement process by the consultants who are assisting with this resource consent.
  - Wolfgang noted that the stakeholders who have been contacted include Haoura Tairāwhiti, Department of Conservation, surf lifesaving clubs, waka ama, and more. Wolfgang also noted that the project team have talked to these key stakeholders about the overflows also.
  - Wolfgang clarified that the reason these this was conducted separately to the KIWA Group engagement is because tangata whenua engagement was viewed more as a partnership between Council and tangata whenua rather than a simple consultation.

**Action point for Wolfgang: to make this clearer in the next version of the document**

- Keith noted that he is still looking through the report and has not finished his review at this stage.
- Wolfgang stated that he and Ian are wanting to know if the KIWA Group feels that everything they wanted to see has been included in this report, and to know whether this information is being illustrated in the way they want it to be.
- Ray asked about the KIWA Group recommendations on page 39 and queried where the KIWA Group fits in when it comes to sitting in at the hearing for the consent. Ray asked if Council is prepared to let the KIWA Group speak on cultural issues if they are questioned.
- Wolfgang noted that he is not sure about that at this stage and plans to have this report included as a KIWA Group Report on the effects on tangata whenua, to be lodged with the consent. Wolfgang noted that whilst he is not familiar with hearings in New Zealand, his understanding is that people have to request to speak in advance of the hearing.
- Ian added that during a hearing when there is a question raised people usually have to have an answer prepared.

- Wolfgang noted that this may be a positive and as this report is going to be submitted with the consent, if questions are raised in relation to it then the KIWA Group would need to be represented by someone that can answer these questions at the hearing. Wolfgang noted that that person would likely be Ian as chairman of the KIWA group.
- Ray noted that this is where the KIWA Group may fit in quite nicely in the hearing and noted that this could be an opportunity to respond to any Māori issues that come up.

**Action for Wolfgang to find out from the consent planners what the process is and report back to the group on that.**

- Owen asked what Walton's position would be in terms of providing guidance.
- Wolfgang noted that as Walton is a Council employee and currently not actively involved in this KIWA Group engagement process, he would not see him taking an active role in the hearings.
- David asked Wolfgang how much say the KIWA Group would have at the actual hearing, and whether the KIWA Group have to come to a conclusion before this goes to hearing.
- Wolfgang reminded the KIWA group that there are two process going on here.
  - There is the KIWA Group engagement work which is being carried out as per the KIWA Group terms of reference which is as a technical team under the wastewater consent. The report Wolfgang has asked the KIWA Group to review attempts to summarise the outcomes of this engagement and will be used as part of the consent.
  - The other process is Iwi/hapu themselves getting involved with the resource consent outside of the KIWA Group. Wolfgang noted that through the consent process they can provide submissions and can also ask to speak if it goes to a hearing.
- David noted that his issue with this is that the information is going from this group to another group who will then make a decision on the conclusions that the KIWA Group has come to. What concerns him is that people who have not been involved in this engagement process will be the ones to report back on it.
- Wolfgang noted that he understands where David is coming from and understands his concerns. Wolfgang clarified that as this work has been done by the KIWA Group, the report will be presented to the Wastewater Management Committee (WMC) and no changes will be made to the report itself by the WMC. Ian noted that he cannot see any problems arising from the perspective of the WMC and thinks that everyone would agree with recommendations and issues that have been identified in the KIWA Group report.
- Ian noted that the WMC is not another Māori group, rather it is made up of councilors and tangata whenua representatives. Ian named all members of the WMC for the KIWA Group.
- David emphasised that once again Te-Whanau-a-Kai are not represented on the WMC and is cautious that people may think that the committee have produced the outcomes of the report themselves.
- Ian noted that on the front page of the KIWA Group report there is a list of report owners and all KIWA Group members have been listed.
- Owen asked about what happens when this KIWA Group report goes to the leadership group and whether this will be presented as Council's view.

- Wolfgang noted that he wanted to use this process to accurately capture tangata whenua concerns and put these into a report that can be used in the consent. Therefore, this report is not going to Council for approval and will not be changed by Council or by anyone else, as the report contents are the outcomes of the KIWA Group hui.
- Owen noted that if it is questioned, he would like to be there to ensure that if anyone is going to challenge the KIWA Group view that it is based on cultural knowledge rather than political knowledge. Owen noted that he would not like the knowledge of this group to be questioned without them being there.
- Ian noted that when the report is taken to the WMC there should not be any surprises. Ian stated that for the KIWA Group representatives, once an approved version of the KIWA Group report has been finalised, their role will be to take this back to their iwi chairs and talk them through it.
- Wolfgang agreed with Ian and noted that this is why he has been hoping that iwi representatives on this group have been talking to their senior management and keeping them informed throughout this process.
- Wolfgang also noted to Ian that there is a WMC meeting next week and this may be an opportunity to share some of this work.
- Wolfgang and Ian invited the KIWA Group to join them at the WMC meeting next Thursday where they will provide an update on the work and present the high-level outcomes at this stage.
- Ally will send the KIWA Group the livestream link for those who cannot make it in person.
- Keith noted that he is concerned that as he stated at the previous KIWA Group meeting, he had thought that this would be a governance role, not a recommendation role. Keith noted that he is uncomfortable with being asked to put his name to a report that he does not entirely agree with and has no way of defending the report. Keith noted that he accepted an invitation on this group as he viewed this as an attempt by Council to communicate and consult with them, however he feels like this process has not been that as they have no control over the report.
- Keith noted that if their trustees object and want to challenge the consent because they have not been at the top table talking about it, then that will put them in a difficult position if they are having to trust the process of this report and put their names to it.
- Ian stated that there is the opportunity to submit on the consent as Te Whanau-a-Kai. Keith agreed, but stated that it may not be logical to do this when their names are already on this report. Ian stated that if they are opposing something else that comes up then that is completely fine and he would do the same, and that is why the KIWA Group are being given the opportunity to address and finalise things in the report now, so that a situation like this does not arise.
- Wolfgang emphasised that no report will be submitted on behalf of the KIWA Group that the KIWA Group has not reviewed and does not agree with.
- Keith noted that as the report has not been completed and this narrow window is where they are being applied to. Keith stated that his view is quite simple – what is going into the rivers should not be going in there and the question should be what is Council doing to stop and correct that behaviour.
- Regarding conclusions and recommendations, Keith noted that he has not reached this section of the report yet, however he has already encountered a number of things that he strongly disagrees with.
- Wolfgang noted that that is okay and that he is after a thorough review and feedback on how this report should be changed to reflect everyone on the

KIWA Group's views. Wolfgang noted that this report is collaborative and the aim is to get everyone on the same page.

- Keith agreed, but restated that this is why they thought they were coming in to this as a governance role.
- Wolfgang noted that all of this work is being done in the KIWA Group terms of reference which was discussed during the first KIWA Group meeting and was provided to everyone on the KIWA Group.
- Keith emphasised that last week was the first time he realised that this was merely going to be a recommendation report.
- Wolfgang apologised to Keith for the confusion and for this not being made clear enough. Wolfgang also noted that he has tried to be as open and honest as possible throughout this process with the KIWA Group about the work that is being done and why.
- Keith noted that he just has concerns that this work may be in conflict with what Te Whanau-a-Kai are taking Council to the environment court for.
- Wolfgang noted that this work should not be in conflict with anything else outside of wastewater overflow issues, as this mahi is specifically about the effects on tangata whenua due to wastewater overflows.
- Samuel asked Wolfgang to explain the representation of the 4 Māori members on the WMC because he thinks that this may be where some confusion is coming from.
- Wolfgang stated that the representatives on the WMC are TROTAK, Rongowhakaata, Te Aitanga a Mahaki, Ngai Tamanuhiri.
- Wolfgang explained that they were placed on the WMC because they were submitters against Council and through the consent the WMC was created to give them a voice. Ngati Oneone were given an opportunity to be on the WMC but they declined at that stage.
- Samuel noted that the WMC was formed from having challenged Council on these issues, and he thinks it is clear that the representation, whilst not of mana whenua inside of the WMC if its only submitted through who is on there, then sure enough they would have submitted from that perspective, but they are not as wide of tangata whenua representation as the KIWA Group is.
- Samuel noted that he sees the LLB as the future and thinks we should be walking towards the future. Samuel noted that he thinks that the job done on the KIWA Group has been a wonderful job, however there are inconsistencies being seen at this table so we only have power to recommend. Samuel suggested that the KIWA Group could potentially make recommendations, note the inconsistencies that have been seen and highlight the LLB and recommend that they walk towards this.
- Wolfgang noted that the recommendations in the report and these need to reflect what conclusions the KIWA Group has come to. Ian agreed that this is where these things should be noted.
- Samuel agreed and noted that he thinks this puts things into perspective, and from a tangata whenua perspective he can see the inconsistencies in representation. Samuel noted that one of the recommendations in this report could be for the Council to look at this representation in the future.
- Keith noted that they have a summarised view of what Te Whanau-a-Kai are doing in the environment court and he would like to share this with the KIWA Group to show how this conflicts with the work the KIWA Group are being asked to do here.
- Wolfgang noted that that is a good suggestion. Wolfgang noted that there is significant value in this report being a collaborative effort and stated that if

anyone did not want to put their name on this report and did not want to be represented as having contributed to this then it would not be as strong.

- Wolfgang emphasised that this is why the KIWA Group have been given the opportunity to raise any concerns they have with the report now, so that we can address them collectively and make sure the work that has been done by the KIWA Group for the past few weeks is not diminished.
- Wolfgang also emphasised that edits will not be made that the KIWA Group are not aware of and everything will be approved by the KIWA Group. Wolfgang emphasised that this report is going to go along with the resource consent into the application and Council will not make a decision on whether accept or ignore the report. It is being submitted as part of the consent.
- Wolfgang clarified that Council have put together the draft consent application and have been kept updated on the work that the KIWA Group has been doing. Wolfgang would like to give the consent writer this report for him to use to inform what the consent is asking for from a tangata whenua perspective. No findings from the report will be changed by the consent writer, the content will just be used to inform the consent.

**Action point for Wolfgang: to include a statement at the beginning of the KIWA Group report which states that this was done in the capacity of the KIWA Group as people, and it does not reflect any view of governance or take away any opportunity for iwi to submit on the final consent.**

- Ray asked if the Council have spoken with the other key stakeholders to make sure they know that the KIWA Group are the Māori representatives for the recommendations being made in the consent. Wolfgang noted that the key stakeholders were not informed of this as that consultation was specifically targeted at getting comments about recreational concerns.
- Ray asked if they had been introduced to the Mauri Compass tools. Wolfgang stated that they have not as this was part of the tangata whenua consultation.
- Ray asked if those groups could contribute to the hearing. Wolfgang noted that they have the right, as does everyone to apply for their view to be heard as part of the hearing.
- Owen noted that the bullet points stated in the report make it clear that tangata whenua consider any wastewater going into the waterways is totally unacceptable from a cultural perspective and he thinks this is a good, clear statement which explains that whatever anyone says, tangata whenua will not be changing their minds on that.
- Owen noted to the KIWA Group that reading the report will show that Wolfgang has explored all the areas that have been discussed and could be identified as concerns and positives and that is really important.
- Ray noted that he is here to represent the views of his iwi and after reading through the report he can see that tangata whenua views and the reasons for them have been made very clear.
- Wolfgang stated that they tried to capture what everyone has said and to best reflect tangata whenua views, however the reason the KIWA Group is being asked to review the report is to make sure that this document has been looked at critically and that everyone on the KIWA Group is happy with how the work has been represented.
- Ray agreed with Owen and stated that paragraph four in the conclusions and recommendations of the report is very strong and captures tangata whenua's views on wastewater overflows and their effects.

- Keith noted that he would have thought that the community would have the same views and feel the same effects, however that question has not been asked of them.
- Wolfgang noted that he has written about the rest of the community briefly in the report also, however the aim was for this report to be mainly about tangata whenua as it is the result of cultural engagement.
- Owen agreed with Wolfgang and stated that the fact is that Council is requesting a consent to overflows into the rives a reduced number of times which poses the view that from a physical perspective, it is not as bad as it would be when considered from a cultural perspective. Owen noted that the mental, cultural and spiritual part is not being taken into account which tells him that that is what this report is addressing as well.
- Wolfgang stated that legally speaking, Council have a compliance issue from July this year so they have to apply for a consent. Currently, Council have set the target of reducing overflows to 1 every 2 years based on what they believe can be achieved with the rate payer money available for doing this work.
- Wolfgang noted that the conclusions and recommendations in this report validate that Council must keep striving to reduce and try to eliminate. To do that within the next 10 years will be very difficult, however the consent authority will look at the report and will see that tangata whenua want complete elimination, and will consider whether what council is doing is going to be enough.
- Owen stated that the concern is how long will Council continue to say to Iwi that this issue is not an overnight fix. Owen emphasised that if Council is saying that it is going to take another 10 years to fix, given how long the issue has been around, then that is insufficient to solve the problem and someone has to take responsibility for having built this city on a swamp.
- Wolfgang noted that Owen just made some very good comments which should be noted in his review of the report so that they can be incorporated into the recommendations for what Council needs to do.
- Ian noted that Keith should do the same and add what he said in our previous meetings about the vacuum system into the report recommendations.
- Keith noted that he thinks the money is the weakest argument. Wolfgang noted that is something that can be challenged in Council's long term planning process.
- Wolfgang also noted however that if Council want to fix private property issues it would result in a rates increases so money is a significant factor.
- Owen noted that it is very difficult to separate the two parts – the decision making with Council on the big picture, and what the KIWA Group is saying here about wastewater overflows and their suggestions. Owen suggested that the other part is for Māori to fill those seats around the table and make decisions which are not about the ratepayers, but about the Treaty. Owen noted that this is where they need to be pushing on another pathway.
- Keith noted that private property has infrastructure on it because the public system has been built and everyone is touched by the system, inferring public responsibility for private infrastructure.
- Wolfgang noted that he is not aware of anywhere in the world where private infrastructure on private property is managed by or owned by a council. As private property is owned by individuals, it is therefore their responsibility to maintain and manage.
- Keith noted that private property doesn't have a choice of being hooked into this system and therefore it is a community service.

- Owen stated that if one has built their house according to the rules and that is how they get consent to build their house, but when Council's pipes are too small to accommodate that is where the problem arises.
- Wolfgang stated that Council pipes are not too small and the problem is that the private infrastructure is broken.
- Keith referred to a report he read which argued that they don't know how Council got to the conclusion that the issues are coming from private properties.
- Wolfgang noted that the wastewater modelling conducted by the engineers very clearly outlines that the issue is with inflow which he has shared with the KIWA Group and explained at length.
- Wolfgang noted that there are 3 sections in Council's pipes that have been identified and scheduled to be upgraded in the next ten years. Wolfgang emphasised that Council is confident these are not significant causes of the inflow and subsequent overflows into the rivers, and from a technical perspective the view that Council's pipes are causing the issue is incorrect.
- Wolfgang noted that he will go over these details further with Keith and Owen if they would like to discuss the technical aspects more, but he has attempted to be as open and honest as possible with the KIWA Group about the technical issues involved.
- Samuel noted that the private property network itself has been inundated with runoff and Wolfgang has highlighted the sections around town where there are issues of water entering the network through these private properties. Samuel noted what Owen pointed out about the liability of those things and Council allowing people to build, however the property owner can take these issues up with Council if they believe the issue was present when they were given permission to build. This lies outside of the scope of the KIWA Group as this would be between the property owner and the Council.
- Wolfgang noted that some things have been consented and may not be fit for purpose, and then there are some things that have been consented but have not been maintained which has also led to these issues.
- Owen noted that at his mother's house things worked well until Council built the road up and now the old system does not work because Council blocked it up and this contributes to the flooding in the low areas of Kaiti.
- Owen noted that the issue is less about whose fault it is, and rather it is about how to find a solution and to not justify letting overflows to continue.
- Wolfgang referred back to the DrainWise implementation Programme which outlines all the work Council is doing to try and solve the problem. Wolfgang noted that he recognises that tangata whenua and the community should be given the opportunity to input on these issues and agrees that these need to be considered. Wolfgang noted that this has always been his intention with this consultation and engagement process.
- Owen noted that the fact is that the framing of the questions determines the kind of answers you get and it has taken a while to get to what the problem actually is, what is solution and strategic responses are, and what the immediate response is in terms of the problem which has made it easier for him to understand.
- Wolfgang also acknowledged that he knows this mahi is only one part of the puzzle, however by putting in recommendations for engaging with tangata whenua he is being genuine with that and that is why they are in the report.
- Keith noted that Wolfgang needs to understand that this is a long history and he does not expect things to change overnight.

- Owen noted that Wolfgang should not feel disheartened and the KIWA Group appreciates his sincerity to accurately get and record the view of tangata whenua.
  - Samuel noted that he found some information on the Kopuawhakatapa Stream and discovered that there are people living there that are certainly not hooked up to the sewage line so he will send information on this property to Wolfgang and Ian.
  - Wolfgang also noted that he is trying to set a platform for the KIWA Group work to continue, within the context of having worked on the wastewater overflow project.
  - Ian noted that the next KIWA Group meeting is scheduled for Wednesday 2pm and asked the KIWA Group how best we can go through this report and look at feedback.
  - Owen noted that everyone should mark the report individually and everyone's notes could be discussed collectively to make sure that everything is in harmony with the kaupapa.
  - Wolfgang asked everyone to go through the document and highlight sections they have concerns with, provide feedback, and himself and Ian will make themselves available for Tuesday and Wednesday to look through those sections.
- Karakia:  
David closed this hui with a karakia.



## **Tenth KIWA Group Meeting**

### **Meeting Minutes**

**Time:** 2pm to 3pm

**Venue:** Virtual via Zoom

**Date:** 3<sup>rd</sup> of June 2020

#### **Attendees:**

- GDC Staff:  
Wolfgang Kanz – 4 Waters Strategy Advisor  
Ally Campbell – Junior Wastewater Advisor
  
- KIWA Group Representatives:  
Ian Ruru - TROTAK  
Ray Farmer - Te Aitanga-a-Mahaki  
David Hawea - Te Whanau-a-Kai  
Keith Katipa - Te Whanau-a-Kai  
Murray Palmer; Samuel Lewis - Rongowhakaata

#### **Apologies:**

Dianne Irwin – Ngati Oneone  
Owen Lloyd - Nga Ariki Kaiputahi  
Matawhero Lloyd - Nga Ariki Kaiputahi  
Joanne Pere - Te Aitanga a Mahaki  
Karena Toroa - Ngai Tamanuhiri

#### **Please note:**

The minutes are not recorded verbatim. Please read through them and advise if anything has been left out or incorrectly stated.

- Karakia  
David opened this hui with a karakia
  
- Administrative tasks
  - Wolfgang asked for a mover and a seconder for the meeting minutes.
  - Samuel stated that he is prepared to move the minutes.
  - Samuel noted that he wanted to clarify part of a previous discussion that was had and recorded in the minutes of one of our earlier meetings about the possibility of iwi supporting Council in a Covid-19 related funding application.

Samuel stated that in this discussion, his intention was to ask and discuss whether Council saw any merit in partnering with iwi as a collective to drive this funding application and the possibility of any subsequent meetings or decisions would be left up to his superiors to decide, as this does not form part of Samuel's role within this advisory group.

- Wolfgang clarified for the KIWA Group that his superiors discussed the opportunity for partnership on these funding applications with iwi chairs and the decision was made that there would not be enough time to complete this process.
  - Ray stated that he will second the minutes.
  - Ally will produce a table of meeting attendance, review work and associated costs. This table will be sent out individually for confirmation for each KIWA Group member to confirm that what has been recorded is accurate and to make sure that everyone is happy.
  - The KIWA Group was informed that Ian will be presenting via Zoom at the next Wastewater Management Committee (WMC) meeting on the 4<sup>th</sup> of June. The KIWA Group was informed that they can listen in to this meeting via the livestream or they can attend in person if they would like to. Ally will make sure the KIWA Group has the link to the livestream for this meeting tomorrow morning.
- 
- Finalising the mahi
    - Wolfgang requested that the KIWA Group provide their reviews and comments to be incorporated into the final report. Once received and incorporated, a final draft will be sent to the KIWA Group for confirmation.
    - Wolfgang shared a piece of suggested text that will be included at the beginning of the final report to clarify that the work is not intended to imply any support or endorsement by Iwi of any Council initiatives. Wolfgang asked the KIWA Group to look at the full piece of text and consider whether it addresses any concerns they may have about how this information will be used.
    - Keith asked about the purpose of the report and whether it is meant to be a collective view. Wolfgang suggested that the report can be a collective view if the KIWA Group agrees and wants it to be presented that way, and emphasized that a collective view would be best.
    - Wolfgang asked that if there are areas that the KIWA Group do not agree with in the report, to identify these as part of their review so they can be addressed collectively.
    - Keith noted that there are a number of things he does not agree with and as he has been fairly busy with other work and commitments he has not had time to record these in written form as of yet.
    - Wolfgang stated that the offer still stands for himself and Ian to meet in person with Keith and anyone else on the KIWA Group to go through this work and address any concerns.
    - Keith noted that he would like to have a discussion with them after he has had time to complete his review of the report and will contact Ian and Wolfgang about a meeting.
    - Wolfgang asked the group as a collective to consider how the report should be presented if everyone on the KIWA Group has not provided a review by Wednesday next week. Samuel noted that in terms of meeting the deadline, he and Murray will have their reviews ready by next Wednesday.

- Keith asked about how he should be making comments or statements and whether he needs to provide references, as these can be time-consuming to find.
  - Ian suggested that he and Wolfgang could arrange a meeting with Keith to decide collectively if he needs to provide referencing for all of his points. Wolfgang and Keith agreed that a meeting next Monday or Tuesday may work for them.
  - Wolfgang suggested that if by next Wednesday everyone on the KIWA Group has not provided their review, it can be noted that whilst everyone was party to this work, final sign-off on the report has not been provided by those who could not complete this within the time-frame.
  - Samuel suggested that this is likely all Wolfgang can do if that scenario arises. Samuel also noted that possibly any other relative information could be included inside of additional reports following on. Wolfgang agreed and noted that he likes the idea of having additional reports if necessary.
  - Wolfgang also reminded the group that this KIWA Group work will be ongoing for at least the next 20 years as the current wastewater consent runs for at least another 20 years..
  - Wolfgang noted that he appreciates that whilst this is meant to be a technical advisory group, he understands that wider issues also arise that need to be addressed by iwi, and he is thankful for the perseverance of the group and the time they have put into this mahi.
  - Ray asked Wolfgang what the consequences are if consensus is not reached by the first of July. Wolfgang noted that if the KIWA Group want to reach consensus more time could be spent on this, however the longer this takes the longer Council will be non-compliant and will have to operate under the emergency provisions if they apply.
  - Wolfgang confirmed that Council will be in a position where they will not have a consent in time, but if consensus within the KIWA Group is not reached, the report will record where the group has agreed and disagreed on certain aspects.
  - Ray shared his thoughts on the process and what has been discussed, and stated that he believes his iwi are likely to agree with the report, however he will need to talk with his seniors for confirmation.
- Mauri Compass scores and spreadsheets
    - Ian noted that he will speak offline to David, Keith and Owen about collecting their scores as these were completed on printed spreadsheets.
  - Upcoming Mahi
    - Ian is going to send out a meeting invite to the KIWA Group to discuss the upcoming mortuary wastewater work that they will be engaged as part of. This meeting will provide background and set the platform for KIWA Group engagement on this work.
    - Wolfgang noted as has been mentioned at previous meetings, that at some point the KIWA Group terms of reference will need to be reviewed and updated.
    - Wolfgang and Murray noted that through this process we have certainly learnt about more than just wastewater and the platform has been laid for future advisory work between the KIWA Group and Council.
    - The KIWA Group discussed what work has been done on mortuary wastewater throughout New Zealand to date.

- Murray and Ray confirmed that they have not found an examples anywhere else in the world of mortuary wastewater being removed from the main system for cultural reasons, so this work may very well be a first.
- Wolfgang noted that if the Wisconsin mound model works from a technical perspective, the work moving forward will be about applying a cultural lens to the mortuary wastewater project.
- Keith asked if there are any government regulations around separating mortuary wastewater. Wolfgang noted that there currently is not as far as he knows.
- Keith stated that he has found some information on the internet which suggests that there may be regulations around radiation from cancer treatments. Keith noted that the information he found suggested that because the water had to be stored, vacuum systems for flushing were favored in order to save water.
- Murray commented that he thinks Keith is right (in respect of radiation) and there are standards and limits through the trade-waste bylaw in terms of hazardous waste. Murray also noted that he unaware of the monitoring regime in Tairāwhiti for that, however he thinks the same may apply.
- Wolfgang noted that the trade-waste bylaw does stipulate the standards for trade-waste.
- Wolfgang asked Murray if there are radiation limits included in that. Murray confirmed that there are across the Australian and New Zealand Water Quality Guidelines, however he is not sure for exactly what type of radiation.
- Wolfgang noted that he thought in terms of regulation, there is no specific regulation around mortuary wastewater products, rather there are regulations around what can go into the system. Murray agreed with Wolfgang on this.
- Keith noted that he also discovered through personal research that certain types of cancer treatment had to be stored for a period of time to get it down to a level, however it was still indicated that it was taken away. Wolfgang noted that Murray is right that beyond a certain level of radiation this wastewater may need to go to the hazardous treatment plant.
- Keith stated that he is not sure how it was eventually disposed of in the example he referred to, however he mentioned this to emphasise his point about using a vacuum system so great quantities of water did not have to be stored with radiation and the period of time it had to be stored for.
- Wolfgang clarified that the work on mortuary wastewater that the KIWA Group will be doing will be about mortuary byproducts, how this is treated and disposed of, and how Council can make sure that all spiritual and cultural processes are addressed.
- Keith noted that he was emphasising the point that if water is contaminated by radiation it maybe should not be getting pumped into the waterways anyway, regardless of cultural implications.
- Wolfgang stated that currently this wastewater would not be pumped into the river, rather it would be getting treated at the wastewater treatment plant and pumped out to sea.
- Wolfgang also noted that this would be a good question to ask the hospital to find out more about radioactive waste and where it goes. Ian indicated that Dianne may be able to inform us of this topic.
- Ian will put this discussion onto the agenda for one of the KIWA Groups upcoming Mortuary wastewater meetings to ask Dianne about this.
  
- Wolfgang informed the group that Drew Williamson will be sitting in on future KIWA Group discussions involving mortuary wastewater and will provide

technical discussions as project manager for the mortuary wastewater project.

- Murray noted that he would like to briefly discuss the reference to wet and dry weather wastewater overflows in the report.
- Wolfgang clarified that the dry weather overflows are part of this process and whilst some discussions about dry weather overflows have been had, they are considered to be very similar so cultural concerns over wet and dry weather overflows have been addressed together.
- Murray noted that he has had discussions with Rongowhakaata and a question about dry weather overflows was brought up and he does not feel that it has ever been his position that this is the case. Wolfgang agreed that this has not been discussed at length, however because this engagement has been about the cultural effects of overflows, they would not have been viewed as too dissimilar from a cultural perspective.
- Murray noted that he will try and articulate what has been discussed with Rongowhakaata in more detail and will send this to Wolfgang to provide clarity on this point.
- Wolfgang also noted Murray's other comment about the effects of dry weather overflows being dependent on where they go which was also a good point to raise. Wolfgang noted that when dry weather overflows occur the volume is much smaller, therefore Wolfgang doubts that the effects are any different from a western science perspective.
- Murray noted that this may be the case, however as the KIWA Group does have people to answer to having that kind of material may be useful for discussion. Wolfgang agreed.

- Karakia

David closed the meeting with a karakia.

***The 11<sup>th</sup> meeting was held on 11 June 2020. These minutes were not yet available at the time of the consent being lodged. They will be submitted as an addendum after the consent has been lodged and the minutes have been approved by the KIWA Group.***

## Appendix 7 List of technical reports / information considered

Technical reports / information looked at include:

- Ecological effects of wastewater overflows (2020), Coast & Catchment (09/04/2020)
- Quantitative Health Risk Assessment for Wet-Weather Wastewater Discharges into City Rivers and Poverty Bay (2020), Streamlined Environmental (09/04/2020)
- Ecological risk assessment of emerging organic contaminants in Poverty Bay from wastewater overflows, Streamlined Environmental (09/04/2020)
- Gisborne WWTP Hourly Analysis Memo (2017), Beca (30/04/2020)
- Gisborne WWTP Stage 2 - Implications of Drainwise Memo (2017), Beca (30/04/2020)
- Wastewater-related monitoring and Suitability for Recreation Grades (2020), GDC (1/05/2020)
- The relationship of wastewater projects to each other, including Te Karaka, the WWTP upgrade, DrainWise, Mortuary Wastewater (2020), GDC presentation (1/05/2020)
- The effects and causes of wastewater overflows, and Council's DrainWise Programme (2020), GDC presentation (1/05/2020)
- Information on regulation related to the consent (2020), GDC presentation (1/05/2020)
- Maps of affected areas and overflows (2020), GDC presentation (1/05/2020)
- Information on focus areas for investigation (2020), GDC presentation (1/05/2020)
- Information on wastewater storage to reduce overflows (2020), GDC presentation (1/05/2020)
- Discussion on public versus private sources of inflow, using an indicative hydrograph of wastewater flows during overflow events and schematic (2020), GDC presentation (1/05/2020)
- Infrastructure Improvements on Private Property Strategy (2019), GDC (06/05/2020)
- Stormwater network and modelling maps on the network and flooding (2019), WSP Opus (06/05/2020)
- Geographical Information Systems (GIS) mapping of overland flow paths and depressions (2020), GDC (06/05/2020)
- Wastewater network and performance maps (2017), Beca (in final approved engagement plan)
- Wastewater information sheets in English and Te Reo Māori (2020), GDC Draft Versions (16/04/2020), Finalized Versions (13/05/2020)
- Wet weather overflows notification and testing protocol (2020), GDC (21/05/2020)
- DrainWise education and awareness statistics (2020), GDC (29/05/2020)

## **Appendix 8 Mauri Compass Assessment scores and comments**

The Mauri Compass is protected by copyright, and the tool is the Intellectual Property of Maumahara Consultancy Services.

### **Appendix 8.1 TROTAK/Council (Freshwater) & Te Aitanga a Mahaki**

Summary table of Scores	Scenario 1		Scenario 2 - After TRMP, reduction in overflows		Scenario 3 - No wastewater overflows in wet weather		Scenario 4 - During overflows	
<b>Description</b>	Present State of wastewater overflows between 2 and 4 times a year in wet weather, including all catchment influences (e.g. rural and urban stormwater discharges)		Wastewater overflows in wet weather, after TRMP targets have been achieved, reduction in overflows to an average of one overflow per two years (a 50% chance of an overflow per year), all catchment influences remain (e.g. rural and urban stormwater discharges)		No more wastewater overflows in wet weather, all other catchment influences remain (e.g. rural and urban stormwater discharges)		From start of an overflow to up to 2 to 4 days afterwards; this is the period over which differences in water quality due to wastewater overflows can be detected in the receiving waters; excludes EOCs and viruses; all other catchment influences remain (e.g. rural and urban stormwater discharges)	
<b>Te Ao Maori</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>
Tangata whenua (how strong is your overall connection to the waterbody?)	2.0	33.4	2.5	42.8	3.3	62.2	1.3	24.8
Tikanga (how prevalent are your cultural practices with the waterbody?)	1.3		1.8		2.8		1.0	
Wairua (how strong are your spiritual connections with the waterbody?)	1.8		2.0		2.8		1.5	
Mahinga kai (is mahinga kai practiced?)	1.6		2.3		3.6		1.2	
<b>Nga Tini A Tangaroa</b>								
Kai Species Richness (are the same species still available for mahinga kai?)	3.0	48.8	3.0	48.8	3.0	48.8	3.0	48.8
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel)	2.3		2.3		2.3		2.3	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.0		3.0		3.0		3.0	
Catchment health (what is the state of the ecosystems and associated	1.5		1.5		1.5		1.5	
<b>Te Ao Taiao</b>								
How natural is the habitat in and adjacent to the waterbody?	2.2	40.8	2.2	44.8	2.2	46.8	2.2	39.8
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	2.3		2.3		2.3		2.3	
Biohazards (how germ free is the waterbody?)	1.2		2.0		2.4		1.0	
Chemistry (how free of chemical pollution is the waterbody?)	2.5		2.5		2.5		2.5	
<b>Total Score (%)</b>	<b>41</b>		<b>45</b>		<b>53</b>		<b>38</b>	



Scenario #1

Present State of wastewater overflows between 2 and 4 times a year in wet weather, including all catchment influences (e.g. rural and urban stormwater discharges)

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, as a source of tribal identity and whakapapa, reflected in terms of tikanga practice?	1	2	3	4	5	2 Dave Hawea - 1 today; not practised today; eroded due to effects of urbanisation etc.	Disagree because in terms of tikanga practice, the waterbody is not being treated with the correct customary conventions or practices. The tribal identity is recognised but tikanga is rarely practised, apart from waka ama; wastewater in the rivers is seen as a key reason for less interaction with the waterbody. Tikanga definitely not practised during overflows.
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	3	Tangata whenua frequently swim and play in the river in summer; however definitely not during or for a while after overflows. Winter use is mostly restricted to waka ama and other non-contact use. However, tangata whenua are often warned of biohazards / unsafe to swim when there are overflows. This affects use at the time of the overflows and for a period afterwards, but is restricted to winter. In summer the use is extensive (including use of the lower Turanganui River, the confluence of the Taruheru and Waimata, and at bridges in the city). The rivers are a key recreational use for tangata whenua in summers, and they are intensively used. This is testament to tangata whenua's integral relationship with the awa, even in the knowledge that the rivers are subject to wastewater overflows. Tangata whenua's disdain at wastewater overflows are reflected in reactions to wastewater overflow events, and having to use the rivers while aware that wastewater overflows take place from time to time. Winter contact recreation would be low anyway, but is certainly lower than it would be if wastewater overflows were not present. The score must be viewed in the context of these comments, a reasonable degree of use it does in no way minimise tangata whenua's abhorrence of wastewater overflows.
How regularly are archaeological sites associated with the waterbody accessed?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	2	Archaeological sites are rarely accessed. Many permanently lost to urban developments, and access to the river banks is difficult.
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	1	Tangata whenua strongly disagree that they feel they are achieving their aspirations as kaitiaki. Historically tangata whenua have had little or no say in the management of the waterbodies. Without cultural monitoring, it is very difficult to put a Te Ao Māori lens on water management.

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	1.5	Tikanga wai Maori management practices and protocols are never to rarely practiced by tangata whenua due to deficient quality of the waterbody; definitely not during or for a while after overflows. While GDC will put up signs, formal rahuis are not set up. While the waterbodies are used by tangata whenua for recreation, customary practices and protocols are largely absent due to the state of the rivers and 'knowing that there are wastewater overflows'
What range of tikanga wai maori or wai tai is practiced?	<20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	<20% due to reasons above.

Wairua (how strong are your spiritual connections with the waterbody?)

1.25

People

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites <u>are well known</u>	1	2	3	4	5	3	Agree that wahi tapu and taniwha sites are well known. Archives, Iwi research and museum information available. However, this information is not readily accessible to the community and not well integrated into the fabric of Gisborne, not given sufficient credence in Gisborne's identity.
Wahi tapu and taniwha sites associated with the waterbody <u>are regularly visited</u>	1	2	3	4	5	2	Wahi tapu and taniwha sites associated with the waterbody are rarely visited. This is related to the above. Access may also be difficult.
Is the waterbody in its <u>current state</u> considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	1	2	3	4	5	1	Strongly disagree that the waterbody still nurtures and nourishes the soul, due to human sewage and poor water quality. Tangata whenua still engage with the river, but this spiritual connection is largely broken because of the state of the rivers.
Places of taniwha and wahi tapu are protected	1	2	3	4	5	2	Very few places of taniwha and wahi tapu are protected due to urbanisation.
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	1	2	3	4	5	2	The waterbody is rarely used for providing rongoa Maori (flora and fauna) for Tangata Whenua because of the extremely poor quality of water and impact on its wairua due to sewage overflows. Definitely not during or for a while after overflows. The degraded habitat and limited riparian access also limits how many resources are actually available and safe to use. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	1	The waterbody is never used by Tangata Whenua for purification and for ceremonial purposes (including waikarakia and waitapu) because of the extremely poor quality of water and impact on its wairua due to sewage overflows.

1.8

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.	<p><b>Eels, flounder, cockles (tuangi), pipis, lampreys, grey mullet, whitebait species (particularly in side streams) such as inanga, mussels, possibly koura.</b>  <b>Keystone / sentinel species: Eels, flounder, "estuarine shellfish"</b></p>
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This information is used to enable a value judgement to be made on the below Likert scale scoring

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihi), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	1	The waterbody is never used to provide kai for hui, tangi or other gatherings because of the extremely poor quality of water available and impact on its wairua due to sewage overflows. Definitely not during or for a while after overflows. The main Mahinga Kai use comprises fishing, for marine and estuarine species. However, this is not for customary practices (e.g. tangi).
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyers, etc.)?	1	2	3	4	5	2	The waterbody is rarely used for other customary natural resource gathering because of the extremely poor quality of water and impact on its wairua due to sewage overflows. Definitely not during or for a while after overflows. The degraded habitat and limited riparian access also limits how many resources are actually available and safe to use. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	2	The waterbody can rarely be used for mahinga kai because of the water quality issues in the rivers, and the lasting cultural concerns on use. Definitely not during or for a while after overflows. Some of the kai presents risks when consumed, due to viruses and Emerging Organic Contaminants (EOCs), that can persist in shellfish.
	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)

Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	1	Mahinga kai is never carried out during wastewater overflows. During wastewater overflows and for a period of time afterwards tangata whenua completely avoid using the estuarine parts of the rivers for fishing. The upper estuarine parts of the rivers are never used for harvesting tuna for the marae, due to wastewater concerns. Some harvesting takes place in between events, but this is done reluctantly and because there is no other option. In terms of the full range of Mahinga Kai, shellfish are almost totally avoided because of health concerns. Human wastes, and ongoing cultural concerns even long after overflow events, mean that Mahinga Kai is not practiced at the marae (using kai from the sea)
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	2	Disagree that pukenga in kaitiakitanga of mahinga kai are known and engaged in the marae due to it being a dying art. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded

1.6

**Nga Tini A Tangaroa**

This is about day-to-day gathering of key / indicator food resources.

Kai Species Richness (are the same species still available for mahinga kai / collecting kai?)

**ONLY FILL IN IF SCORED**  
**NB: If not applicable, do not enter anything in the excel cell**

What kai species are relevant (past and present)? What is / are the keystone / sentinel species?	Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (paerticularly in side streams) such as inanga, mussels. Keystone / sentinel species: <u>Eels, flounder, estuarine shellfish</u>
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This information is used to enable a value judgement to be made on the below Likert scale scoring

Is the full range of kai species, that the type of waterbody should provide, available?	No	Some	Yes	Score	Comments (if needed)
	1	3	5	3	Most still exist, but not everywhere that one would expect them.

<b>Species #1</b>	Name	
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<b>Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)</b>	Eels (tuna)
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Does the waterbody have lots of this species?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	2	Based on netting and surveys, less than half of what would be expected
Is the male / female ratio healthy? If possible to assess.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5		Not assessed. Insufficient numbers to assess.
Are there different sizes of each species?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	3	Generally a size distribution, but no evidence of 'breeders' / mature adults.

2.5

<b>Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)</b>	Eels (tuna)
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Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	Yes	Uncertain	No	Score	Comments (if needed)		
	1	3	5	3	No real evidence, although sample numbers are low.		
What percentage of this species exhibits any external signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Insufficient data
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	Yes	Uncertain	No	Score	Comments (if needed)		
	1	3	5				Some dissections have been done. Numbers not high enough to conclude anything. No obvious signs, but as stated, sample number low.
What percentage of this species exhibits any internal signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Insufficient data

Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Otoliths assessed, although small sample size						
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)

If YES, please describe the growth rate	1	2	3	4	5	3	Insufficient data; some age data available, but sample size too small to statistically analyse
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**Species #2** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
Flounder (patiki)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Large scale habitat transformation; Spartina grass, loss of mud-flats and diversity

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5	Not assessed	

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are there different sizes of each species?	1	2	3	4	5	2	Not assessed

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**  
Flounder (patiki)

	Yes		Uncertain	No		Score	Comments (if needed)
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1		3	5			Not assessed

	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
What percentage of this species exhibits any external signs that there are health issues?	1	2	3	4	5		Not assessed

	Yes		Uncertain	No		Score	Comments (if needed)
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1		3	5			Not assessed

	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
What percentage of this species exhibits any internal signs that there are health issues?	1	2	3	4	5		Not assessed

Was the age assessed by direct means (e.g. otolith examination)? Yes/No  
Not applicable

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
If YES, please describe the growth rate	1	2	3	4	5	#DIV/0!	

**Species #3** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
Estuarine shellfish as a group

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Not a lot compared to what one would expect in a natural environment. Lots of habitat transformed / degraded. Spartina again has a big impact by transforming mudflats. Increased muddiness will have affected habitat.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5	Not assessed	

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are there different sizes of each species?	1	2	3	4	5	2	Not assessed

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**  
Estuarine shellfish as a group

	Yes		Uncertain	No		Score	Comments (if needed)
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1		3	5			Not assessed

	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
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What percentage of this species exhibits any external signs that there are health issues?	1	2	3	4	5	Score	Not assessed	
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	Yes		Uncertain	No		Score	Comments (if needed)	
What percentage of this species exhibits any internal signs that there are health issues?	1	2	3	4	5	Score	Not assessed	
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not assessed							
If YES, please describe the growth rate	Not at all the same		Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5		Not assessed	
<b>Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)</b>	<b>Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)</b>						#DIV/0!	As we are in essence assessing the downstream end of the catchment, we will not be assessing the catchment health downstream, but considering the waterbodies affected by the wastewater overflows as part of the upstream catchment. That enables us to capture aspects such as point source discharges.
	<b>Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)</b>						2.25	
	<b>Upstream of area being assessed</b>						3	
Native vegetation cover comprises the following extents	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)	
	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native catchment.	
Are waterways in the catchment surrounded by native vegetation (relative to that specific habitat)? Riparian health.	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)	
	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native riparian vegetation.	
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)	
	1	2	3	4	5	1	While the area affected by wastewater overflows is a small part of the catchment, it is 'nested' within the Gisborne urban area and is subject to stormwater point source discharges as well as wastewater point source discharges in wet weather and sometimes in dry weather. While the rural areas do not have lots of dairy etc., there are many unmitigated farm drains adjacent to intensively-farmed areas which act to concentrate flows and discharge them at specific discharge points. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxidised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. Contaminated landfills are leaching contaminants.	
	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)	

Are there diffuse discharges of pollution into waters?	1	2	3	4	5	1	Almost the entire urban catchment is unmitigated in terms of stormwater pollution, and there will be diffuse sources of pollution. The rural areas currently largely have very little or no setbacks from waterways, with pastoral and more intensive agriculture draining unmitigated into the waterways. Some of this is concentrated into pipes or drains, but there is no real 'disconnection' between contaminant sources and the waterways. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. This supports scoring upstream sources of pollution as category 1.
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	1	2	4	5	2	2	This is not included in LAWA. GDC sediment monitoring data shows good clarity at Tuckers Road (Taruheru River) but relatively poor clarity at Lytton Road and Peel Street) - NOF band C. The Waikanaye shows the same. This indicates that turbidity is likely being driven by tidal and estuarine processes. An opinion is that the high 'muddiness' combines with tidal flows to resuspend or keep in suspension sediments for longer. The Waimata is accepted as carrying high levels of sediment and being turbid. While there are times during summer when turbidity reduces, it only takes a small rainfall event to revert back to high turbidity.

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use	Land use (best fit)	% cover	Ranking				
	Annual cropping / High intensity livestock	50	1				
	Commercial forestry	27	2				
	Low intensity livestock (incl. extensive grazing)	3	3				
	Permanent horticulture/viticulture/urban	1	4				
	Native	19	5				
	<b>Should = 100%</b>	<b>100</b>	2.12		2.12		
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)

As the effects take place in areas affected by tidal processes and mixing will to some extent occur between waters from the Taruheru, Waikanae and Waimata, we considered these all together, focussing on the Turanganui as the common area of impact. The Landcover work calculated on GIS.

The Waimata River system has the largest catchment of approximately 22,700 ha. Predominant land covers in the Waimata catchment include steep grasslands, exotic forest and manuka/kanuka (Figure 4-2). Less than 3.5 km of the river runs through urban parts of Gisborne, of which, around 2 km is downstream of the only Primary outfall in its catchment (Seymour Rd/Turenne St). No secondary outfalls drain to the Waimata River system. Urban reaches of Waimata River are adjoined by a mix of public and private open space and residential development (see Appendix 3 for photographs).

The Taruheru River system is around 111 km in length and drains a catchment of around 8400 ha. The river system flows through a low-lying floodplain before reaching Gisborne township. Landuses in the catchment are dominated by cropping, orchards and grasslands, with urban development in the lower catchment (Figure 4-2; Gisborne District Council (2013)). The gradient of the river is very flat through the 5 km urban section (see Appendix 3 for photographs), and for 10 km upstream. As a consequence, water levels are strongly affected by sea levels, with tidal effects occurring over this distance (Poynter et al. 2016). A flood management scheme dating back to the 1960s including stopbanks, channel deepening and riverbank armouring enabled major changes in landuse from pastoral to horticultural. Despite this, low lying areas remain vulnerable to surface flooding (Peacock et al. 1997). The impacts of river modification and surrounding landuses have adversely affected the natural character of the river, which was scored as low by a River Expert Panel using the River Values Assessment System (RIVAS) (Booth et al. 2012). Two secondary outfalls discharge along Taruheru River (Oak St and Palmerston Rd/Peel St), while a Primary outfall is located in Turanganui River, just below the Waimata and Taruheru confluence.

The Waikanae Creek system is around 7.5 km in length and borders the southwestern edge of Gisborne township. It is a low gradient, groundwater fed stream that drains a catchment of around 1100 ha. The stream is tidally influenced, with the saline intrusion evident at least 4 km upstream from the sea. Landuse in the upper catchment is dominated by orchards and horticulture, while the mid to lower catchment is dominated by mixed urban (including industrial) development, though significant areas of urban parkland or open space are also present, including open space areas associated with closed landfills (Figure 4-2; Conn (2018)). The creek has been heavily impacted by human activities and was assessed as having low natural character (Booth et al. 2012). No primary or secondary outfalls discharge to Waikanae Creek.

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	1	2	3	4	5	3	The flows will be primarily determined by the rural areas, as these are by far the majority of the catchment. Urban areas may have some localised impacts on flows. The catchment has been almost entirely transformed from natural, due to agricultural activities. There is a fair bit of exotic forest and a little natural bush; these can be expected to have similar hydrological influences as a natural catchment, although harvesting will also have an influence. The cropping and horticultural areas will have land drainage, which will have modified the hydrology of those areas. The Poverty Bay flats would historically have comprised an extensive swamp with lots of water retention - that has changed dramatically. The hydrology is therefore considered to have been changed significantly in freshwater areas. Urban areas will have some influence, but this will be small because they mostly discharge into estuarine areas (where tidal influences are greatest). Hydrological changes on the areas affected by wastewater overflows would have changed but unlikely significantly. The saline wedges are all likely to have been affected. In wet weather higher freshwater flows can be expected (because of less attenuation in the catchment). While these effects can be modelled, this is not yet done. A score of 3 was chosen, considered to reflect the dominant tidal effect on the areas affected by the wastewater (which would mean little change in these areas) matched against the upstream changes in hydrological flows (which will have resulted in changes).
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Very few waterways are fenced.

1.52

**Downstream of area being assessed** Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Natural vegetation cover comprises the following extents	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are waterways surrounded by native vegetation (relative to that specific habitat)?	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	0 - 25% quartile	26 - 50% quartile		51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2		4	5	2	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Land use (best fit)	% cover	Ranking
Annual cropping / High intensity livestock	50	1
Commercial forestry	27	2
Low intensity livestock (incl. extensive grazing)	3	3
Permanent horticulture/viticulture/urban	1	4
Native	19	5
<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>

Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)

Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Muri Compass tool, the same scores have been entered as per the 'upstream' area.
	1.52						

**Te Ao Taiao**

**ONLY FILL IN IF SCORED**

How natural is the habitat in and adjacent to the waterbody?

**NB: If not applicable, do not enter anything in the excel cell**

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Does the terrestrial habitat look like the equivalent native habitat?	1	2	3	4	5	1	The terrestrial habitat is almost completely transformed. In the jkey area of impact, the terrestrial habitat comprises urban environments, with limited ripatrian margins.
	Very poor	Poor	Average	Good	Very good	Score	Comments (if needed)
How good are the habitat conditions for reproduction of aquatic species?	1	2	3	4	5	2	Sediment has smothered much of the habitat. The prevalence of Spartina has exacerbated sedimentation and muddiness. This would have had significant impacts on flatfish and native birds. Spartina would have taken over some salt marsh areas, although their importance in breeding is likely to be low. Their function would have probably been constrained to short periods of foraging during spring tides when they are accessible. Semi-pelagic species, such as mullets, smelt, and the common galaxiid Galaxias maculatus (inanga), may have used lost use of such areas. The spartina may offer some of this also, but it is unlikely that New Zealand fisheries species are utilising introduced Spartina habitats in any significant way. It is unlikely to offer inanga spawning habitat, as Spartina is often associated with higher salinity. Clearing of woody debris also reduces habitat. Native riparian / aquatic margins are almost non-existent. Some species are successful in these environments, such as mud crabs. Sediments are also relatively contaminated, which will negatively affect breeding. The waterways have been subject to excavation for flood management purposes.
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Are benthic conditions similar to natural conditions?	1	2	3	4	5	1	Although estuarine environments generally are soft-bottomed, the majority of the beds of the waterbodies have become unnaturally muddy (elevated 'muddiness') compared to a native state. Benthic conditions have been affected by flood management works (including excavation ion parts). Significant changes. Muddiness expected on account of a channel in very soft recently deposited sediments of an historically swampy floodplain.Used Kelly (2020): Averaged, mud content at all sites was in the range considered to cause significant persistent stress on a range of aquatic organisms
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Are erosion and deposition patterns (fluvial conditions) characteristic of natural conditions?	1	2	3	4	5	3	The hydrology of the river has been altered due to land drainage and flood protection works. However, the low grades of the sections of river considered (areas potentially affected by wastewater overflows), in conjunction with dominant tidal processes and low grades in the wider catchment, would dampen the hydrological effect of land drainage (in relation to erosion and sedimentation). The multitude of changes that have taken place in the catchment make it difficult to assess this. While the rivers are affected by stormwater flows, river hydrology is unlikely to be significantly affected by these stormwater flows on account of the very large upstream catchments which will dominate hydrology in this end of catchment location. The exception is where we have localised storm events, but these will likely only affect fluvial conditions at stormwater outfall points. The exception may be the Waikanae, which has a large percentage of imperviousness (however this is well known to be low-flushing and stormwater flows are also unlikely to have a significant impact on overall fluvial conditions).
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
How similar is water clarity compared to a natural stream / waterbody?	1	2	3	4	5	2	The rivers are regularly turbid, this likely on account of the elevated muddiness and re-suspension of settled particles and heavy sediment loads from upstream agricultural catchments.
	> 24 °C / >25 °C	22 - 24 °C / >25 °C	20 - 22°C / < 25 °C	18 - 20 °C / < 22 °C	< 18 °C / < 19 °C	Score	Comments (if needed)



How optimal is the water temperature? Note: Adapt depending on waterbody.

1

2

3

4

5

4

The temperature in the areas affected by wastewater overflows will be similar to what can be expected in low lying rivers / estuarine environments.

2.2

**Biodiversity (how diverse is the plant and animal life associated with the waterbody?)**

**Results of sampling / surveys:**

Invertebrate species richness (#)

24 taxa

The following is relevant (from Kelly & Sim-Smith, 2020):

Twenty-four taxa were collected from sites between the confluence and 5 km upstream. The number of species progressively declined upstream, from 14 taxa at the confluence to 7 taxa at the upstream site. The community at the downstream site was dominated by polychaetes (capitellids, *Nicoletis aestuariensis*, and *Scolecopeloides benhami*), mud snails (*Amphibola crenata*), estuarine snails (*Potamopyrgus estuarinus*), the bivalve *Arthritica* sp. and the mud crab (*Austrohelice crassa*). A mixture of freshwater (e.g., *Potamopyrgus antipodarum* and chironomid midges) and estuarine species were present at sites 4 km beyond the confluence, indicating that salinities in this area are low. Intertidal communities within *Spartina* beds had very low diversity, mainly comprising snails (*P. estuarinus* and *Pleuroloba costellaris*).

EPT taxa (#)

The following is relevant (from Kelly & Sim-Smith, 2020):

The most common freshwater fish reported to occur in the Taruheru and Turanganui River systems are eels (*Anguilla* spp.) and the common bully (*Gobiomorphus cotidianus*). Other species that have been occasionally reported include banded kokopu (*Galaxias fasciatus*), inanga (*Galaxias maculatus*), goldfish (*Carassius auratus*) and mosquitofish (*Gambusia affinis*), the latter two species being introduced (Peacock et al. 1997; Clapcott et al. 2012; Crow 2017). Other freshwater species may also occur.

Fish species richness (#)

Fish species recorded in saline areas of the Waimata, Taruheru, Turanganui Rivers and Waikanae Creek include grey mullet (*Mugil cephalus*), common smelt (*Retropinna retropinna*), black flounder (*Rhombosolea retiaria*), kahawai (*Ariopsis trutta*) and kingfish (*Seriola lalandi lalandi*) (Gisborne District Council 2013; Crow 2017; Conn 2018). Other marine species also likely to be present including yellow eyed mullet, piper and snapper (Poynter et al. 2016).

Native plant percentage (%)

10%

**Predicted native state:**

Invertebrate species richness (#) / Benthic life

The species richness has been described as depauperate compared to the predicted native state.

EPT taxa (#) / Sensitive Species

The species richness has been described as depauperate compared to the predicted native state.

This information is used to enable a value judgement to be made on the below Likert scale scoring

This information is used to enable a value judgement to

The environments affected by the wastewater overflows are estuarine and as such we assessed the benthic community, as this is more relevant to these environments. 'EPT taxa (#)' has therefore been replaced with text relevant to the benthic community.

Fish species considered estuarine species as well as freshwater species that inhabit / use intertidal areas.

The environments affected by the wastewater overflows are estuarine and as such we assessed the benthic community, as this is more relevant to these environments. 'EPT taxa (#)' has therefore been replaced with text relevant to the benthic community.

Land

Fish species richness (#)	Species richness in the areas affected by the wastewater overflows is similar to that of natural estuarine environments.	value judgement to be made on the below Likert scale scoring	Fish species considered estuarine species as well as freshwater species that inhabit / use intertidal areas.
Native plant percentage (%)	100%		

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is invertebrate / benthic life similar to that of a native environment?	1	2	3	4	5	2	No comments required; information provided in above sections.
Is fish life similar to that of a native environment?	1	2	3	4	5	3	The species richness of fish life is very similar to that of a native environment. Abundance of fish species may however be lower, due to direct human impacts (e.g. fishing) and compromised habitats, especially at the upper ends of the tidal areas.
Is plant life similar to that of a native environment?	1	2	3	4	5	1	Plant life is dominated by Spartina, and a lack of meaningful riparian margins in areas affected by wastewater overflows. Physical modifications to the channel and floodplains have significantly negatively affected the diversity of plant life that one would expect in a native state.
Are there man-made barriers to fish migration? Upstream	Total barriers 1		Partial barriers 3	No barriers 5		Score 5	Comments (if needed) No known man-made barriers.

Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)

Not applicable

	Total barriers	Partial barriers	No barriers	Score	Comments (if needed)
Are there man-made barriers to fish migration? Downstream	1	3	5	5	No known man-made barriers.
Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)	Not applicable			Overall fish barrier score: 5	<b>Enter fish passage score from H252 IF fish passage has been scored</b>
				Total score 2.30	

**Biohazards (how germ free is the waterbody?)**

**Present State**

**Freshwater**

Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)	
Levels of indicator species of bacteria (E.coli) - Suitability for Recreation Grade	1	2	3	4	5	1.5	Rated as Poor to Very Poor using the MFE guidelines (both during overflows and at times in-between overflows)  During an overflow event risks will be higher, decreasing over time after the event.  The significant role of background pathogen sources is highlighted here, as there is essentially no difference in suitability for recreation grade comparing overflow events and in-between times. However, the risks are much higher during the overflow event.	
E.coli - LAWA - specific to a particular waterbody	0 - 25% quartile		26 - 50% quartile		51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2		4	5	1	LAWA data places the Turanganui River in the lowest quartile for bacteria. NOF band E (also Waikanae);(both during overflows and at times in-between overflows)  During an overflow event risks will be higher, decreasing over time after the event.	
	NPSFM Band E	NPSFM Band D	NPSFM Band C	NPSFM Band B	NPSFM Band A	Score	Comments (if needed)	

Levels of indicator species of bacteria (E.coli) - NPSFM	1	2	3	4	5	1	<p>Council monitoring data was assessed. Average figures in affected rivers are between 1,500 and 4,500 CFU / 100ml for E.coli. 50th percentile figures in affected rivers are between 150 and 700 CFU / 100ml for E.coli. 95th percentile figures in affected rivers are between 7,500 and 35,000 CFU / 100ml for E.coli. These figures highlight ongoing high levels of biohazards.</p> <p>During an overflow event the pathogen counts sharply increase (sometimes with values above 35,000 CFU / 100ml) and risks will be higher, decreasing over time after the event.</p>
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**Saline**

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
Levels of indicator species of bacteria (Enterococci) - Suitability for Recreation Grade	1	2	3	4	5	1.5	Rated as Poor to Very Poor using the MFE guidelines During an overflow event risks will be higher, decreasing over time after the event.
Levels of indicator species of bacteria (Enterococci) - LAWA - specific to a particular waterbody (suitability for swimming)	Not suitable for Swimming		Caution advised	Suitable for swimming		Score	Comments (if needed)
	1		3	5			Not available
Levels of indicator species of bacteria (Enterococci)	> 500 CFU/100ml	201 - 500 CFU/100ml	41 - 200 CFU/100ml	<40 CFU/100ml		Score	Comments (if needed)
	1	2	3	4	5	1	<p>Council monitoring data was assessed. Average figures in affected rivers are between 1,000 and 4,000 CFU / 100ml for Enterococci. 50th percentile figures in affected rivers are between 70 and 700 CFU / 100ml for Enterococci. 95th percentile figures in affected rivers are between 3,500 and 26,500 CFU / 100ml for Enterococci. These figures highlight ongoing high levels of biohazards.</p> <p>During an overflow event risks will be higher, decreasing over time after the event. This category is relevant to between events. During an overflow event the pathogen counts sharply increase (sometimes with values above 26,500 CFU / 100ml) and risks will be higher, decreasing over time after the event.</p>

1.2

**Chemistry (how free of chemical pollution is the waterbody?)**

Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.

Freshwater environments

	Band D	Band C	Band B	Band A	Score	Comments (if needed)	
NPSFM - Phytoplankton (Lakes)	1	2	4	5		Not applicable	
NPSFM - Total Nitrogen (Lakes)	Band D		Band C	Band B	Band A	Score	Comments (if needed)
	1		2	4	5		Not applicable
NPSFM - Total Phosphorus (Lakes)	Band D		Band C	Band B	Band A	Score	Comments (if needed)
	1		2	4	5		Not applicable
NPSFM - Periphyton (Rivers)	Band D		Band C	Band B	Band A	Score	Comments (if needed)
	1		2	4	5		No data for the city rivers
NPSFM - Nitrate (Toxicity) (Rivers)	Band D		Band C	Band B	Band A	Score	Comments (if needed)
	1		2	4	5	2	<p>Used Kelly (2017) report findings. Amended detail based on available data. Taruheru: Nitrate-N toxicity guidelines were not exceeded during the monitoring periods examined; Nitrate-N concentrations routinely exceeded the ANZECC (2000) freshwater and SE Australian estuarine triggers for the protection of ecosystems.</p> <p>The concentrations will rise during overflow events but are unlikely to affect flora and fauna beyond the effects due to background levels.</p>
	Band D	Band C	Band B	Band A	Score	Comments (if needed)	

NPSFM - Ammonia (Toxicity) (Lakes and Rivers)	1	2	4	5	2	Used Kelly (2017) report findings. Amended detail based on available data. Taruhuru: Ammonia-N toxicity guidelines were not exceeded during the monitoring periods examined; Ammonia-N concentrations routinely exceed the ANZECC (2000) trigger for the protection of NZ freshwater ecosystems and the SE Australian trigger for the protection of estuarine ecosystems  The concentrations will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Cyanobacteria (Planktonic) (Lakes and Rivers)	1	2	4	5		No data for the city rivers
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Dissolved Oxygen)(below point sources);	1	2	4	5	3	Between 4 and 6 mg/l in Taruhuru sites. Between 1.8 and 3.7 mg/l in Waikanae. The Waikanae sites are not or extremely unlikely to be significantly affected by wastewater overflows (based on the hydrodynamic modelling). The Taruhuru sites were therefore used. A score of 3 was chosen because of the range of DO.  The concentrations do rise during storm events but are unlikely to affect flora and fauna beyond the the effects due to background levels.

Note: For Dissolved Oxygen, for the purpose of this assessment, the above can be used for both below point sources and generally. Verify that this approach is acceptable with another subject matter expert.

The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the effects due to background levels.

	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Black Disc - LAWA - specific to a particular waterbody	1	2	4	5	2	Not assessed in LAWA; based on discussions with local experts
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Turbidity - LAWA - specific to a particular waterbody	1	2	4	5	2	Not assessed in LAWA; based on discussions with local experts
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total N - LAWA - specific to a particular waterbody	1	2	4	5	3	LAWA data places the Turanganui River in the third quartile for Total N; Waikanae in second quartile
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total Oxidised N - LAWA - specific to a particular waterbody	1	2	4	5	3	LAWA data places the Turanganui River in the third quartile for Total Oxidised N; Waikanae in fourth quartile
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Ammoniacal N - LAWA - specific to a particular waterbody	1	2	4	5	1	LAWA data places the Turanganui River in the lowest quartile for Ammoniacal N; same for Waikanae; NOF band C; Waikanae NOF band B.
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Dissolved Reactive P - LAWA - specific to a particular waterbody	1	2	4	5	1	LAWA data places the Turanganui River in the lowest quartile for Dissolved Reactive P; same for Waikanae
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total P - LAWA - specific to a particular waterbody	1	2	4	5	2	LAWA data places the Turanganui River in the second quartile for Ammoniacal N; Waikanae in first quartile
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Zinc - ANZECC guidelines (level of protection)	1	3	4	5	3	No significant elevated levels in the Turanganui and Taruhuru likely. Elevated in the Waikanae. Have used the Taruhuru data as the Waikanae is not predicted to be significantly impacted on by wastewater overflows. Gisborne District Council, 2014. Gisborne Urban Stormwater and Sediment Study. Prepared by Gisborne District Council, December 2014. Substantiated by Kelly & Sim Smith (2020). Kelly & Sim Smith (2020); Concentrations of key metals (copper and zinc) and ammoniacal-N were also compared with ANZECC (2000) trigger values for the protection of 80% and 90% of species - Metal trigger values were occasionally exceeded, but most estuarine samples were close to, or below, detection limits. Elevated levels from time to time likely due to stormwater runoff.

	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Copper - ANZECC guidelines	1	3	4	5	3	No significant elevated levels in the Turanganui and Taruheru likely. Elevated in the Waikanae. Have used the Taruheru data as the Waikanae is not predicted to be significantly impacted on by wastewater overflows. Gisborne District Council, 2014. Gisborne Urban Stormwater and Sediment Study. Prepared by Gisborne District Council, December 2014. Kelly & Sim Smith (2020): Concentrations of key metals (copper and zinc) and ammoniacal-N were also compared with ANZECC (2000) trigger values for the protection of 80% and 90% of species - Metal trigger values were occasionally exceeded, but most estuarine samples were close to, or below, detection limits. Elevated levels from time to time likely due to stormwater runoff.

Saline environments

The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.

	> 10µg/L	5 – 10 µg/L	< 5µg/L		Score	Comments (if needed)	
Chlorophyll concentrations	1	3	5			Not available	
Oxygen Saturation	< 65% saturation	66 - 80% saturation	80 - 90%	> 90%	Score	Comments (if needed)	
	1	3	4	5		Adressed above	
Total Nitrogen - Sediment	> 4000 mg/kg	2000 - 4000 mg/kg	500 - 2000 mg/kg	< 500 mg/kg	Score	Comments (if needed)	
	1	3	4	5	4	Used Kelly (2020). Averaged, total nitrogen concentrations in the two upper Taruheru sites (which includes the site below the Oak St. outfall) were at or above concentrations considered to cause moderate stress on a number of aquatic organisms (1000-2000 mg/kg). Concentrations at all other sites were in the range considered to cause minor stress on sensitive organisms (250-1000 mg/kg)	
Total Phosphorus - Sediment	> 1000 mg/kg		500 - 1000 mg/kg	200 - 500 mg/kg	< 200 mg/kg	Score	Comments (if needed)
	1	2	3	4	5	4	Used Kelly (2020).
Zinc - ANZECC guidelines (level of protection)	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)	
	1	3	4	5		Adressed above	
Copper - ANZECC guidelines	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)	
	1	3	4	5		Adressed above	

2.5

Summary Table of Scores

Te Ao Maori	Subgroup Scores	Group Scores
Tangata whenua (how strong is your overall connection to the waterbody?)	2.00	33.42
Tikanga (how prevalent are your cultural practices with the waterbody?)	1.25	
Wairua (how strong are your spiritual connections with the waterbody?)	1.83	
Mahinga kai (is mahinga kai practiced?)	1.60	
<b>Nga Tini A Tangaroa</b>		
Kai Species Richness (are the same species still available for mahinga kai?)	3.00	48.83
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)	2.25	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.00	
Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)	1.52	
<b>Te Ao Talao</b>		
How natural is the habitat in and adjacent to the waterbody?	2.17	40.83
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	2.30	
Biohazards (how germ free is the waterbody?)	1.20	
Chemistry (how free of chemical pollution is the waterbody?)	2.50	
<b>Total Score (%)</b>	<b>41.03</b>	

Scenario #2

Wastewater overflows in wet weather, after TRMP targets have been achieved, reduction in overflows to an average of one overflow per two years (a 50% chance of an overflow per year), all catchment influences remain (e.g. rural and urban stormwater discharges)

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa</del> , reflected in terms of tikanga practice?	1	2	3	4	5	2.5	Disagree because in terms of tikanga practice, the waterbody is not being treated with the correct customary conventions or practices. The tribal identity is recognised but tikanga is rarely practised, apart from waka ama; wastewater in the rivers is seen as a key reason for less interaction with the waterbody. Tikanga definitely not practised during overflows.  Improvement possibly because of the reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows.
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	3.5	Tangata whenua frequently swim and play in the river in summer; however definitely not during or for a while after overflows. Winter use is mostly restricted to waka ama and other non-contact use. However, tangata whenua are often warned of biohazards / unsafe to swim when there are overflows. This affects use at the time of the overflows and for a period afterwards, but is restricted to winter. In summer the use is extensive (including use of the lower Turanganui River, the confluence of the Taruheru and Waimata, and at bridges in the city). The rivers are a key recreational use for tangata whenua in summers, and they are intensively used. This is testament to tangata whenua's integral relationship with the awa, even in the knowledge that the rivers are subject to wastewater overflows. Tangata whenua's disdain at wastewater overflows are reflected in reactions to wastewater overflow events, and having to use the rivers while aware that wastewater overflows take place from time to time. Winter contact recreation would be low anyway, but is certainly lower than it would be if wastewater overflows were not present. The score must be viewed in the context of these comments, a reasonable degree of use it does in no way minimise tangata whenua's abhorrence of wastewater overflows.  Improvements due to reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years.
How regularly are archaeological sites associated with the waterbody accessed?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	2	Archaeological sites are rarely accessed. Many permanently lost to urban developments, and access to the river banks is difficult.  No material change likely
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)

Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	1	2	3	4	5	2	<p>Tangata whenua Disagree that they feel they are achieving their aspirations as kaitiaki. Historically tangata whenua have had little or no say in the management of the waterbodies. Without cultural monitoring, it is very difficult to put a Te Ao Māori lens on water management.</p> <p>Improvement due to reduction in overflows and commitment from GDC to stay on the right trajectory. However, this would have to be accompanied with more input from tangata whenua in monitoring and managing waterways.</p>
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2.5

**Tikanga (how prevalent are your cultural practices with the waterbody?)**

	Likert					Score	Comments (if needed)
	Never	Rarely	Occasionally	Frequently	Very Frequently		
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	2	<p>Tikanga wai Maori management practices and protocols are rarely practiced by tangata whenua due to deficient quality of the waterbody; definitely not during or for a while after overflows. While GDC will put up signs, formal rahuis are not set up. While the waterbodies are used by tangata whenua for recreation, customary practices and protocols are largely absent due to the state of the rivers and 'knowing that there are wastewater overflows'</p> <p>Improvements are possible, but unlikely to be substantial.</p>
What range of tikanga wai maori or wai tai is practiced?	<20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1.5	<p>Much longer periods in between overflows would enable more tikanga wai maori / wai tai to be practiced.</p> <p>Improvements may take place</p>

1.75

**Wairua (how strong are your spiritual connections with the waterbody?)**

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4		
Wahi tapu and taniwha sites associated with the waterbody are regularly visited	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	2	<p>Wahi tapu and taniwha sites associated with the waterbody are rarely visited. This is related to the above. Access may also be difficult.</p> <p>Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti and access becoming available)</p>
Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	2	<p>Disagree that the waterbody still nurtures and nourishes the soul, due to human sewage and poor water quality. Tangata whenua still engage with the river, but this spiritual connection is largely broken because of the state of the rivers.</p> <p>Improvement due reduction in overflows and commitment from GDC to stay on the right trajectory.</p>
Places of taniwha and wahi tapu are protected	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
	1	2	3	4	5	2	<p>Very few places of taniwha and wahi tapu are protected due urbanisation.</p> <p>Not necessarily directly related to wastewater overflows. No change</p>
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)

How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	1	2	3	4	5	2	<p>The waterbody is rarely used for providing rongoa Maori (flora and fauna) for Tangata Whenua because of the extremely poor quality of water available and impact on its wairua due to sewage overflows. Definitely not during or for a while after overflows. The degraded habitat and limited riparian access also limits how many resources are actually available and safe to use. Through urban development and limited creedence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.</p> <p>A slight improvement possibly because of the reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows. But many other factors also influencing this e.g. farm effluent, access, etc. So no change indicated.</p>
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	1	<p>The waterbody is never used by Tangata Whenua for purification and for ceremonial purposes (including waikarakia and waitapu) because of the extremely poor quality of water and impact on its wairua due to sewage overflows.</p> <p>Extremely unlikely that the reduction will result in use for purification, cleansing, ceremonial, or ritual purposes. That relies on a number of other factors being resolved (incl. broader catchment issues)</p>

2.0

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Seperate out into main taanga / sentinel species and other kai species.	<p><b>Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (paerticularly in side streams) such as inanga, mussels. Keystone / sentinel species: Eels, flounder, "estuarine shellfish"</b></p>					<p>This information is used to enable a value judgement to be made on the below Likert scale scoring</p>	
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (watakirihi), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	2	<p>The waterbody is rarely used to provide kai for hui, tangi or other gatherings because of the extremely poor quality of water available and impact on its wairua due to sewage overflows. Definitely not during or for a while after overflows. The main Mahinga Kai use comprises fishing, for marine and estuarine species. However, this is not for customary practices (e.g. tangi).</p> <p>Improvement because of the reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows. But many other factors also influencing this e.g. farm effluent, access, etc. So little change indicated.</p>
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)



How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	2.5	<p>The waterbody is rarely used for other customary natural resource gathering because of the extremely poor quality of water and impact on its wairua due to sewage overflows. Definitely not during or for a while after overflows. The degraded habitat and limited riparian access also limits how many resources are actually available and safe to use. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.</p> <p>Improvement for non-consumption uses. Improvement possibly because of the reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows. But many other factors also influencing this e.g. farm effluent, access, etc. So minor change indicated. Broader issues still need to be addressed, incl. catchment contamination, access, and 'cultural integration'.</p>
How often can the waterbody be used for mahinga kai?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	2.5	<p>The waterbody can be rarely to occasionally used for mahinga kai because of the longer times between overflows. Water quality issues in the rivers remain, as do the lasting cultural concerns on use. Definitely not during or for a while after overflows. Some of the kai presents risks when consumed, due to viruses and Emerging Organic Contaminants (EOCs), that can persist in shellfish..</p> <p>Slight improvement</p>
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)
	1	2	3	4	5	2	<p>Mahinga kai is never carried out during wastewater overflows. During wastewater overflows and for a period of time afterwards tangata whenua completely avoid using the estuarine parts of the rivers for fishing. The upper estuarine parts of the rivers are never used for harvesting tuna for the marae, due to wastewater concerns. Some harvesting takes place in between events, but this is done reluctantly and because there is no other option. In terms of the full range of Mahinga Kai, shellfish are almost totally avoided because of health concerns.</p> <p>Improvement for non-consumption uses. A slight improvement possibly because of the reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows. But many other factors also influencing this e.g. farm effluent, access, etc.</p>
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	2.5	<p>Disagree that pukenga in kaitiakitanga of mahinga kai are known and engaged in the marae due to it being a dying art. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded</p> <p>Improvement if the wastewater overflow reduction work includes input from tangata whenua in monitoring and managing waterways, including placing of rahuis and engagement of tangata whenua through cultural frameworks.</p>

2.3

**Nga Tini A Tangaroa**

This is about day-to-day gathering of key / indicator food resources.

Kai Species Richness (are the same species still available for mahinga kai / collecting kai?)

**ONLY FILL IN IF SCORED****NB: If not applicable, do not enter anything in the excel cell**

What kai species are relevant (past and present)?  
What is / are the keystone / sentinel species?

**Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (paeritcularly in side streams) such as inanga, mussels. Keystone / sentinel species: Eels, flounder, "estuarine shellfish"**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	No	Some	Yes	Score	Comments (if needed)
Is the full range of kai species, that the type of waterbody should provide, available?	1	3	5	3	Most still exist, but not everywhere that one would expect them.

**Species #1** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
Eels (tuna)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Based on netting and surveys, less than half of what would be expected
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed. Insufficient numbers to assess.
Are there different sizes of each species?	1	2	3	4	5	3	Generally a size distribution, but no evidence of 'breeders' / mature adults.

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**  
Eels (tuna)

	Yes	Uncertain	No	Score	Comments (if needed)	
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1	3	5	3	No real evidence, although sample numbers are low.	
What percentage of this species exhibits any external signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Insufficient data
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1	3	5		Some dissections have been done. Numbers not high enough to conclude anything. No obvious signs, but as stated, sample number low.	
What percentage of this species exhibits any internal signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Insufficient data

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Otoliths assessed, although small sample size						
If YES, please describe the growth rate	1	2	3	4	5	3	Insufficient data; some age data available, but sample size too small to statistically analyse

**Species #2** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
Flounder (patiki)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Large scale habitat transformation; Spartina grass, loss of mud-flats and diversity
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed
Are there different sizes of each species?	1	2	3	4	5	2	Not assessed

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**  
Flounder (patiki)

	Yes	Uncertain	No	Score	Comments (if needed)	
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1	3	5		Not assessed	
What percentage of this species exhibits any external signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1	3	5		Not assessed	
What percentage of this species exhibits any internal signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not applicable					
If YES, please describe the growth rate	Not at all the same 1	Very different 2	Not sure 3	Very similar 4	Exactly the same 5	Score Comments (if needed)
<b>Species #3</b>	Name					#DIV/0!
<b>Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)</b>	Estuarine shellfish as a group					
Does the waterbody have lots of this species?	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score 2 Comments (if needed) Not a lot compared to what one would expect in a natural environment. Lots of habitat transformed / degraded. Spartina again has a big impact by transforming mudflats. Increased muddiness will have affected habitat.
Is the male / female ratio healthy? If possible to assess.	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score Not assessed
Are there different sizes of each species?	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score Not assessed
<b>Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)</b>	Estuarine shellfish as a group					2
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1	3	5		Not assessed	
What percentage of this species exhibits any external signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1	3	5		Not assessed	
What percentage of this species exhibits any internal signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not assessed					
If YES, please describe the growth rate	Not at all the same 1	Very different 2	Not sure 3	Very similar 4	Exactly the same 5	Score Not assessed

**Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)**

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)**

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**

#DIV/0!

2.25

3

As we are in essence assessing the downstream end of the catchment, we will not be assessing the catchment health downstream, but considering the waterbodies affected by the wastewater overflows as part of the upstream catchment. That enables us to capture aspects such as point source discharges.

None of the below will change on account of reductions in wastewater overflows

Upstream of area being assessed

W		0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	Native vegetation cover comprises the following extents	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native catchment.
Are waterways in the catchment surrounded by native vegetation (relative to that specific habitat)? Riparian health.	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native riparian vegetation.	
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	1	While the area affected by wastewater overflows is a small part of the catchment, it is 'nested' within the Gisborne urban area and is subject to stormwater point source discharges as well as wastewater point source discharges in wet weather and sometimes in dry weather. While the rural areas do not have lots of dairy etc., there are many unmitigated farm drains adjacent to intensively-farmed areas which act to concentrate flows and discharge them at specific discharge points. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxidised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. Contaminated landfills are leaching contaminants.	
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	1	Almost the entire urban catchment is unmitigated in terms of stormwater pollution, and there will be diffuse sources of pollution. The rural areas currently largely have very little or no setbacks from waterways, with pastoral and more intensive agriculture draining unmitigated into the waterways. Some of this is concentrated into pipes or drains, but there is no real 'disconnection' between contaminant sources and the waterways. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxidised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. This supports scoring upstream sources of pollution as category 1.	
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	1	2	This is not included in LAWA. GDC sediment monitoring data shows good clarity at Tuckers Road (Taruheru River) but relatively poor clarity at Lytton Road and Peel Street) - NOF band C. The Waikanaye shows the same. This indicates that turbidity is likely being driven by tidal and estuarine processes. An opinion is that the high 'muddiness' combines with tidal flows to resuspend or keep in suspension sediments for longer. The Waimata is accepted as carrying high levels of sediment and being turbid. While there are times during summer when turbidity reduces, it only takes a small rainfall event to revert back to high turbidity.	

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use

Land use (best fit)	% cover	Ranking
Annual cropping / High intensity livestock	50	1
Commercial forestry	27	2
Low intensity livestock (incl. extensive grazing)	3	3
Permanent horticulture/viticulture/urban	1	4
Native	19	5
<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>

As the effects take place in areas affected by tidal processes and mixing will to some extent occur between waters from the Taruheru, Waikanae and Waimata, we considered these all together, focussing on the Turanganui as the common area of impact. The landcover work calculated on GIS.

The Waimata River system has the largest catchment of approximately 22,700 ha. Predominant land covers in the Waimata catchment include steep grasslands, exotic forest and manuka/kanuka (Figure 4-2). Less than 3.5 km of the river runs through urban parts of Gisborne, of which, around 2 km is downstream of the only Primary outfall in its catchment (Seymour Rd/Turenne St). No secondary outfalls drain to the Waimata River system. Urban reaches of Waimata River are adjoined by a mix of public and private open space and residential development (see Appendix 3 for photographs).

The Taruheru River system is around 111 km in length and drains a catchment of around 8400 ha. The river system flows through a low-lying floodplain before reaching Gisborne township. Landuses in the catchment are dominated by cropping, orchards and grasslands, with urban development in the lower catchment (Figure 4-2; Gisborne District Council (2013)). The gradient of the river is very flat through the 5 km urban section (see Appendix 3 for photographs), and for 10 km upstream. As a consequence, water levels are strongly affected by sea levels, with tidal effects occurring over this distance (Poynter et al. 2014). A flood management scheme dating back to the 1960s including stopbanks, channel deepening and riverbank armouring enabled major changes in landuse from pastoral to horticultural. Despite this, low lying areas remain vulnerable to surface flooding (Peacock et al. 1997). The impacts of river modification and surrounding landuses have adversely affected the natural character of the river, which was scored as low by a River Expert Panel using the River Values Assessment System (RIVAS) (Booth et al. 2012). Two secondary outfalls discharge along Taruheru River (Oak St and Palmerston Rd/Peel St), while a Primary outfall is located in Turanganui River, just below the Waimata and Taruheru confluence.

The Waikanae Creek system is around 7.5 km in length and borders the southwestern edge of Gisborne township. It is a low gradient, groundwater fed stream that drains a catchment of around 1100 ha. The stream is tidally influenced, with the saline intrusion evident at least 4 km upstream from the sea. Landuse in the upper catchment is dominated by orchards and horticulture, while the mid to lower catchment is dominated by mixed urban (including industrial) development, though significant areas of urban parkland or open space are also present, including open space areas associated with closed landfills (Figure 4-2; Conn (2018)). The creek has been heavily impacted by human activities and was assessed as having low natural character (Booth et al. 2012). No primary or secondary outfalls discharge to Waikanae Creek.

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	1	2	3	4	5	3	The flows will be primarily determined by the rural areas, as these are by far the majority of the catchment. Urban areas may have some localised impacts on flows. The catchment has been almost entirely transformed from natural, due to
Sediment sources – proportion of waterways fenced (areas where there are livestock)	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Very few waterways are fenced.

1.52

**Downstream of area being assessed** Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Natural vegetation cover comprises the following extents	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area
Are waterways surrounded by native vegetation (relative to that specific habitat)?	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)	
	1	2	4	5	2		Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use

Land use (best fit)	% cover	Ranking
Annual cropping / High intensity livestock	50	1
Commercial forestry	27	2
Low intensity livestock (incl. extensive grazing)	3	3

Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same

Permanent horticulture/viticulture/urban	1	4
Native	19	5
<b>Should = 100%</b>	<b>100</b>	2.12
		2.12

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	1	2	3	4	5	3	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

1.52

**Te Ao Taiao****ONLY FILL IN IF SCORED****How natural is the habitat in and adjacent to the waterbody?****NB: If not applicable, do not enter anything in the excel cell**

None of the below will change on account of reductions in wastewater overflows

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Does the terrestrial habitat look like the equivalent native habitat?	1	2	3	4	5	1	The terrestrial habitat is almost completely transformed. In the key area of impact, the terrestrial habitat comprises urban environments, with limited riparian margins.
	Very poor	Poor	Average	Good	Very good	Score	Comments (if needed)
How good are the habitat conditions for reproduction of aquatic species?	1	2	3	4	5	2	Sediment has smothered much of the habitat. The prevalence of Spartina has exacerbated sedimentation and muddiness. This would have had significant impacts on flatfish and native birds. Spartina would have taken over some salt marsh areas, although their importance in breeding is likely to be low. Their function would have probably been constrained to short periods of foraging during spring tides when they are accessible. Semi-pelagic species, such as mullets, smelt, and the common galaxiid Galaxias maculatus (inanga), may have used lost use of such areas. The spartina may offer some of this also, but it is unlikely that New Zealand fisheries species are utilising introduced Spartina habitats in any significant way. It is unlikely to offer inanga spawning habitat, as Spartina is often associated with higher salinity. Clearing of woody debris also reduces habitat. Native riparian / aquatic margins are almost non-existent. Some species are successful in these environments, such as mud crabs. Sediments are also relatively contaminated, which will negatively affect breeding. The waterways have been subject to excavation for flood management purposes.
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Are benthic conditions similar to natural conditions?	1	2	3	4	5	1	Although estuarine environments generally are soft-bottomed, the majority of the beds of the waterbodies have become unnaturally muddy (elevated 'muddiness') compared to a native state. Benthic conditions have been affected by flood management works (including excavation in parts). Significant changes. Muddiness expected on account of a channel in very soft recently deposited sediments of an historically swampy floodplain. Used Kelly (2020): Averaged, mud content at all sites was in the range considered to cause significant persistent stress on a range of aquatic organisms
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)

Are erosion and deposition patterns (fluvial conditions) characteristic of natural conditions?	1	2	3	4	5	3	The hydrology of the river has been altered due to land drainage and flood protection works. However, the low grades of the sections of river considered (areas potentially affected by wastewater overflows), in conjunction with dominant tidal processes and low grades in the wider catchment, would dampen the hydrological effect of land drainage (in relation to erosion and sedimentation). The multitude of changes that have taken place in the catchment make it difficult to assess this. While the rivers are affected by stormwater flows, river hydrology is unlikely to be significantly affected by these stormwater flows on account of the very large upstream catchments which will dominate hydrology in this end of catchment location. The exception is where we have localised storm events, but these will likely only affect fluvial conditions at stormwater outfall points. The exception may be the Waikanae, which has a large percentage of imperviousness (however this is well known to be low-flushing and stormwater flows are also unlikely to have a significant impact on overall fluvial conditions).
How similar is water clarity compared to a natural stream / waterbody?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	2	The rivers are regularly turbid, this likely on account of the elevated muddiness and re-suspension of settled particles and heavy sediment loads from upstream agricultural catchments.
How optimal is the water temperature? Note: Adapt depending on waterbody.	> 24 °C / >25 °C	22 - 24 °C / >25 °C	20 - 22°C / < 25 °C	18 - 20 °C / < 22 °C	< 18 °C / < 19 °C	Score	Comments (if needed)
	1	2	3	4	5	4	The temperature in the areas affected by wastewater overflows will be similar to what can be expected in low lying rivers / estuarine environments.

2.2

**Biodiversity (how diverse is the plant and animal life associated with the waterbody?)**

None of the below will change on account of reductions in wastewater overflows

**Results of sampling / surveys:**

Invertebrate species richness (#)

24 taxa

The following is relevant (from Kelly & Sim-Smith, 2020):

Twenty-four taxa were collected from sites between the confluence and 5 km upstream. The number of species progressively declined upstream, from 14 taxa at the confluence to 7 taxa at the upstream site. The community at the downstream site was dominated by polychaetes (capitellids, *Nicoletis aestuariensis*, and *Scolecopelides benhami*), mud snails (*Amphibola crenata*), estuarine snails (*Potamopyrgus estuarinus*), the bivalve *Arthritica* sp. and the mud crab (*Austrohelice crassa*). A mixture of freshwater (e.g., *Potamopyrgus antipodarum* and chironomid midges) and estuarine species were present at sites 4 km beyond the confluence, indicating that salinities in this area are low. Intertidal communities within *Spartina* beds had very low diversity, mainly comprising snails (*P. estuarinus* and *Pleuroloba costellaris*).

EPT taxa (#)

The environments affected by the wastewater

Fish species richness (#)	<p>The following is relevant (from Kelly &amp; Sim-Smith, 2020):</p> <p>The most common freshwater fish reported to occur in the Taruheru and Turanganui River systems are eels (<i>Anguilla</i> spp.) and the common bully (<i>Gobiomorphus cotidianus</i>). Other species that have been occasionally reported include banded kokopu (<i>Galaxias fasciatus</i>), inanga (<i>Galaxias maculatus</i>), goldfish (<i>Carassius auratus</i>) and mosquitofish (<i>Gambusia affinis</i>), the latter two species being introduced (Peacock et al. 1997; Clapcott et al. 2012; Crow 2017). Other freshwater species may also occur.</p> <p>Fish species recorded in saline areas of the Waimatea, Taruheru, Turanganui Rivers and Waikanae Creek include grey mullet (<i>Mugil cephalus</i>), common smelt (<i>Retropinna retropinna</i>), black flounder (<i>Rhombosolea retiaria</i>), kahawai (<i>Aripis trutta</i>) and kingfish (<i>Seriola lalandi lalandi</i>) (Gisborne District Council 2013; Crow 2017; Conn 2018). Other marine species also likely to be present including yellow eyed mullet, piper and snapper (Poynter et al. 2016).</p>
Native plant percentage (%)	10%

This information is used to enable a value judgement to be made on the below Likert scale scoring

overflows are estuarine and as such we assessed the benthic community, as this is more relevant to these environments. 'EPT taxa (#)' has therefore been replaced with text relevant to the benthic community.

Fish species considered estuarine species as well as freshwater species that inhabit / use intertidal areas.

**Predicted native state:**

Invertebrate species richness (#) / Benthic life	The species richness has been described as depauperate compared to the predicted native state.
EPT taxa (#) / Sensitive Species	The species richness has been described as depauperate compared to the predicted native state.
Fish species richness (#)	Species richness in the areas affected by the wastewater overflows is similar to that of natural estuarine environments.
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are estuarine and as such we assessed the benthic community, as this is more relevant to these environments. 'EPT taxa (#)' has therefore been replaced with text relevant to the benthic community.

Fish species considered estuarine species as well as freshwater species that inhabit / use intertidal areas.

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is invertebrate / benthic life similar to that of a native environment?	1	2	3	4	5	2	No comments required; information provided in above sections.
Is fish life similar to that of a native environment?	1	2	3	4	5	3	The species richness of fish life is very similar to that of a native environment. Abundance of fish species may however be lower, due to direct human impacts (e.g. fishing) and compromised habitats, especially at the upper ends of the tidal areas.
Is plant life similar to that of a native environment?	1	2	3	4	5	1	Plant life is dominated by <i>Spartina</i> , and a lack of meaningful riparian margins in areas affected by wastewater overflows. Physical modifications to the channel and floodplains have significantly negatively affected the diversity of plant life that one would expect in a native state.
Are there man-made barriers to fish migration? Upstream	Total barriers		Partial barriers	No barriers		Score	Comments (if needed)
	1		3	5		5	No known man-made barriers.

Please provide details of the fish barrier(s)



(incl. nature of barrier, how many, how far away, how much catchment affected) Not applicable

	Total barriers	Partial barriers	No barriers	Score	Comments (if needed)
Are there man-made barriers to fish migration? Downstream	1	3	5	5	No known man-made barriers.

Note: Downstream has a higher weighting Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)

Not applicable

Overall fish barrier score: 5.00  
5  
Total score 2.30

**Enter fish passage score from H252 IF fish passage has been scored**

**Biohazards (how germ free is the waterbody?)**

**Present State**

Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.

**Freshwater**

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
Levels of indicator species of bacteria (E.coli) - Suitability for Recreation Grade	1	2	3	4	5	2	Rated as Poor to Very Poor using the MfE guidelines (both during overflows and at times in-between overflows)  During an overflow event risks will be higher, decreasing over time after the event. This category is relevant to between events.  The frequency, duration, distribution, and quantity of pathogens will decrease for overflow events, fewer health risks.  After reduction of wastewater overflows, the 95th percentile value is likely to reduce. Background levels remain high enough to not influence \$FRG. This improvement in score also reflects the change in frequency of overflows.
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile		Score	Comments (if needed)
E.coli - LAWA - specific to a particular waterbody	1	2	4	5		2	LAWA data places the Turanganui River in the lowest quartile for bacteria. NOF band E (also Waikanae);(both during overflows and at times in-between overflows)  During an overflow event risks will be higher, decreasing over time after the event.  After reduction of wastewater overflows, the 95th percentile value is likely to reduce. Quartile may possibly change. This improvement in score also reflects the change in frequency of overflows.
	NPSFM Band E	NPSFM Band D	NPSFM Band C	NPSFM Band B	NPSFM Band A	Score	Comments (if needed)
Levels of indicator species of bacteria (E.coli) - NPSFM	1	2	3	4	5	2	Council monitoring data was assessed. Average figures in affected rivers are between 1,500 and 4,500 CFU / 100ml for E.coli. 50th percentile figures in affected rivers are between 150 and 700 CFU / 100ml for E.coli. 95th percentile figures in affected rivers are between 7,500 and 35,000 CFU / 100ml for E.coli. These figures highlight ongoing high levels of biohazards.  During an overflow event the pathogen counts sharply increase (sometimes with values above 35,000 CFU / 100ml) and risks will be higher, decreasing over time after the event.  After reduction in wastewater overflows, the 95th percentile value is likely to reduce. This improvement in score also reflects the change in frequency of overflows. other sources of bacteria persist and prevent a change to a higher band.

**Saline**

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
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Levels of indicator species of bacteria (Enterococci) - Suitability for Recreation Grade	1	2	3	4	5	2	Rated as Poor to Very Poor using the MFE guidelines  During an overflow event risks will be higher, decreasing over time after the event.  After reduction of wastewater overflows, the 95th percentile value is likely to reduce. Background levels remain high enough to not influence SFRG. This improvement in score also reflects the change in frequency of overflows.
	Not suitable for Swimming		Caution advised	Suitable for swimming		Score	Comments (if needed)
Levels of indicator species of bacteria (Enterococci) - LAWA - specific to a particular waterbody (suitability for swimming)	1		3	5			Not available
	> 500 CFU/100ml	201 - 500 CFU/100ml	41 - 200 CFU/100ml	<40 CFU/100ml		Score	Comments (if needed)
Levels of indicator species of bacteria (Enterococci)	1	2	3	4	5	2	Council monitoring data was assessed. Average figures in affected rivers are between 1,000 and 4,000 CFU / 100ml for Enterococci. 50th percentile figures in affected rivers are between 70 and 700 CFU / 100ml for Enterococci. 95th percentile figures in affected rivers are between 3,500 and 26,500 CFU / 100ml for Enterococci. These figures highlight ongoing high levels of biohazards.  During an overflow event risks will be higher, decreasing over time after the event. This category is relevant to between events. During an overflow event the pathogen counts sharply increase (sometimes with values above 26,500 CFU / 100ml) and risks will be higher, decreasing over time after the event.  After reduction in wastewater overflows, the 95th percentile value is likely to reduce. This improvement in score also reflects the change in frequency of overflows.
	2						

**Chemistry (how free of chemical pollution is the waterbody?)**

**Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.**

Freshwater environments

	Band D	Band C	Band B	Band A	Score	Comments (if needed)	
NPSFM - Phytoplankton (Lakes)	1	2	4	5		Not applicable	
	Band D		Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Total Nitrogen (Lakes)	1	2	4	5		Not applicable	
	Band D		Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Total Phosphorus (Lakes)	1	2	4	5		Not applicable	
	Band D		Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Periphyton (Rivers)	1	2	4	5		No data for the city rivers	
	Band D		Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Nitrate (Toxicity) (Rivers)	1	2	4	5	2	Used Kelly (2017) report findings. Amended detail based on available data. Taruheru: Nitrate-N toxicity guidelines were not exceeded during the monitoring periods examined; Nitrate-N concentrations routinely exceeded the ANZECC (2000) freshwater and SE Australian estuarine triggers for the protection of ecosystems.  The concentrations will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.	
	Band D		Band C	Band B	Band A	Score	No change in the classification Comments (if needed)

NPSFM - Ammonia (Toxicity) (Lakes and Rivers)	1	2	4	5	2	Used Kelly (2017) report findings. Amended detail based on available data. Taruhuru: Ammonia-N toxicity guidelines were not exceeded during the monitoring periods examined; Ammonia-N concentrations routinely exceed the ANZECC (2000) trigger for the protection of NZ freshwater ecosystems and the SE Australian trigger for the protection of estuarine ecosystems  The concentrations will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.  No change in the classification
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Cyanobacteria (Planktonic) (Lakes and Rivers)	1	2	4	5		No data for the city rivers
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Dissolved Oxygen (below point sources);	1	2	4	5	3	Between 4 and 6 mg/l in Taruhuru sites. Between 1.8 and 3.7 mg/l in Waikanae. The Waikanae sites are not or extremely unlikely to be significantly affected by wastewater overflows (based on the hydrodynamic modelling). The Taruhuru sites were therefore used. A score of 3 was chosen because of the range of DO.  The concentrations do rise during storm events but are unlikely to affect flora and fauna beyond the the effects due to background levels..  No change in the classification

Note: For Dissolved Oxygen, for the purpose of this assessment, the above can be used for both below point sources and generally. Verify that this approach is acceptable with another subject matter expert.

**No change in the classification of any of the below. The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.**

	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Black Disc - LAWA - specific to a particular waterbody	1	2	4	5	2	Not assessed in LAWA; based on discussions with local experts
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Turbidity - LAWA - specific to a particular waterbody	1	2	4	5	2	Not assessed in LAWA; based on discussions with local experts
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total N - LAWA - specific to a particular waterbody	1	2	4	5	3	LAWA data places the Turanganui River in the third quartile for Total N; Waikanae in second quartile
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total Oxidised N - LAWA - specific to a particular waterbody	1	2	4	5	3	LAWA data places the Turanganui River in the third quartile for Total Oxidised N; Waikanae in fourth quartile
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Ammoniacal N - LAWA - specific to a particular waterbody	1	2	4	5	1	LAWA data places the Turanganui River in the lowest quartile for Ammoniacal N; same for Waikanae; NOF band C; Waikanae NOF band B.
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Dissolved Reactive P - LAWA - specific to a particular waterbody	1	2	4	5	1	LAWA data places the Turanganui River in the lowest quartile for Dissolved Reactive P; same for Waikanae
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total P - LAWA - specific to a particular waterbody	1	2	4	5	2	LAWA data places the Turanganui River in the second quartile for Ammoniacal N; Waikanae in first quartile
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)

Zinc - ANZECC guidelines (level of protection)	1	3	4	5	3	No significant elevated levels in the Turanganui and Taruheru likely. Elevated in the Waikanae. Have used the Taruheru data as the Waikanae is not predicted to be significantly impacted on by wastewater overflows. Gisborne District Council, 2014. Gisborne Urban Stormwater and Sediment Study. Prepared by Gisborne District Council, December 2014. Substantiated by Kelly & Sim Smith (2020). Kelly & Sim Smith (2020): Concentrations of key metals (copper and zinc) and ammoniacal-N were also compared with ANZECC (2000) trigger values for the protection of 80% and 90% of species - Metal trigger values were occasionally exceeded, but most estuarine samples were close to, or below, detection limits. Elevated levels from time to time likely due to stormwater runoff.
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Copper - ANZECC guidelines	1	3	4	5	3	No significant elevated levels in the Turanganui and Taruheru likely. Elevated in the Waikanae. Have used the Taruheru data as the Waikanae is not predicted to be significantly impacted on by wastewater overflows. Gisborne District Council, 2014. Gisborne Urban Stormwater and Sediment Study. Prepared by Gisborne District Council, December 2014. Kelly & Sim Smith (2020): Concentrations of key metals (copper and zinc) and ammoniacal-N were also compared with ANZECC (2000) trigger values for the protection of 80% and 90% of species - Metal trigger values were occasionally exceeded, but most estuarine samples were close to, or below, detection limits. Elevated levels from time to time likely due to stormwater runoff.

No change in the classification of any of the below.  
The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the effects due to background levels.

Saline environments

Chlorophyll concentrations	> 10µg/L 1		5 - 10 µg/L 3	< 5µg/L 5		Score	Comments (if needed)
	< 65% saturation		66 - 80% saturation	80 - 90%	> 90%	Score	Comments (if needed)
Oxygen Saturation	1		3	4	5	Score	Adressed above
	> 4000 mg/kg		2000 - 4000 mg/kg	500 - 2000 mg/kg	< 500 mg/kg	Score	Comments (if needed)
Total Nitrogen - Sediment	1		3	4	5	4	Used Kelly (2020). Averaged, total nitrogen concentrations in the two upper Taruheru sites (which includes the site below the Oak St. outfall) were at or above concentrations considered to cause moderate stress on a number of aquatic organisms (1000-2000 mg/kg). Concentrations at all other sites were in the range considered to cause minor stress on sensitive organisms (250-1000 mg/kg).
	> 1000 mg/kg		500 - 1000 mg/kg	200 - 500 mg/kg	< 200 mg/kg	Score	Comments (if needed)
Total Phosphorus - Sediment	1	2	3	4	5	4	Used Kelly (2020).
	< 80%		80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Zinc - ANZECC guidelines (level of protection)	1		3	4	5	Score	Adressed above
	< 80%		80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Copper - ANZECC guidelines	1		3	4	5	Score	Adressed above

2.5

**Summary Table of Scores**

Te Ao Maori	Subgroup Scores	Group Scores
Tangata whenua (how strong is your overall connection to the waterbody?)	2.50	42.75
Tikanga (how prevalent are your cultural practices with the waterbody?)	1.75	
Wairua (how strong are your spiritual connections with the waterbody?)	2.00	
Mahinga kai (is mahinga kai practiced?)	2.30	

<b>Nga Tini A Tangaroa</b>		
Kai Species Richness (are the same species still available for mahinga kai?)	3.00	48.83
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)	2.25	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.00	
Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)	1.52	
<b>Te Ao Taiao</b>		
How natural is the habitat in and adjacent to the waterbody?	2.17	44.83
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	2.30	
Biohazards (how germ free is the waterbody?)	2.00	
Chemistry (how free of chemical pollution is the waterbody?)	2.50	
<b>Total Score (%)</b>	<b>45.47</b>	

Scenario #3

No more wastewater overflows in wet weather, all other catchment influences remain (e.g. rural and urban stormwater discharges)

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa, reflected</del> in terms of tikanga practice?	1	2	3	4	5	3.5	Improvement. Agree because in terms of tikanga practice, the waterbody is being treated with the correct customary conventions or practices. The tribal identity is recognised and tikanga is practised more often; wastewater in the rivers is seen as a key reason for less interaction with the waterbody. Other catchment issues (incl. access restrictions) prevent higher scores.
How often do Tangata Whenua swim, play and recreate in the waterbody?	1	2	3	4	5	4	Improvement. Tangata whenua frequently swim and play in the river in summer; and winter (as would be expected). Winter use is mostly restricted to waka ama and other non-contact use. In summer the use is extensive (including use of the lower Turanganui River, the confluence of the Taruheru and Waimata, and at bridges in the city). The rivers are a key recreational use for tangata whenua in summers, and they are intensively used. This is testament to tangata whenua's integral relationship with the awa, even in the knowledge that the rivers are subject to wastewater overflows. Tangata whenua's disdain at wastewater overflows are reflected in reactions to wastewater overflow events, and having to use the rivers while aware that wastewater overflows take place from time to time. Winter contact recreation use in the overflows scenario is heavily constrained by wastewater overflows. Winter contact recreation would be low anyway, but is certainly lower than it would be if wastewater overflows were not present. The score must be viewed in the context of these comments, a reasonable degree of use it does in no way minimise tangata whenua's abhorrence of wastewater overflows.
How regularly are archaeological sites associated with the waterbody accessed?	1	2	3	4	5	2	Archaeological sites are rarely accessed. Many permanently lost to urban developments, and access to the river banks is difficult. No change.
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	1	2	3	4	5	3.5	Improvement. Tangata whenua agree that they feel they are achieving their aspirations as kaitiaki. Large improvement due reduction in overflows and commitment from GDC to stay on the right trajectory. Improvement due to absence in overflows and commitment from GDC to achieve this. Historically tangata whenua have had little or no say in the management of the waterbodies. Without cultural monitoring, it is very difficult to put a Te Ao Māori lens on water management. The increase in score relies on more partnering between IWI and council. However, broader issues still need to be addressed.
3.3							
Tikanga (how prevalent are your cultural practices with the waterbody?)	Likert						
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)

How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	3	Improvement. Tikanga wai Maori management practices and protocols are occasionally to frequently practiced by tangata whenua due to no more wastewater overflows. Deficient quality of the waterbody is still an issue.  Broader issues still need to be addressed, incl. catchment contamination, access, and 'cultural integration'. While the physical basis for this is greatly improved (removal of wastewater overflows), Tikanga wai maori management practices and protocols not well integrated into the 'fabric' of Gisborne, not given sufficient credence in Gisborne's identity).
What range of tikanga wai maori or wai tai is practiced?	<20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	2.5	Deficient quality and quantity of the waterbody is still an issue. Broader issues still need to be addressed, incl. catchment contamination, access, and 'cultural integration'. While the physical basis for this is greatly improved (removal of wastewater overflows), Tikanga wai maori management practices and protocols not well integrated into the 'fabric' of Gisborne, not given sufficient credence in Gisborne's identity).
<b>Wairua (how strong are your spiritual connections with the waterbody?)</b>						2.75	
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites <u>are well known</u>	1	2	3	4	5	3	Agree that wahi tapu and taniwha sites are well known. Archives, Iwi research and museum information available. However, this information is not readily accessible to the community and not well integrated into the fabric of Gisborne, not given sufficient credence in Gisborne's identity.  Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti)
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
Wahi tapu and taniwha sites associated with the waterbody <u>are regularly visited</u>	1	2	3	4	5	2	Wahi tapu and taniwha sites associated with the waterbody are rarely visited. This is related to the above. Access may also be difficult.  Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti and access becoming available)
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody in <u>its current state</u> considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	1	2	3	4	5	4	Agree that the waterbody nurtures and nourishes the soul, due to removal of human sewage overflows. Other quality issues exist. However a big improvement because human wastewater is such a significant issue for tangata whenua.
	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
Places of taniwha and wahi tapu are protected	1	2	3	4	5	2	Very few places of taniwha and wahi tapu are protected due urbanisation.  Not necessarily directly related to wastewater overflows. No change
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	1	2	3	4	5	3	Improvement. The waterbody is occasionally used for providing rongoa Maori (flora and fauna) for Tangata Whenua; while a key constraint (wastewater overflows) has been removed, use is still limited because of broader catchment water quality issues. The degraded habitat and limited riparian access limits how many resources are actually available and safe to use. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)

How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	3	Improvement. The waterbody is occasionally used by Tangata Whenua for purification and for ceremonial purposes (including waikarakia and waitapu. Poor quality of water available remains.
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2.8

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.

**Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (paerticularly in side streams) such as inanga, mussels. Keystone / sentinel species: Eels, flounder, 'estuarine shellfish'**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihi), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	3	The waterbody is occasionally used to provide kai for hui, tangi or other gatherings because of the longer times between overflows. Water quality issues in the rivers remain, as do the lasting cultural concerns on use. Definitely not during or for a while after overflows. Some of the kai presents risks when consumed, due to viruses and Emerging Organic Contaminants (EOCs), that can persist in shellfish..  Slight improvement  But many other factors also influencing this e.g. farm effluent, access, etc. So little change indicated.
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	3.5	The waterbody is occasionally used for other customary natural resource gathering because of the extremely poor quality of water and impact on its wairua due to sewage overflows.  Improvement for non-consumption uses. Other improvements also. Broader issues still need to be addressed, incl. catchment contamination, access, and 'cultural integration'.
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	3	The waterbody can occasionally be used for mahinga kai because the key limiting factor of human wastewater from overflows has been resolved. Other catchment pollution will still affect when the resources are accessible.
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	4.5	Very rarely is mahinga kai affected by wastewater issues. Sometimes there can be unforeseen wastewater overflows - it is impossible to 100% eliminate the chance of a wastewater overflow.
Are pūkenga in kaiiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	4	Agree that pūkenga in kaiiakitanga of mahinga kai are known and engaged in the marae, because of increased Mahinga Kai and other wai-related work that would happen as a result of the process required to aim for complete avoidance of wastewater overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded - these would have to be rekindled / rejuvenated.  Improvement if the wastewater overflow reduction work includes input from tangata whenua in monitoring and managing waterways, including placing of rahuis and engagement of tangata whenua through cultural frameworks.

3.6

**Nga Tini A Tangaroa**

This is about day-to-day gathering of key / indicator food resources.

Kai Species Richness (are the same species still available for mahinga kai / collecting kai?)

**ONLY FILL IN IF SCORED**

**NB: If not applicable, do not enter anything in the excel cell**



What kai species are relevant (past and present)?  
What is / are the keystone / sentinel species?

**Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (paeritcularly in side streams) such as inanga, mussels. Keystone / sentinel species: Eels, flounder, "estuarine shellfish"**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	No	Some	Yes	Score	Comments (if needed)
Is the full range of kai species, that the type of waterbody should provide, available?	1	3	5	3	Most still exist, but not everywhere that one would expect them.

**Species #1** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
Eels (tuna)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Based on netting and surveys, less than half of what would be expected
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed. Insufficient numbers to assess.
Are there different sizes of each species?	1	2	3	4	5	3	Generally a size distribution, but no evidence of 'breeders' / mature adults.

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**  
Eels (tuna)

	Yes	Uncertain	No	Score	Comments (if needed)	
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1	3	5	3	No real evidence, although sample numbers are low.	
What percentage of this species exhibits any external signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Insufficient data
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1	3	5		Some dissections have been done. Numbers not high enough to conclude anything. No obvious signs, but as stated, sample number low.	
What percentage of this species exhibits any internal signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Insufficient data

Was the age assessed by direct means (e.g. otolith examination)? Yes/No  
Otoliths assessed, although small sample size

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
If YES, please describe the growth rate	1	2	3	4	5	3	Insufficient data; some age data available, but sample size too small to statistically analyse

**Species #2** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
Flounder (patiki)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Large scale habitat transformation; Spartina grass, loss of mud-flats and diversity
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed
Are there different sizes of each species?	1	2	3	4	5	2	Not assessed

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**  
Flounder (patiki)

Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5			Not assessed
What percentage of this species exhibits any external signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5			Not assessed
What percentage of this species exhibits any internal signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not applicable						
If YES, please describe the growth rate	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5		

**Species #3** Name  #DIV/0!

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)** Estuarine shellfish as a group

Does the waterbody have lots of this species?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	2	Not a lot compared to what one would expect in a natural environment. Lots of habitat transformed / degraded. Spartina again has a big impact by transforming mudflats. Increased muddiness will have affected habitat.
Is the male / female ratio healthy? If possible to assess.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5		Not assessed
Are there different sizes of each species?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)** Estuarine shellfish as a group 2

Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5			Not assessed
What percentage of this species exhibits any external signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5			Not assessed
What percentage of this species exhibits any internal signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not assessed						
If YES, please describe the growth rate	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

<b>Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)</b>	<b>Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)</b>					#DIV/0!	As we are in essence assessing the downstream end of the catchment, we will not be assessing the catchment health downstream, but considering the waterbodies affected by the wastewater overflows as part of the upstream catchment. That enables us to capture aspects such as point source discharges.
						2.25	
	<b>Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)</b>						
						3	

Upstream of area being assessed None of the below will change on account of reductions in wastewater overflows

Water

	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Native vegetation cover comprises the following extents	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native catchment.
Are waterways in the catchment surrounded by native vegetation (relative to that specific habitat)? Riparian health.	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native riparian vegetation.
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	While the area affected by wastewater overflows is a small part of the catchment, it is 'nested' within the Gisborne urban area and is subject to stormwater point source discharges as well as wastewater point source discharges in wet weather and sometimes in dry weather. While the rural areas do not have lots of dairy etc., there are many unmitigated farm drains adjacent to intensively-farmed areas which act to concentrate flows and discharge them at specific discharge points. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. Contaminated landfills are leaching contaminants.
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Almost the entire urban catchment is unmitigated in terms of stormwater pollution, and there will be diffuse sources of pollution. The rural areas currently largely have very little or no setbacks from waterways, with pastoral and more intensive agriculture draining unmitigated into the waterways. Some of this is concentrated into pipes or drains, but there is no real 'disconnection' between contaminant sources and the waterways. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. This supports scoring upstream sources of pollution as category 1.
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile		Score	Comments (if needed)
	1	2	4	5		2	This is not included in LAWA. GDC sediment monitoring data shows good clarity at Tuckers Road (Taruheru River) but relatively poor clarity at Lytton Road and Peel Street) - NOF band C. The Waikanaye shows the same. This indicates that turbidity is likely being driven by tidal and estuarine processes. An opinion is that the high 'muddiness' combines with tidal flows to resuspend or keep in suspension sediments for longer. The Waimata is accepted as carrying high levels of sediment and being turbid. While there are times during summer when turbidity reduces, it only takes a small rainfall event to revert back to high turbidity.

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use

Land use (best fit)	% cover	Ranking
Annual cropping / High intensity livestock	50	1
Commercial forestry	27	2
Low intensity livestock (incl. extensive grazing)	3	3
Permanent horticulture/viticulture/urban	1	4
Native	19	5
<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>

As the effects take place in areas affected by tidal processes and mixing will to some extent occur between waters from the Taruheru, Waikanae and Waimata, we considered these all together, focussing on the Turanganui as the common area of impact. The landcover work calculated on GIS.

The Waimata River system has the largest catchment of approximately 22,700 ha. Predominant land covers in the Waimata catchment include steep grasslands, exotic forest and manuka/kanuka (Figure 4-2). Less than 3.5 km of the river runs through urban parts of Gisborne, of which, around 2 km is downstream of the only Primary outfall in its catchment (Seymour Rd/Turenne St). No secondary outfalls drain to the Waimata River system. Urban reaches of Waimata River are adjoined by a mix of public and private open space and residential development (see Appendix 3 for photographs).

The Taruheru River system is around 111 km in length and drains a catchment of around 8400 ha. The river system flows through a low-lying floodplain before reaching Gisborne township. Landuses in the catchment are dominated by cropping, orchards and grasslands, with urban development in the lower catchment (Figure 4-2; Gisborne District Council (2013)). The gradient of the river is very flat through the 5 km urban section (see Appendix 3 for photographs), and for 10 km upstream. As a consequence, water levels are strongly affected by sea levels, with tidal effects occurring over this distance (Poynter et al. 2016). A flood management scheme dating back to the 1960s including stopbanks, channel deepening and riverbank armouring enabled major changes in landuse from pastoral to horticultural. Despite this, low lying areas remain vulnerable to surface flooding (Peacock et al. 1997). The impacts of river modification and surrounding landuses have adversely affected the natural character of the river, which was scored as low by a River Expert Panel using the River Values Assessment System (RIVAS) (Booth et al. 2012). Two secondary outfalls discharge along Taruheru River (Oak St and Palmerston Rd/Peel St), while a Primary outfall is located in Turanganui River, just below the Waimata and Taruheru confluence.

The Waikanae Creek system is around 7.5 km in length and borders the southwestern edge of Gisborne township. It is a low gradient, groundwater fed stream that drains a catchment of around 1100 ha. The stream is tidally influenced, with the saline intrusion evident at least 4 km upstream from the sea. Landuse in the upper catchment is dominated by orchards and horticulture, while the mid to lower catchment is dominated by mixed urban (including industrial) development, though significant areas of urban parkland or open space are also present, including open space areas associated with closed landfills (Figure 4-2; Conn (2018)). The creek has been heavily impacted by human activities and was assessed as having low natural character (Booth et al. 2012). No primary or secondary outfalls discharge to Waikanae Creek.

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	1	2	3	4	5	3	The flows will be primarily determined by the rural areas, as these are by far the majority of the catchment. Urban areas may have some localised impacts on flows. The catchment has been almost entirely transformed from natural, due to agricultural activities. There is a fair bit of exotic forest and a little natural bush; these can be expected to have similar hydrological influences as a natural catchment, although harvesting will also have an influence. The cropping and horticultural areas will have land drainage, which will have modified the hydrology of those areas. The Poverty Bay flats would historically have comprised an extensive swamp with lots of water retention - that has changed dramatically. The hydrology is therefore considered to have been changed significantly in freshwater areas. Urban areas will have some influence, but this will be small because they mostly discharge into estuarine areas (where tidal influences are greatest). Hydrological changes on the areas affected by wastewater overflows would have changed but unlikely significantly. The saline wedges are all likely to have been affected. In wet weather higher freshwater flows can be expected (because of less attenuation in the catchment). While these effects can be modelled, this is not yet done. A score of 3 was chosen, considered to reflect the dominant tidal effect on the areas affected by the wastewater (which would mean little change in these areas) matched against the upstream changes in hydrological flows (which will have resulted in changes).
Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Very few waterways are fenced.
						1.52	

Downstream of area being assessed

Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
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Natural vegetation cover comprises the following extents	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Are waterways surrounded by native vegetation (relative to that specific habitat)?	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
Are there point source discharges of pollution into waters?	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
Are there diffuse discharges of pollution into waters?	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)	
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	1	2	4	5	2	2	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use	<table border="1"> <thead> <tr> <th>Land use (best fit)</th> <th>% cover</th> <th>Ranking</th> </tr> </thead> <tbody> <tr> <td>Annual cropping / High intensity livestock</td> <td>50</td> <td>1</td> </tr> <tr> <td>Commercial forestry</td> <td>27</td> <td>2</td> </tr> <tr> <td>Low intensity livestock (incl. extensive grazing)</td> <td>3</td> <td>3</td> </tr> <tr> <td>Permanent horticulture/viticulture/urban</td> <td>1</td> <td>4</td> </tr> <tr> <td>Native</td> <td>19</td> <td>5</td> </tr> <tr> <td><b>Should = 100%</b></td> <td><b>100</b></td> <td>2.12</td> </tr> </tbody> </table>	Land use (best fit)	% cover	Ranking	Annual cropping / High intensity livestock	50	1	Commercial forestry	27	2	Low intensity livestock (incl. extensive grazing)	3	3	Permanent horticulture/viticulture/urban	1	4	Native	19	5	<b>Should = 100%</b>	<b>100</b>	2.12	2.12	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same
Land use (best fit)	% cover	Ranking																						
Annual cropping / High intensity livestock	50	1																						
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Native	19	5																						
<b>Should = 100%</b>	<b>100</b>	2.12																						

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Sediment sources - proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

1.52

**Te Ao Taiao**

How natural is the habitat in and adjacent to the waterbody?

**ONLY FILL IN IF SCORED**  
**NB: If not applicable, do not enter anything in the excel cell**

None of the below will change on account of reductions in wastewater overflows

Does the terrestrial habitat look like the equivalent native habitat?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	1	The terrestrial habitat is almost completely transformed. In the key area of impact, the terrestrial habitat comprises urban environments, with limited riparian margins.
	Very poor	Poor	Average	Good	Very good	Score	Comments (if needed)
How good are the habitat conditions for reproduction of aquatic species?	1	2	3	4	5	2	Sediment has smothered much of the habitat. The prevalence of Spartina has exacerbated sedimentation and muddiness. This would have had significant impacts on fluffish and native birds. Spartina would have taken over some salt marsh areas, although their importance in breeding is likely to be low. Their function would have probably been constrained to short periods of foraging during spring tides when they are accessible. Semi-pelagic species, such as mullets, smelt, and the common galaxiid Galaxias maculatus (inanga), may have used lost use of such areas. The spartina may offer some of this also, but it is unlikely that New Zealand fisheries species are utilising introduced Spartina habitats in any significant way. It is unlikely to offer inanga spawning habitat, as Spartina is often associated with higher salinity. Clearing of woody debris also reduces habitat. Native riparian / aquatic margins are almost non-existent. Some species are successful in these environments, such as mud crabs. Sediments are also relatively contaminated, which will negatively affect breeding. The waterways have been subject to excavation for flood management purposes.
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)

Are benthic conditions similar to natural conditions?	1	2	3	4	5	1	Although estuarine environments generally are soft-bottomed, the majority of the beds of the waterbodies have become unnaturally muddy (elevated 'muddiness') compared to a native state. Benthic conditions have been affected by flood management works (including excavation ion parts). Significant changes. Muddiness expected on account of a channel in very soft recently deposited sediments of an historically swampy floodplain.Used Kelly (2020): Averaged, mud content at all sites was in the range considered to cause significant persistent stress on a range of aquatic organisms
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Are erosion and deposition patterns (fluvial conditions) characteristic of natural conditions?	1	2	3	4	5	3	The hydrology of the river has been altered due to land drainage and flood protection works. However, the low grades of the sections of river considered (areas potentially affected by wastewater overflows), in conjunction with dominant tidal processes and low grades in the wider catchment, would dampen the hydrological effect of land drainage (in relation to erosion and sedimentation). The multitude of changes that have taken place in the catchment make it difficult to assess this. While the rivers are affected by stormwater flows, river hydrology is unlikely to be significantly affected by these stormwater flows on account of the very large upstream catchments which will dominate hydrology in this end of catchment location. The exception is where we have localised storm events, but these will likely only affect fluvial conditions at stormwater outfall points. The exception may be the Waikanae, which has a large percentage of imperviousness (however this is well known to be low-flushing and stormwater flows are also unlikely to have a significant impact on overall fluvial conditions).
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
How similar is water clarity compared to a natural stream / waterbody?	1	2	3	4	5	2	The rivers are regularly turbid, this likely on account of the elevated muddiness and re-suspension of settled particles and heavy sediment loads from upstream agricultural catchments.
	> 24 °C / >25 °C	22 - 24 °C / >25 °C	20 - 22°C / < 25 °C	18 - 20 °C / < 22 °C	< 18 °C / < 19 °C	Score	Comments (if needed)
How optimal is the water temperature? Note: Adapt depending on waterbody.	1	2	3	4	5	4	The temperature in the areas affected by wastewater overflows will be similar to what can be expected in low lying rivers / estuarine environments.

2.2

**Biodiversity (how diverse is the plant and animal life associated with the waterbody?)**

None of the below will change on account of no more wastewater overflows

**Results of sampling / surveys:**

Invertebrate species richness (#)

24 taxa

The following is relevant (from Kelly & Sim-Smith, 2020):

Twenty-four taxa were collected from sites between the confluence and 5 km upstream. The number of species progressively declined upstream, from 14 taxa at the confluence to 7 taxa at the upstream site. The community at the downstream site was dominated by polychaetes (capitellids, *Nicon aestuariensis*, and *Scolecopelides benhami*), mud snails (*Amphibola crenata*), estuarine snails (*Potamopyrgus estuarinus*), the bivalve *Arthritica* sp. and the mud crab (*Austrohelice crassa*). A mixture of freshwater (e.g., *Potamopyrgus antipodarum* and chironomid midges) and estuarine species were present at sites 4 km beyond the confluence, indicating that salinities in this area are low. Intertidal communities within *Spartina* beds had very low diversity, mainly comprising snails (*P. estuarinus* and *Pleuroloba costellaris*).

EPT taxa (#)

The environments affected by the wastewater

Fish species richness (#)	<p>The following is relevant (from Kelly &amp; Sim-Smith, 2020):</p> <p>The most common freshwater fish reported to occur in the Taruheru and Turanganui River systems are eels (<i>Anguilla</i> spp.) and the common bully (<i>Gobiomorphus cotidianus</i>). Other species that have been occasionally reported include banded kokopu (<i>Galaxias fasciatus</i>), inanga (<i>Galaxias maculatus</i>), goldfish (<i>Carassius auratus</i>) and mosquitofish (<i>Gambusia affinis</i>), the latter two species being introduced (Peacock et al. 1997; Clapcott et al. 2012; Crow 2017). Other freshwater species may also occur.</p> <p>Fish species recorded in saline areas of the Waimatea, Taruheru, Turanganui Rivers and Waikanae Creek include grey mullet (<i>Mugil cephalus</i>), common smelt (<i>Retropinna retropinna</i>), black flounder (<i>Rhombosolea retiaria</i>), kahawai (<i>Aripis trutta</i>) and kingfish (<i>Seriola lalandi lalandi</i>) (Gisborne District Council 2013; Crow 2017; Conn 2018). Other marine species also likely to be present including yellow eyed mullet, piper and snapper (Poynter et al. 2016).</p>
Native plant percentage (%)	10%

This information is used to enable a value judgement to be made on the below Likert scale scoring

overflows are estuarine and as such we assessed the benthic community, as this is more relevant to these environments. 'EPT taxa (#)' has therefore been replaced with text relevant to the benthic community.

Fish species considered estuarine species as well as freshwater species that inhabit / use intertidal areas.

**Predicted native state:**

Invertebrate species richness (#) / Benthic life	The species richness has been described as depauperate compared to the predicted native state.
EPT taxa (#) / Sensitive Species	The species richness has been described as depauperate compared to the predicted native state.
Fish species richness (#)	Species richness in the areas affected by the wastewater overflows is similar to that of natural estuarine environments.
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are estuarine and as such we assessed the benthic community, as this is more relevant to these environments. 'EPT taxa (#)' has therefore been replaced with text relevant to the benthic community.

Fish species considered estuarine species as well as freshwater species that inhabit / use intertidal areas.

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is invertebrate / benthic life similar to that of a native environment?	1	2	3	4	5	2	No comments required; information provided in above sections.
Is fish life similar to that of a native environment?	1	2	3	4	5	3	The species richness of fish life is very similar to that of a native environment. Abundance of fish species may however be lower, due to direct human impacts (e.g. fishing) and compromised habitats, especially at the upper ends of the tidal areas.
Is plant life similar to that of a native environment?	1	2	3	4	5	1	Plant life is dominated by <i>Spartina</i> , and a lack of meaningful riparian margins in areas affected by wastewater overflows. Physical modifications to the channel and floodplains have significantly negatively affected the diversity of plant life that one would expect in a native state.
Are there man-made barriers to fish migration? Upstream	Total barriers		Partial barriers	No barriers		Score	Comments (if needed)
	1		3	5		5	No known man-made barriers.

Please provide details of the fish barrier(s)

(incl. nature of barrier, how many, how far away, how much catchment affected) Not applicable

	Total barriers	Partial barriers	No barriers	Score	Comments (if needed)
Are there man-made barriers to fish migration? Downstream	1	3	5	5	No known man-made barriers.

Note: Downstream has a higher weighting  
Please provide details of the fish barrier(s)  
(incl. nature of barrier, how many, how far away, how much catchment affected)

Not applicable

Overall fish barrier score: 5.00  
5  
Total score 2.30

Enter fish passage score from H252 IF fish passage has been scored

**Biohazards (how germ free is the waterbody?)**

**Present State**

Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of storm events when pollution from the upstream catchment is washed down to the Turanganui.

**Freshwater**

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
Levels of indicator species of bacteria (E.coli) - Suitability for Recreation Grade	1	2	3	4	5	2.5	Rated as Poor to Fair using the MFE guidelines (both during overflows and at times in-between overflows)  During rainfall events risks will be higher, decreasing over time after the storm. Concentrations / levels remain high due to other catchment influences. However, likely to be from natural and agricultural sources.  After elimination of wastewater overflows, the 95th percentile value may reduce to a level that influences the SFRG.
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile		Score	Comments (if needed)
E.coli - LAWA - specific to a particular waterbody	1	2	4	5		3	LAWA data places the Turanganui River in the lowest quartile for bacteria. NOF band E (also Waikanae);(both during overflows and at times in-between overflows)  Concentrations / levels remain high due to other catchment influences. However, likely to be from natural and agricultural sources.  After elimination of wastewater overflows, the 95th percentile value is likely to reduce. Quartile may possibly change.
	NPSFM Band E	NPSFM Band D	NPSFM Band C	NPSFM Band B	NPSFM Band A	Score	Comments (if needed)
Levels of indicator species of bacteria (E.coli) - NPSFM	1	2	3	4	5	2	Council monitoring data was assessed. Average figures in affected rivers are between 1,500 and 4,500 CFU / 100ml for E.coli. 50th percentile figures in affected rivers are between 150 and 700 CFU / 100ml for E.coli. 95th percentile figures in affected rivers are between 7,500 and 35,000 CFU / 100ml for E.coli. These figures highlight ongoing high levels of biohazards.  During a heavy rainfall event the pathogen counts sharply increase regardless of wastewater overflows. However, maxima are lower in the absence of wastewater overflows.  Concentrations / levels remain high due to other catchment influences. However, likely to be from natural and agricultural sources.  After elimination of wastewater overflows, the 95th percentile value is likely to reduce. However, other sources of bacteria persist and prevent a change to a higher band.

**Saline**

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
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Levels of indicator species of bacteria (Enterococci) - Suitability for Recreation Grade	1	2	3	4	5	2.5	Rated as Poor to Very Poor using the MFE guidelines During heavy storms risks will be higher, decreasing over time after the event. Concentrations / levels remain high due to other catchment influences. However, likely to be from natural and agricultural sources. After elimination of wastewater overflows, the 95th percentile value is likely to reduce.
Levels of indicator species of bacteria (Enterococci) - LAWA - specific to a particular waterbody (suitability for swimming)	Not suitable for Swimming		Caution advised	Suitable for swimming		Score	Comments (if needed)
	1		3	5			Not available
Levels of indicator species of bacteria (Enterococci)	> 500 CFU/100ml	201 - 500 CFU/100ml	41 - 200 CFU/100ml	<40 CFU/100ml		Score	Comments (if needed)
	1	2	3	4	5	2	Council monitoring data was assessed. Average figures in affected rivers are between 1,000 and 4,000 CFU / 100ml for Enterococci. 50th percentile figures in affected rivers are between 70 and 700 CFU / 100ml for Enterococci. 95th percentile figures in affected rivers are between 3,500 and 26,500 CFU / 100ml for Enterococci. These figures highlight ongoing high levels of biohazards. During a heavy rainfall event the pathogen counts sharply increase regardless of wastewater overflows. However, maxima are lower in the absence of wastewater overflows. Concentrations / levels remain high due to other catchment influences. However, likely to be from natural and agricultural sources. After elimination of wastewater overflows, the 95th percentile value is likely to reduce. However, other sources of bacteria persist and prevent a change to a higher band.
2.4							

**Chemistry (how free of chemical pollution is the waterbody?)**

**Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.**

Freshwater environments

	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Phytoplankton (Lakes)	1	2	4	5		Not applicable
NPSFM - Total Nitrogen (Lakes)	1	2	4	5		Not applicable
NPSFM - Total Phosphorus (Lakes)	1	2	4	5		Not applicable
NPSFM - Periphyton (Rivers)	1	2	4	5		No data for the city rivers
NPSFM - Nitrate (Toxicity) (Rivers)	1	2	4	5	2	Used Kelly (2017) report findings. Amended detail based on available data. Taruheru: Nitrate-N toxicity guidelines were not exceeded during the monitoring periods examined; Nitrate-N concentrations routinely exceeded the ANZECC (2000) freshwater and SE Australian estuarine triggers for the protection of ecosystems. The concentrations will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels. No change in the classification
	Band D	Band C	Band B	Band A	Score	Comments (if needed)

NPSFM - Ammonia (Toxicity) (Lakes and Rivers)	1	2	4	5	2	Used Kelly (2017) report findings. Amended detail based on available data. Taruhuru: Ammonia-N toxicity guidelines were not exceeded during the monitoring periods examined; Ammonia-N concentrations routinely exceed the ANZECC (2000) trigger for the protection of NZ freshwater ecosystems and the SE Australian trigger for the protection of estuarine ecosystems  The concentrations will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.  No change in the classification
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Cyanobacteria (Planktonic) (Lakes and Rivers)	1	2	4	5		No data for the city rivers
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Dissolved Oxygen (below point sources);	1	2	4	5	3	Between 4 and 6 mg/l in Taruhuru sites. Between 1.8 and 3.7 mg/l in Waikanae. The Waikanae sites are not or extremely unlikely to be significantly affected by wastewater overflows (based on the hydrodynamic modelling). The Taruhuru sites were therefore used. A score of 3 was chosen because of the range of DO.  The concentrations do rise during storm events but are unlikely to affect flora and fauna beyond the the effects due to background levels.  No change in the classification

Note: For Dissolved Oxygen, for the purpose of this assessment, the above can be used for both below point sources and generally. Verify that this approach is acceptable with another subject matter expert.

**No change in the classification of any of the below.**  
**The concentrations / levels of the below will rise during storm events but are unlikely to affect flora and fauna beyond the the effects due to background levels. Concentrations / levels remain high due to other catchment influences.**

	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Black Disc - LAWA - specific to a particular waterbody	1	2	4	5	2	Not assessed in LAWA; based on discussions with local experts
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Turbidity - LAWA - specific to a particular waterbody	1	2	4	5	2	Not assessed in LAWA; based on discussions with local experts
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total N - LAWA - specific to a particular waterbody	1	2	4	5	3	LAWA data places the Turanganui River in the third quartile for Total N; Waikanae in second quartile
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total Oxidised N - LAWA - specific to a particular waterbody	1	2	4	5	3	LAWA data places the Turanganui River in the third quartile for Total Oxidised N; Waikanae in fourth quartile
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Ammoniacal N - LAWA - specific to a particular waterbody	1	2	4	5	1	LAWA data places the Turanganui River in the lowest quartile for Ammoniacal N; same for Waikanae; NOF band C; Waikanae NOF band B.
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Dissolved Reactive P - LAWA - specific to a particular waterbody	1	2	4	5	1	LAWA data places the Turanganui River in the lowest quartile for Dissolved Reactive P; same for Waikanae
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total P - LAWA - specific to a particular waterbody	1	2	4	5	2	LAWA data places the Turanganui River in the second quartile for Ammoniacal N; Waikanae in first quartile
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)

Zinc - ANZECC guidelines (level of protection)	1	3	4	5	3	No significant elevated levels in the Turanganui and Taruheru likely. Elevated in the Waikanae. Have used the Taruheru data as the Waikanae is not predicted to be significantly impacted on by wastewater overflows. Gisborne District Council, 2014. Gisborne Urban Stormwater and Sediment Study. Prepared by Gisborne District Council, December 2014. Substantiated by Kelly & Sim Smith (2020). Kelly & Sim Smith (2020): Concentrations of key metals (copper and zinc) and ammoniacal-N were also compared with ANZECC (2000) trigger values for the protection of 80% and 90% of species - Metal trigger values were occasionally exceeded, but most estuarine samples were close to, or below, detection limits. Elevated levels from time to time likely due to stormwater runoff.
Copper - ANZECC guidelines	1	3	4	5	3	No significant elevated levels in the Turanganui and Taruheru likely. Elevated in the Waikanae. Have used the Taruheru data as the Waikanae is not predicted to be significantly impacted on by wastewater overflows. Gisborne District Council, 2014. Gisborne Urban Stormwater and Sediment Study. Prepared by Gisborne District Council, December 2014. Kelly & Sim Smith (2020): Concentrations of key metals (copper and zinc) and ammoniacal-N were also compared with ANZECC (2000) trigger values for the protection of 80% and 90% of species - Metal trigger values were occasionally exceeded, but most estuarine samples were close to, or below, detection limits. Elevated levels from time to time likely due to stormwater runoff.

Saline environments

The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the effects due to background levels.

No change in classification

Chlorophyll concentrations	> 10µg/L 1		5 – 10 µg/L 3		< 5µg/L 5		Score	Comments (if needed)
Oxygen Saturation	< 65% saturation 1		66 - 80% saturation 3		80 - 90% 4		Score	Comments (if needed)
Total Nitrogen - Sediment	> 4000 mg/kg 1		2000 - 4000 mg/kg 3		500 - 2000 mg/kg 4		Score	Comments (if needed)
Total Phosphorus - Sediment	> 1000 mg/kg 1		500 - 1000 mg/kg 3		200 - 500 mg/kg 4		Score	Comments (if needed)
Zinc - ANZECC guidelines (level of protection)	< 80% 1		80 - 90% 3		90 - 95% 4		Score	Comments (if needed)
Copper - ANZECC guidelines	< 80% 1		80 - 90% 3		90 - 95% 4		Score	Comments (if needed)

2.5

Summary Table of Scores

Te Ao Maori	Subgroup Scores	Group Scores
Tangata whenua (how strong is your overall connection to the waterbody?)	3.25	62.17
Tikanga (how prevalent are your cultural practices with the waterbody?)	2.75	
Wairua (how strong are your spiritual connections with the waterbody?)	2.83	
Mahinga kai (is mahinga kai practiced?)	3.60	
<b>Nga Tini A Tangaroa</b>		
Kai Species Richness (are the same species still available for mahinga kai?)	3.00	48.83

Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)	2.25	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.00	
Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)	1.52	
<b>Te Ao Talao</b>		
How natural is the habitat in and adjacent to the waterbody?	2.17	46.83
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	2.30	
Biohazards (how germ free is the waterbody?)	2.40	
Chemistry (how free of chemical pollution is the waterbody?)	2.50	
<b>Total Score (%)</b>	<b>52.61</b>	

Scenario #4

From start of an overflow to up to 2 to 4 days afterwards; this is the period over which differences in water quality due to wastewater overflows can be detected in the receiving waters; excludes EOCs and viruses

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa, reflected</del> in terms of tikanga practice?	1	2	3	4	5	1	Strongly disagree because in terms of tikanga practice, the waterbody is not being treated with the correct customary conventions or practices. The tribal identity is recognised but tikanga is not practised; wastewater in the rivers is seen as a key reason for less interaction with the waterbody. Tikanga definitely not practised during overflows.
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 1	Comments (if needed) Strongly disagree - not used during wastewater overflows
How regularly are archaeological sites associated with the waterbody accessed?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 2	Comments (if needed) Archaeological sites are rarely accessed. Many permanently lost to urban developments, and access to the river banks is difficult. Not really related to overflows.
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score 1	Comments (if needed) Tangata whenua strongly disagree that they feel they are achieving their aspirations as kaitiaki. Historically tangata whenua have had little or no say in the management of the waterbodies. Without cultural monitoring, it is very difficult to put a Te Ao Māori lens on water management.

1.25

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Likert Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	1	Tikanga wai Maori management practices and protocols are never practiced by tangata whenua due to deficient quality of the waterbody.
What range of tikanga wai maori or wai tai is practiced?	<20% 1	20 - 40% 2	40 - 60% 3	60 - 80% 4	80 - 100% 5	Score 1	Comments (if needed) None during wastewater overflows

1

Wairua (how strong are your spiritual connections with the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known.	1	2	3	4	5	3	Agree that wahi tapu and taniwha sites are well known. Archives, Iwi research and museum information available. However, this information is not readily accessible to the community and not well integrated into the fabric of Gisborne, not given sufficient credence in Gisborne's identity.  Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti)
Wahi tapu and taniwha sites associated with the waterbody are regularly visited.	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 1	Comments (if needed) Wahi tapu and taniwha sites associated with the waterbody are rarely visited. This is related to the above. Access may also be difficult.  Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti); although sites would definitely not be visited in an event.

People

Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (if it is a place of ūkaipō)?	1	2	3	4	5	1	Strongly disagree that the waterbody still nurtures and nourishes the soul, due to human sewage during the event.
	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
Places of taniwha and wahi tapu are protected	1	2	3	4	5	2	Very few places of taniwha and wahi tapu are protected due to urbanisation.
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	1	None during wastewater overflows. The waterbody is rarely used for providing rongoa Maori (flora and fauna) for Tangata Whenua because of the extremely poor quality of water available and impact on its wairua due to sewage overflows. Definitely not during or for a while after overflows. The degraded habitat and limited riparian access also limits how many resources are actually available and safe to use. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	1	Never during wastewater overflows. The waterbody is never used by Tangata Whenua for purification and for ceremonial purposes (including waikarakia and waitapu) because of the extremely poor quality of water available and impact on its wairua due to sewage overflows.

1.5

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.	<p><b>Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (paerticularly in side streams) such as inanga, mussels. Keystone / sentinel species: Eels, flounder, estuarine shellfish"</b></p>						<p>This information is used to enable a value judgement to be made on the below Likert scale scoring</p>	
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihi), etc.) for hui, tangi or other gatherings?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)	
	1	2	3	4	5	1	None during wastewater overflows	
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)	
	1	2	3	4	5	1	None during wastewater overflows	
How often can the waterbody be used for mahinga kai?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)	
	1	2	3	4	5	1	Not during wastewater overflows	
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)	
	1	2	3	4	5	1	Always during wastewater overflows	
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)	
	1	2	3	4	5	2	Disagree that pukenga in kaitiakitanga of mahinga kai are known and engaged in the marae due to it being a dying art. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded	

1.2

**Nga Tini A Tangaroa**

This is about day-to-day gathering of key / indicator food resources.

**Kai Species Richness (are the same species still available for mahinga kai / collecting kai?)**

**ONLY FILL IN IF SCORED**  
**NB: If not applicable, do not enter anything in the excel cell**

What kai species are relevant (past and present)? What is / are the keystone / sentinel species?	<p><b>Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (paerticularly in side streams) such as inanga, mussels. Keystone / sentinel species: Eels, flounder, estuarine shellfish"</b></p>						<p>This information is used to enable a value judgement to be made on the below Likert scale scoring</p>	
Is the full range of kai species, that the type of waterbody should provide, available?	No	Some	Yes	Score	Comments (if needed)			
	1	3	5	3	Most still exist, but not everywhere that one would expect them.			



	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
What percentage of this species exhibits any internal signs that there are health issues?	1	2	3	4	5		Not assessed
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not applicable						
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
If YES, please describe the growth rate	1	2	3	4	5		
<b>Species #3</b>	Name					#DIV/0!	
<b>Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)</b>	Estuarine shellfish as a group						
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Not a lot compared to what one would expect in a natural environment. Lots of habitat transformed / degraded. Spartina again has a big impact by transforming mudflats. Increased muddiness will have affected habitat.
Is the male / female ratio healthy? If possible to assess.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5		Not assessed
Are there different sizes of each species?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5		Not assessed
<b>Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)</b>	Estuarine shellfish as a group						
	Yes		Uncertain	No		Score	Comments (if needed)
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1		3	5			Not assessed
What percentage of this species exhibits any external signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5			Not assessed
What percentage of this species exhibits any internal signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not assessed						
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
If YES, please describe the growth rate	1	2	3	4	5		Not assessed
<b>Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)</b>	<b>Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)</b>					#DIV/0!	As we are in essence assessing the downstream end of the catchment, we will not be assessing the catchment health downstream, but considering the waterbodies affected by the wastewater overflows as part of the upstream catchment. That enables us to capture aspects such as point source discharges.
	<b>Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)</b>					2.25	
<b>Upstream of area being assessed</b>						3	<b>None of the below will change because it is independent of wastewater overflows</b>
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Native vegetation cover comprises the following extents	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native catchment.
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)



Water

Are waterways in the catchment surrounded by native vegetation (relative to that specific habitat)? Riparian health.	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native riparian vegetation.
	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
Are there point source discharges of pollution into waters?	1	2	3	4	5	1	While the area affected by wastewater overflows is a small part of the catchment, it is 'nested' within the Gisborne urban area and is subject to stormwater point source discharges as well as wastewater point source discharges in wet weather and sometimes in dry weather. While the rural areas do not have lots of dairy etc., there are many unmitigated farm drains adjacent to intensively-farmed areas which act to concentrate flows and discharge them at specific discharge points. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. Contaminated landfills are leaching contaminants.
	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
Are there diffuse discharges of pollution into waters?	1	2	3	4	5	1	Almost the entire urban catchment is unmitigated in terms of stormwater pollution, and there will be diffuse sources of pollution. The rural areas currently largely have very little or no setbacks from waterways, with pastoral and more intensive agriculture draining unmitigated into the waterways. Some of this is concentrated into pipes or drains, but there is no real 'disconnection' between contaminant sources and the waterways. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. This supports scoring upstream sources of pollution as category 1.
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)	
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	1	2	4	5	2	This is not included in LAWA. GDC sediment monitoring data shows good clarity at Tuckers Road (Taruheru River) but relatively poor clarity at Lytton Road and Peel Street) - NOF band C. The Waikanaye shows the same. This indicates that turbidity is likely being driven by tidal and estuarine processes. An opinion is that the high 'muddiness' combines with tidal flows to resuspend or keep in suspension sediments for longer. The Waimata is accepted as carrying high levels of sediment and being turbid. While there are times during summer when turbidity reduces, it only takes a small rainfall event to revert back to high turbidity.	

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use

Land use (best fit)	% cover	Ranking
Annual cropping / High intensity livestock	50	1
Commercial forestry	27	2
Low intensity livestock (incl. extensive grazing)	3	3
Permanent horticulture/viticulture/urban	1	4
Native	19	5
<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>

As the effects take place in areas affected by tidal processes and mixing will to some extent occur between waters from the Taruheru, Waikanae and Waimata, we considered these all together, focussing on the Turanganui as the common area of impact. The landcover work calculated on GIS.

The Waimata River system has the largest catchment of approximately 22,700 ha. Predominant land covers in the Waimata catchment include steep grasslands, exotic forest and manuka/kanuka (Figure 4-2). Less than 3.5 km of the river runs through urban parts of Gisborne, of which, around 2 km is downstream of the only Primary outfall in its catchment (Seymour Rd/Turenne St). No secondary outfalls drain to the Waimata River system. Urban reaches of Waimata River are adjoined by a mix of public and private open space and residential development (see Appendix 3 for photographs).

The Taruheru River system is around 111 km in length and drains a catchment of around 8400 ha. The river system flows through a low-lying floodplain before reaching Gisborne township. Landuses in the catchment are dominated by cropping, orchards and grasslands, with urban development in the lower catchment (Figure 4-2; Gisborne District Council (2013)). The gradient of the river is very flat through the 5 km urban section (see Appendix 3 for photographs), and for 10 km upstream. As a consequence, water levels are strongly affected by sea levels, with tidal effects occurring over this distance (Poynter et al. 2016). A flood management scheme dating back to the 1960s including stopbanks, channel deepening and riverbank armouring enabled major changes in landuse from pastoral to horticultural. Despite this, low lying areas remain vulnerable to surface flooding (Peacock et al. 1997). The impacts of river modification and surrounding landuses have adversely affected the natural character of the river, which was scored as low by a River Expert Panel using the River Values Assessment System (RIVAS) (Booth et al. 2012). Two secondary outfalls discharge along Taruheru River (Oak St and Palmerston Rd/Peel St), while a Primary outfall is located in Turanganui River, just below the Waimata and Taruheru confluence.

The Waikanae Creek system is around 7.5 km in length and borders the southwestern edge of Gisborne township. It is a low gradient, groundwater fed stream that drains a catchment of around 1100 ha. The stream is tidally influenced, with the saline intrusion evident at least 4 km upstream from the sea. Landuse in the upper catchment is dominated by orchards and horticulture, while the mid to lower catchment is dominated by mixed urban (including industrial) development, though significant areas of urban parkland or open space are also present, including open space areas associated with closed landfills (Figure 4-2; Conn (2018)). The creek has been heavily impacted by human activities and was assessed as having low natural character (Booth et al. 2012). No primary or secondary outfalls discharge to Waikanae Creek.

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	1	2	3	4	5	3	The flows will be primarily determined by the rural areas, as these are by far the majority of the catchment. Urban areas may have some localised impacts on flows. The catchment has been almost entirely transformed from natural, due to agricultural activities. There is a fair bit of exotic forest and a little natural bush; these can be expected to have similar hydrological influences as a natural catchment, although harvesting will also have an influence. The cropping and horticultural areas will have land drainage, which will have modified the hydrology of those areas. The Poverty Bay flats would historically have comprised an extensive swamp with lots of water retention - that has changed dramatically. The hydrology is therefore considered to have been changed significantly in freshwater areas. Urban areas will have some influence, but this will be small because they mostly discharge into estuarine areas (where tidal influences are greatest). Hydrological changes on the areas affected by wastewater overflows would have changed but unlikely significantly. The saline wedges are all likely to have been affected. In wet weather higher freshwater flows can be expected (because of less attenuation in the catchment). While these effects can be modelled, this is not yet done. A score of 3 was chosen, considered to reflect the dominant tidal effect on the areas affected by the wastewater (which would mean little change in these areas) matched against the upstream changes in hydrological flows (which will have resulted in changes).
Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Very few waterways are fenced.
<b>Downstream of area being assessed</b>	1.52 Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.						
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)

Natural vegetation cover comprises the following extents	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Are waterways surrounded by native vegetation (relative to that specific habitat)?	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
Are there point source discharges of pollution into waters?	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
Are there diffuse discharges of pollution into waters?	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)	
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	1	2	4	5	2	2	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use

Land use (best fit)	% cover	Ranking
Annual cropping / High intensity livestock	50	1
Commercial forestry	27	2
Low intensity livestock (incl. extensive grazing)	3	3
Permanent horticulture/viticulture/urban	1	4
Native	19	5
<b>Should = 100%</b>	<b>100</b>	2.12

Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Sediment sources - proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

1.52

### Te Ao Taiao

How natural is the habitat in and adjacent to the waterbody?

**ONLY FILL IN IF SCORED**  
**NB: If not applicable, do not enter anything in the excel cell**

None of the below will change when assessing water quality over the time when wastewater overflows are influencing water quality measurements

Does the terrestrial habitat look like the equivalent native habitat?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	1	The terrestrial habitat is almost completely transformed. In the key area of impact, the terrestrial habitat comprises urban environments, with limited riparian margins.
	Very poor	Poor	Average	Good	Very good	Score	Comments (if needed)

How good are the habitat conditions for reproduction of aquatic species?	1	2	3	4	5	2	Sediment has smothered much of the habitat. The prevalence of Spartina has exacerbated sedimentation and muddiness. This would have had significant impacts on flatfish and native birds. Spartina would have taken over some salt marsh areas, although their importance in breeding is likely to be low. Their function would have probably been constrained to short periods of foraging during spring tides when they are accessible. Semi-pelagic species, such as mullets, smelt, and the common galaxiid Galaxias maculatus (inanga), may have used lost use of such areas. The spartina may offer some of this also, but it is unlikely that New Zealand fisheries species are utilising introduced Spartina habitats in any significant way. It is unlikely to offer inanga spawning habitat, as Spartina is often associated with higher salinity. Clearing of woody debris also reduces habitat. Native riparian / aquatic margins are almost non-existent. Some species are successful in these environments, such as mud crabs. Sediments are also relatively contaminated, which will negatively affect breeding. The waterways have been subject to excavation for flood management purposes.
Are benthic conditions similar to natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	1	Although estuarine environments generally are soft-bottomed, the majority of the beds of the waterbodies have become unnaturally muddy (elevated 'muddiness') compared to a native state. Benthic conditions have been affected by flood management works (including excavation in parts). Significant changes. Muddiness expected on account of a channel in very soft recently deposited sediments of an historically swampy floodplain. Used Kelly (2020): Averaged, mud content at all sites was in the range considered to cause significant persistent stress on a range of aquatic organisms
Are erosion and deposition patterns (fluvial conditions) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	The hydrology of the river has been altered due to land drainage and flood protection works. However, the low grades of the sections of river considered (areas potentially affected by wastewater overflows), in conjunction with dominant tidal processes and low grades in the wider catchment, would dampen the hydrological effect of land drainage (in relation to erosion and sedimentation). The multitude of changes that have taken place in the catchment make it difficult to assess this. While the rivers are affected by stormwater flows, river hydrology is unlikely to be significantly affected by these stormwater flows on account of the very large upstream catchments which will dominate hydrology in this end of catchment location. The exception is where we have localised storm events, but these will likely only affect fluvial conditions at stormwater outfall points. The exception may be the Waikanae, which has a large percentage of imperviousness (however this is well known to be low-flushing and stormwater flows are also unlikely to have a significant impact on overall fluvial conditions).
How similar is water clarity compared to a natural stream / waterbody?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	2	The rivers are regularly turbid, this likely on account of the elevated muddiness and re-suspension of settled particles and heavy sediment loads from upstream agricultural catchments.
How optimal is the water temperature? Note: Adapt depending on waterbody.	> 24 °C / >25 °C	22 - 24 °C / >25 °C	20 - 22°C / < 25 °C	18 - 20 °C / < 22 °C	< 18 °C / < 19 °C	Score	Comments (if needed)
	1	2	3	4	5	4	The temperature in the areas affected by wastewater overflows will be similar to what can be expected in low lying rivers / estuarine environments.

2.2

Biodiversity (how diverse is the plant and animal life associated with the waterbody?)

None of the below will change when assessing water quality over the time when wastewater overflows are influencing water quality measurements

Results of sampling / surveys:

Invertebrate species richness (#)	24 taxa	The following is relevant (from Kelly & Sim-Smith, 2020):  Twenty-four taxa were collected from sites between the confluence and 5 km upstream. The number of species progressively declined upstream, from 14 taxa at the confluence to 7 taxa at the upstream site. The community at the downstream site was dominated by polychaetes (capitellids, Nicon aestuariensis, and Scolecolepides benhami), mud snails (Amphibola crenata), estuarine snails (Potamopyrgus estuarinus), the bivalve Arthritica sp. and the mud crab (Austrohelice crassa). A mixture of freshwater (e.g., Potamopyrgus antipodarum and chironomid midges) and estuarine species were present at sites 4 km beyond the confluence, indicating that salinities in this area are low. Intertidal communities within Spartina beds had very low diversity, mainly comprising snails (P. estuarinus and Pleuroloba costellaris).	The environments affected by the wastewater overflows are estuarine and as such we assessed the benthic community, as this is more relevant to these environments. 'EPT taxa (#)' has therefore been replaced with text relevant to the benthic community.				
	EPT taxa (#)						
Fish species richness (#)	The following is relevant (from Kelly & Sim-Smith, 2020):  The most common freshwater fish reported to occur in the Taruheru and Turanganui River systems are eels (Anguilla spp.) and the common bully (Gobiomorphus cotidianus). Other species that have been occasionally reported include banded kokopu (Galaxias fasciatus), inanga (Galaxias maculatus), goldfish (Carassius auratus) and mosquitofish (Gambusia affinis), the latter two species being introduced (Peacock et al. 1997; Clapcott et al. 2012; Crow 2017). Other freshwater species may also occur.	This information is used to enable a value judgement to be made on the below Likert scale scoring	Fish species considered estuarine species as well as freshwater species that inhabit / use intertidal areas.				
	Fish species richness (#)						
Native plant percentage (%)	Fish species recorded in saline areas of the Waimatea, Taruheru, Turanganui Rivers and Waikanae Creek include grey mullet (Mugil cephalus), common smelt (Retropinna retropinna), black flounder (Rhombosolea retiaria), kahawai (Ariopsis trutta) and kingfish (Seriola lalandi lalandi) (Gisborne District Council 2013; Crow 2017; Conn 2018). Other marine species also likely to be present including yellow eyed mullet, piper and snapper (Poynter et al. 2016).						
<b>Predicted native state:</b>							
Invertebrate species richness (#) / Benthic life	The species richness has been described as depauperate compared to the predicted native state.	This information is used to enable a value judgement to be made on the below Likert scale scoring	The environments affected by the wastewater overflows are estuarine and as such we assessed the benthic community, as this is more relevant to these environments. 'EPT taxa (#)' has therefore been replaced with text relevant to the benthic community.				
EPT taxa (#) / Sensitive Species	The species richness has been described as depauperate compared to the predicted native state.						
Fish species richness (#)	Species richness in the areas affected by the wastewater overflows is similar to that of natural estuarine environments.		Fish species considered estuarine species as well as freshwater species that inhabit / use intertidal areas.				
Native plant percentage (%)	100%						
Not at all the same		Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)

Is invertebrate / benthic life similar to that of a native environment?	1	2	3	4	5	2	No comments required; information provided in above sections.
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is fish life similar to that of a native environment?	1	2	3	4	5	3	The species richness of fish life is very similar to that of a native environment. Abundance of fish species may however be lower, due to direct human impacts (e.g. fishing) and compromised habitats, especially at the upper ends of the tidal areas.
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is plant life similar to that of a native environment?	1	2	3	4	5	1	Plant life is dominated by Spartina, and a lack of meaningful riparian margins in areas affected by wastewater overflows. Physical modifications to the channel and floodplains have significantly negatively affected the diversity of plant life that one would expect in a native state.
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Are there man-made barriers to fish migration? Upstream	Total barriers 1		Partial barriers 3	No barriers 5		Score 5	Comments (if needed) No known man-made barriers.

Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)

Not applicable

Are there man-made barriers to fish migration? Downstream	Total barriers 1		Partial barriers 3	No barriers 5		Score 5	Comments (if needed) No known man-made barriers.
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*Note:* Downstream has a higher weighting  
Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)

Not applicable

Overall fish barrier score: 5.00  
5  
 Total score 2.30

**Enter fish passage score from H252 IF fish passage has been scored**

**Biohazards (how germ free is the waterbody?)**

*Present State*

*Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.*

*Freshwater*

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
Levels of indicator species of bacteria (E.coli) - Suitability for Recreation Grade	1	2	3	4	5	1	Rated as Poor to Very Poor using the MfE guidelines (both during overflows and at times in-between overflows); scored as very poor because of the very high pathogen counts during overflow events and adopting a conservative approach.  During an overflow event risks will be higher, decreasing over time after the event.  The significant role of background pathogen sources is highlighted here, as there is essentially no difference in suitability for recreation grade comparing overflow events and in-between times. However, the risks are higher during the overflow event.  Swimming is discouraged during overflow events through signage.
	0 – 25% quartile	26 – 50% quartile		51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
E.coli - LAWA - specific to a particular waterbody	1	2		4	5	1	LAWA data places the Turanganui River in the lowest quartile for bacteria. NOF band E (also Waikanae);(both during overflows and at times in-between overflows)  During an overflow event risks will be higher, decreasing over time after the event. This category is relevant to between events.
	NPSFM Band E	NPSFM Band D	NPSFM Band C	NPSFM Band B	NPSFM Band A	Score	Comments (if needed)

Levels of indicator species of bacteria (E.coli) - NPSFM	1	2	3	4	5	1	<p>Council monitoring data was assessed. Average figures in affected rivers are between 1,500 and 4,500 CFU / 100ml for E.coli. 50th percentile figures in affected rivers are between 150 and 700 CFU / 100ml for E.coli. 95th percentile figures in affected rivers are between 7,500 and 35,000 CFU / 100ml for E.coli. These figures highlight ongoing high levels of biohazards.</p> <p>During an overflow event the pathogen counts sharply increase (sometimes with values above 35,000 CFU / 100ml) and risks will be higher, decreasing over time after the event. This category is relevant to between events.</p>
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**Saline**

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
Levels of indicator species of bacteria (Enterococci) - Suitability for Recreation Grade	1	2	3	4	5	1	<p>Rated as Poor to Very Poor using the MFE guidelines; scored as very poor because of the very high pathogen counts during overflow events and adopting a conservative approach.</p> <p>During an overflow event risks will be higher, decreasing over time after the event.</p> <p>The significant role of background pathogen sources is highlighted here, as there is essentially no difference in suitability for recreation grade comparing overflow events and in-between times. However, the risks are higher during the overflow event.</p> <p>Swimming is discouraged during overflow events through signage.</p>
Levels of indicator species of bacteria (Enterococci) - LAWA - specific to a particular waterbody (suitability for swimming)	Not suitable for Swimming		Caution advised	Suitable for swimming		Score	Comments (if needed)
	1		3	5			Not available
Levels of indicator species of bacteria (Enterococci)	> 500 CFU/100ml	201 - 500 CFU/100ml	41 - 200 CFU/100ml	<40 CFU/100ml		Score	Comments (if needed)
	1	2	3	4	5	1	<p>Council monitoring data was assessed. Average figures in affected rivers are between 1,000 and 4,000 CFU / 100ml for Enterococci. 50th percentile figures in affected rivers are between 70 and 700 CFU / 100ml for Enterococci. 95th percentile figures in affected rivers are between 3,500 and 26,500 CFU / 100ml for Enterococci. These figures highlight ongoing high levels of biohazards.</p> <p>During an overflow event risks will be higher, decreasing over time after the event. This category is relevant to between events. During an overflow event the pathogen counts sharply increase (sometimes with values above 26,500 CFU / 100ml) and risks will be higher, decreasing over time after the event. This category is relevant to between events.</p> <p>No change in classification</p>

1

**Chemistry (how free of chemical pollution is the waterbody?)**

**Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.**

Freshwater environments

	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Phytoplankton (Lakes)	1	2	4	5		Not applicable
NPSFM - Total Nitrogen (Lakes)	Band D	Band C	Band B	Band A	Score	Comments (if needed)
	1	2	4	5		Not applicable
	Band D	Band C	Band B	Band A	Score	Comments (if needed)

NPSFM - Total Phosphorus (Lakes)	1	2	4	5		Not applicable
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Periphyton (Rivers)	1	2	4	5		No data for the city rivers
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Nitrate (Toxicity) (Rivers)	1	2	4	5	2	Used Kelly (2017) report findings. Amended detail based on available data. Taruhuru: Nitrate-N toxicity guidelines were not exceeded during the monitoring periods examined; Nitrate-N concentrations routinely exceeded the ANZECC (2000) freshwater and SE Australian estuarine triggers for the protection of ecosystems.  The concentrations will rise during overflow events but are unlikely to affect flora and fauna.  No change in the classification
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Ammonia (Toxicity) (Lakes and Rivers)	1	2	4	5	2	Used Kelly (2017) report findings. Amended detail based on available data. Taruhuru: Ammonia-N toxicity guidelines were not exceeded during the monitoring periods examined; Ammonia-N concentrations routinely exceed the ANZECC (2000) trigger for the protection of NZ freshwater ecosystems and the SE Australian trigger for the protection of estuarine ecosystems  The concentrations will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.  No change in the classification
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Cyanobacteria (Planktonic) (Lakes and L	1	2	4	5		No data for the city rivers
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Dissolved Oxygen)(below point sources);	1	2	4	5	3	Between 4 and 6 mg/l in Taruhuru sites. Between 1.8 and 3.7 mg/l in Waikanae. The Waikanae sites are not or extremely unlikely to be significantly affected by wastewater overflows (based on the hydrodynamic modelling). The Taruhuru sites were therefore used. A score of 3 was chosen because of the range of DO.  The concentrations will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.  No change in the classification

**Note:** For Dissolved Oxygen, for the purpose of this assessment, the above can be used for both below point sources and generally. Verify that this approach is acceptable with another subject matter expert.

**No change in the classification of any of the below.  
The concentrations / levels of the below will rise during**

	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Black Disc - LAWA - specific to a particular waterbody	1	2	4	5	2	Not assessed in LAWA; based on discussions with local experts
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Turbidity - LAWA - specific to a particular waterbody	1	2	4	5	2	Not assessed in LAWA; based on discussions with local experts
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total N - LAWA - specific to a particular waterbody	1	2	4	5	3	LAWA data places the Turanganui River in the third quartile for Total N; Waikanae in second quartile
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total Oxidised N - LAWA - specific to a particular waterbody	1	2	4	5	3	LAWA data places the Turanganui River in the third quartile for Total Oxidised N; Waikanae in fourth quartile
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Ammoniacal N - LAWA - specific to a particular waterbody	1	2	4	5	1	LAWA data places the Turanganui River in the lowest quartile for Ammoniacal N; same for Waikanae; NOF band C; Waikanae NOF band B.
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Dissolved Reactive P - LAWA - specific to a particular waterbody	1	2	4	5	1	LAWA data places the Turanganui River in the lowest quartile for Dissolved Reactive P; same for Waikanae



	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total P - LAWA - specific to a particular waterbody	1	2	4	5	2	LAWA data places the Turanganui River in the second quartile for Ammoniacal N; Waikanae in first quartile
Zinc - ANZECC guidelines (level of protection)	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
	1	3	4	5	3	No significant elevated levels in the Turanganui and Taruheru likely. Elevated in the Waikanae. Have used the Taruheru data as the Waikanae is not predicted to be significantly impacted on by wastewater overflows. Gisborne District Council, 2014. Gisborne Urban Stormwater and Sediment Study. Prepared by Gisborne District Council, December 2014. Substantiated by Kelly & Sim Smith (2020). Kelly & Sim Smith (2020): Concentrations of key metals (copper and zinc) and ammoniacal-N were also compared with ANZECC (2000) trigger values for the protection of 80% and 90% of species - Metal trigger values were occasionally exceeded, but most estuarine samples were close to, or below, detection limits. Elevated levels from time to time likely due to stormwater runoff.
Copper - ANZECC guidelines	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
	1	3	4	5	3	No significant elevated levels in the Turanganui and Taruheru likely. Elevated in the Waikanae. Have used the Taruheru data as the Waikanae is not predicted to be significantly impacted on by wastewater overflows. Gisborne District Council, 2014. Gisborne Urban Stormwater and Sediment Study. Prepared by Gisborne District Council, December 2014. Kelly & Sim Smith (2020): Concentrations of key metals (copper and zinc) and ammoniacal-N were also compared with ANZECC (2000) trigger values for the protection of 80% and 90% of species - Metal trigger values were occasionally exceeded, but most estuarine samples were close to, or below, detection limits. Elevated levels from time to time likely due to stormwater runoff.

Saline environments

The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.

No change in classification

Chlorophyll concentrations	> 10µg/L	5 – 10 µg/L	< 5µg/L		Score	Comments (if needed)
	1	3	5			Not available
Oxygen Saturation	< 65% saturation	66 - 80% saturation	80 - 90%	> 90%	Score	Comments (if needed)
	1	3	4	5		Adressed above
Total Nitrogen - Sediment	> 4000 mg/kg	2000 - 4000 mg/kg	500 - 2000 mg/kg	< 500 mg/kg	Score	Comments (if needed)
	1	3	4	5	4	Used Kelly (2020). Averaged, total nitrogen concentrations in the two upper Taruheru sites (which includes the site below the Oak St. outfall) were at or above concentrations considered to cause moderate stress on a number of aquatic organisms (1000-2000 mg/kg). Concentrations at all other sites were in the range considered to cause minor stress on sensitive organisms (250-1000 mg/kg)
Total Phosphorus - Sediment	> 1000 mg/kg	500 - 1000 mg/kg	200 - 500 mg/kg	< 200 mg/kg	Score	Comments (if needed)
	1	2	3	4	5	4
Zinc - ANZECC guidelines (level of protection)	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
	1	3	4	5		Adressed above
Copper - ANZECC guidelines	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
	1	3	4	5		Adressed above

2.5

Summary Table of Scores

Te Ao Maori	Subgroup Scores	Group Scores
Tangata whenua (how strong is your overall connection to the waterbody?)	1.25	24.75
Tikanga (how prevalent are your cultural practices with the waterbody?)	1.00	
Wairua (how strong are your spiritual connections with the waterbody?)	1.50	

Mahinga kai (is mahinga kai practiced?)	1.20	
<b>Nga Tini A Tangaroa</b>		
Kai Species Richness (are the same species still available for mahinga kai?)	3.00	48.83
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)	2.25	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.00	
Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)	1.52	
<b>Te Ao Taiao</b>		
How natural is the habitat in and adjacent to the waterbody?	2.17	39.83
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	2.30	
Biohazards (how germ free is the waterbody?)	1.00	
Chemistry (how free of chemical pollution is the waterbody?)	2.50	
<b>Total Score (%)</b>	<b>37.80</b>	

## Appendix 8.2 Rongowhakaata (Freshwater)

Summary table of Scores	Scenario 1		Scenario 2 - After TRMP, reduction in overflows		Scenario 3 - No wastewater overflows in wet weather		Scenario 4 - During overflows	
<b>Description</b>	Present State of wastewater overflows between 2 and 4 times a year in wet weather, including all catchment influences (e.g. rural and urban stormwater discharges)		Wastewater overflows in wet weather, after TRMP targets have been achieved, reduction in overflows to an average of one overflow per two years (a 50% chance of an overflow per year), all catchment influences remain (e.g. rural and urban stormwater discharges)		No more wastewater overflows in wet weather, all other catchment influences remain (e.g. rural and urban stormwater discharges)		From start of an overflow to up to 2 to 4 days afterwards; this is the period over which differences in water quality due to wastewater overflows can be detected in the receiving waters; excludes EOCs and viruses; all other catchment influences remain (e.g. rural and urban stormwater discharges)	
<b>Te Ao Maori</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>
Tangata whenua (how strong is your overall connection to the waterbody?)	2.0	33.5	3.0	44.3	3.9	63.9	0.0	3.3
Tikanga (how prevalent are your cultural practices with the waterbody?)	1.5		2.0		3.3		0.0	
Wairua (how strong are your spiritual connections with the waterbody?)	1.5		1.7		2.3		0.7	
Mahinga kai (is mahinga kai practiced?)	1.7		2.2		3.4		0.0	
<b>Nga Tini A Tangaroa</b>								
Kai Species Richness (are the same species still available for mahinga kai?)	3.0	48.8	3.0	48.8	3.0	48.8	3.0	48.8
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel	2.3		2.3		2.3		2.3	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.0		3.0		3.0		3.0	
Catchment health (what is the state of the ecosystems and associated	1.5		1.5		1.5		1.5	
<b>Te Ao Taiao</b>								
How natural is the habitat in and adjacent to the waterbody?	2.2	40.8	2.2	44.8	2.2	46.8	2.2	39.8
Biodiversity (how diverse is the plant and animal life associated with the waterb	2.3		2.3		2.3		2.3	
Biohazards (how germ free is the waterbody?)	1.2		2.0		2.4		1.0	
Chemistry (how free of chemical pollution is the waterbody?)	2.5		2.5		2.5		2.5	

Scenario #1

Present State of wastewater overflows between 2 and 4 times a year in wet weather, including all catchment influences (e.g. rural and urban stormwater discharges)

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa</del> , reflected in terms of tikanga practice?	1	2	3	4	5	1	Rivers in question are degraded by discharges. Waka ama is practiced because there is no alternative.
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	4	Frequent use. Again, no alternative for many.
How regularly are archaeological sites associated with the waterbody accessed?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	2	Uncertain as to whereabouts of any such sites, or level of use.
Tangata Whenua feel that they are achieving their aspirations as kaiiaki of the waterbody	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	1	Strongly disagree. TW largely excluded from decision making around any aspect of catchment management. Unsatisfactory experiences with the freshwater planning process and ongoing management.

2

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	1.5	Largely absent. May be a dormant state, however while sewage discharges in particular continue, it remains very difficult for TW to undertake such practices.
What range of tikanga wai maori or wai tai is practiced?	<20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1.5	No comment

1.5

Wairua (how strong are your spiritual connections with the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4	5	2	The waahi tapu cannot be said to be well known, but many are known, or at least their historical areas known, amongst some people and groups.
Wahi tapu and taniwha sites associated with the waterbody are regularly visited	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	1.5	
Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	2	Despite the historical and ongoing impacts, there is a feeling amongst some, especially water users, that hope for the rivers and a sense of their living nature means that they will not be abandoned.
Places of taniwha and wahi tapu are protected	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
	1	2	3	4	5	1	As far as I understand these sites have no protection, except that conferred by their invisible presence.
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	1.5	Limited knowledge of this, however impact of sewage wastes is expected to preclude any such use.
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	1	Limited knowledge of this.

1.5

Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.

People

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.

**Eels, flounder, cockles (tuangi), pipis, lampreys, grey mullet, whitebait species (particularly in side streams) such as inanga, mussels, possibly koura. Keystone / sentinel species: Eels, flounder, 'estuarine shellfish'**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihī), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	1	The waterbody is never used to provide kai for hui, tangi or other gatherings because of the extremely poor quality of water available and impact on its wairua due to sewage overflows. Definitely not during or for a while after overflows. The main Mahinga Kai use comprises fishing, for marine and estuarine species. However, this is not for customary practices (e.g. tangi).
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	1	Contamination, including high levels of sediment, precludes such.
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	1.5	Although some pelagic species (e.g. Kahawai, kingfish) may possibly be taken and safely consumed during periods distant from any sewage discharges, because of the threats associated with residual contamination of sediments, all shellfish and fish such as kanae and patiki that feed in the benthic environment should be avoided.
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	1	As above, Row 49. Physical and spiritual impacts are expected to be present.
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	4	Pūkenga are held in high regard by TW, although acknowledgement of the significance of kaitiakitanga by the powers that be is less so.

Scenario #2

Wastewater overflows in wet weather, after TRMP targets have been achieved, reduction in overflows to an average of one overflow per two years (a 50% chance of an overflow per year), all catchment influences remain (e.g. rural and urban stormwater discharges)

MP Added: The use of an average does not have great meaning without a time period indicated.

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa, reflected</del> in terms of tikanga practice?	1	2	3	4	5	2.5	
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 4	Comments (if needed)
How regularly are archaeological sites associated with the waterbody accessed?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score Uncertain	Comments (if needed)
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score 2.5	Comments (if needed) Improvement has been achieved to at least some degree.
3.0							

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	2	This can only be determined at the time and dependent on what actually occurs.
What range of tikanga wai maori or wai tai is practiced?	<20% 1	20 - 40% 2	40 - 60% 3	60 - 80% 4	80 - 100% 5	Score 2	Comments (if needed) As above Row 21. No score.
2							

Wairua (how strong are your spiritual connections with the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4	5		No change expected due solely to removal of discharges. Only wider TW expert engagement can effect such. No score.
Wahi tapu and taniwha sites associated with the waterbody are regularly visited	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score As above Row 28. No score.	Comments (if needed)
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)

Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	1	2	3	4	5	2	As scenario 1, Row 32: Despite the historical and ongoing impacts, there is a feeling amongst some, especially water users, that hope for the rivers and a sense of their living nature means that they will not be abandoned.
	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
Places of taniwha and wahi tapu are protected	1	2	3	4	5		No change expected due solely to removal of discharges. Only wider TW expert engagement can effect such. No score.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	1	2	3	4	5	1.5	Limited knowledge of this, however impact of sewage wastes is expected to preclude any such use. Slight improvement.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	1.5	Limited knowledge of this.

1.7

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.	<p><b>Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (paerticularly in side streams) such as inanga, mussels. Keystone / sentinel species: Eels, flounder, "estuarine shellfish"</b></p>					<p>This information is used to enable a value judgement to be made on the below Likert scale scoring</p>	
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirini), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	1	Highly unlikely that kai would be taken from these areas for hui, even with the reduction in sewage discharges. Tikanga associated with water and waste is precautionary, involving manuhiri.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	2	the reduction in sewage discharges makes it more likely that such customary practices might occur, however overall levels of contamination, including high levels of sediment, will physically preclude such.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	2	Although some pelagic species (e.g. Kahawai, kingfish) may possibly be taken and safely consumed during periods distant from any sewage discharges, because of the threats associated with residual contamination of sediments, all shellfish and fish such as kanae and patiki that feed in the benthic environment should still be avoided.
	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	2	As above, Row 49, Physical and spiritual impacts are expected to still be present, although the potential physical impacts may be reduced.
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	4	Pūkenga are held in high regard by TW, although acknowledgement of the significance of kaitiakitanga by the powers that be is less so.

2.2



Scenario #3

No more wastewater overflows in wet weather, all other catchment influences remain (e.g. rural and urban stormwater discharges)

Te Ao Maori

ONLY FILL IN IF SCORED

Tangata whenua (how strong is your overall connection to the waterbody?)

NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa</del> , reflected in terms of tikanga practice?	1	2	3	4	5	4	Removal of sewage discharges allows TW to focus on readily identifiable and measurable factors. It is more likely to reflect tikanga practice in such an environment.
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	4.5	As before Sc 1 and 2. Numbers are not expected to greatly change
How regularly are archaeological sites associated with the waterbody accessed?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	3	Probably less reluctance to engage with awa once sewage discharges have finished. Other factors may be more important in such a context.
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	4	Cessation of sewage discharges signpost a significant achievement at least in part a result of TW exercise of kaitiaki role.

3.9

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	3.5	Cessation of sewage discharges make it significantly more likely that such practices and protocols (other than those specifically targetted at mitigating the discharges themselves) are carried out.
What range of tikanga wai maori or wai tai is practiced?	<20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	3	An estimate would be 40-60%

3.25

Wairua (how strong are your spiritual connections with the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4	5		No change expected due solely to removal of discharges. Only wider TW expert engagement can effect such. No score.
Wahi tapu and taniwha sites associated with the waterbody are regularly visited	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5		As above Row 28. No score.
Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	2	As scenario 1 and 2, Row 32: Despite the historical and ongoing impacts, there is a feeling amongst some, especially water users, that hope for the rivers and a sense of their living nature means that they will not be abandoned.
Places of taniwha and wahi tapu are protected	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
	1	2	3	4	5	3	No major change expected due solely to removal of discharges. Only wider TW expert engagement can effect such. However removal of sewage discharges may enhance willingness to participate in awa-related activities.
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	2.5	Limited knowledge of this, however removal of sewage wastes is expected to enhance any such use, even to a minor degree. Slight improvement.

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	1.5	Limited knowledge of this.

2.3

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.

**Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (particularly in side streams) such as inanga, mussels. Keystone / sentinel species: Eels, flounder, "estuarine shellfish"**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihi), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	1.5	Highly unlikely that kai would be taken from these areas for hui, even with the removal of sewage discharges. Tikanga associated with water and waste is precautionary, involving manuhiri. Other local areas are available for safe mahinga kai.
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	3.5	The removal of sewage discharges makes it more likely that such customary practices might occur, however overall levels of contamination, including high levels of sediment, will physically preclude such.
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	3.5	Pelagic species (e.g. Kahawai, kingfish) may be taken and safely consumed with more confidence. Threats associated with other contaminant sources (agriculture, stormwater) suggests that all shellfish and fish such as kanae and patiki that feed in the benthic environment should still be avoided, although periodic feeds of kanae and patiki might be undertaken if the stomach contents are discarded.
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	4	The removal of sewage discharges also removes their impacts on mahinga kai. Unforeseen discharges may compromise this however, and the extent of such impacts are unknown. Nevertheless, assuming there are no more overflows, the score will be 4.
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	4.5	Pūkenga are held in high regard by TW, although acknowledgement of the significance of kaitiakitanga by the powers that be is less so. Removal of sewage discharges enhances the mana of kaitiaki.

3.4

**Scenario #4**

**From start of an overflow to up to 2 to 4 days afterwards; this is the period over which differences in water quality due to wastewater overflows can be detected in the receiving waters; excludes EOCs and viruses**

MP Added: This section has not been scored or commented on as it posits an 'unreal' situation i.e. One that would never be expected to occur in real time.

**Te Ao Maori**

**Tangata whenua (how strong is your overall connection to the waterbody?)**

**ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell**

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa</del> , reflected in terms of tikanga practice?	1	2	3	4	5	0	
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	0	
How regularly are archaeological sites associated with the waterbody accessed?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	0	
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	0	

0

**Tikanga (how prevalent are your cultural practices with the waterbody?)**

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	0	
What range of tikanga wai maori or wai tai is practiced?	<20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	0	

0

**Wairua (how strong are your spiritual connections with the waterbody?)**

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4	5	4	
Wahi tapu and taniwha sites associated with the waterbody are regularly visited	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	0	
Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	0	
Places of taniwha and wahi tapu are protected	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
	1	2	3	4	5	0	
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	0	
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	0	

0.7

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.

**Eels, flounder, cockles (tuangi), pipis, grey mullet, whitebait species (particularly in side streams) such as inanga, mussels. Keystone / sentinel species: Eels, flounder, 'estuarine shellfish'**

This information is used to enable a value judgement to be made on the below Likert scale scoring

How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihī), etc.) for hui, tangi or other gatherings?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	0	
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	0	
How often can the waterbody be used for mahinga kai?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	0	
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)
	1	2	3	4	5	0	
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	0	

0

**Appendix 8.3 TROTAK/Council (Marine) & Te Aitanga a Mahaki**

Summary table of Scores	Scenario 1		Scenario 2 - After TRMP, reduction in overflows		Scenario 3 - No wastewater overflows in wet weather		Scenario 4 - During overflows	
<b>Description</b>	Present State of wastewater overflows between 2 and 4 times a year in wet weather, including all catchment influences (e.g. rural and urban stormwater discharges)		Wastewater overflows in wet weather, after TRMP targets have been achieved, reduction in overflows to an average of one overflow per two years (a 50% chance of an overflow per year), all catchment influences remain (e.g. rural and urban stormwater discharges)		No more wastewater overflows in wet weather, all other catchment influences remain (e.g. rural and urban stormwater discharges)		From start of an overflow to up to 2 to 4 days afterwards; this is the period over which differences in water quality due to wastewater overflows can be detected in the receiving waters; excludes EOCs and viruses; all other catchment influences remain (e.g. rural and urban stormwater discharges)	
<b>Te Ao Maori</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>	<b>Subgroup Scores</b>	<b>Group Scores %</b>
Tangata whenua (how strong is your overall connection to the waterbody?)	2.8	39.8	3.1	51.2	3.8	71.8	1.5	26.0
Tikanga (how prevalent are your cultural practices with the waterbody?)	1.3		2.0		3.5		1.0	
Wairua (how strong are your spiritual connections with the waterbody?)	2.2		2.6		2.9		1.5	
Mahinga kai (is mahinga kai practiced?)	1.8		2.6		4.2		1.2	
<b>Nga Tini A Tangaroa</b>								
Kai Species Richness (are the same species still available for mahinga kai?)	3.0	45.6	3.0	45.6	3.0	45.6	3.0	45.6
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga)	1.6		1.6		1.6		1.6	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.0		3.0		3.0		3.0	
Catchment health (what is the state of the ecosystems and associated ecological)	1.5		1.5		1.5		1.5	
<b>Te Ao Taiao</b>								
How natural is the habitat in and adjacent to the waterbody?	2.8	61.9	2.8	64.8	2.8	67.3	2.8	59.0
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	3.3		3.3		3.3		3.3	
Biohazards (how germ free is the waterbody?)	2.3		2.8		3.3		1.7	
Chemistry (how free of chemical pollution is the waterbody?)	4.0		4.0		4.0		4.0	
<b>Total Score (%)</b>	<b>49</b>		<b>54</b>		<b>62</b>		<b>44</b>	

Scenario #1

Present State of wastewater overflows between 2 and 4 times a year in wet weather, including all catchment influences (e.g. rural and urban stormwater discharges)

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

**ONLY FILL IN IF SCORED**  
**NB: If not applicable, do not enter anything in the excel cell**

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, as a source of tribal identity and whakapapa, reflected in terms of tikanga practice?	1	2	3	4	5	3	Disagree because in terms of tikanga practice, the waterbody is not being treated with the correct customary conventions or practices. The tribal identity is recognised but tikanga is rarely practised, apart from waka ama, which is more related to the rivers in any case; wastewater in the marine waters is seen as a key reason for less interaction with the waterbody. Tikanga definitely not practised during wastewater overflows.
How often do Tangata Whenua swim, play and recreate in the waterbody?	1	2	3	4	5	4	Tangata whenua frequently swim and play in the sea and beaches, particularly in summer; however definitely not during or for a while after overflows. Winter use is mostly restricted to non-contact use, as is expected at that time of year. However, tangata whenua are often warned of biohazards / unsafe to swim when there are overflows. This affects use at the time of the overflows and for a period afterwards, but is restricted to winter. In summer the use is extensive (including use of The Cut / river mouth and Kaiti Beach). The marine waters are a key recreational use for tangata whenua in summers, and they are intensively used. This is testament to tangata whenua's integral relationship with the moana, even in the knowledge that the marine waters are subject to wastewater overflows. There may be a perception that risks are lower in the marine environment, which is true. Tangata whenua's disdain at wastewater overflows is reflected in reactions to wastewater overflow events. The score must be viewed in the context of these comments, a reasonable degree of use it does in no way minimise tangata whenua's abhorrence of wastewater overflows.
How regularly are archaeological sites associated with the waterbody accessed?	1	2	3	4	5	3	Archaeological sites are rarely accessed, although access is not restricted. However, many permanently lost to urban developments along the beachfront.
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	1	2	3	4	5	1	Tangata whenua strongly disagree that they feel they are achieving their aspirations as kaitiaki. Historically tangata whenua have had little or no say in the management of the waterbodies. Without cultural monitoring, it is very difficult to put a Te Ao Māori lens on water management.

2.75

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	1.5	Tikanga wai Maori management practices and protocols are never to rarely practiced by tangata whenua. Definitely not during or for a while after overflows. At other times this is not necessarily only due to water quality concerns, but also possibly due to social / cultural changes. While the waterbodies are used by tangata whenua for recreation, and customary practices and protocols are affected by wastewater overflows, urban development and limited credence to customary practices / protection in regulation and management has eroded these connections with the moana.
What range of tikanga wai maori or wai tai is practiced?	1	2	3	4	5	1	<20% due to reasons above.

**Wairua (how strong are your spiritual connections with the waterbody?)**

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites <u>are well known</u>	1	2	3	4	5	3	Agree that wahi tapu and taniwha sites are well known. Archives, Iwi research and museum information available. However, this information is not readily accessible to the community and not well integrated into the fabric of Gisborne, not given sufficient credence in Gisborne's identity.
Wahi tapu and taniwha sites associated with the waterbody <u>are regularly visited</u>	1	2	3	4	5	2	Wahi tapu and taniwha sites associated with the waterbody are rarely visited. This is related to the above. Many have been permanently lost to urban development, including the port and harbour area, and the beachfront.
Is the waterbody <u>in its current state</u> considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	1	2	3	4	5	3	Comments (if needed) Tangata whenua still engage regularly with the moana, but this spiritual connection is diminished because of the wastewater overflows and urban development and limited credence to customary practices / protection in regulation and management has eroded these connections with the moana. This assessment covers the area of influence of the wastewater overflows. The waterbody will still nurture and nourish the soul, as evidenced by how many tangata whenua use the moana at all times of the year, and it clearly a place of refuge and replenishment for tangata whenua.
Places of taniwha and wahi tapu are protected	1	2	3	4	5	2	Comments (if needed) Very few places of taniwha and wahi tapu are protected due to urbanisation. Many have been permanently lost to urban development, including the port and harbour area, and the beachfront.
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	1	2	3	4	5	2	Comments (if needed) The waterbody is rarely used for providing rongoa Maori (flora and fauna) for Tangata Whenua, because of the impact on its wairua due to sewage overflows, but practically also because of land transformation due to urban development, including the port and harbour area, and the beachfront. Definitely not during or for a while after overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	1	Comments (if needed) The waterbody is never used by Tangata Whenua for purification and for ceremonial purposes (including waikarakia and waitapu). Definitely not during or for a while after overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.

2.2

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.

**Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important. Keystone / sentinel species: Pāua & crayfish, kina, 'beach shellfish'**

This information is used to enable a value judgement to be made on the below Likert scale scoring

Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
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How often is the waterbody used to provide kai (incl. fish, watercress (wātakirini), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	2	The waterbody is rarely used to provide kai for hui, tangi or other gatherings. Areas used include the reefs in the bay and Kaiti area, but these are almost never used for customary gatherings. Definitely not during or for a while after overflows. While kai is harvested, this is not for customary practices (e.g. tangi). The community does collect kai from the coastal areas impacted on by the flows from the river, although this is very much diminished because of the risk of contamination.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	2	The waterbody is rarely used for other customary natural resource gathering. Definitely not during or for a while after overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the moana have been eroded. Many other factors also influencing this.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	2	The waterbody can rarely be used for mahinga kai because of how often the wastewater overflows occur, plus the marine outfall, and lasting cultural concerns on use. Definitely not during or for a while after overflows. While health risks due to overflows diminish over time and conventional health risks are considered unlikely, and water quality due to overflows is unlikely to affect the kai themselves, the 'cultural health' is affected for much longer. There are also other urban-type effects (e.g. heavy metals) that may also be affecting the kai. Some of the kai presents risks when consumed, due to viruses and Emerging Organic Contaminants (EOCs), that can persist in shellfish. However, based on the effects of overflows only, most of the areas would not be significantly affected in western science health terms and for relatively short periods of time. However, the ongoing urban effects remain. The cultural effects are also persistent (irrespective of predicted health risks), because they are cultural concerns (not health concerns).
	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	1	Mahinga kai is never carried out during wastewater overflows. During wastewater overflows and for a period of time afterwards tangata whenua completely avoid using the moana for gathering kai. Some harvesting takes place in between events, but this is done reluctantly and because there is no other option. In terms of the full range of kai, shellfish are almost totally avoided because of health concerns. Human wastes, and ongoing cultural concerns even long after overflow events, mean that Mahinga Kai is not practiced at the marae (using kai from the sea). The current frequency of overflows is such that customary marae Mahinga Kai practices are not carried out (utilising the affected areas).
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	2	Disagree that pukenga in kaitiakitanga of mahinga kai are known and engaged in the marae due to it being a dying art. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded

1.8

**Nga Tini A Tangaroa**

This is about day-to-day gathering of key / indicator food resources.

Kai Species Richness (are the same species still available for mahinga kai / collecting kai?)

**ONLY FILL IN IF SCORED****NB: If not applicable, do not enter anything in the excel cell**

What kai species are relevant (past and present)?  
What is / are the keystone / sentinel species?

**Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important.**  
**Keystone / sentinel species: Pāua & crayfish, kina, 'beach shellfish'**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	No	Some	Yes	Score	Comments (if needed)
Is the full range of kai species, that the type of waterbody should provide, available?	1	3	5	3	Most still exist, but not everywhere that one would expect them.

**Species #1** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
Pāua & crayfish

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	1	This applies mainly to the areas from the river mouth to Tuahine Point. Heavily over-utilised. Sediment possibly having some effect, but uncertain. Port will have changed the habitats, as did the meat works, including breeding habitats. Sub-optimal.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are there different sizes of each species?	1	2	3	4	5	1	Generally very small / undersized.

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**  
Pāua & crayfish

	Yes	Uncertain	No	Score	Comments (if needed)
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1	3	5	3	None obviously visible, but has not been assessed in any meaningful way yet.

	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
What percentage of this species exhibits any external signs that there are health issues?	1	2	3	4	5		Not assessed

	Yes	Uncertain	No	Score	Comments (if needed)
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1	3	5		Not assessed

	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
What percentage of this species exhibits any internal signs that there are health issues?	1	2	3	4	5		Not assessed

Was the age assessed by direct means (e.g. otolith examination)? Yes/No  
Not assessed

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
If YES, please describe the growth rate	1	2	3	4	5	3	Not assessed

**Species #2** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
Kina

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Heavily over-utilised. Sediment possibly having some effect, but uncertain. Port will have changed the habitats, as did the meat works, including breeding habitats. Sub-optimal.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are there different sizes of each species?	1	2	3	4	5	1	Generally very small / undersized.

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**

Kina

	Yes	Uncertain	No	Score	Comments (if needed)	
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1	3	5	3	None obviously visible, but has not been assessed in any meaningful way yet.	
What percentage of this species exhibits any external signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1	3	5		Not assessed	
What percentage of this species exhibits any internal signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not assessed					
If YES, please describe the growth rate	Not at all the same 1	Very different 2	Not sure 3	Very similar 4	Exactly the same 5	Score Not assessed

**Species #3**

Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**

'beach shellfish'

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	3	Not extensively harvested because of awareness of potential health risks. Some harvested reluctantly. The sediments around the river mouth and further away to some extent will be quite different to that in the past, and this is likely to have affected the abundance and distribution of beach shellfish. Probably abundance is quite high, although impacted to some extent, but there is a question around diversity and quality. Lots of some, few of others.
Is the male / female ratio healthy? If possible to assess.	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score Not assessed	Comments (if needed)
Are there different sizes of each species?	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score Not assessed	Comments (if needed)

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**

'beach shellfish'

	Yes	Uncertain	No	Score	Comments (if needed)	
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1	3	5	3	None obviously visible, but has not been assessed in any meaningful way yet.	
What percentage of this species exhibits any external signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1	3	5		Not assessed	
What percentage of this species exhibits any internal signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not assessed					
If YES, please describe the growth rate	Not at all the same 1	Very different 2	Not sure 3	Very similar 4	Exactly the same 5	Score Not assessed

Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)

Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)

1.6

In open coast situations we would not necessarily consider this section. However, where there is a clear link between marine and freshwater, especially in terms of effects, this is relevant (particularly considering the area affected by the wastewater overflows).

As we are in essence assessing the downstream end of the catchment, we will not be assessing the catchment health downstream, but considering the waterbodies affected by the wastewater overflows as part of the upstream catchment. That enables us to capture aspects such as point source discharges.

Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)

3

Upstream of area being assessed

	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Native vegetation cover comprises the following extents	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native catchment.
Are waterways in the catchment surrounded by native vegetation (relative to that specific habitat)? Riparian health.	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native riparian vegetation.
Are there point source discharges of pollution into waters?	1	2	3	4	5	1	While the area affected by wastewater overflows is a small part of the catchment, it is 'nested' within the Gisborne urban area and is subject to stormwater point source discharges as well as wastewater point source discharges in wet weather and sometimes in dry weather. While the rural areas do not have lots of dairy etc., there are many unmitigated farm drains adjacent to intensively-farmed areas which act to concentrate flows and discharge them at specific discharge points. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. Contaminated landfills are leaching contaminants.
Are there diffuse discharges of pollution into waters?	1	2	3	4	5	1	Almost the entire urban catchment is unmitigated in terms of stormwater pollution, and there will be diffuse sources of pollution. The rural areas currently largely have very little or no setbacks from waterways, with pastoral and more intensive agriculture draining unmitigated into the waterways. some of this is concentrated into pipes or drains, but there is no real 'disconnection' between contaminant sources and the waterways. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. This supports scoring upstream sources of pollution as category 1.
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile		Score	Comments (if needed)

Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	1	2	4	5	2 This is not included in LAWA. GDC sediment monitoring data shows good clarity at Tuckers Road (Taruhuru River) but relatively poor clarity at Lytton Road and Peel Street) - NOF band C. The Waikanaye shows the same. This indicates that turbidity is likely being driven by tidal and estuarine processes. An opinion is that the high 'muddiness' combines with tidal flows to resuspend or keep in suspension sediments for longer. The Waimata is accepted as carrying high levels of sediment and being turbid. While there are times during summer when turbidity reduces, it only takes a small rainfall event to revert back to high turbidity.
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The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use	Land use (best fit)	% cover	Ranking	<p>As the effects take place in areas affected by tidal processes and mixing will to some extent occur between waters from the Taruhuru, Waikanāe and Waimata, we considered these all together as one catchment, focussing on the Turanganui as the common area of impact, discharging into the coastal marine area. The landcover work calculated on GIS.</p> <p>The Waimata River system has the largest catchment of approximately 22,700 ha. Predominant land covers in the Waimata catchment include steep grasslands, exotic forest and manuka/kanuka (Figure 4-2). Less than 3.5 km of the river runs through urban parts of Gisborne, of which, around 2 km is downstream of the only Primary outfall in its catchment (Seymour Rd/Turenne St). No secondary outfalls drain to the Waimata River system. Urban reaches of Waimata River are adjoined by a mix of public and private open space and residential development (see Appendix 3 for photographs).</p> <p>The Taruhuru River system is around 111 km in length and drains a catchment of around 8400 ha. The river system flows through a low-lying floodplain before reaching Gisborne township. Landuses in the catchment are dominated by cropping, orchards and grasslands, with urban development in the lower catchment (Figure 4-2; Gisborne District Council (2013)). The gradient of the river is very flat through the 5 km urban section (see Appendix 3 for photographs), and for 10 km upstream. As a consequence, water levels are strongly affected by sea levels, with tidal effects occurring over this distance (Poynter et al. 2016). A flood management scheme dating back to the 1960s including stopbanks, channel deepening and riverbank armouring enabled major changes in landuse from pastoral to horticultural. Despite this, low lying areas remain vulnerable to surface flooding (Peacock et al. 1997). The impacts of river modification and surrounding landuses have adversely affected the natural character of the river, which was scored as low by a River Expert Panel using the River Values Assessment System (RIVAS) (Booth et al. 2012). Two secondary outfalls discharge along Taruhuru River (Oak St and Palmerston Rd/Peel St), while a Primary outfall is located in Turanganui River, just below the Waimata and Taruhuru confluence.</p> <p>The Waikanāe Creek system is around 7.5 km in length and borders the southwestern edge of Gisborne township. It is a low gradient, groundwater fed stream that drains a catchment of around 1100 ha. The stream is tidally influenced, with the saline intrusion evident at least 4 km upstream from the sea. Landuse in the upper catchment is dominated by orchards and horticulture, while the mid to lower catchment is dominated by mixed urban (including industrial) development, though significant areas of urban parkland or open space are also present, including open space areas associated with closed landfills (Figure 4-2; Conn (2018)). The creek has been heavily impacted by human activities and was assessed as having low natural character (Booth et al. 2012). No primary or secondary outfalls discharge to Waikanāe Creek.</p>																	
	<table border="1"> <tr><td>Annual cropping / High intensity livestock</td><td>50</td><td>1</td></tr> <tr><td>Commercial forestry</td><td>27</td><td>2</td></tr> <tr><td>Low intensity livestock (incl. extensive grazing)</td><td>3</td><td>3</td></tr> <tr><td>Permanent horticulture/viticulture/urban</td><td>1</td><td>4</td></tr> <tr><td>Native</td><td>19</td><td>5</td></tr> <tr><td><b>Should = 100%</b></td><td><b>100</b></td><td><b>2.12</b></td></tr> </table>	Annual cropping / High intensity livestock	50		1	Commercial forestry	27	2	Low intensity livestock (incl. extensive grazing)	3	3	Permanent horticulture/viticulture/urban	1	4	Native	19	5	<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>	<table border="1"> <tr><td>2.12</td></tr> </table>
Annual cropping / High intensity livestock	50	1																			
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Permanent horticulture/viticulture/urban	1	4																			
Native	19	5																			
<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>																			
2.12																					
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)														

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	1	2	3	4	5	3	The flows will be primarily determined by the rural areas, as these are by far the majority of the catchment. Urban areas may have some localised impacts on flows. The catchment has been almost entirely transformed from natural, due to agricultural activities. There is a fair bit of exotic forest and a little natural bush; these can be expected to have similar hydrological influences as a natural catchment, although harvesting will also have an influence. The cropping and horticultural areas will have land drainage, which will have modified the hydrology of those areas. The Poverty Bay flats would historically have comprised an extensive swamp with lots of water retention - that has changed dramatically. The hydrology is therefore considered to have been changed significantly in freshwater areas. Urban areas will have some influence, but this will be small because they mostly discharge into estuarine areas (where tidal influences are greatest). Hydrological changes on the areas affected by wastewater overflows would have changed but unlikely significantly. The saline wedges are all likely to have been affected. In wet weather higher freshwater flows can be expected (because of less attenuation in the catchment). While these effects can be modelled, this is not yet done. A score of 3 was chosen, considered to reflect the dominant tidal effect on the areas affected by the wastewater (which would mean little change in these areas) matched against the upstream changes in hydrological flows (which will have resulted in changes).
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Very few waterways are fenced.

1.52

**Downstream of area being assessed** Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Natural vegetation cover comprises the following extents	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are waterways surrounded by native vegetation (relative to that specific habitat)?	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	0 - 25% quartile	26 - 50% quartile		51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5	2	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.	

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Land use (best fit)	% cover	Ranking
Annual cropping / High intensity livestock	50	1
Commercial forestry	27	2
Low intensity livestock (incl. extensive grazing)	3	3
Permanent horticulture/viticulture/urban	1	4
Native	19	5
<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>

Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)

Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Muri Compass tool, the same scores have been entered as per the 'upstream' area.
1.52							

**Te Ao Taiao**

**ONLY FILL IN IF SCORED**

**NB: If not applicable, do not enter anything in the excel cell**

**How natural is the habitat in and adjacent to the waterbody?**

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Does the terrestrial habitat look like the equivalent native habitat?	1	2	3	4	5	2	The terrestrial habitat is almost completely transformed. In the area of impact, the terrestrial habitat comprises urban environments, with parkland and landscaped areas. Some dune restoration, and bush regeneration (Kaiti). Some areas further away but still likely to be adjacent to affected marine waters comprise dune areas that will provide some value.
How good are the habitat conditions for reproduction of aquatic species?	Very poor	Poor	Average	Good	Very good	Score	Comments (if needed)
	1	2	3	4	5	2.5	The current state is compared to the likely natural state. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipooa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally. Nevertheless breeding habitats should be functioning close to natural. The inner harbour and port areas will have negative effects on reproduction of some species, while potentially providing suitable conditions for other species. Dredging will be having a negative effect. Marine koura hatcheries have been impacted and are threatened.
Are benthic conditions similar to natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	There will be some areas that have increased 'muddiness'. The size fractions of sediments will also likely be smaller than in natural conditions.
Are erosion and deposition patterns (fluvial conditions) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3.5	These patterns are driven by natural processes that are not really affected by man's activities. However, the port and harbour would have resulted in changes, particularly close to the river mouth.
How similar is water clarity compared to a natural stream / waterbody?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	The rivers are regularly turbid, and the east coast is characterised by actively eroding cliffs that deposit fine sediments into the sea. Land use in upstream areas, and sediment-laden runoff from these areas, will be affecting the frequency of changes in turbidity and adding an unnatural load of fine sediment to these areas.
How optimal is the water temperature? Note: Adapt depending on waterbody.	> 24 °C / >25 °C	22 - 24 °C / >25 °C	20 - 22°C / < 25 °C	18 - 20 °C / < 22 °C	< 18 °C / < 19 °C	Score	Comments (if needed)
	1	2	3	4	5		Not relevant

2.8

**Biodiversity (how diverse is the plant and animal life associated with the waterbody?)**

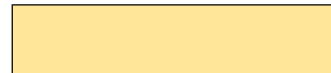
**Results of sampling / surveys:**

Invertebrate species richness (#)

No specific overall surveys completed. In the case of the marine environment, we have related this to shellfish, kina and crayfish.

EPT taxa (#)

Not relevant



Fish species richness (#)	<p>The following is relevant (from Kelly &amp; Sim-Smith, 2020):</p> <p>Fish species recorded in saline areas of the Waimata, Taruheru, Turanganui Rivers and Waikanae Creek include grey mullet (<i>Mugil cephalus</i>), common smelt (<i>Retropinna retropinna</i>), black flounder (<i>Rhombosolea retaria</i>), kahawai (<i>Atripis trutta</i>) and kingfish (<i>Seriola lalandi lalandi</i>) (Gisborne District Council 2013; Crow 2017; Conn 2018). Other marine species also likely to be present including yellow eyed mullet, piper and snapper (Poynter et al. 2016).</p> <p>Fish species in the coastal areas will be representative of natural species.</p>
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are river mouth, marine, and near shore. As such we considered the shellfish, kina and crayfish community. Fish species considered river mouth, beach, marine, and near shore species.

**Predicted native state:**

Invertebrate species richness (#) / Benthic life	The same species are present, but in lower abundances than expected in natural scenarios.
EPT taxa (#) / Sensitive Species	Not relevant
Fish species richness (#)	The same species are present, but in lower abundances than expected in natural scenarios.
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are river mouth, marine, and near shore. As such we considered the shellfish, kina and crayfish community. Fish species considered river mouth, beach, marine, and near shore species.

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is invertebrate / benthic life similar to that of a native environment?	1	2	3	4	5	3	Over-harvesting will have affected abundance in some areas. Other areas (e.g. the mouth of the Waikanae Creek and beach areas) are almost not at all harvested. However, there have been effects of sedimentation from upstream catchments. The extent to which this sediment load (particularly fine sediments) is natural is unclear. However, farming will definitely have worsened this. The river mouth has been mostly transformed from its natural state. So fairly substantial changes likely (although changes in species richness unlikely)
Is fish life similar to that of a native environment?	1	2	3	4	5	3	The species richness of fish life is very similar to that of a native environment. Abundance of fish species may however be lower, due to direct human impacts (e.g. fishing) and compromised habitats, especially at the river mouth. There may be some effect due to habitat transformation.
Is plant life similar to that of a native environment?	1	2	3	4	5	4	This will be very similar. Maybe some changes due to sediment effects and transformation at the river mouth.
Are there man-made barriers to fish migration? Upstream	Total barriers 1		Partial barriers 3	No barriers 5		Score	Comments (if needed) Not really applicable; dealt with in freshwater assessment
Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)	Not applicable						
	Total barriers		Partial barriers	No barriers		Score	Comments (if needed)



Are there man-made barriers to fish migration? Downstream	1	3	5		Not really applicable; dealt with in freshwater assessment
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Note: Downstream has a higher weighting  
Please provide details of the fish barrier(s)  
(incl. nature of barrier, how many, how far away, how much catchment affected)

Not applicable

Overall fish barrier score: 0.00  
Total score 3.33

Enter fish passage score from H252 IF fish passage has been scored

**Biohazards (how germ free is the waterbody?)**

**Present State**

Freshwater - not applicable

**Freshwater**

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
Levels of indicator species of bacteria (E.coli) - Suitability for Recreation Grade	1	2	3	4	5		Not applicable
E.coli - LAWA - specific to a particular waterbody	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile		Score	Comments (if needed)
	1	2	4	5			Not applicable
	NPSFM Band E	NPSFM Band D	NPSFM Band C	NPSFM Band B	NPSFM Band A	Score	Comments (if needed)
Levels of indicator species of bacteria (E.coli) - NPSFM	1	2	3	4	5		Not applicable

**Saline**

Applicable

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
Levels of indicator species of bacteria (Enterococci) - Suitability for Recreation Grade	1	2	3	4	5	2.5	<p>The Cut rated as Poor to Very Poor using the MFE guidelines (both during overflows and at times in-between overflows). Kaiti Yacht Club (Good), Midway (Very Good), Waikanae (Fair to Good). Adopting a precautionary approach, and recognising the most contact recreation for tangata whenua takes place from The Cut to Waikanae, that The Cut also has some spikes in indicator bacteria during summer months, we have chosen a category of poor to fair. Score reflects the variability in SFRG depending on where you are at the coast (some areas very good, others very poor).</p> <p>During an overflow event risks will be higher, decreasing over time after the event.</p> <p>The significant role of background pathogen sources is highlighted here, as there is essentially no difference in suitability for recreation grade comparing overflow events and in-between times. However, the risks are higher during the overflow event.</p> <p>While indicator pathogen levels do increase during overflow events (as evidenced in monitoring data for The Cut), the changes at Waikanae, Midway, and Kaiti are relatively small. It does appear that the main (elevated) pathogen risks are close to the river mouth.</p> <p>Swimming is discouraged during overflow events through signage.</p>
Levels of indicator species of bacteria (Enterococci) - LAWA - specific to a particular waterbody (suitability for swimming)	Not suitable for Swimming		Caution advised		Suitable for swimming	Score	Comments (if needed)
	1		3		5	2.5	<p>The LAWA data classifies Midway as 'Suitable for swimming' and Waikanae as 'Caution advised'. It does not classify The Cut; however, based on available data, The Cut would likely be classified as Not Suitable for Swimming if it was measured (using GDC data).</p> <p>During an overflow event risks will be higher, decreasing over time after the event.</p>
	> 500 CFU/100ml	201 - 500 CFU/100ml	41 - 200 CFU/100ml	<40 CFU/100ml		Score	Comments (if needed)

Levels of indicator species of bacteria (Enterococci)	1	2	3	4	5	2	<p>Council monitoring data was assessed.</p> <p>95th percentile figures in affected areas are between 21 and 8,500 CFU / 100ml for Enterococci. This reflects the decreasing risk as one moves from the river mouth out to Miday and Kaiti Yacht Club.</p> <p>Maximum figures in affected areas are between 98 and 42,000 CFU / 100ml for Enterococci. This reflects the decreasing risk as one moves from the river mouth out to Miday and Kaiti Yacht Club. Only The Cut maximum exceeded the indicator guidelines for contact recreation. This shows the dilution effect of the marine environment.</p> <p>These figures highlight ongoing high levels of biohazards specifically at The Cut (an area regularly used by recreators).</p> <p>Most swimming takes place in summer, and in summer the Enterococci scores are substantially lower at The Cut (although The Cut also has some spikes in indicator bacteria during summer months). While recognising this, we have nevertheless adopted a precautionary approach (also recognising the most contact recreation for tangata whenua takes place from The Cut to Waikanae), and we have chosen a score of 2. This is very precautionary.</p> <p>During an overflow event risks will be higher, decreasing over time after the event.</p> <p>During an overflow event levels will be higher, but are extremely unlikely to exceed 500 CFU/100ml except at The Cut.</p>
	2.3						

**Chemistry (how free of chemical pollution is the waterbody?)**

**Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.**

Freshwater environments

	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Phytoplankton (Lakes)	1	2	4	5		Not applicable
NPSFM - Total Nitrogen (Lakes)	1	2	4	5		Not applicable
NPSFM - Total Phosphorus (Lakes)	1	2	4	5		Not applicable
NPSFM - Periphyton (Rivers)	1	2	4	5		Not applicable
NPSFM - Nitrate (Toxicity) (Rivers)	1	2	4	5		Not applicable
NPSFM - Ammonia (Toxicity) (Lakes and Rivers)	1	2	4	5		Not applicable
NPSFM - Cyanobacteria (Planktonic) (Lakes and Rivers)	1	2	4	5		Not applicable
NPSFM - Dissolved Oxygen (below point sources);	1	2	4	5		Not applicable

Note: For Dissolved Oxygen, for the purpose of this assessment, the above can be used for both below point sources and generally. Verify that this approach is acceptable with another subject matter expert.

	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 – 100% quartile	Score	Comments (if needed)
Black Disc - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 – 100% quartile	Score	Comments (if needed)

Turbidity - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total N - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total Oxidised N - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Ammoniacal N - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Dissolved Reactive P - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
Total P - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Zinc - ANZECC guidelines (level of protection)	1	3	4	5		Not applicable
Copper - ANZECC guidelines	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
	1	3	4	5		Not applicable

Saline environments

The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the effects due to background levels.

Chlorophyll concentrations	> 10µg/L		5 - 10 µg/L	< 5µg/L		Score	Comments (if needed)	
	1		3	5			Not available	
Oxygen Saturation	< 65% saturation		66 - 80% saturation		80 - 90%	> 90%	Score	Comments (if needed)
	1		3		4	5		Not applicable
Total Nitrogen - Sediment	> 4000 mg/kg		2000 - 4000 mg/kg	500 - 2000 mg/kg	< 500 mg/kg		Score	Comments (if needed)
	1		3	4	5			Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
Total Phosphorus - Sediment	> 1000 mg/kg		500 - 1000 mg/kg	200 - 500 mg/kg	< 200 mg/kg		Score	Comments (if needed)
	1		2	3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
	< 80%	80 - 90%	90 - 95%	95 - 100%		Score	Comments (if needed)	

Zinc - ANZECC guidelines (level of protection)	1	3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Copper - ANZECC guidelines	1	3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.

4

For the purpose of this mauri assessment, and use of the tool, we have included a score in this row. This is because no water chemistry issues are likely to be having any effects in the environments subject to this work. Some issues have been suggested due to the activities of the Port, however with recent stormwater treatment improvements these appear to have been largely mitigated. While none of the chemistry scorings have been specifically addressed, a score of 4 was provided in this section as an overall score for water chemistry in the marine environment at this location.

Summary Table of Scores

Te Ao Maori	Subgroup Scores	Group Scores
Tangata whenua (how strong is your overall connection to the waterbody?)	2.75	39.83
Tikanga (how prevalent are your cultural practices with the waterbody?)	1.25	
Wairua (how strong are your spiritual connections with the waterbody?)	2.17	
Mahinga kai (is mahinga kai practiced?)	1.80	
<b>Nga Tini A Tangaroa</b>		
Kai Species Richness (are the same species still available for mahinga kai?)	3.00	45.58
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)	1.60	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.00	
Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)	1.52	
<b>Te Ao Taiao</b>		
How natural is the habitat in and adjacent to the waterbody?	2.80	61.92
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	3.33	
Biohazards (how germ free is the waterbody?)	2.25	
Chemistry (how free of chemical pollution is the waterbody?)	4.00	
<b>Total Score (%)</b>	<b>49.11</b>	

Scenario #2

Wastewater overflows in wet weather, after TRMP targets have been achieved, reduction in overflows to an average of one overflow per two years (a 50% chance of an overflow per year), all catchment influences remain (e.g. rural and urban stormwater discharges)

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa, reflected</del> in terms of tikanga practice?	1	2	3	4	5	3	Disagree because in terms of tikanga practice, the waterbody is not being treated with the correct customary conventions or practices. The tribal identity is recognised but tikanga is rarely practised, apart from waka ama, which is more related to the rivers in any case; wastewater in the marine waters is seen as a key reason for less interaction with the waterbody. Tikanga definitely not practised during wastewater overflows.  Improvement possibly because of the reduction in overflows, frequency of overflows, and time that the water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows.
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	4.25	Tangata whenua frequently swim and play in the sea and beaches, particularly in summer; however definitely not during or for a while after overflows. Winter use is mostly restricted to non-contact use, as is expected at that time of year. However, tangata whenua are often warned of biohazards / unsafe to swim when there are overflows. This affects use at the time of the overflows and for a period afterwards, but is restricted to winter. In summer the use is extensive (including use of The Cut / river mouth and Kaiti Beach). The marine waters are a key recreational use for tangata whenua in summers, and they are intensively used. This is testament to tangata whenua's integral relationship with the moana, even in the knowledge that the marine waters are subject to wastewater overflows. There may be a perception that risks are lower in the marine environment, which is true. Tangata whenua's disdain at wastewater overflows is reflected in reactions to wastewater overflow events. The score must be viewed in the context of these comments, a reasonable degree of use it does in no way minimise tangata whenua's abhorrence of wastewater overflows.  Improvements due to reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years.
How regularly are archaeological sites associated with the waterbody accessed?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	3	Archaeological sites are rarely accessed, although access is not restricted. However, many permanently lost to urban developments along the beachfront.
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)

Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	1	2	3	4	5	2	<p>Tangata whenua Disagree that they feel they are achieving their aspirations as kaitiaki. Historically tangata whenua have had little or no say in the management of the waterbodies. Without cultural monitoring, it is very difficult to put a Te Ao Māori lens on water management.</p> <p>Improvement due to reduction in overflows and commitment from GDC to stay on the right trajectory. However, this would have to be accompanied with more input from tangata whenua in monitoring and managing waterways.</p>
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3.1

**Tikanga (how prevalent are your cultural practices with the waterbody?)**

	Likert					Score	Comments (if needed)
	Never	Rarely	Occasionally	Frequently	Very Frequently		
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	2.5	<p>Tikanga wai Maori management practices and protocols are rarely to occasionally practiced by tangata whenua due to deficient quality and quantity of the waterbody; definitely not during or for a while after overflows. While GDC will put up signs, formal rahuis are not set up. While the waterbodies are used by tangata whenua for recreation, customary practices and protocols are largely absent due to cultural concerns 'knowing that there are wastewater overflows'</p> <p>Improvements are possible, but unlikely to be substantial.</p>
What range of tikanga wai maori or wai tai is practiced?	<20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1.5	<p>Much longer periods in between overflows would enable more tikanga wai maori / wai tai to be practiced.</p> <p>Improvements may take place</p>

2

**Wairua (how strong are your spiritual connections with the waterbody?)**

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites <u>are well known</u>	1	2	3	4		
Wahi tapu and taniwha sites associated with the waterbody <u>are regularly visited</u>	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	2	<p>Wahi tapu and taniwha sites associated with the waterbody are rarely visited. This is related to the above. Many have been permanently lost to urban development, including the port and harbour area, and the beachfront.</p> <p>Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti and access becoming available)</p>
Is the waterbody in its <u>current state</u> considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	3.5	<p>Tangata whenua still engage regularly with the moana, but this spiritual connection is diminished because of the wastewater overflows and urban development and limited credence to customary practices / protection in regulation and management has eroded these connections with the moana. This assessment covers the area of influence of the wastewater overflows.</p> <p>The waterbody will still nurture and nourish the soul, as evidenced by how many tangata whenua use the moana at all times of the year, and it clearly a place of refuge and replenishment for tangata whenua.</p> <p>Some improvement with less wastewater overflows.</p>
	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)

Places of taniwha and wahi tapu are protected	1	2	3	4	5	2	Very few places of taniwha and wahi tapu are protected due urbanisation. Many have been permanently lost to urban development, including the port and harbour area, and the beachfront.  Not necessarily directly related to wastewater overflows. No change
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	1	2	3	4	5	3	The waterbody is rarely to occasionally used for providing rongoa Maori (flora and fauna) for Tangata Whenua, because of the impact on its wairua due to sewage overflows, but practically also because of land transformation due to urban development, including the port and harbour area, and the beachfront. Definitely not during or for a while after overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded. Improvement because of the reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows. But many other factors also influencing this e.g. farm effluent, access, etc. So no change indicated.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	2	The waterbody is rarely used by Tangata Whenua for purification and for ceremonial purposes (including waikarakia and waitapu). Definitely not during or for a while after overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.  Some improvement. Extremely unlikely that the reduction will result in more than a small increase in use for purification, cleansing, ceremonial, or ritual purposes. That relies also on a number of other factors being resolved (incl. broader catchment issues)
<b>Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.</b>						2.6	
What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.	<p><b>Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important. Keystone / sentinel species: Pāua &amp; crayfish, kina, 'beach shellfish'.</b></p>					<p>This information is used to enable a value judgement to be made on the below Likert scale scoring</p>	
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihi), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	2.5	The waterbody is rarely to occasionally used to provide kai for hui, tangi or other gatherings. Areas used include the reefs in the bay and Kaiti area, but the use of these areas for customary gatherings is still heavily impacted. Definitely not during or for a while after overflows. While kai is currently harvested, this is not for customary practices (e.g. tangi). The community does collect kai from the coastal areas impacted on by the flows from the river, although this is very much diminished because of the risk of contamination.  Improvement because of the reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows. Many other factors also influencing this.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)

How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	3	<p>The waterbody is occasionally used for other customary natural resource gathering. Definitely not during or for a while after overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the moana have been eroded.</p> <p>Improvement for non-consumption uses. Improvement possibly because of the reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows. But many other factors also influencing this e.g. farm effluent, access, etc. Broader issues still need to be addressed, incl. catchment contamination, access, and 'cultural integration'.</p>
How often can the waterbody be used for mahinga kai?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	2.5	<p>Definitely not during or for a while after overflows. The waterbody can rarely to occasionally be used for mahinga kai because of longer times between overflows. This score assumes that the length of time after an overflow event influences mahinga kai. I.e. Mahinga kai can again be practised after a certain period of time after an overflow. I.e. The mauri is restored over time (and a frequency of overflow once per two years does allow for some mahinga kai customary practices) .</p> <p>Improvement</p>
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	2.5	<p>Mahinga kai is never carried out during wastewater overflows. During wastewater overflows and for a period of time afterwards tangata whenua completely avoid using the moana for gathering kai. Some harvesting takes place in between events, but this is done reluctantly and because there is no other option. In terms of the full range of kai, shellfish are almost totally avoided because of health concerns. Human wastes, and ongoing cultural concerns even long after overflow events, mean that Mahinga Kai is not practised at the marae (using kai from the sea). The current frequency of overflows is such that customary marae Mahinga Kai practices are not carried out (utilising the affected areas).</p> <p>Improvement for non-consumption uses. A slight improvement possibly for because of the reduction in overflows, frequency of overflows, and time that the river water quality is affected by wastewater overflows. From an average of 2.5 overflows per year (maximum of 4) to an average of 1 every 2 years. Significantly longer periods of time in between overflows. But many other factors also influencing this e.g. farm effluent, access, etc. So no change indicated.</p> <p>This score assumes that the length of time after an overflow event influences mahinga kai. I.e. Mahinga kai can again be practised after a certain period of time after an overflow. I.e. The mauri is restored over time (and a frequency of overflow once per two years does allow for some mahinga kai customary practices) .</p>
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	2.5	<p>Disagree that pūkenga in kaitiakitanga of mahinga kai are known and engaged in the marae due to it being a dying art. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the moana have been eroded</p> <p>Improvement if the wastewater overflow reduction work includes input from tangata whenua in monitoring and managing waterways, including placing of rahuís and engagement of tangata whenua through cultural frameworks.</p>



**Nga Tini A Tangaroa**

This is about day-to-day gathering of key / indicator food resources.

Kai Species Richness (are the same species still available for mahinga kai / collecting kai?)

**ONLY FILL IN IF SCORED**  
**NB: If not applicable, do not enter anything in the excel cell**

What kai species are relevant (past and present)?  
 What is / are the keystone / sentinel species?  
**Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important.**  
**Keystone / sentinel species: Pāua & crayfish, kina, 'beach shellfish'**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	No	Some	Yes	Score	Comments (if needed)
Is the full range of kai species, that the type of waterbody should provide, available?	1	3	5	3	Most still exist, but not everywhere that one would expect them.

**Species #1** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
 Pāua & crayfish

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	1	This applies mainly to the areas from the river mouth to Tuahine Point. Heavily over-utilised. Sediment possibly having some effect, but uncertain. Port will have changed the habitats, as did the meat works, including breeding habitats. Sub-optimal.
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed
Are there different sizes of each species?	1	2	3	4	5	1	Generally very small / undersized.

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**  
 Pāua & crayfish

	Yes	Uncertain	No	Score	Comments (if needed)	
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1	3	5	3	None obviously visible, but has not been assessed in any meaningful way yet.	
What percentage of this species exhibits any external signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Not assessed
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1	3	5		Not assessed	
What percentage of this species exhibits any internal signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Not assessed

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	1	2	3	4	5	3	Not assessed
If YES, please describe the growth rate	1	2	3	4	5		Not assessed

**Species #2** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**  
 Kina

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Heavily over-utilised. Sediment possibly having some effect, but uncertain. Port will have changed the habitats, as did the meat works, including breeding habitats. Sub-optimal.
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed

Are there different sizes of each species?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	1.5	Generally very small / undersized.

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**

Kina

Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5		3	None obviously visible, but has not been assessed in any meaningful way yet.

What percentage of this species exhibits any external signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5			Not assessed

What percentage of this species exhibits any internal signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

Was the age assessed by direct means (e.g. otolith examination)? Yes/No

Not assessed

If YES, please describe the growth rate	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	Not assessed

**Species #3**

Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**

'beach shellfish'

Does the waterbody have lots of this species?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	3	Not extensively harvested because of awareness of potential health risks. Some harvested reluctantly. The sediments around the river mouth and further away to some extent will be quite different to that in the past, and this is likely to have affected the abundance and distribution of beach shellfish. Probably abundance is quite high, although impacted to some extent, but there is a question around diversity and quality. Lots of some, few of others.

Is the male / female ratio healthy? If possible to assess.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

Are there different sizes of each species?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**

'beach shellfish'

Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5		3	None obviously visible, but has not been assessed in any meaningful way yet.

What percentage of this species exhibits any external signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5			Not assessed

What percentage of this species exhibits any internal signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

Was the age assessed by direct means (e.g. otolith examination)? Yes/No

Not assessed

If YES, please describe the growth rate	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5		Not assessed

Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)

Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)

3

1.6

In open coast situations we would not necessarily consider this section. However, where there is a clear link between marine and freshwater, especially in terms of effects, this is relevant (particularly considering the area affected by the wastewater overflows).

As we are in essence assessing the downstream end of the catchment, we will not be assessing the catchment health downstream, but considering the waterbodies affected by the wastewater overflows as part of the upstream catchment. That enables us to capture aspects such as point source discharges.

Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)

3

None of the below will change on account of reductions in wastewater overflows

Upstream of area being assessed

	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Native vegetation cover comprises the following extents	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native catchment.
Are waterways in the catchment surrounded by native vegetation (relative to that specific habitat)? Riparian health.	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native riparian vegetation.
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	While the area affected by wastewater overflows is a small part of the catchment, it is 'nested' within the Gisborne urban area and is subject to stormwater point source discharges as well as wastewater point source discharges in wet weather and sometimes in dry weather. While the rural areas do not have lots of dairy etc., there are many unmitigated farm drains adjacent to intensively-farmed areas which act to concentrate flows and discharge them at specific discharge points. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. Contaminated landfills are leaching contaminants.
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Almost the entire urban catchment is unmitigated in terms of stormwater pollution, and there will be diffuse sources of pollution. The rural areas currently largely have very little or no setbacks from waterways, with pastoral and more intensive agriculture draining unmitigated into the waterways. some of this is concentrated into pipes or drains, but there is no real 'disconnection' between contaminant sources and the waterways. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. This supports scoring upstream sources of pollution as category 1.
	0 - 25% quartile	26 - 50% quartile		51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)

Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	1	2	4	5	2	This is not included in LAWA. GDC sediment monitoring data shows good clarity at Tuckers Road (Taruhuru River) but relatively poor clarity at Lytton Road and Peel Street) - NOF band C. The Waikanaye shows the same. This indicates that turbidity is likely being driven by tidal and estuarine processes. An opinion is that the high 'muddiness' combines with tidal flows to resuspend or keep in suspension sediments for longer. The Waimata is accepted as carrying high levels of sediment and being turbid. While there are times during summer when turbidity reduces, it only takes a small rainfall event to revert back to high turbidity.
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The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use	Land use (best fit)	% cover	Ranking	<p>As the effects take place in areas affected by tidal processes and mixing will to some extent occur between waters from the Taruhuru, Waikanae and Waimata, we considered these all together, focussing on the Turanganui as the common area of impact. The Landcover work calculated on GIS.</p> <p>The Waimata River system has the largest catchment of approximately 22,700 ha. Predominant land covers in the Waimata catchment include steep grasslands, exotic forest and manuka/kanuka (Figure 4-2). Less than 3.5 km of the river runs through urban parts of Gisborne, of which, around 2 km is downstream of the only Primary outfall in its catchment (Seymour Rd/Turenne St). No secondary outfalls drain to the Waimata River system. Urban reaches of Waimata River are adjoined by a mix of public and private open space and residential development (see Appendix 3 for photographs).</p> <p>The Taruhuru River system is around 111 km in length and drains a catchment of around 8400 ha. The river system flows through a low-lying floodplain before reaching Gisborne township. Landuses in the catchment are dominated by cropping, orchards and grasslands, with urban development in the lower catchment (Figure 4-2; Gisborne District Council (2013)). The gradient of the river is very flat through the 5 km urban section (see Appendix 3 for photographs), and for 10 km upstream. As a consequence, water levels are strongly affected by sea levels, with tidal effects occurring over this distance (Poynter et al. 2016). A flood management scheme dating back to the 1960s including stopbanks, channel deepening and riverbank armouring enabled major changes in landuse from pastoral to horticultural. Despite this, low lying areas remain vulnerable to surface flooding (Peacock et al. 1997). The impacts of river modification and surrounding landuses have adversely affected the natural character of the river, which was scored as low by a River Expert Panel using the River Values Assessment System (RIVAS) (Booth et al. 2012). Two secondary outfalls discharge along Taruhuru River (Oak St and Palmerston Rd/Peel St), while a Primary outfall is located in Turanganui River, just below the Waimata and Taruhuru confluence.</p> <p>The Waikanae Creek system is around 7.5 km in length and borders the southwestern edge of Gisborne township. It is a low gradient, groundwater fed stream that drains a catchment of around 1100 ha. The stream is tidally influenced, with the saline intrusion evident at least 4 km upstream from the sea. Landuse in the upper catchment is dominated by orchards and horticulture, while the mid to lower catchment is dominated by mixed urban (including industrial) development, though significant areas of urban parkland or open space are also present, including open space areas associated with closed landfills (Figure 4-2; Conn (2018)). The creek has been heavily impacted by human activities and was assessed as having low natural character (Booth et al. 2012). No primary or secondary outfalls discharge to Waikanae Creek.</p>			
	Annual cropping / High intensity livestock	50	1				
Commercial forestry	27	2					
Low intensity livestock (incl. extensive grazing)	3	3					
Permanent horticulture/viticulture/urban	1	4					
Native	19	5					
<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>					

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	The flows will be primarily determined by the rural areas, as these are by far the majority of the catchment. Urban areas may have some localised impacts on flows. The catchment has been almost entirely transformed from natural, due to
Sediment sources – proportion of waterways fenced (areas where there are livestock)	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Very few waterways are fenced.

**Downstream of area being assessed** Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Natural vegetation cover comprises the following extents	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are waterways surrounded by native vegetation (relative to that specific habitat)?	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)	
	1	2	4	5	2	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.	

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use	<b>Land use (best fit)</b>	<b>% cover</b>	<b>Ranking</b>	2.12	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same
	Annual cropping / High intensity livestock	50	1		
	Commercial forestry	27	2		
	Low intensity livestock (incl. extensive grazing)	3	3		
	Permanent horticulture/viticulture/urban	1	4		
	Native	19	5		
	<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>		

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Sediment sources – proportion of waterways fenced (areas where there are livestock)	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

1.52

**Te Ao Taiao**

How natural is the habitat in and adjacent to the waterbody?

**ONLY FILL IN IF SCORED**  
**NB: If not applicable, do not enter anything in the excel cell**

None of the below will change on account of reductions in wastewater overflows

Does the terrestrial habitat look like the equivalent native habitat?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	2	The terrestrial habitat is almost completely transformed. In the area of impact, the terrestrial habitat comprises urban environments, with parkland and landscaped areas. Some dune restoration, and bush regeneration (Kaiti). Some areas further away but still likely to be adjacent to affected marine waters comprise dune areas that will provide some value.
How good are the habitat conditions for reproduction of aquatic species?	Very poor	Poor	Average	Good	Very good	Score	Comments (if needed)
	1	2	3	4	5	2.5	The current state is compared to the likely natural state. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipooa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally. Nevertheless breeding habitats should be functioning close to natural. The inner harbour and port areas will have negative effects on reproduction of some species, while potentially providing suitable conditions for other species. Dredging will be having a negative effect. Marine koura hatcheries have been impacted and are threatened.
Are benthic conditions similar to natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	There will be some areas that have increased 'muddiness'. The size fractions of sediments will also likely be smaller than in natural conditions.
Are erosion and deposition patterns (fluvial conditions) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3.5	These patterns are driven by natural processes that are not really affected by man's activities. However, the port and harbour would have resulted in changes, particularly close to the river mouth.
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)

How similar is water clarity compared to a natural stream / waterbody?	1	2	3	4	5	3	The rivers are regularly turbid, and the east coast is characterised by actively eroding cliffs that deposit fine sediments into the sea. Land use in upstream areas, and sediment-laden runoff from these areas, will be affecting the frequency of changes in turbidity and adding an unnatural load of fine sediment to these areas.
How optimal is the water temperature? Note: Adapt depending on waterbody.	> 24 °C / >25 °C	22 - 24 °C / >25 °C	20 - 22°C / < 25 °C	18 - 20 °C / < 22 °C	< 18 °C / < 19 °C	Score	Comments (if needed)
	1	2	3	4	5		Not relevant

2.8

**Biodiversity (how diverse is the plant and animal life associated with the waterbody?)**

None of the below will change on account of reductions in wastewater overflows

**Results of sampling / surveys:**

Invertebrate species richness (#) EPT taxa (#)	No specific overall surveys completed. In the Not relevant
Fish species richness (#)	The following is relevant (from Kelly & Sim-Smith, 2020):  Fish species recorded in saline areas of the Waimata, Taruheru, Turanganui Rivers and Waikanae Creek include grey mullet (Mugil cephalus), common smelt (Retropinna retropinna), black flounder (Rhombosolea retaria), kahawai (Aripis trutta) and kingfish (Seriola lalandi lalandi) (Gisborne District Council 2013; Crow 2017; Conn 2018). Other marine species also likely to be present including yellow eyed mullet, piper and snapper (Poynter et al. 2016).  Fish species in the coastal areas will be representative of natural species.
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are river mouth, marine, and near shore. As such we considered the shellfish, kina and crayfish community. Fish species considered river mouth, beach, marine, and near shore species.
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**Predicted native state:**

Invertebrate species richness (#) / Benthic life EPT taxa (#) / Sensitive Species	The same species are present, but in lower abundances than expected in natural scenarios. Not relevant
Fish species richness (#)	The same species are present, but in lower abundances than expected in natural scenarios.
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are river mouth, marine, and near shore. As such we considered the shellfish, kina and crayfish community. Fish species considered river mouth, beach, marine, and near shore species.
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Is invertebrate / benthic life similar to that of a native environment?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	Over-harvesting will have affected abundance in some areas. Other areas (e.g. the mouth of the Waikanae Creek and beach areas) are almost not at all harvested. However, there have been effects of sedimentation from upstream catchments. The extent to which this sediment load (particularly fine sediments) is natural is unclear. However, farming will definitely have worsened this. The river mouth has been mostly transformed from its natural state. So fairly substantial changes likely (although changes in species richness unlikely)
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)

Is fish life similar to that of a native environment?	1	2	3	4	5	3	The species richness of fish life is very similar to that of a native environment. Abundance of fish species may however be lower, due to direct human impacts (e.g. fishing) and compromised habitats, especially at the river mouth. There may be some effect due to habitat transformation.
	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is plant life similar to that of a native environment?	1	2	3	4	5	4	This will be very similar. Maybe some changes due to sediment effects and transformation at the river mouth.
	Total barriers		Partial barriers	No barriers		Score	Comments (if needed)
Are there man-made barriers to fish migration? Upstream	1		3	5			Not really applicable; dealt with in freshwater assessment

Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)

Not applicable

	Total barriers		Partial barriers	No barriers		Score	Comments (if needed)
Are there man-made barriers to fish migration? Downstream	1		3	5			Not really applicable; dealt with in freshwater assessment

Note: Downstream has a higher weighting  
Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)

Not applicable

Overall fish barrier score: 0.00  
Total score 3.33

**Enter fish passage score from H252 IF fish passage has been scored**

**Biohazards (how germ free is the waterbody?)**

**Present State** Freshwater - not applicable

**Freshwater**

Levels of indicator species of bacteria (E.coli) - Suitability for Recreation Grade	Very poor 1	Poor 2	Fair 3	Good 4	Very Good 5	Score	Comments (if needed)
	0 - 25% quartile		26 - 50% quartile		51 - 75% quartile		76 - 100% quartile
E.coli - LAWA - specific to a particular waterbody	1	2	3	4	5	Score	Comments (if needed)
	NPSFM Band E		NPSFM Band D	NPSFM Band C	NPSFM Band B	NPSFM Band A	
Levels of indicator species of bacteria (E.coli) - NPSFM	1	2	3	4	5	Score	Comments (if needed)

**Saline** Applicable

	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
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Land

Levels of indicator species of bacteria (Enterococci) - Suitability for Recreation Grade							<p>The Cut rated as Poor to Very Poor using the MFE guidelines (both during overflows and at times in-between overflows). Kaiti Yacht Club (Good), Midway (Very Good), Waikanae (Fair to Good). Adopting a precautionary approach, and recognising the most contact recreation for tangata whenua takes place from The Cut to Waikanae, that The Cut also has some spikes in indicator bacteria during summer months, we have chosen a category of fair. Score reflects the variability in SFRG depending on where you are at the coast (some areas very good, others very poor).</p> <p>During an overflow event risks will be higher, decreasing over time after the event.</p> <p>The significant role of background pathogen sources is highlighted here, as there is essentially no difference in suitability for recreation grade comparing overflow events and in-between times. However, the risks are higher during the overflow event.</p> <p>While indicator pathogen levels do increase during overflow events (as evidenced in monitoring data for The Cut), the changes at Waikanae, Midway, and Kaiti are relatively small. It does appear that the main (elevated) pathogen risks are close to the river mouth.</p> <p>Swimming is discouraged during overflow events through signage.</p> <p>After reduction in wastewater overflows, the 95th percentile value is likely to reduce. This improvement in score also reflects the change in frequency of overflows.</p>
		1	2	3	4	5	3
Levels of indicator species of bacteria (Enterococci) - LAWA - specific to a particular waterbody (suitability for swimming)	Not suitable for Swimming		Caution advised	Suitable for swimming		Score	Comments (if needed)
		1	3	5		3	<p>The LAWA data classifies Midway as 'Suitable for swimming' and Waikanae as 'Caution advised'. It does not classify The Cut; however, based on available data, The Cut would likely be classified as Not Suitable for Swimming if it was measured (using GDC data). A mid-range was therefore chosen.</p> <p>During an overflow event risks will be higher, decreasing over time after the event.</p>
Levels of indicator species of bacteria (Enterococci)	> 500 CFU/100ml	201 - 500 CFU/100ml	41 - 200 CFU/100ml	<40 CFU/100ml		Score	Comments (if needed)
	1	2	3	4	5	2.5	<p>Council monitoring data was assessed.</p> <p>95th percentile figures in affected areas are between 21 and 8,500 CFU / 100ml for Enterococci. This reflects the decreasing risk as one moves from the river mouth out to Midway and Kaiti Yacht Club.</p> <p>Maximum figures in affected areas are between 98 and 42,000 CFU / 100ml for Enterococci. This reflects the decreasing risk as one moves from the river mouth out to Midway and Kaiti Yacht Club. Only The Cut maximum exceeded the indicator guidelines for contact recreation. This shows the dilution effect of the marine environment.</p> <p>These figures highlight ongoing high levels of biohazards specifically at The Cut (an area regularly used by recreators).</p> <p>Most swimming takes place in summer, and in summer the Enterococci scores are substantially lower at The Cut (although The Cut also has some spikes in indicator bacteria during summer months). While recognising this, we have nevertheless adopted a precautionary approach (also recognising the most contact recreation for tangata whenua takes place from The Cut to Waikanae), and we have chosen a score of 2.5. During an overflow event risks will be higher, decreasing over time after the event.</p> <p>During an overflow event levels will be higher, but are extremely unlikely to exceed 500 CFU/100ml except at The Cut.</p>



## Chemistry (how free of chemical pollution is the waterbody?)

Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.

## Freshwater environments

	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Phytoplankton (Lakes)	1	2	4	5		Not applicable
NPSFM - Total Nitrogen (Lakes)	1	2	4	5		Not applicable
NPSFM - Total Phosphorus (Lakes)	1	2	4	5		Not applicable
NPSFM - Periphyton (Rivers)	1	2	4	5		Not applicable
NPSFM - Nitrate (Toxicity) (Rivers)	1	2	4	5		Not applicable
NPSFM - Ammonia (Toxicity) (Lakes and Rivers)	1	2	4	5		Not applicable
NPSFM - Cyanobacteria (Planktonic) (Lakes and Rivers)	1	2	4	5		Not applicable
NPSFM - Dissolved Oxygen (below point sources);	1	2	4	5		Not applicable

Note: For Dissolved Oxygen, for the purpose of this assessment, the above can be used for both below point sources and generally. Verify that this approach is acceptable with another subject matter expert.

	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 – 100% quartile	Score	Comments (if needed)
Black Disc - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
Turbidity - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
Total N - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
Total Oxidised N - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
Ammoniacal N - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
Dissolved Reactive P - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
Total P - LAWA - specific to a particular waterbody	1	2	4	5		Not applicable
Zinc - ANZECC guidelines (level of protection)	< 80%	80 - 90%	90 - 95%	95 - 100%		Not applicable
Copper - ANZECC guidelines	1	3	4	5		Not applicable

## Saline environments

The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.

	> 10µg/L	5 – 10 µg/L	< 5µg/L	Score	Comments (if needed)	
Chlorophyll concentrations	1	3	5		Not available	
Oxygen Saturation	< 65% saturation	66 - 80% saturation	80 - 90%	> 90%		Not applicable
	1	3	4	5		Not applicable
	> 4000 mg/kg	2000 - 4000 mg/kg	500 - 2000 mg/kg	< 500 mg/kg		Not applicable

Total Nitrogen - Sediment	1	3	4	5	Score	Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
	> 1000 mg/kg		500 - 1000 mg/kg	200 - 500 mg/kg	< 200 mg/kg	Comments (if needed)
Total Phosphorus - Sediment	1	2	3	4	5	Score
	> 1000 mg/kg		500 - 1000 mg/kg	200 - 500 mg/kg	< 200 mg/kg	Comments (if needed)
Zinc - ANZECC guidelines (level of protection)	1	3	4	5	Score	Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Copper - ANZECC guidelines	1	3	4	5	Score	Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)

4

For the purpose of this mauri assessment, and use of the tool, we have included a score in this row. This is because no water chemistry issues are likely to be having any effects in the environments subject to this work. Some issues have been suggested due to the activities of the Port, however with recent stormwater treatment improvements these appear to have been largely mitigated. While none of the chemistry scorings have been specifically addressed, a score of 4 was provided in this section as an overall score for water chemistry in the marine environment at this location.

Summary Table of Scores

Te Ao Maori	Subgroup Scores	Group Scores
Tangata whenua (how strong is your overall connection to the waterbody?)	3.06	51.23
Tikanga (how prevalent are your cultural practices with the waterbody?)	2.00	
Wairua (how strong are your spiritual connections with the waterbody?)	2.58	
Mahinga kai (is mahinga kai practiced?)	2.60	
<b>Nga Tini A Tangaroa</b>		
Kai Species Richness (are the same species still available for mahinga kai?)	3.00	45.58
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)	1.60	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.00	
Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)	1.52	
<b>Te Ao Taiao</b>		
How natural is the habitat in and adjacent to the waterbody?	2.80	64.83
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	3.33	
Biohazards (how germ free is the waterbody?)	2.83	
Chemistry (how free of chemical pollution is the waterbody?)	4.00	
<b>Total Score (%)</b>	<b>53.88</b>	

Scenario #3

No more wastewater overflows in wet weather, all other catchment influences remain (e.g. rural and urban stormwater discharges)

Te Ao Maori

ONLY FILL IN IF SCORED

Tangata whenua (how strong is your overall connection to the waterbody?)

NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa, reflected</del> in terms of tikanga practice?	1	2	3	4	5	4	Improvement. Agree because in terms of tikanga practice, the waterbody is being treated with the correct customary conventions or practices. The tribal identity is recognised and tikanga is practised more often; wastewater is seen as a key reason for less interaction with the waterbody.
How often do Tangata Whenua swim, play and recreate in the waterbody?	1	2	3	4	5	4.5	Improvement. Tangata whenua frequently swim and play in the sea in summer; and winter (as would be expected). Winter use is mostly restricted to non-contact use, as is expected at that time of year. In summer the use is extensive (including use of The Cut / river mouth and Kaiti Beach). The marine waters are a key recreational use for tangata whenua in summers, and they are intensively used. They are a key recreational use for tangata whenua in summers, and they are intensively used. This is testament to tangata whenua's integral relationship with the moana. Winter contact recreation use would no longer be affected by wastewater overflows. However some constraints to use still exist due to other catchment issues.
How regularly are archaeological sites associated with the waterbody accessed?	1	2	3	4	5	3	Archaeological sites are rarely accessed, although access is not restricted. However, many permanently lost to urban developments along the beachfront.
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	1	2	3	4	5	3.5	Improvement. Tangata whenua agree that they feel they are achieving their aspirations as kaitiaki of this waterbody. Large improvement due reduction in overflows and commitment from GDC to stay on the right trajectory. Historically tangata whenua have had little or no say in the management of the waterbodies. Without cultural monitoring, it is very difficult to put a Te Ao Māori lens on water management. The increase in score relies on more partnering between IWI and council. However, broader issues still need to be addressed.
3.8							

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	3.5	Improvement. Tikanga wai Maori management practices and protocols are occasionally to frequently practiced by tangata whenua due to no more wastewater overflows. Deficient quality and quantity of the waterbody is still an issue.  Broader issues still need to be addressed, incl. catchment contamination, access, and 'cultural integration'. While the physical basis for this is greatly improved (removal of wastewater overflows), Tikanga wai maori management practices and protocols not well integrated into the 'fabric' of Gisborne, not given sufficient credence in Gisborne's identity).
	<20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)

What range of tikanga wai maori or wai tai is practiced?	1	2	3	4	5	3.5	Deficient quality and quantity of the waterbody is still an issue. Broader issues still need to be addressed, incl. catchment contamination, access, and 'cultural integration'. While the physical basis for this is greatly improved (removal of wastewater overflows), Tikanga wai maori management practices and protocols not well integrated into the 'fabric' of Gisborne, not given sufficient credence in Gisborne's identity).
3.5							
<b>Wairua (how strong are your spiritual connections with the waterbody?)</b>							
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites <u>are well known</u>	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	3	Agree that wahi tapu and taniwha sites are well known. Archives, Iwi research and museum information available. However, this information is not readily accessible to the community and not well integrated into the fabric of Gisborne, not given sufficient credence in Gisborne's identity.  Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti)
Wahi tapu and taniwha sites associated with the waterbody <u>are regularly visited</u>	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	2	Wahi tapu and taniwha sites associated with the waterbody are rarely visited. This is related to the above. Many have been permanently lost to urban development, including the port and harbour area, and the beachfront.  Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti and access becoming available)
Is the waterbody <u>in its current state</u> considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	4	Agree that the waterbody nurtures and nourishes the soul, due to removal of human sewage overflows. Other quality and quality issues exist. However a big improvement because human wastewater is such a significant issue for tangata whenua.
Places of taniwha and wahi tapu are protected	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
	1	2	3	4	5	2	Very few places of taniwha and wahi tapu are protected due urbanisation. Many have been permanently lost to urban development, including the port and harbour area, and the beachfront.  Not necessarily directly related to wastewater overflows. No change
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	3.5	Improvement. The waterbody is occasionally to frequently used for providing rongoa Maori (flora and fauna) for Tangata Whenua, because of the impact on its wairua due to sewage overflows, but practically also because of land transformation due to urban development, including the port and harbour area, and the beachfront. Definitely not during or for a while after overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.  While a key constraint (wastewater overflows) has been removed, use is still limited because of broader catchment water quality issues. The degraded habitat and limited riparian access limits how many resources are actually available and safe to use. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)

How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	3	Improvement. The waterbody is occasionally used by Tangata Whenua for purification and for ceremonial purposes (including waikarakia and waitapu). A number of other factors persist (incl. broader catchment issues)
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2.9

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.	<b>Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important. Keystone / sentinel species: Pāua &amp; crayfish, kina, 'beach shellfish'</b>
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This information is used to enable a value judgement to be made on the below Likert scale scoring

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihi), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	4	The waterbody is frequently used to provide kai for hui, tangi or other gatherings.
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	4	The waterbody is occasionally to frequently used for other customary natural resource gathering. Definitely not during or for a while after overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the moana have been eroded.  Although key factor / issue has been resolved, many other factors also influencing this. Broader issues still need to be addressed, incl. catchment contamination, access, and 'cultural integration'.
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	4.5	The waterbody can frequently be used for mahinga kai because the key limiting factor of human wastewater from overflows has been resolved. Other catchment pollution will still affect when the resources are accessible.
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	4.5	Very rarely is mahinga kai affected by wastewater issues. Sometimes there can be unforeseen wastewater overflows - it is impossible to 100% eliminate the chance of a wastewater overflow.
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	4	Agree that pukenga in kaitiakitanga of mahinga kai are known and engaged in the marae, because of increased Mahinga Kai and other wai-related work that would happen as a result of the process required to aim for complete avoidance of wastewater overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the moana have been eroded - these would have to be rekindled / rejuvenated.  Improvement if the wastewater overflow reduction work includes input from tangata whenua in monitoring and managing waterways, including placing of rāhuis and engagement of tangata whenua through cultural frameworks.

4.2

**Nga Tini A Tangaroa**

This is about day-to-day gathering of key / indicator food resources.

**Kai Species Richness (are the same species still available for mahinga kai / collecting kai?)**

**ONLY FILL IN IF SCORED**  
**NB: If not applicable, do not enter anything in the excel cell**

What kai species are relevant (past and present)? What is / are the keystone / sentinel species?	<b>Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important. Keystone / sentinel species: Pāua &amp; crayfish, kina, 'beach shellfish'</b>
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This information is used to enable a value judgement to be made on the below Likert scale scoring



What percentage of this species exhibits any external signs that there are health issues?	1	2	3	4	5		Not assessed	
	Yes		Uncertain	No		Score	Comments (if needed)	
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1		3	5			Not assessed	
	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)	
What percentage of this species exhibits any internal signs that there are health issues?	1	2	3	4	5		Not assessed	
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not assessed							
	Not at all the same		Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
If YES, please describe the growth rate	1	2	3	4	5		Not assessed	

<b>Species #3</b>	Name						
<b>Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)</b>	'beach shellfish'						
Does the waterbody have lots of this species?	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score 3	Comments (if needed) Not extensively harvested because of awareness of potential health risks. Some harvested reluctantly. The sediments around the river mouth and further away to some extent will be quite different to that in the past, and this is likely to have affected the abundance and distribution of beach shellfish. Probably abundance is quite high, although impacted to some extent, but there is a question around diversity and quality. Lots of some, few of others.
Is the male / female ratio healthy? If possible to assess.	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score	Comments (if needed)
Are there different sizes of each species?	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score	Comments (if needed)

<b>Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)</b>	'beach shellfish'							
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	Yes 1		Uncertain 3	No 5		Score 3	Comments (if needed) None obviously visible, but has not been assessed in any meaningful way yet.	
	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)	
What percentage of this species exhibits any external signs that there are health issues?	1	2	3	4	5		Not assessed	
	Yes		Uncertain	No		Score	Comments (if needed)	
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1		3	5			Not assessed	
	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)	
What percentage of this species exhibits any internal signs that there are health issues?	1	2	3	4	5		Not assessed	
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not assessed							
	Not at all the same		Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
If YES, please describe the growth rate	1	2	3	4	5		Not assessed	



Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)

Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)

1.6

In open coast situations we would not necessarily consider this section. However, where there is a clear link between marine and freshwater, especially in terms of effects, this is relevant (particularly considering the area affected by the wastewater overflows).

As we are in essence assessing the downstream end of the catchment, we will not be assessing the catchment health downstream, but considering the waterbodies affected by the wastewater overflows as part of the upstream catchment. That enables us to capture aspects such as point source discharges.

Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)

3

None of the below will change on account of reductions in wastewater overflows

Upstream of area being assessed

	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Native vegetation cover comprises the following extents	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native catchment.
Are waterways in the catchment surrounded by native vegetation (relative to that specific habitat)? Riparian health.	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native riparian vegetation.
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	While the area affected by wastewater overflows is a small part of the catchment, it is 'nested' within the Gisborne urban area and is subject to stormwater point source discharges as well as wastewater point source discharges in wet weather and sometimes in dry weather. While the rural areas do not have lots of dairy etc., there are many unmitigated farm drains adjacent to intensively-farmed areas which act to concentrate flows and discharge them at specific discharge points. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. Contaminated landfills are leaching contaminants.
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Almost the entire urban catchment is unmitigated in terms of stormwater pollution, and there will be diffuse sources of pollution. The rural areas currently largely have very little or no setbacks from waterways, with pastoral and more intensive agriculture draining unmitigated into the waterways. Some of this is concentrated into pipes or drains, but there is no real 'disconnection' between contaminant sources and the waterways. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. This supports scoring upstream sources of pollution as category 1.
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile		Score	Comments (if needed)

Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	1	2	4	5	2 This is not included in LAWA. GDC sediment monitoring data shows good clarity at Tuckers Road (Taruhuru River) but relatively poor clarity at Lytton Road and Peel Street) - NOF band C. The Waikanaye shows the same. This indicates that turbidity is likely being driven by tidal and estuarine processes. An opinion is that the high 'muddiness' combines with tidal flows to resuspend or keep in suspension sediments for longer. The Waimata is accepted as carrying high levels of sediment and being turbid. While there are times during summer when turbidity reduces, it only takes a small rainfall event to revert back to high turbidity.
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The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use	Land use (best fit)	% cover	Ranking	<p>As the effects take place in areas affected by tidal processes and mixing will to some extent occur between waters from the Taruhuru, Waikanae and Waimata, we considered these all together, focussing on the Turanganui as the common area of impact. The Landcover work calculated on GIS.</p> <p>The Waimata River system has the largest catchment of approximately 22,700 ha. Predominant land covers in the Waimata catchment include steep grasslands, exotic forest and manuka/kanuka (Figure 4-2). Less than 3.5 km of the river runs through urban parts of Gisborne, of which, around 2 km is downstream of the only Primary outfall in its catchment (Seymour Rd/Turenne St). No secondary outfalls drain to the Waimata River system. Urban reaches of Waimata River are adjoined by a mix of public and private open space and residential development (see Appendix 3 for photographs).</p> <p>The Taruhuru River system is around 111 km in length and drains a catchment of around 8400 ha. The river system flows through a low-lying floodplain before reaching Gisborne township. Landuses in the catchment are dominated by cropping, orchards and grasslands, with urban development in the lower catchment (Figure 4-2; Gisborne District Council (2013)). The gradient of the river is very flat through the 5 km urban section (see Appendix 3 for photographs), and for 10 km upstream. As a consequence, water levels are strongly affected by sea levels, with tidal effects occurring over this distance (Poynter et al. 2016). A flood management scheme dating back to the 1960s including stopbanks, channel deepening and riverbank armouring enabled major changes in landuse from pastoral to horticultural. Despite this, low lying areas remain vulnerable to surface flooding (Peacock et al. 1997). The impacts of river modification and surrounding landuses have adversely affected the natural character of the river, which was scored as low by a River Expert Panel using the River Values Assessment System (RIVAS) (Booth et al. 2012). Two secondary outfalls discharge along Taruhuru River (Oak St and Palmerston Rd/Peel St), while a Primary outfall is located in Turanganui River, just below the Waimata and Taruhuru confluence.</p> <p>The Waikanae Creek system is around 7.5 km in length and borders the southwestern edge of Gisborne township. It is a low gradient, groundwater fed stream that drains a catchment of around 1100 ha. The stream is tidally influenced, with the saline intrusion evident at least 4 km upstream from the sea. Landuse in the upper catchment is dominated by orchards and horticulture, while the mid to lower catchment is dominated by mixed urban (including industrial) development, though significant areas of urban parkland or open space are also present, including open space areas associated with closed landfills (Figure 4-2; Conn (2018)). The creek has been heavily impacted by human activities and was assessed as having low natural character (Booth et al. 2012). No primary or secondary outfalls discharge to Waikanae Creek.</p>	
	Annual cropping / High intensity livestock	50	1		
	Commercial forestry	27	2		
	Low intensity livestock (incl. extensive grazing)	3	3		
	Permanent horticulture/viticulture/urban	1	4		
	Native	19	5		
	<b>Should = 100%</b>	<b>100</b>	2.12		
		2.12			

Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
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Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	1	2	3	4	5	3	The flows will be primarily determined by the rural areas, as these are by far the majority of the catchment. Urban areas may have some localised impacts on flows. The catchment has been almost entirely transformed from natural, due to agricultural activities. There is a fair bit of exotic forest and a little natural bush; these can be expected to have similar hydrological influences as a natural catchment, although harvesting will also have an influence. The cropping and horticultural areas will have land drainage, which will have modified the hydrology of those areas. The Poverty Bay flats would historically have comprised an extensive swamp with lots of water retention - that has changed dramatically. The hydrology is therefore considered to have been changed significantly in freshwater areas. Urban areas will have some influence, but this will be small because they mostly discharge into estuarine areas (where tidal influences are greatest). Hydrological changes on the areas affected by wastewater overflows would have changed but unlikely significantly. The saline wedges are all likely to have been affected. In wet weather higher freshwater flows can be expected (because of less attenuation in the catchment). While these effects can be modelled, this is not yet done. A score of 3 was chosen, considered to reflect the dominant tidal effect on the areas affected by the wastewater (which would mean little change in these areas) matched against the upstream changes in hydrological flows (which will have resulted in changes).
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Very few waterways are fenced.

1.52

**Downstream of area being assessed** Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Natural vegetation cover comprises the following extents	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are waterways surrounded by native vegetation (relative to that specific habitat)?	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)	
	1	2	4	5	2	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.	

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use	<b>Land use (best fit)</b>	<b>% cover</b>	<b>Ranking</b>	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same
	Annual cropping / High intensity livestock	50	1	
	Commercial forestry	27	2	
	Low intensity livestock (incl. extensive grazing)	3	3	
	Permanent horticulture/viticulture/urban	1	4	
	Native	19	5	
	<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>	

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)

Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Muri Compass tool, the same scores have been entered as per the 'upstream' area.
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1.52

**Te Ao Taiao**

**ONLY FILL IN IF SCORED**

How natural is the habitat in and adjacent to the waterbody?

**NB: If not applicable, do not enter anything in the excel cell**

None of the below will change on account of reductions in wastewater overflows

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Does the terrestrial habitat look like the equivalent native habitat?	1	2	3	4	5	2	The terrestrial habitat is almost completely transformed. In the area of impact, the terrestrial habitat comprises urban environments, with parkland and landscaped areas. Some dune restoration, and bush regeneration (Kaiti). Some areas further away but still likely to be adjacent to affected marine waters comprise dune areas that will provide some value.
How good are the habitat conditions for reproduction of aquatic species?	Very poor	Poor	Average	Good	Very good	Score	Comments (if needed)
	1	2	3	4	5	2.5	The current state is compared to the likely natural state. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally. Nevertheless breeding habitats should be functioning close to natural. The inner harbour and port areas will have negative effects on reproduction of some species, while potentially providing suitable conditions for other species. Dredging will be having a negative effect. Marine koura hatcheries have been impacted and are threatened.
Are benthic conditions similar to natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	There will be some areas that have increased 'muddiness'. The size fractions of sediments will also likely be smaller than in natural conditions.
Are erosion and deposition patterns (fluvial conditions) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3.5	These patterns are driven by natural processes that are not really affected by man's activities. However, the port and harbour would have resulted in changes, particularly close to the river mouth.
How similar is water clarity compared to a natural stream / waterbody?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
	1	2	3	4	5	3	The rivers are regularly turbid, and the east coast is characterised by actively eroding cliffs that deposit fine sediments into the sea. Land use in upstream areas, and sediment-laden runoff from these areas, will be affecting the frequency of changes in turbidity and adding an unnatural load of fine sediment to these areas.
How optimal is the water temperature? Note: Adapt depending on waterbody.	> 24 °C / >25 °C	22 - 24 °C / >25 °C	20 - 22°C / < 25 °C	18 - 20 °C / < 22 °C	< 18 °C / < 19 °C	Score	Comments (if needed)
	1	2	3	4	5		Not relevant

2.8

Biodiversity (how diverse is the plant and animal life associated with the waterbody?)

None of the below will change on account of no more wastewater overflows

Results of sampling / surveys:

Invertebrate species richness (#)  
EPT taxa (#)

No specific overall surveys completed. In the Not relevant

Fish species richness (#)	<p>The following is relevant (from Kelly &amp; Sim-Smith, 2020):</p> <p>Fish species recorded in saline areas of the Waimata, Taruheru, Turanganui Rivers and Waikanae Creek include grey mullet (<i>Mugil cephalus</i>), common smelt (<i>Retropinna retropinna</i>), black flounder (<i>Rhombosolea retaria</i>), kahawai (<i>Atripis trutta</i>) and kingfish (<i>Seriola lalandi lalandi</i>) (Gisborne District Council 2013; Crow 2017; Conn 2018). Other marine species also likely to be present including yellow eyed mullet, piper and snapper (Poynter et al. 2016).</p> <p>Fish species in the coastal areas will be representative of natural species.</p>
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are river mouth, marine, and near shore. As such we considered the shellfish, kina and crayfish community. Fish species considered river mouth, beach, marine, and near shore species.

**Predicted native state:**

Invertebrate species richness (#) / Benthic life	The same species are present, but in lower abundances than expected in natural scenarios.
EPT taxa (#) / Sensitive Species	Not relevant
Fish species richness (#)	The same species are present, but in lower abundances than expected in natural scenarios.
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are river mouth, marine, and near shore. As such we considered the shellfish, kina and crayfish community. Fish species considered river mouth, beach, marine, and near shore species.

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is invertebrate / benthic life similar to that of a native environment?	1	2	3	4	5	3	Over-harvesting will have affected abundance in some areas. Other areas (e.g. the mouth of the Waikanae Creek and beach areas) are almost not at all harvested. However, there have been effects of sedimentation from upstream catchments. The extent to which this sediment load (particularly fine sediments) is natural is unclear. However, farming will definitely have worsened this. The river mouth has been mostly transformed from its natural state. So fairly substantial changes likely (although changes in species richness unlikely)
Is fish life similar to that of a native environment?	1	2	3	4	5	3	The species richness of fish life is very similar to that of a native environment. Abundance of fish species may however be lower, due to direct human impacts (e.g. fishing) and compromised habitats, especially at the river mouth. There may be some effect due to habitat transformation.
Is plant life similar to that of a native environment?	1	2	3	4	5	4	This will be very similar. Maybe some changes due to sediment effects and transformation at the river mouth.
Are there man-made barriers to fish migration? Upstream	Total barriers 1		Partial barriers 3	No barriers 5		Score	Comments (if needed) Not really applicable; dealt with in freshwater assessment
Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)	Not applicable						
Are there man-made barriers to fish migration? Downstream	Total barriers 1		Partial barriers 3	No barriers 5		Score	Comments (if needed) Not really applicable; dealt with in freshwater assessment

Note: Downstream has a higher weighting  
Please provide details of the fish barrier(s)  
(incl. nature of barrier, how many, how far away,  
how much catchment affected)

Not applicable

Overall fish barrier score: 0.00

Total score 3.33

Enter fish passage score from H252 IF fish passage has been scored

**Biohazards (how germ free is the waterbody?)**

**Present State**

Freshwater - not applicable

**Freshwater**

Levels of indicator species of bacteria (E.coli) - Suitability for Recreation Grade	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)	
	1	2	3	4	5		Not applicable	
	0 - 25% quartile		26 - 50% quartile		51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
E.coli - LAWA - specific to a particular waterbody	1	2		4	5		Not applicable	
	NPSFM Band E		NPSFM Band D	NPSFM Band C	NPSFM Band B	NPSFM Band A	Score	Comments (if needed)
Levels of indicator species of bacteria (E.coli) - NPSFM	1	2	3	4	5		Not applicable	

**Saline**

Applicable

Levels of indicator species of bacteria (Enterococci) - Suitability for Recreation Grade	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
	1	2	3	4	5		
	1	2	3	4	5	3.5	<p>The Cut rated as Poor to Very Poor using the MFE guidelines (both during overflows and at times in-between overflows). Kaiti Yacht Club (Good), Midway (Very Good), Waikanae (Fair to Good). Adopting a precautionary approach, and recognising the most contact recreation for tangata whenua takes place from The Cut to Waikanae, that The Cut also has some spikes in indicator bacteria during summer months, we have chosen a category of fair to good. Score reflects the variability in SFRG depending on where you are at the coast (some areas very good, others very poor). Other sources of bacteria persist.</p> <p>During an overflow event risks will be higher, decreasing over time after the event.</p> <p>The significant role of background pathogen sources is highlighted here, as there is essentially no difference in suitability for recreation grade comparing overflow events and in-between times. However, the risks are higher during the overflow event.</p> <p>While indicator pathogen levels do increase during overflow events (as evidenced in monitoring data for The Cut), the changes at Waikanae, Midway, and Kaiti are relatively small. It does appear that the main (elevated) pathogen risks are close to the river mouth.</p> <p>Swimming is discouraged during overflow events through signage.</p>
	Not suitable for Swimming		Caution advised	Suitable for swimming		Score	Comments (if needed)

Land

Levels of indicator species of bacteria (Enterococci) - LAWA - specific to a particular waterbody (suitability for swimming)	1	3	5	3.5	The LAWA data classifies Midway as 'Suitable for swimming' and Waikanae as 'Caution advised'. It does not classify The Cut; however, based on available data, The Cut would likely be classified as Not Suitable for Swimming if it was measured (using GDC data). Slight escalation over the 'after TRMP' scenario. We still have farm etc. pathogens washed down in rain events.  During an overflow event risks will be higher, decreasing over time after the event.		
Levels of indicator species of bacteria (Enterococci)	> 500 CFU/100ml	201 - 500 CFU/100ml	41 - 200 CFU/100ml	<40 CFU/100ml	Score	Comments (if needed)	
	1	2	3	4	5	3	Council monitoring data was assessed.  95th percentile figures in affected areas are between 21 and 8,500 CFU / 100ml for Enterococci. This reflects the decreasing risk as one moves from the river mouth out to Midway and Kaihi Yacht Club.  Maximum figures in affected areas are between 98 and 42,000 CFU / 100ml for Enterococci. This reflects the decreasing risk as one moves from the river mouth out to Midway and Kaihi Yacht Club. Only The Cut maximum exceeded the indicator guidelines for contact recreation. This shows the dilution effect of the marine environment.  These figures highlight ongoing high levels of biohazards specifically at The Cut (an area regularly used by recreators).  Most swimming takes place in summer, and in summer the Enterococci scores are substantially lower at The Cut (although The Cut also has some spikes in indicator bacteria during summer months). While recognising this, we have nevertheless adopted a precautionary approach (also recognising the most contact recreation for tangata whenua takes place from The Cut to Waikanae).  Raised the score to 3 on account of no overflows and likelihood that 95th % of data will be lower. Background issues persist.

3.3

**Chemistry (how free of chemical pollution is the waterbody?)**

Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.

Freshwater environments

	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Phytoplankton (Lakes)	1	2	4	5		Not applicable
NPSFM - Total Nitrogen (Lakes)	1	2	4	5		Not applicable
NPSFM - Total Phosphorus (Lakes)	1	2	4	5		Not applicable
NPSFM - Periphyton (Rivers)	1	2	4	5		Not applicable
NPSFM - Nitrate (Toxicity) (Rivers)	1	2	4	5		Not applicable
NPSFM - Ammonia (Toxicity) (Lakes and Rivers)	1	2	4	5		Not applicable
NPSFM - Cyanobacteria (Planktonic) (Lakes and Rivers)	1	2	4	5		Not applicable
NPSFM - Dissolved Oxygen)(below point sources);	1	2	4	5		Not applicable

Note: For Dissolved Oxygen, for the purpose of this assessment, the above can be used for both below point sources and generally. Verify that this approach is acceptable with another subject matter expert.

Black Disc - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Turbidity - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Total N - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Total Oxidised N - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Ammoniacal N - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Dissolved Reactive P - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Total P - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Zinc - ANZECC guidelines (level of protection)	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
	1	3	4	5		Not applicable
Copper - ANZECC guidelines	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
	1	3	4	5		Not applicable

The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the the effects due to background levels.

Saline environments

Chlorophyll concentrations	> 10µg/L		5 – 10 µg/L	< 5µg/L		Score	Comments (if needed)
	1		3	5			Not available
Oxygen Saturation	< 65% saturation		66 - 80% saturation	80 - 90%	> 90%	Score	Comments (if needed)
	1		3	4	5		Not applicable
Total Nitrogen - Sediment	> 4000 mg/kg		2000 - 4000 mg/kg	500 - 2000 mg/kg	< 500 mg/kg	Score	Comments (if needed)
	1		3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
Total Phosphorus - Sediment	> 1000 mg/kg		500 - 1000 mg/kg	200 - 500 mg/kg	< 200 mg/kg	Score	Comments (if needed)
	1	2	3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
	< 80%	80 - 90%	90 - 95%	95 - 100%		Score	Comments (if needed)



Zinc - ANZECC guidelines (level of protection)	1	3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Copper - ANZECC guidelines	1	3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.

4

For the purpose of this mauri assessment, and use of the tool, we have included a score in this row. This is because no water chemistry issues are likely to be having any effects in the environments subject to this work. Some issues have been suggested due to the activities of the Port, however with recent stormwater treatment improvements these appear to have been largely mitigated. While none of the chemistry scorings have been specifically addressed, a score of 4 was provided in this section as an overall score for water chemistry in the marine environment at this location.

Summary Table of Scores

Te Ao Maori	Subgroup Scores	Group Scores
Tangata whenua (how strong is your overall connection to the waterbody?)	3.75	71.83
Tikanga (how prevalent are your cultural practices with the waterbody?)	3.50	
Wairua (how strong are your spiritual connections with the waterbody?)	2.92	
Mahinga kai (is mahinga kai practiced?)	4.20	
<b>Nga Tini A Tangaroa</b>		
Kai Species Richness (are the same species still available for mahinga kai?)	3.00	45.58
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)	1.60	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.00	
Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)	1.52	
<b>Te Ao Taiao</b>		
How natural is the habitat in and adjacent to the waterbody?	2.80	67.33
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	3.33	
Biohazards (how germ free is the waterbody?)	3.33	
Chemistry (how free of chemical pollution is the waterbody?)	4.00	
<b>Total Score (%)</b>	<b>61.58</b>	

**Scenario #4**

**From start of an overflow to up to 2 to 4 days afterwards; this is the period over which differences in water quality due to wastewater overflows can be detected in the receiving waters; excludes EOCs and viruses**

**Te Ao Maori**

**Tangata whenua (how strong is your overall connection to the waterbody?)**

**ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell**

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa, reflected</del> in terms of tikanga practice?	1	2	3	4	5	1	Strongly disagree because in terms of tikanga practice, the waterbody is not being treated with the correct customary conventions or practices. The tribal identity is recognised but tikanga is never practised; wastewater in the rivers is seen as a key reason for less interaction with the waterbody. Tikanga definitely not practised during overflows.
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 1	Comments (if needed) Strongly disagree - not used during wastewater overflows
How regularly are archaeological sites associated with the waterbody accessed?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 3	Comments (if needed) Archaeological sites are rarely accessed, although access is not restricted. However, many permanently lost to urban developments along the beachfront.
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score 1	Comments (if needed) Tangata whenua strongly disagree that they feel they are achieving their aspirations as kaitiaki. Historically tangata whenua have had little or no say in the management of the waterbodies. Without cultural monitoring, it is very difficult to put a Te Ao Māori lens on water management.

1.5

**Tikanga (how prevalent are your cultural practices with the waterbody?)**

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	1	Tikanga wai Maori management practices and protocols are never practiced by tangata whenua due to deficient quality and quantity of the waterbody.
What range of tikanga wai maori or wai tai is practiced?	<20% 1	20 - 40% 2	40 - 60% 3	60 - 80% 4	80 - 100% 5	Score 1	Comments (if needed) None during wastewater overflows

1

**Wairua (how strong are your spiritual connections with the waterbody?)**

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4	5	3	Agree that wahi tapu and taniwha sites are well known. Archives, lwi research and museum information available. However, this information is not readily accessible to the community and not well integrated into the fabric of Gisborne, not given sufficient credence in Gisborne's identity.  Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti).
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)

People

Wahi tapu and taniwha sites associated with the waterbody <u>are regularly visited</u>	1	2	3	4	5	1	Wahi tapu and taniwha sites associated with the waterbody are rarely visited. This is related to the above. Many have been permanently lost to urban development, including the port and harbour area, and the beachfront. Not necessarily directly related to wastewater overflows. No change due to the reduction in overflows - this relies on success in other areas (e.g. cultural identity in Tairāwhiti and access becoming available); although sites would definitely not be visited in an event.
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	1	2	3	4	5	1	Strongly disagree that the waterbody still nurtures and nourishes the soul, due to human sewage during the event.
	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
Places of taniwha and wahi tapu are protected	1	2	3	4	5	2	Very few places of taniwha and wahi tapu are protected due to urbanisation. Many have been permanently lost to urban development, including the port and harbour area, and the beachfront. Not necessarily directly related to wastewater overflows. No change
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	1	2	3	4	5	1	The waterbody is never used for providing rongoa Maori (flora and fauna) for Tangata Whenua, because of the impact on its wairua due to sewage overflows, but practically also because of land transformation due to urban development, including the port and harbour area, and the beachfront. Definitely not during or for a while after overflows. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the rivers have been eroded.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	1	Never during wastewater overflows. The waterbody is never used by Tangata Whenua for purification and for ceremonial purposes (including waikarakia and waitapu) because of the extremely poor quality of water and impact on its wairua due to sewage overflows.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)

1.5

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.	<p><b>Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important. Keystone / sentinel species: Pāua &amp; crayfish, kina, 'beach shellfish'</b></p>						<p>This information is used to enable a value judgement to be made on the below Likert scale scoring</p>
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihī), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	1	None during wastewater overflows
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	1	None during wastewater overflows
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	1	Not during wastewater overflows
	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	1	Always during wastewater overflows
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	2	Disagree that pukenga in kaitiakitanga of mahinga kai are known and engaged in the marae due to it being a dying art. Through urban development and limited credence to customary practices / protection in regulation and management the practical connections with the moana have been eroded
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)

1.2

**Nga Tini A Tangaroa**

This is about day-to-day gathering of key / indicator food resources.

**ONLY FILL IN IF SCORED**

**Kai Species Richness (are the same species still available for mahinga kai / collecting kai?)**

**NB: If not applicable, do not enter anything in the excel cell**

What kai species are relevant (past and present)?  
What is / are the keystone / sentinel species?

**Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important.**  
**Keystone / sentinel species: Pāua & crayfish, kina, 'beach shellfish'**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	No	Some	Yes	Score	Comments (if needed)
Is the full range of kai species, that the type of waterbody should provide, available?	1	3	5	3	Most still exist, but not everywhere that one would expect them.

**Species #1**

Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**

Pāua & crayfish

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	1	This applies mainly to the areas from the river mouth to Tuhine Point. Heavily over-utilised. Sediment possibly having some effect, but uncertain. Port will have changed the habitats, as did the meat works, including breeding habitats. Sub-optimal.
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed
Are there different sizes of each species?	1	2	3	4	5	1	Generally very small / undersized.

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)**

Pāua & crayfish

	Yes	Uncertain	No	Score	Comments (if needed)	
Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	1	3	5	3	None obviously visible, but has not been assessed in any meaningful way yet.	
What percentage of this species exhibits any external signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	1	3	5		Not assessed	
What percentage of this species exhibits any internal signs that there are health issues?	>50% 1	>25% 2	>10% 3	>5% 4	0% 5	Score Not assessed
Was the age assessed by direct means (e.g. otolith examination)? Yes/No	Not assessed					
If YES, please describe the growth rate	Not at all the same 1	Very different 2	Not sure 3	Very similar 4	Exactly the same 5	Score Not assessed

**Species #2**

Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)**

Kina

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Does the waterbody have lots of this species?	1	2	3	4	5	2	Heavily over-utilised. Sediment possibly having some effect, but uncertain. Port will have changed the habitats, as did the meat works, including breeding habitats. Sub-optimal.
Is the male / female ratio healthy? If possible to assess.	1	2	3	4	5		Not assessed
Are there different sizes of each species?	1	2	3	4	5	1	Generally very small / undersized.

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)** Kina

Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5		3	None obviously visible, but has not been assessed in any meaningful way yet.
What percentage of this species exhibits any external signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5	Not assessed	
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5		Not assessed	
What percentage of this species exhibits any internal signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5	Not assessed	

Was the age assessed by direct means (e.g. otolith examination)? Yes/No Not assessed

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
If YES, please describe the growth rate	1	2	3	4	5	3	Not assessed

**Species #3** Name

**Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel kai today as before?)** 'beach shellfish'

Does the waterbody have lots of this species?	Strongly Disagree		Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1		2	3	4	5	3	Not extensively harvested because of awareness of potential health risks. Some harvested reluctantly. The sediments around the river mouth and further away to some extent will be quite different to that in the past, and this is likely to have affected the abundance and distribution of beach shellfish. Probably abundance is quite high, although impacted to some extent, but there is a question around diversity and quality. Lots of some, few of others.
Is the male / female ratio healthy? If possible to assess.	Strongly Disagree		Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are there different sizes of each species?	1		2	3	4	5	Not assessed	
	Strongly Disagree		Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1		2	3	4	5	3	Not assessed

**Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)** 'beach shellfish'

Does the species exhibit any external signs that there are health issues? E.g. Discoloration of skin, fungus, cysts, sluggish behaviour, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5		3	None obviously visible, but has not been assessed in any meaningful way yet.
What percentage of this species exhibits any external signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5	Not assessed	
Does the species exhibit any internal signs that there are health issues? E.g. Discoloration of liver, liver abnormalities, cysts, worms, etc.	Yes		Uncertain	No		Score	Comments (if needed)
	1		3	5		Not assessed	
What percentage of this species exhibits any internal signs that there are health issues?	>50%	>25%	>10%	>5%	0%	Score	Comments (if needed)
	1	2	3	4	5	Not assessed	

Was the age assessed by direct means (e.g. otolith examination)? Yes/No Not assessed

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
If YES, please describe the growth rate	1	2	3	4	5	3	Not assessed

Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)

Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)

1.6

In open coast situations we would not necessarily consider this section. However, where there is a clear link between marine and freshwater, especially in terms of effects, this is relevant (particularly considering the area affected by the wastewater overflows).

As we are in essence assessing the downstream end of the catchment, we will not be assessing the catchment health downstream, but considering the waterbodies affected by the wastewater overflows as part of the upstream catchment. That enables us to capture aspects such as point source discharges.

Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)

3

None of the below will change because it is independent of wastewater overflows

Upstream of area being assessed

	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Native vegetation cover comprises the following extents	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native catchment.
Are waterways in the catchment surrounded by native vegetation (relative to that specific habitat)? Riparian health.	1	2	3	4	5	1	This varies depending on which river system is being considered. The Waikanae has the least, but is not really affected by the wastewater overflows. More weight could therefore have been given to the Taruheru and Waimata. However, all in any case fall into category 1. Very little native riparian vegetation.
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	While the area affected by wastewater overflows is a small part of the catchment, it is 'nested' within the Gisborne urban area and is subject to stormwater point source discharges as well as wastewater point source discharges in wet weather and sometimes in dry weather. While the rural areas do not have lots of dairy etc., there are many unmitigated farm drains adjacent to intensively-farmed areas which act to concentrate flows and discharge them at specific discharge points. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. Contaminated landfills are leaching contaminants.
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Almost the entire urban catchment is unmitigated in terms of stormwater pollution, and there will be diffuse sources of pollution. The rural areas currently largely have very little or no setbacks from waterways, with pastoral and more intensive agriculture draining unmitigated into the waterways. Some of this is concentrated into pipes or drains, but there is no real 'disconnection' between contaminant sources and the waterways. For example, the Taruheru at Tuckers - LAWA places E.coli, Total N, Total Oxised N, Ammoniacal N, DRP, and TP in the worst 25% of all LAWA monitored streams in NZ. The Waimata has better scores, but also shows degradation; the lower scores may be due to less intensive farming (i.e. less cultivation) and a better flushing ability. The LAWA data supports scoring upstream sources of pollution as category 1. This supports scoring upstream sources of pollution as category 1.
	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile		Score	Comments (if needed)

Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	1	2	4	5	2 This is not included in LAWA. GDC sediment monitoring data shows good clarity at Tuckers Road (Taruhuru River) but relatively poor clarity at Lytton Road and Peel Street) - NOF band C. The Waikanaye shows the same. This indicates that turbidity is likely being driven by tidal and estuarine processes. An opinion is that the high 'muddiness' combines with tidal flows to resuspend or keep in suspension sediments for longer. The Waimata is accepted as carrying high levels of sediment and being turbid. While there are times during summer when turbidity reduces, it only takes a small rainfall event to revert back to high turbidity.
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The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use	Land use (best fit)	% cover	Ranking	<p>As the effects take place in areas affected by tidal processes and mixing will to some extent occur between waters from the Taruhuru, Waikanae and Waimata, we considered these all together, focussing on the Turanganui as the common area of impact. The Landcover work calculated on GIS.</p> <p>The Waimata River system has the largest catchment of approximately 22,700 ha. Predominant land covers in the Waimata catchment include steep grasslands, exotic forest and manuka/kanuka (Figure 4-2). Less than 3.5 km of the river runs through urban parts of Gisborne, of which, around 2 km is downstream of the only Primary outfall in its catchment (Seymour Rd/Turenne St). No secondary outfalls drain to the Waimata River system. Urban reaches of Waimata River are adjoined by a mix of public and private open space and residential development (see Appendix 3 for photographs).</p> <p>The Taruhuru River system is around 111 km in length and drains a catchment of around 8400 ha. The river system flows through a low-lying floodplain before reaching Gisborne township. Landuses in the catchment are dominated by cropping, orchards and grasslands, with urban development in the lower catchment (Figure 4-2; Gisborne District Council (2013)). The gradient of the river is very flat through the 5 km urban section (see Appendix 3 for photographs), and for 10 km upstream. As a consequence, water levels are strongly affected by sea levels, with tidal effects occurring over this distance (Poynter et al. 2016). A flood management scheme dating back to the 1960s including stopbanks, channel deepening and riverbank armouring enabled major changes in landuse from pastoral to horticultural. Despite this, low lying areas remain vulnerable to surface flooding (Peacock et al. 1997). The impacts of river modification and surrounding landuses have adversely affected the natural character of the river, which was scored as low by a River Expert Panel using the River Values Assessment System (RIVAS) (Booth et al. 2012). Two secondary outfalls discharge along Taruhuru River (Oak St and Palmerston Rd/Peel St), while a Primary outfall is located in Turanganui River, just below the Waimata and Taruhuru confluence.</p> <p>The Waikanae Creek system is around 7.5 km in length and borders the southwestern edge of Gisborne township. It is a low gradient, groundwater fed stream that drains a catchment of around 1100 ha. The stream is tidally influenced, with the saline intrusion evident at least 4 km upstream from the sea. Landuse in the upper catchment is dominated by orchards and horticulture, while the mid to lower catchment is dominated by mixed urban (including industrial) development, though significant areas of urban parkland or open space are also present, including open space areas associated with closed landfills (Figure 4-2; Conn (2018)). The creek has been heavily impacted by human activities and was assessed as having low natural character (Booth et al. 2012). No primary or secondary outfalls discharge to Waikanae Creek.</p>	
	Annual cropping / High intensity livestock	50	1		
	Commercial forestry	27	2		
	Low intensity livestock (incl. extensive grazing)	3	3		
	Permanent horticulture/viticulture/urban	1	4		
	Native	19	5		
	<b>Should = 100%</b>	<b>100</b>	2.12		
		2.12			

Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
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Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	1	2	3	4	5	3	The flows will be primarily determined by the rural areas, as these are by far the majority of the catchment. Urban areas may have some localised impacts on flows. The catchment has been almost entirely transformed from natural, due to agricultural activities. There is a fair bit of exotic forest and a little natural bush; these can be expected to have similar hydrological influences as a natural catchment, although harvesting will also have an influence. The cropping and horticultural areas will have land drainage, which will have modified the hydrology of those areas. The Poverty Bay flats would historically have comprised an extensive swamp with lots of water retention - that has changed dramatically. The hydrology is therefore considered to have been changed significantly in freshwater areas. Urban areas will have some influence, but this will be small because they mostly discharge into estuarine areas (where tidal influences are greatest). Hydrological changes on the areas affected by wastewater overflows would have changed but unlikely significantly. The saline wedges are all likely to have been affected. In wet weather higher freshwater flows can be expected (because of less attenuation in the catchment). While these effects can be modelled, this is not yet done. A score of 3 was chosen, considered to reflect the dominant tidal effect on the areas affected by the wastewater (which would mean little change in these areas) matched against the upstream changes in hydrological flows (which will have resulted in changes).
	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Very few waterways are fenced.
						1.52	

**Downstream of area being assessed** Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Natural vegetation cover comprises the following extents	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are waterways surrounded by native vegetation (relative to that specific habitat)?	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are there point source discharges of pollution into waters?	Many	More than a few	A few	Almost none	None	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Are there diffuse discharges of pollution into waters?	Most of the area	Quite a lot of the area	Here and there	Almost nowhere	Nowhere	Score	Comments (if needed)
	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
Turbidity NTU - LAWA - specific to a particular waterbody - measured at the site	0 - 25% quartile	26 - 50% quartile	51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)	
	1	2	4	5	2	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.	

The below can be used if LAWA data or other monitoring data is not available for turbidity. In such an event consider both 'land cover / use' and 'length of waterways fenced'. This may also be filled out in conjunction with the LAWA data (as it provides another level of assessment).

Sediment sources - land cover / use

Land use (best fit)	% cover	Ranking
Annual cropping / High intensity livestock	50	1
Commercial forestry	27	2
Low intensity livestock (incl. extensive grazing)	3	3
Permanent horticulture/viticulture/urban	1	4
Native	19	5
<b>Should = 100%</b>	<b>100</b>	<b>2.12</b>

Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.

Is the hydrology of the water body (the volume of water, flow patterns, and seasonal changes) characteristic of natural conditions?	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)					
	1	2	3	4	5	3	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.					
						Score	Comments (if needed)					
						0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)



Sediment sources – proportion of waterways fenced (areas where there are livestock)	1	2	3	4	5	1	Not applicable, as described above; for the purpose of the functionality of the Mauri Compass tool, the same scores have been entered as per the 'upstream' area.
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1.52

**Te Ao Taiao**

**ONLY FILL IN IF SCORED**

How natural is the habitat in and adjacent to the waterbody?

**NB: If not applicable, do not enter anything in the excel cell**

None of the below will change when assessing water quality over the time when wastewater overflows are influencing water quality measurements

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Does the terrestrial habitat look like the equivalent native habitat?	1	2	3	4	5	2	The terrestrial habitat is almost completely transformed. In the area of impact, the terrestrial habitat comprises urban environments, with parkland and landscaped areas. Some dune restoration, and bush regeneration (Kaiti). Some areas further away but still likely to be adjacent to affected marine waters comprise dune areas that will provide some value.
How good are the habitat conditions for reproduction of aquatic species?	Very poor 1	Poor 2	Average 3	Good 4	Very good 5	Score 2.5	Comments (if needed) The current state is compared to the likely natural state. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipooa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally. Nevertheless breeding habitats should be functioning close to natural. The inner harbour and port areas will have negative effects on reproduction of some species, while potentially providing suitable conditions for other species. Dredging will be having a negative effect. Marine koura hatcheries have been impacted and are threatened.
Are benthic conditions similar to natural conditions?	Not at all the same 1	Very different 2	Not sure 3	Very similar 4	Exactly the same 5	Score 3	Comments (if needed) There will be some areas that have increased 'muddiness'. The size fractions of sediments will also likely be smaller than in natural conditions.
Are erosion and deposition patterns (fluvial conditions) characteristic of natural conditions?	Not at all the same 1	Very different 2	Not sure 3	Very similar 4	Exactly the same 5	Score 3.5	Comments (if needed) These patterns are driven by natural processes that are not really affected by man's activities. However, the port and harbour would have resulted in changes, particularly close to the river mouth.
How similar is water clarity compared to a natural stream / waterbody?	Not at all the same 1	Very different 2	Not sure 3	Very similar 4	Exactly the same 5	Score 3	Comments (if needed) The rivers are regularly turbid, and the east coast is characterised by actively eroding cliffs that deposit fine sediments into the sea. Land use in upstream areas, and sediment-laden runoff from these areas, will be affecting the frequency of changes in turbidity and adding an unnatural load of fine sediment to these areas.
How optimal is the water temperature? Note: Adapt depending on waterbody.	> 24 °C / >25 °C 1	22 - 24 °C / >25 °C 2	20 - 22°C / < 25 °C 3	18 - 20 °C / < 22 °C 4	< 18 °C / < 19 °C 5	Score Not relevant	Comments (if needed) Not relevant

2.8

Biodiversity (how diverse is the plant and animal life associated with the waterbody?)

None of the below will change when assessing water quality over the time when wastewater overflows are influencing water quality measurements

**Results of sampling / surveys:**

Invertebrate species richness (#)  
EPT taxa (#)

No specific overall surveys completed. In the  
Not relevant

Fish species richness (#)	<p>The following is relevant (from Kelly &amp; Sim-Smith, 2020):</p> <p>Fish species recorded in saline areas of the Waimata, Taruheru, Turanganui Rivers and Waikanae Creek include grey mullet (<i>Mugil cephalus</i>), common smelt (<i>Retropinna retropinna</i>), black flounder (<i>Rhombosolea retaria</i>), kahawai (<i>Atripis trutta</i>) and kingfish (<i>Seriola lalandi lalandi</i>) (Gisborne District Council 2013; Crow 2017; Conn 2018). Other marine species also likely to be present including yellow eyed mullet, piper and snapper (Poynter et al. 2016).</p> <p>Fish species in the coastal areas will be representative of natural species.</p>
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are river mouth, marine, and near shore. As such we considered the shellfish, kina and crayfish community. Fish species considered river mouth, beach, marine, and near shore species.

**Predicted native state:**

Invertebrate species richness (#) / Benthic life	The same species are present, but in lower abundances than expected in natural scenarios.
EPT taxa (#) / Sensitive Species	Not relevant
Fish species richness (#)	The same species are present, but in lower abundances than expected in natural scenarios.
Native plant percentage (%)	100%

This information is used to enable a value judgement to be made on the below Likert scale scoring

The environments affected by the wastewater overflows are river mouth, marine, and near shore. As such we considered the shellfish, kina and crayfish community. Fish species considered river mouth, beach, marine, and near shore species.

	Not at all the same	Very different	Not sure	Very similar	Exactly the same	Score	Comments (if needed)
Is invertebrate / benthic life similar to that of a native environment?	1	2	3	4	5	3	Over-harvesting will have affected abundance in some areas. Other areas (e.g. the mouth of the Waikanae Creek and beach areas) are almost not at all harvested. However, there have been effects of sedimentation from upstream catchments. The extent to which this sediment load (particularly fine sediments) is natural is unclear. However, farming will definitely have worsened this. The river mouth has been mostly transformed from its natural state. So fairly substantial changes likely (although changes in species richness unlikely)
Is fish life similar to that of a native environment?	1	2	3	4	5	3	The species richness of fish life is very similar to that of a native environment. Abundance of fish species may however be lower, due to direct human impacts (e.g. fishing) and compromised habitats, especially at the river mouth. There may be some effect due to habitat transformation.
Is plant life similar to that of a native environment?	1	2	3	4	5	4	This will be very similar. Maybe some changes due to sediment effects and transformation at the river mouth.
Are there man-made barriers to fish migration? Upstream	Total barriers 1		Partial barriers 3	No barriers 5		Score	Comments (if needed) Not really applicable; dealt with in freshwater assessment
Please provide details of the fish barrier(s) (incl. nature of barrier, how many, how far away, how much catchment affected)	Not applicable						
Are there man-made barriers to fish migration? Downstream	Total barriers 1		Partial barriers 3	No barriers 5		Score	Comments (if needed) Not really applicable; dealt with in freshwater assessment

Note: Downstream has a higher weighting  
Please provide details of the fish barrier(s)  
(incl. nature of barrier, how many, how far away,  
how much catchment affected)

Not applicable

Overall fish barrier score: 0.00

Total score 3.33

Enter fish passage score from H252 IF fish passage has been scored

**Biohazards (how germ free is the waterbody?)**

**Present State**

Freshwater - not applicable

**Freshwater**

Levels of indicator species of bacteria (E.coli) - Suitability for Recreation Grade	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)	
	1	2	3	4	5		Not applicable	
	0 - 25% quartile		26 - 50% quartile		51 - 75% quartile	76 - 100% quartile	Score	Comments (if needed)
E.coli - LAWA - specific to a particular waterbody	1	2	3	4	5		Not applicable	
	NPSFM Band E		NPSFM Band D	NPSFM Band C	NPSFM Band B	NPSFM Band A	Score	Comments (if needed)
Levels of indicator species of bacteria (E.coli) - NPSFM	1	2	3	4	5		Not applicable	

**Saline**

Applicable

Levels of indicator species of bacteria (Enterococci) - Suitability for Recreation Grade	Very poor	Poor	Fair	Good	Very Good	Score	Comments (if needed)
	1	2	3	4	5		
	1	2	3	4	5	1.5	<p>The Cut rated as Poor to Very Poor using the MfE guidelines (both during overflows and at times in-between overflows). Kaiti Yacht Club (Good), Midway (Very Good), Waikanae (Fair to Good). Adopting a precautionary approach, and recognising the most contact recreation for tangata whenua takes place from The Cut to Waikanae, that The Cut also has some spikes in indicator bacteria during summer months, we have chosen a category of poor to fair.</p> <p>During an overflow event risks will be higher, decreasing over time after the event.</p> <p>The significant role of background pathogen sources is highlighted here, as there is essentially no difference in suitability for recreation grade comparing overflow events and in-between times. However, the risks are higher during the overflow event.</p> <p>While indicator pathogen levels do increase during overflow events (as evidenced in monitoring data for The Cut), the changes at Waikanae, Midway, and Kaiti are relatively small. It does appear that the main (elevated) pathogen risks are close to the river mouth.</p> <p>Swimming is discouraged during overflow events through signage.</p> <p>Did not make it 1 because in some of the receiving environments it would be between 2 and 5, even during overflow events.</p>
	Not suitable for Swimming		Caution advised	Suitable for swimming		Score	Comments (if needed)

Land

Levels of indicator species of bacteria (Enterococci) - LAWA - specific to a particular waterbody (suitability for swimming)	1		3	5	2	<p>The LAWA data classifies Midway as 'Suitable for swimming' and Waikanae as 'Caution advised'. It does not classify The Cut; however, based on available data, The Cut would likely be classified as Not Suitable for Swimming if it was measured (using GDC data).</p> <p>During an overflow event risks will be higher, decreasing over time after the event.</p> <p>The significant role of background pathogen sources is highlighted here, as there is essentially no difference in suitability for recreation grade comparing overflow events and in-between times. However, the risks are much higher during the overflow event.</p> <p>While indicator pathogen levels do increase during overflow events (as evidenced in monitoring data for The Cut), the changes at Waikanae, Midway, and Kaiti are relatively small. It does appear that the main (elevated) pathogen risks are close to the river mouth.</p> <p>Swimming is discouraged during overflow events through signage.</p> <p>Score reflects the variability in SFRG depending on where you are at the coast (not all areas). A score of 2 has been provided as there are not all affected areas will be classed as 'not suitable' for swimming.</p>	
	> 500 CFU/100ml	201 - 500 CFU/100ml	41 - 200 CFU/100ml	<40 CFU/100ml	Score	Comments (if needed)	
Levels of indicator species of bacteria (Enterococci)	1	2	3	4	5	1.5	<p>Council monitoring data was assessed.</p> <p>95th percentile figures in affected areas are between 21 and 8,500 CFU / 100ml for Enterococci. This reflects the decreasing risk as one moves from the river mouth out to Midway and Kaiti Yacht Club.</p> <p>Maximum figures in affected areas are between 98 and 42,000 CFU / 100ml for Enterococci. This reflects the decreasing risk as one moves from the river mouth out to Midway and Kaiti Yacht Club. Only The Cut maximum exceeded the indicator guidelines for contact recreation. This shows the dilution effect of the marine environment.</p> <p>These figures highlight ongoing high levels of biohazards specifically at The Cut (an area regularly used by recreators).</p> <p>During an overflow event levels will be higher, but are extremely unlikely to exceed 500 CFU/100ml except at The Cut. The score of 1.5 is seen as precautionary.</p>

1.7

**Chemistry (how free of chemical pollution is the waterbody?)**

**Note: We will not see much change to the below because of the categories these figures relate to and the way they are statistically assessed. Percentiles take out any infrequent spikes, such as that of wastewater overflows. Where effects are greater during overflows, this has been described.**

Freshwater environments

	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Phytoplankton (Lakes)	1	2	4	5	Not applicable	
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Total Nitrogen (Lakes)	1	2	4	5	Not applicable	
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Total Phosphorus (Lakes)	1	2	4	5	Not applicable	
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Periphyton (Rivers)	1	2	4	5	Not applicable	
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Nitrate (Toxicity) (Rivers)	1	2	4	5	Not applicable	
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Ammonia (Toxicity) (Lakes and Rivers)	1	2	4	5	Not applicable	
	Band D	Band C	Band B	Band A	Score	Comments (if needed)

NPSFM - Cyanobacteria (Planktonic) (Lakes and L	1	2	4	5		Not applicable
	Band D	Band C	Band B	Band A	Score	Comments (if needed)
NPSFM - Dissolved Oxygen)(below point sources);	1	2	4	5		Not applicable

Note: For Dissolved Oxygen, for the purpose of this assessment, the above can be used for both below point sources and generally. Verify that this approach is acceptable with another subject matter expert.

Black Disc - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Turbidity - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Total N - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Total Oxidised N - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Ammoniacal N - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Dissolved Reactive P - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Total P - LAWA - specific to a particular waterbody	0 – 25% quartile	26 – 50% quartile	51 – 75% quartile	76 - 100% quartile	Score	Comments (if needed)
	1	2	4	5		Not applicable
Zinc - ANZECC guidelines (level of protection)	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
	1	3	4	5		Not applicable
Copper - ANZECC guidelines	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
	1	3	4	5		Not applicable

Saline environments

The concentrations / levels of the below will rise during overflow events but are unlikely to affect flora and fauna beyond the effects due to background levels.

Chlorophyll concentrations	> 10µg/L	5 – 10 µg/L	< 5µg/L		Score	Comments (if needed)
	1	3	5			Not available
Oxygen Saturation	< 65% saturation	66 - 80% saturation	80 - 90%	> 90%	Score	Comments (if needed)
	1	3	4	5		Not applicable
Total Nitrogen - Sediment	> 4000 mg/kg	2000 - 4000 mg/kg	500 - 2000 mg/kg	< 500 mg/kg	Score	Comments (if needed)
	1	3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
Total Phosphorus - Sediment	> 1000 mg/kg	500 - 1000 mg/kg	200 - 500 mg/kg	< 200 mg/kg	Score	Comments (if needed)
	1	2	3	4	5	Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)

Zinc - ANZECC guidelines (level of protection)	1	3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.
	< 80%	80 - 90%	90 - 95%	95 - 100%	Score	Comments (if needed)
Copper - ANZECC guidelines	1	3	4	5		Not applicable. Extremely unlikely to be relevant to ecological effects in these dynamic environments. No known signs of stress due to nutrients. The key issues for this environment comprise turbidity and sedimentation, particularly fine sediments / silts. The sediments are extremely mobile. These are natural processes, however the sediments from the Waipaoa catchment introduce very large quantities of sediment. Large quantities of sediment also exit out of the Turanganui. These will be affecting reef areas, to some extent unnaturally.  The lower tidal areas of city rivers have been addressed in the freshwater assessment.

4

For the purpose of this mauri assessment, and use of the tool, we have included a score in this row. This is because no water chemistry issues are likely to be having any effects in the environments subject to this work. Some issues have been suggested due to the activities of the Port, however with recent stormwater treatment improvements these appear to have been largely mitigated. While none of the chemistry scorings have been specifically addressed, a score of 4 was provided in this section as an overall score for water chemistry in the marine environment at this location.

Summary Table of Scores

Te Ao Maori	Subgroup Scores	Group Scores
Tangata whenua (how strong is your overall connection to the waterbody?)	1.50	26.00
Tikanga (how prevalent are your cultural practices with the waterbody?)	1.00	
Wairua (how strong are your spiritual connections with the waterbody?)	1.50	
Mahinga kai (is mahinga kai practiced?)	1.20	
<b>Nga Tini A Tangaroa</b>		
Kai Species Richness (are the same species still available for mahinga kai?)	3.00	45.58
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga kai today as before?)	1.60	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.00	
Catchment health (what is the state of the ecosystems and associated ecological processes in areas upstream and downstream of the waterbody?)	1.52	
<b>Te Ao Taiao</b>		
How natural is the habitat in and adjacent to the waterbody?	2.80	59.00
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	3.33	
Biohazards (how germ free is the waterbody?)	1.67	
Chemistry (how free of chemical pollution is the waterbody?)	4.00	
<b>Total Score (%)</b>	<b>43.53</b>	

## Appendix 8.4 Rongowhakaata (Marine)

Summary table of Scores	Scenario 1		Scenario 2 - After TRMP, reduction in overflows		Scenario 3 - No wastewater overflows in wet weather		Scenario 4 - During overflows	
Description	Present State of wastewater overflows between 2 and 4 times a year in wet weather, including all catchment influences (e.g. rural and urban stormwater discharges)		Wastewater overflows in wet weather, after TRMP targets have been achieved, reduction in overflows to an average of one overflow per two years (a 50% chance of an overflow per year), all catchment influences remain (e.g. rural and urban stormwater discharges)		No more wastewater overflows in wet weather, all other catchment influences remain (e.g. rural and urban stormwater discharges)		From start of an overflow to up to 2 to 4 days afterwards; this is the period over which differences in water quality due to wastewater overflows can be detected in the receiving waters; excludes EOCs and viruses; all other catchment influences remain (e.g. rural and urban stormwater discharges)	
Te Ao Maori	Subgroup Scores	Group Scores %	Subgroup Scores	Group Scores %	Subgroup Scores	Group Scores %	Subgroup Scores	Group Scores %
Tangata whenua (how strong is your overall connection to the waterbody?)	2.8	50.0	4.0	64.0	4.0	73.3	0.0	3.3
Tikanga (how prevalent are your cultural practices with the waterbody?)	2.5		3.0		3.3		0.0	
Wairua (how strong are your spiritual connections with the waterbody?)	2.8		3.5		4.0		0.7	
Mahinga kai (is mahinga kai practiced?)	2.0		2.3		3.4		0.0	
<b>Nga Tini A Tangaroa</b>								
Kai Species Richness (are the same species still available for mahinga kai?)	3.0	45.6	3.0	45.6	3.0	45.6	3.0	45.6
Taonga/Sentinel Kai Species Abundance (are there as many taonga / sentinel mahinga)	1.6		1.6		1.6		1.6	
Taonga/Sentinel Kai Species Health (how healthy is the kai in the waterbody?)	3.0		3.0		3.0		3.0	
Catchment health (what is the state of the ecosystems and associated ecological)	1.5		1.5		1.5		1.5	
<b>Te Ao Taiao</b>								
How natural is the habitat in and adjacent to the waterbody?	2.8	61.9	2.8	64.8	2.8	67.3	2.8	59.0
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	3.3		3.3		3.3		3.3	
Biohazards (how germ free is the waterbody?)	2.3		2.8		3.3		1.7	
Chemistry (how free of chemical pollution is the waterbody?)	4.0		4.0		4.0		4.0	
<b>Total Score (%)</b>	<b>52</b>		<b>58</b>		<b>62</b>		<b>36</b>	



Scenario #1

Present State of wastewater overflows between 2 and 4 times a year in wet weather, including all catchment influences (e.g. rural and urban stormwater discharges)

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, as a source of tribal identity and whakapapa, reflected in terms of tikanga practice?	1	2	3	4	5	2	The impacts particularly of the wastewater discharge to the Bay plus the overflows of untreated sewage largely preclude tikanga practice, including manaaki of guests. Similarly while tribal identity remains strong, this is also compromised by these factors, plus urban and agricultural inputs (although to a lesser degree).
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 5	Comments (if needed) The coastal embayment and coastline is a major venue for waka, sailing, surfing, paddle boarding, swimming and, in places, gathering of kai moana.
How regularly are archaeological sites associated with the waterbody accessed?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 3	Comments (if needed) Uncertain of actual numbers and sites.
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score 1	Comments (if needed) As above, Row 10. The frustration over difficulties associated with exercise of kaitiakitanga is mitigated somewhat by proposed improvements to wastewater treatment systems. Urban and upper catchment influences impact also.

2.75

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	3	Occasionally rahui may be imposed for death at sea. Recent powhiri were conducted along the coast and beachfront for Pacifica manuhiri. The beaches and inshore have been used recently for preparing tupapaku.
What range of tikanga wai maori or wai tai is practiced?	<20% 1	20 - 40% 2	40 - 60% 3	60 - 80% 4	80 - 100% 5	Score 2	Comments (if needed) See above Row 20.

2.5

Wairua (how strong are your spiritual connections with the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4	5	4	Well known to some, but this knowledge is not widely available.
Wahi tapu and taniwha sites associated with the waterbody are regularly visited	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score Uncertain. No score.	Comments (if needed)
Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score 4	Comments (if needed) Yes, despite contamination from a range of sources and regular disturbance, the coastal embayment and surrounds is very highly regarded for intrinsic values.
Places of taniwha and wahi tapu are protected	None protected 1	Very few protected 2	Some protected 3	Most protected 4	All protected 5	Score Uncertain. No score.	Comments (if needed)
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 1.5	Comments (if needed) I know of no one who, e.g., gathers seawater from the Bay and environs for healing purposes because of contamination inputs.
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and wai tapu)?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 1.5	Comments (if needed) As above Row 36.

2.8

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.

**Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important. Keystone / sentinel species: Pāua & crayfish, kina, beach shellfish**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihī), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	1	My understanding is that marae have given directives that no kai from the rivers or Bay is to be used at marae-based gatherings.
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5		Uncertain. No score.
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	2	As above, Row 45. Some individuals do gather food from the beaches and Bay, although this tends to be finfish, rather than shellfish or crustacea (although this also may occur from time to time).
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	1	As above, Rows 45 and 49. Many if not most people do not equate wastewater discharges with the transport also of mortuary materials.
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	4	Pūkenga kaitiaki are held in high value amongst tangata whenua, and their opinions sought often in relation e.g. to water contamination.

Scenario #2

Wastewater overflows in wet weather, after TRMP targets have been achieved, reduction in overflows to an average of one overflow per two years (a 50% chance of an overflow per year), all catchment influences remain (e.g. rural and urban stormwater discharges)

Te Ao Maori

Tangata whenua (how strong is your overall connection to the waterbody?)

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa</del> , reflected in terms of tikanga practice?	1	2	3	4	5	3	Question in this context is a little misleading i.e. It should ask if the waterbody's POTENTIAL for significance is enhanced. There are numerous factors which may impact on the implementation of actual tikanga practice.
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 5	Comments (if needed) The beaches and embayment comprise a series of major recreational venues. Reduction in volume and periodicity of sewage overflows is expected to enhance this (as is the proposed wastewater upgrade).
How regularly are archaeological sites associated with the waterbody accessed?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score	Comments (if needed) Uncertain. No score.
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score	Comments (if needed) No comment / No score.

4.0

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	3	An improved and targetted shellfish monitoring program, using rahui to close beds at unsafe times, and reopen these when indicators have stabilised as acceptable, would be one example of a new application of tikanga practice that reduced overflows might provide opportunity for.
What range of tikanga wai maori or wai tai is practiced?	<20% 1	20 - 40% 2	40 - 60% 3	60 - 80% 4	80 - 100% 5	Score	Comments (if needed) No score. Uncertain.

3

Wairua (how strong are your spiritual connections with the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4	5	4	I believe these sites are well known to some, but the information is not widely known.
Wahi tapu and taniwha sites associated with the waterbody are regularly visited	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score	Comments (if needed) No score. Uncertain.
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)

People

Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	1	2	3	4	5	4.5	As Row 32, Scenario 1: 4 Yes, despite contamination from a range of sources and regular disturbance, the coastal embayment and surrounds is very highly regarded for intrinsic values. Any reduction in contaminant loading will enhance this.
Places of taniwha and wahi tapu are protected	None protected 1	Very few protected 2	Some protected 3	Most protected 4	All protected 5	Score	Comments (if needed)
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	No score. Uncertain. Comments (if needed)
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	1	2	3	4	5	3	Reduction in volume and periodicity of overflows is expected to enhance use of coastal waters for rongoa purposes.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	2.5	The only real use of the coastal waters for ceremonial/purification/ritual purposes that I know of is for washing the tūpapaku prior to tangi. However, such use is highly contentious and invariably clandestine.

3.5

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.

**Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important. Keystone / sentinel species: Pāua & crayfish, kina, 'beach shellfish'**

This information is used to enable a value judgement to be made on the below Likert scale scoring

How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihī), etc.) for hui, tangi or other gatherings?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score	Comments (if needed)
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	At present never. Whether the reduction in volumes and periodicity of overflows affects this (along with the proposed improvements to the wastewater treatment system) Comments (if needed)
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	2	I'm largely unaware of the use of the coastal environment for the types of activities envisaged here.
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	2.5	As above, Row 45. Some individuals do gather food from the beaches and Bay, although this tends to be finfish, rather than shellfish or crustacea (although this also may occur from time to time).
	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	2	The tapu impact of these materials may remain after any common western indicators of faecal material have ceased to be evident.
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	4	Pūkenga kaitiaki are held in high value amongst tangata whenua, and their opinions sought often in relation e.g. to water contamination. Reduction in volumes and periodicity of sewage overflows may mean an extended range of queries come to the tohunga attention.

2.3

Scenario #3

No more wastewater overflows in wet weather, all other catchment influences remain (e.g. rural and urban stormwater discharges)

Te Ao Maori

ONLY FILL IN IF SCORED  
NB: If not applicable, do not enter anything in the excel cell

Tangata whenua (how strong is your overall connection to the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)	
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa</del> , reflected in terms of tikanga practice?	1	2	3	4	5	4	Removal of sewage discharges allows TW to focus on readily identifiable and measurable factors. It is more likely to reflect tikanga practice in such an environment.	
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)	
	1	2	3	4	5	5	As before Sc 1 and 2. Numbers are not expected to greatly change, but based on our social research information, with removal of sewage overflows they would be expected to increase.	
How regularly are archaeological sites associated with the waterbody accessed?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)	
	1	2	3	4	5	3	Probably less reluctance to engage with takutai moana once sewage overflows have finished. Other factors may be more important in such a context. Uncertain however.	
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)	
	1	2	3	4	5	4	Cessation of sewage discharges signpost a significant achievement at least in part a result of TW exercise of kaitiaki role.	
	4.0							

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)	
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	3.5	Cessation of sewage discharges make it significantly more likely that such practices and protocols (other than those specifically targetted at mitigating the discharges themselves) are carried out.	
What range of tikanga wai maori or wai tai is practiced?	<20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%	Score	Comments (if needed)	
	1	2	3	4	5	3	An estimate would be 40-60%.	
	3.25							

Wairua (how strong are your spiritual connections with the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4	5	4	Sites may be well known, wether or not the cessation of sewage overflows would affect the extent of awareness of these is not easy to ascertain without specific targetted action by tohunga in these areas.
Wahi tapu and taniwha sites associated with the waterbody are regularly visited	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	No score. Uncertain.	
Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	5	As Row 32, Scenario 1: Yes, despite contamination from a range of sources and regular disturbance, the coastal embayment and surrounds is very highly regarded for intrinsic values. Removal of overflows (particularly if associated with proposed improvements to the wastewater system) is expected to significantly enhance this.
Places of taniwha and wahi tapu are protected	None protected	Very few protected	Some protected	Most protected	All protected	Score	Comments (if needed)
	1	2	3	4	5	No score. Uncertain.	
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
	1	2	3	4	5	4	Removal of overflows is expected to significantly enhance the use of coastal waters for rongoa purposes (particularly if associated with proposed improvements to the wastewater system).
	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)

How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	1	2	3	4	5	3	The only real use of the coastal waters for ceremonial/purification/ritual purposes that I know of is for washing the tupapaku prior to tangi. However, with the removal of the overflows ritual uses might be expected to increase. Particularly so with a concomitant improvement in the wastewater system discharge.
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4.0

**Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.**

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.	<b>Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important. Keystone / sentinel species: Pāua &amp; crayfish, kina, 'beach shellfish'</b>
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This information is used to enable a value judgement to be made on the below Likert scale scoring

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihi), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	3	The limiting factors would now be the wastewater discharge and catchment-based impacts. Nevertheless, it may be that there is some movement towards use of kai resources from some areas at some times.
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	3	It would be consistent to expect the takutai moana to be more available for any relevant customary uses.
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	3	The limiting factor remains the wastewater discharge and catchment impacts.
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	1	2	3	4	5	4	The cessation of sewage overflows logically removes the threats from human wastes entering a highly utilised environment. Rare discharges are expected to require rahui until a state of noa has been re-achieved.
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	1	2	3	4	5	4	Pūkenga kaitiaki are held in high value amongst tangata whenua, and their opinions sought often. Reoval of sewage overflows will significantly enable the kaitiaki role of TW and tohunga as to mahinga kai and taonga tuku iho.

3.4

Scenario #4

From start of an overflow to up to 2 to 4 days afterwards; this is the period over which differences in water quality due to wastewater overflows can be detected in the receiving waters; excludes EOCs and viruses

It is hard to conceive of any cultural activities that might be undertaken during sewage overflows as a matter of course. As such I have not commented on, or scored this Scenario.

Te Ao Maori

ONLY FILL IN IF SCORED

NB: If not applicable, do not enter anything in the excel cell

Tangata whenua (how strong is your overall connection to the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Is the waterbody's significance, <del>as a source of tribal identity and whakapapa, reflected</del> in terms of tikanga practice?	1	2	3	4	5	0	
How often do Tangata Whenua swim, play and recreate in the waterbody?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 0	Comments (if needed)
How regularly are archaeological sites associated with the waterbody accessed?	1	2	3	4	5	0	
Tangata Whenua feel that they are achieving their aspirations as kaitiaki of the waterbody	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score 0	Comments (if needed)

Tikanga (how prevalent are your cultural practices with the waterbody?)

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often are Tikanga wai maori management practices and protocols (e.g. rahui, tangi, tauranga waka, and marae events related to the waterbody) carried out?	1	2	3	4	5	0	
What range of tikanga wai maori or wai tai is practiced?	<20% 1	20 - 40% 2	40 - 60% 3	60 - 80% 4	80 - 100% 5	Score 0	Comments (if needed)

Wairua (how strong are your spiritual connections with the waterbody?)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
Wahi tapu (including urupa, pa sites, battlefields, and other sacred areas associated to the waterbody) and taniwha sites are well known	1	2	3	4	5	4	
Wahi tapu and taniwha sites associated with the waterbody are regularly visited	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 0	Comments (if needed)
Is the waterbody in its current state considered as a place that nurtures and nourishes the wairua (it is a place of ūkaipō)?	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	Score 0	Comments (if needed)
Places of taniwha and wahi tapu are protected	None protected 1	Very few protected 2	Some protected 3	Most protected 4	All protected 5	Score 0	Comments (if needed)
How often is the waterbody used for providing rongoa Maori (flora and fauna) for Tangata Whenua?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 0	Comments (if needed)
How often is the waterbody used by Tangata Whenua for purification / cleansing and for ceremonial / ritual purposes (incl. waikarakia and waitapu)?	Never 1	Rarely 2	Occasionally 3	Frequently 4	Very Frequently 5	Score 0	Comments (if needed)

Mahinga kai (is mahinga kai practiced?). This is about the customary practices and protocols of a marae community; this is not about day-to-day gathering of resources.

0.7

What Mahinga Kai species are relevant (past and present)? Separate out into main taonga / sentinel species and other kai species.

**Pāua, kina, crayfish, mussels, oysters, cockles (tuangi), trough shell (ruheruhe), wedge shell (hanikura), and pipi have always been important. Keystone / sentinel species: Pāua & crayfish, kina, 'beach shellfish'**

This information is used to enable a value judgement to be made on the below Likert scale scoring

	Never	Rarely	Occasionally	Frequently	Very Frequently	Score	Comments (if needed)
How often is the waterbody used to provide kai (incl. fish, watercress (wātakirihi), etc.) for hui, tangi or other gatherings?	1	2	3	4	5	0	
How often is the water body used for other customary natural resource gathering (e.g. harakeke, stones for fire, pounamu, mud dyes, etc.)?	1	2	3	4	5	0	
How often can the waterbody be used for mahinga kai?	1	2	3	4	5	0	
Is the practice of mahinga kai affected by human sewage or mortuary waste (other sensitive wastes) discharges into the water?	Always	Frequently	Occasionally	Rarely	Never	Score	Comments (if needed)
	1	2	3	4	5	0	
Are pūkenga in kaitiakitanga of mahinga kai known and engaged by tangata whenua?	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Score	Comments (if needed)
	1	2	3	4	5	0	

0



## **Comment re dry weather overflows, M. Palmer (Rongowhakaata Iwi Trust)**

The 'Summary' for the KIWA Group Engagement Report (May 25) contains the following reference to both wet and dry weather overflows:

The engagement was specifically in respect of wet and dry weather wastewater overflows into Gisborne City rivers and the connected coastal environment. The engagement plan (Appendix 1) provides more detail on the consent requirements, the overflows themselves, effects, affected tangata whenua, what Council is doing in respect of reducing and managing wastewater overflows, and the engagement approach and process. This formed the starting point of the engagement process.

Our belief is that we need to have discussions specifically around the dry weather overflows due to system blockages or malfunctions, as distinct from those overflows occurring during high rainfall events, and that these discussions need to be underpinned by an iteratively produced body of information. Such information would be expected to include:

- Causes of overflows
- Current mitigation options
- Potential mitigation options
- Actual and potential effects.

The impacts and risks associated with these discharges is expected to be dependent on where they occur, how much sewage is discharged, and how often these discharges occur. We note in terms of the Tairāwhiti Resource Management Plan, that the point source discharges of untreated sewage resulting from overflows from wastewater reticulation and pumping stations (Rule 6.2.3(10)) will be a 'Restricted discretionary' activity, while the discharge of wastewater via a pumping station or network overflow in dry weather conditions (Rule 6.2.4(15)) will be 'Noncomplying'.

In general, while the KIWA assessment focussed specifically on cultural impacts and the effects on mauri, we believe that the planning context outlined in the relevant TRMP sections provide a specific set of guidelines as to how such impacts and effects are to be avoided or mitigated. While acknowledging that there may be insufficient time for discussions around the planning context prior to lodging of the GDC resource consent application, nevertheless we anticipate that they will form part of RIT's overall focus around the sewage overflows during further tangata whenua engagement as part of the RMA1991 processes per se.

## Appendix 10 Gisborne District Council supplementary information of dry weather overflows

Dry weather overflows discharge substantially less wastewater than wet weather overflows mainly because the discharge is through the top of manhole covers or from private property gully traps. They are generally contained close to where they have occurred, and largely liquid rather than liquid and solids.

The below information on dry weather overflows is from the last 5 years.

Financial Year	Dry weather events	Number of events discharging to land	Number of events that reached water
2015/16	12	9	3
2016/17	9	7	2
2017/18	9	8	1
2018/19	4	3	1
2019/20	2	0	2
Total	36	27	9

Most of the dry weather overflows are to land.

The volume of wastewater discharged into water in a dry weather overflow event is estimated to generally have been between 100 and 2,000 litres, rarely more, and the duration of an overflow normally less than a couple of hours.

This is based on discussions with Fulton Hogan (Council's wastewater operations contractor). The exact volume is difficult to determine as this depends on how quickly the overflow is detected and the size of the 'upstream' wastewater 'catchment'. These dry weather overflows generally occur out of manholes in roads or gully traps on properties, being readily visible. Gully trap discharges are unlikely to get to water, sewer manholes are closer to stormwater sumps but discharges from manhole are generally very small because of the weight of the lid.

Dry weather overflows are also possible from pump stations (e.g. when rags and wet wipes stop wastewater pumps), but these events are quickly noticed as the pump stations are remotely monitored.

The minimum volume of wastewater discharged in wet weather since 2011 has been 6 million litres, with a minimum discharge duration of over 20 hours.

While wet weather overflows can be assumed to be more diluted than a dry weather overflows (because in wet weather there is a considerable volume of stormwater in the wastewater discharge), and there are higher river flows during wet weather events, the volumes of dry weather overflows are comparatively so small that one can confidently state that the concentrations of wastewater discharged into the environment will be less than that in a wet weather event.

There have been more significant dry weather overflow events, such as the Oak Street overflow in 2017, which lasted approximately 2 hours (although the repair took approximately 8 hours).

<http://www.gdc.govt.nz/assets/Uploads/17-185-Oak-Street-Overflow.pdf>.

During this event Council employed sucker trucks to pump out wastewater from the system, to reduce the volumes reaching the waterbody. Council also notified the community of the dry weather overflow. Following such events GDC has then made improvements to mitigate the risk of a similar event happening again in the future.

When dry weather overflows take place they are generally to relatively large waterbodies where mixing will quickly occur, if it is a small waterway the discharge is generally contained and the discharge recovered by using a suction truck. In terms of effects on communities and water users, dry weather discharges are generally very

localised and generally don't present elevated health risks as they are contained. If a discharge is large such as the Oak Street incident the health risks are assessed at that time and appropriate warnings and monitoring are put in place. Council has in place a protocol for reacting to wastewater overflows, and this includes work by Pollution Control to mitigate health risks (and notify the public if there is a health risk).

There is however a potential for dry weather overflows into smaller waterbodies, such as the smaller creeks and streams in the city, where more significant ecological effects may then be possible, but generally the discharge volumes will be small. The small waterways present a greater opportunity to contain and recover the discharge. The ecological effects of dry weather overflows are considered in the specialist report on ecological effects of wastewater overflows (Kelly & Sim-Smith, 2020). The difficulty in defining the ecological effect of dry weather discharges is reflected in this report:

*Dry weather overflows are unpredictable, in terms of when and where they occur, and their magnitude of effect. While they have the potential to cause significant adverse effects, actual impacts are site and discharge specific. Small discharges of residential sewage directly into Gisborne's main rivers are likely to be minor. Conversely, a large discharge over an extended period into a confined waterway could have a marked impact, particularly if the discharge included a large trade waste component. Having effective systems and processes for preventing, detecting and responding to such events is therefore recommended.*

The unplanned and unexpected nature of the dry weather overflows makes it difficult to predict actual ecological impacts. The focus is therefore on prevention, rapid detection/response, and fast and effective remedial actions. This is also the case for general GDC management of dry weather overflows. Some information is provided below:

- When a dry weather overflow is reported, Council's wastewater operations contractor will immediately visit the site to investigate. This person is the First Responder, and his primary task is to identify the cause and contain the wastewater overflow as best as practicable. This is ordinarily done through bunding or the use of sucker trucks.
- Back-up personnel are concurrently deployed, who then focus on fixing the issues causing the dry weather overflow.
- The operations staff are trained to deal with dry weather overflows.

Council has increased its operational activities on the below, to mitigate the risks of dry weather overflows taking place:

- Education and awareness
- Network surveillance
- Cleaning of key wastewater pipelines (e.g. interceptors are now jet-cleaned every 3 years)
- Establishing more frequent jet-cleaning programmes where there are repeat pipe blockages (monthly to annual – depending on risk)

## **Appendix 11 Te-Whanau-a-Kai additional information**

Te Whānau-ā-Kai wishes to acknowledge the mana whakahaere and work of all fellow participants at the Kiwa Group table. We also wish to recognise the effort of the GDC staff that played a huge part in the creation of this report.

The Te Whānau-ā-Kai view is that mātauranga Māori is primarily based on empirical knowledge whilst Council practices Western scientific values that are based on theoretical knowledge. We view both as two different and separate pools of understandings that follow two separate pathways.

Te Whānau-ā-Kai has therefore chosen not to participate in the use of the Mauri Compass. We do however accept the compromise reached with fellow Group members in that we have all “agreed to disagree” on this issue.

Finally as the Kiwa Groups’ brief did not reach out into the area of the GDC’s “work strategy to reducing the practice of discharging”. However as noted earlier in this report any movement towards ceasing the practices is fully supported. Nevertheless Te Whānau-ā-Kai are not yet convinced that all recommendations identified in the Council’s strategy are the most effective.