

13 September 2019

Greg Hill
Chairman of the Hearing Panel
C/o Steve Rice
Healthy Rivers Hearing Coordinator

Delivered by email to: steve@riceres.co.nz
Cc to: Steve.Rice@waikatoregion.govt.nz

Dear Greg

Healthy Rivers Plan Change – Answers to Commissioners' questions

At the Block 1 Hearing on 13 March 2019, Commissioners asked me to provide written answers to several questions. The questions and answers are provided below.

Regards



Paul S Ryan
Principal Planner

Council Building
Garden Place, Hamilton
Phone 07 838 6478 / 027 453 9363
Email paul.ryan@hcc.govt.nz
Website www.hamilton.govt.nz

STATEMENT OF EVIDENCE

In the matter of the Resource Management Act 1991 (RMA)

And a submission and further submissions on Proposed Waikato Regional Plan Change 1 – Waikato and Waipā River Catchments (PPC1)

Submitter's Name: Hamilton City Council (HCC)

Submission Number: 74051

Hearing Topic: **Block 1 hearings**

- **Overall direction and whole plan submissions**
- **Values and uses**
- **Objectives**

Type of Evidence: Supplementary

Witness: Paul Stanley Ryan

Date: 13 September 2019

Summary statement

1. This evidence answers questions the Commissioners asked me during the Block 1 Hearing on 13 March 2019, which I was unable to answer on the day and which the Commissioners asked me to answer in writing after my appearance at the hearing.
2. The evidence confirms the following:
 - (1) Waikato Regional Council assessed the Pukete Wastewater Treatment Plant was fully compliant with the conditions of HCC's discharge permit in the period from 1 July 2017 to 30 June 2018. It is noted, however, that the criterion in Condition 27 measuring effective mixing of the outfall discharge with the river downstream of the diffuser outfall on the left littoral margins was not met;
 - (2) A mixing zone is specified in the discharge consent for the Pukete Wastewater Treatment Plant;
 - (3) Mixing zones are provided for in HCC's Comprehensive Stormwater Discharge Consent (CSDC); and
 - (4) The 95th percentile value for E. coli in the discharge to Waikato River from the Pukete Wastewater Treatment Plant for the nominally 5-year period from 17/3/2014 and 14/3/2019 is within the 80-year 95th percentile limit for E. coli at the Waikato River Horotiu Bridge, the next water quality monitoring site downstream.

Personal statements

3. My full name is Paul Stanley Ryan. Please refer to my Rebuttal Evidence on "Part B – Outcomes: Overall direction and whole plan submissions" for my:
 - (1) Qualifications and experience;

- (2) Endorsement of the content of HCC’s submissions and further submissions, except where stated otherwise in my evidence;
 - (3) Agreement to comply with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014; and
 - (4) Reserved position with respect to the relief my Block 1 evidence seeks.
4. As for my Block 1 evidence, I reserve my position with respect to the relief this Supplementary Evidence seeks.

Abbreviations

5. Abbreviations and terms used in my evidence are explained in **Attachment A**.

Scope of evidence

6. My evidence answers questions the Commissioners asked during the Block 1 Hearing on 13 March 2019 relating to the following matters:
- (1) Compliance with the Pukete Wastewater Treatment Plant discharge consent;
 - (2) Mixing zones in relation to the Pukete Wastewater Treatment Plant discharge;
 - (3) Mixing zones in relation to urban stormwater discharges; and
 - (4) Whether the quality of the discharge from the Pukete Wastewater Treatment Plant will meet a reasonable test for being swimmable.

Supplementary evidence

Question 1 - from Commissioner Ryder:¹

“So, currently the discharge [from the Pukete Wastewater Treatment Plant] is compliant at the point of the discharge entering the river?”

Answer

7. Waikato Regional Council assessed that, in the period 1 July 2017 to 30 June 2018, the discharge of treated wastewater from the Pukete Wastewater Treatment Plant via a multi-port diffuser outfall to the Waikato River was fully compliant with the conditions of HCC’s discharge permit, consent number AUTH114674.01.02² – see the Regional Council’s letter of compliance in **Attachment B**. The full consent certificate is provided in **Attachment C**. Conditions 8 and 9 specify the required quality of the discharge **entering the outfall pipeline**.
8. Notwithstanding the above assessment of full over-all compliance with the discharge consent conditions, there was an anomaly with one duplicate sample taken from one of three sampling locations in the left littoral margins of Waikato River downstream of the diffuser outlet. This one sample returned higher DIN concentrations than the other samples. This increased the mean value at this location and resulted in failure of the discharge to satisfy the criterion in Condition 27 about effective mixing of the outfall pipeline discharge with the Waikato River in the left littoral margins. The criterion regarding effective mixing of the discharge with the main river flow was satisfied. Further detail about this is provided in **Attachment D**.

¹ This question is asked at 1:48:24 on the audio recording for Day 3d afternoon break 1549 to evening break 1755.

² HCC reference D-2257346

Question 2 - from Commissioner Ryder:³

“You don’t have to have a mixing zone because you are compliant at the point of discharge?”

Answer

9. The above statement is incorrect. Condition 27 of HCC’s permit to discharge treated wastewater from a multi-port diffuser outfall to the Waikato River (see **Attachment C**) requires annual demonstration of uniformity of mixing by sampling surface water at five points across the main flow of the river 300 metres downstream of the outfall. As noted above, in the period 1 July 2017 to 30 June 2018, the discharge was fully compliant with the consent conditions – see **Attachment B**.

Question 3 - from Commissioner Ryder:⁴

“...the urban stormwater discharges to the river for Hamilton City ... presumably they comply with some provision in the Regional Plan, they won’t have mixing zones specified on their permits either?”

Answer

10. The above presumption is incorrect. Mixing zones **are** provided for in HCC’s CSDC⁵ to the extent described below.
11. The CSDC specifies that desired water quality states are to be achieved “after reasonable mixing” of the discharged stormwater with the receiving water in relation to the following contaminants or adverse effects. The conditions referred to are reproduced in **Attachment E** with the wording “after reasonable mixing” highlighted:
- Floatable contaminants – see Condition 14
 - Suspended solids – see Condition 15
 - Adverse effects on aquatic ecosystems – see Condition 18. This includes the following attributes or effects:
 - Dissolved oxygen levels;
 - pH;
 - Suspended sediments smothering benthic organisms;
 - Undesirable biological growths;
 - Water temperature change;
 - Turbidity between the months of August and December;
 - Ammoniacal nitrogen; and
 - Other contaminant contributions.

³ This question is asked at 1:48:33 on the audio recording for Day 3d afternoon break 1549 to evening break 1755.

⁴ This question is asked at 1:49:05 on the audio recording for Day 3d afternoon break 1549 to evening break 1755.

⁵ Consent No. 105279 Doc#2021665. HCC Reference D-881508

12. The CSDC does not specify a distance downstream of a stormwater outfall within which reasonable mixing is considered to take place.
13. Condition 16 of the CSDC specifies that the *United States Environmental Protection Agency National Recommended Water Quality Criteria (USEPA, 2009) – Criteria Maximum Concentration* shall be applied to determine whether the concentration of any hazardous substance is adversely affecting aquatic life, or the suitability of water for human consumption after treatment. These criteria are silent about mixing zones.⁶
14. Condition 17 of the CSDC specifies that the *Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas (Ministry for the Environment, 2003)* shall be relied upon to determine whether a concentration of micro-organisms is adversely affecting human health. That guideline is also silent about mixing zones but specifies (p.H3): “*Water-quality samples should be taken from the area **where swimming occurs.***” [emphasis added]. The guideline may be accessed at: <https://www.mfe.govt.nz/sites/default/files/microbiological-quality-jun03.pdf>.
15. As the test of compliance with Condition 17 is measurement at a swimming site, mixing could be relied upon to dilute any contaminants between the point of any point source discharge and the swimming site.
16. Policy 8 in the Waikato Operative Regional Plan provides assessment criteria to help guide decisions on the size of mixing zone that is reasonable for any given discharge. Policy 8 and other relevant references to “mixing” in the Waikato Operative Regional Plan are reproduced in **Attachment F**.

Question 4 - from Commissioner Robinson:⁷

“Can you give us any sense of the quality of the discharge [from Hamilton City Council’s Pukete Wastewater Treatment Plant]? Will it meet a reasonable test for being swimmable and/or safe to gather food within some close proximity to the discharge?”

Answer

17. HCC collects data about the treated effluent discharged from the Pukete Wastewater Treatment Plant. It is used to monitor compliance with HCC’s discharge consent and to inform control of treatment plant processes.
18. E. coli samples are outfall samples collected downstream of the Ultra Violet treatment by means of a grab sample taken 4 times per week from Mondays through Thursdays between 10am and 4pm.

⁶ Chapter 5.1 of *Water Quality Standards Handbook* (United States Environmental Protection Agency, September 2014) provides detailed guidance about mixing zones, but that chapter is not referenced or invoked in HCC’s CSDC. See: <https://www.epa.gov/sites/production/files/2014-09/documents/handbook-chapter5.pdf>

⁷ This question is asked at 1:50:21 on the audio recording for Day 3d afternoon break 1549 to evening break 1755.

19. The 95th percentile concentration of E. coli in the discharge to Waikato River for the nominally 5-year period (from 17/3/2014 to 14/3/2019) is 223 E. coli MPN/100mL. This compares with the following 95th percentile E. coli targets in PPC1 for Waikato River at Horotiu Bridge:
 - Short-term target: 774 E. coli cfu/100 mL
 - 80-year target: 540 E. coli cfu/100 mL
20. Waikato Regional Council⁸ has advised me that the PPC1 E. coli targets are expressed in terms of number of E. coli per hundred millilitres, where the units are cfu (Colony Forming Units) per 100 millilitres. HCC's E. coli data are in units of MPN (Maximum Probable Number) per 100 millilitres because of the methodology HCC uses to count the E. coli.
21. HCC's Sampling & Analysis Team Leader, Geraldine McHaffie, advises that MPN methods tend to produce slightly higher results than cfu methods.
22. PPC1 states in the text under the heading "Table 3.11-1: Short term and long term numerical water quality targets for the Waikato and Waipa River catchments": "With regard to consent applications for diffuse discharges or point source discharges of nitrogen, phosphorus, sediment and microbial pathogens, it is not intended, nor is it in the nature of water quality targets, that they be used directly as receiving water compliance limits/standards". Despite this, the effluent discharged from the Pukete Wastewater Treatment Plant has fewer E. coli per 100millilitre than the 80-year 95th percentile limit for E. coli at Horotiu Bridge, the next water quality monitoring site downstream: 223 E. coli MPN/100mL compared with 540 E. coli cfu/100 mL

⁸ Vicki Carruthers, Senior Policy Advisor, Waikato Regional Council. Personal Communication, 10 September 2019.

Attachment A

Abbreviations

cfu	Colony Forming Units
CSDC	Comprehensive Stormwater Discharge Consent
DIN	Dissolved Inorganic Nitrogen. This is the sum of nitrite (NO ₂), nitrate (NO ₃) and ammonia (NH ₃).
E. coli	Escherichia coli
HCC	Hamilton City Council
mL	milli-litres
MPN	Maximum Probable Number

Attachment B

**Waikato Regional Council Audit Report
for Pukete Wastewater Treatment Plant
for the period from 1 July 2017 to 30 June 2018 ⁹**

⁹ HCC reference D-2842023

Mark Roberts

From: Edward Prince <Edward.Prince@waikatoregion.govt.nz>
Sent: Friday, 30 November 2018 12:05
To: Trent Fowles; Maire Porter
Cc: Haley O'Donoghue
Subject: Pukete Audit
Attachments: OBS135250-Site compliance report - 1 July 2017 to 30 June 2018-Compliance Monitoring-Self Monitoring.docx; OBS135250-Site Compliance Letter - 1 July 2017 to 30 June 2018-Compliance Monitoring-Self Monitoring.doc

Edward Prince Resource Officer | Infrastructure, Resource Use

WAIKATO REGIONAL COUNCIL | Te Kaunihera ā Rohe o Waikato

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30 November 2018

Trent Fowles
 Hamilton City Council - City Waters
 Private Bag 3010
 Waikato Mail Centre
 Hamilton 3240

Dear Trent

Annual Audit - Hamilton WWTP: Pukete Rd, Hamilton

Please find enclosed a report which assesses your compliance with selected conditions of the authorised activities for which monitoring has been undertaken. This assessment relates to the period from **1 July 2017 to 30 June 2018**.

Based on this assessment the following level of compliance has been achieved:

Authorisation	Activity Authorised	Compliance Status
AUTH108788.01.01	Take up to 4,000 cubic metres per day of water from Waikato River for sewage plant operation purposes	Full compliance
AUTH109199.01.01	Extend an existing box culvert by 24m, place up to 1083 c/m of clean fill material in a gully areas & undertake vegetation clearance & bed disturbance works in association with alignment of Pukete Rd, Hamilton	Full compliance
AUTH111029.01.02	Retain bio-solids on land at the existing Hamilton City Council Wastewater Treatment Plant	Full compliance
AUTH114674.01.02	To change three conditions of Resource Consent AUTH114674.01.01 that authorises the discharge of treated wastewater to the Waikato River from Hamilton City Council Pukete Wastewater Treatment Plant.	Full compliance
AUTH114675.01.01	Use existing river outfall structures in/on or over the bed of the Waikato River to the south-east of the Hamilton Wastewater Treatment Plant	Full compliance
AUTH114676.01.01	Discharge contaminants to air from activities associated with the operation of the Hamilton WWTP	Full compliance
AUTH134278.01.01	Discharge stormwater from Pukete WWTP to an unnamed tributary of the Waikato River.	High level of compliance
AUTH137123.01.01	To construct and maintain a pipe bridge and a vehicle access bridge in an unnamed tributary of the Waikato River, adjacent to the Pukete Wastewater Treatment Plant, Hamilton	Not assessed
AUTH138860.01.01	Install a structure in the bed of a river including associated bed disturbance and earthworks in a high risk erosion area	Full compliance

Overall Site Compliance:

Full Compliance

ACTIONS REQUIRED

The following action is required of you:

Authorisation	Condition Number	Action Required
AUTH134278.01.01	6	Continue to investigate the source of external inputs of suspended solids that are influencing the site C sample results adversely. Take any actions required to reduce the suspended solids to compliant levels.

Please consider what actions Hamilton City Council intends to take to improve compliance with the required action above and provide details of your proposed resolution before 30 June 2019.

Please do not hesitate to call me if you have any questions regarding this monitoring assessment. You can contact me at Waikato Regional Council's Hamilton office on 078590734, or alternatively you can email Edward.Prince@waikatoregion.govt.nz.

Yours faithfully



Edward Prince
**Senior Resource Officer - Infrastructure
Resource Use**

Site Compliance Report

Site No: REG602619
Site Owner: Hamilton City Council - City Waters
Site Name: Hamilton WWTP : Pukete Rd, Hamilton
Date: 8 October 2018

1 INTRODUCTION

The following resource consents are held for the site:

Resource Consent	Status	Description	Commenced	Expiry
AUTH108788.01.01	Current	Take up to 4,000 cubic metres per day of water from Waikato River for sewage plant operation purposes	27/08/2003	1/08/2023
AUTH109199.01.01	Current	Extend an existing box culvert by 24m, place up to 1083 c/m of clean fill material in a gully areas & undertake vegetation clearance & bed disturbance works in association with alignment of Pukete Rd, Hamilton	10/06/2003	17/04/2038
AUTH111029.01.02	Current	Retain biosolids on land at the existing Hamilton City Council Wastewater Treatment Plant	27/10/2004	31/08/2039
AUTH114674.01.02	Current	To change three conditions of Resource Consent AUTH114674.01.01 that authorises the discharge of treated wastewater to the Waikato River from Hamilton City Council Pukete Wastewater Treatment Plant.	18/09/2007	18/09/2027
AUTH114675.01.01	Current	Use existing river outfall structures in/on or over the bed of the Waikato River to the south-east of the Hamilton Wastewater Treatment Plant	18/09/2007	18/09/2027
AUTH114676.01.01	Current	Discharge contaminants to air from activities associated with the operation of the Hamilton WWTP	18/09/2007	18/09/2027
AUTH134278.01.01	Current	Discharge stormwater from Pukete WWTP to an unnamed tributary of the Waikato River.	2/02/2015	2/02/2039
AUTH137123.01.01	Current	To construct and maintain a pipe bridge and a vehicle access bridge in an unnamed tributary of the Waikato River, adjacent to the Pukete Wastewater Treatment Plant, Hamilton	31/08/2016	31/08/2051
AUTH138860.01.01	Current	Install a structure in the bed of a river including associated bed disturbance and earthworks in a high risk erosion area	30/11/2017	30/11/2052

This report examines the level of compliance of Hamilton City Council - City Waters with the selected conditions of the resource consents.

2 BACKGROUND

The Hamilton City Council (HCC) Pukete Treatment Plant covers an area of approximately 8 hectares and is located on Pukete Rd, Hamilton (Figure 1). The plant treats all reticulated wastewater within Hamilton City, which amounts to an average of 45 million litres per day.

The plant has been operating since 1975. Since this time there have been significant and regular upgrades to provide for increased environmental protection and urban growth. The most recent upgrade, completed in 2014 was a \$27 million programme of works.

HCC's Long Term Infrastructure Strategy (2015 – 2045) details over \$360 million of funding for wastewater projects over the next 30 years. There is a planned series of three upgrades to improve the volumetric capacity, treatment performance and reliability of the Pukete Treatment Plant. The timeframes and estimated budgets for these respective upgrades are as follows:

- 2017 to 2020 - \$17.7 million
- 2027 to 2029 - \$31 million
- 2043 to 2045 - \$31 million

In addition to this, asset management practices such as master planning, minor capital works and renewal programmes have continued to occur and advance, and tighter regulations and trade waste customer relationships to protect treatment plant processes has been implemented.

A resource consent (AUTH137123.01.01) was granted recently to authorise the construction of two bridges (pipe and vehicle) at the WWTP. This project however has not yet commenced and therefore the consent was not assessed as part of this audit.

Work has commenced on the construction of Clarifier 5 however this work is authorised by a resource consent that is monitored by another team within Waikato Regional Council and not considered in this audit.

2.1 PREVIOUS COMPLIANCE HISTORY

Date Period	Compliance status
1 July 2017 to 30 June 2018	Full compliance
1 July 2016 to 30 June 2017	Partial compliance
1 July 2015 to 30 June 2016	Partial compliance
1 July 2014 to 30 June 2015	Partial compliance
1 July 2013 to 30 June 2014	Partial compliance
1 July 2011 to 30 June 2012	Partial compliance

3 COMPLIANCE ASSESSMENT

Unless otherwise specified in this document this assessment covers the period from **1 July 2017 to 30 June 2018**.

This compliance assessment has been undertaken based on the submitted annual report by the consent holder, monitoring data supplied throughout the compliance period and site inspections. Some administration, duplicate or irrelevant conditions have been omitted for brevity.

For full self-assessment details see doc ref 13460024. The submitted and amended annual report has been assessed and the self-monitoring classification of these authorisations have been accepted as correct.

Please note that a description of the classification system used to describe compliance status is given in Appendix 1 of this report.

AUTH108788.01.01 - Surface water take

Activity Authorised: Take up to 4,000 cubic metres per day of water from Waikato River for sewage plant operation purposes	
Condition No.	Description
Authorised Activity	Take up to 4,000 cubic metres per day of water from Waikato River for sewage plant operation purposes
Evidence	See separate annual report 13460024
Status Reasoning	
Action Required	Full compliance
Authorisation Compliance: Full compliance	

AUTH134278.01.01 - Water – storm water

Activity Authorised: Discharge storm water from Pukete WWTP to an unnamed tributary of the Waikato River.	
Condition No.	Description
6	<p>The consent holder shall manage the site to minimise the discharge of suspended solids from the storm water system with an aim to achieve:</p> <ol style="list-style-type: none"> 1. A discharge concentration of less than 100 grams per cubic metre suspended solids, except where the concentration of the unnamed tributary has a concentration of greater than 100 grams per cubic metre suspended solids; and 2. An increase in suspended solids concentration due to the discharges in the unnamed tributary of less than 10 percent.
Evidence	<p>The downstream concentrations of the samples taken in November 2017 and May 2018 were above the 10% increase limit with results of 13 and 79% respectively. (see page 18 of annual report).</p> <p>There were two significant rainfall events at the times of these sample dates which may have also contributed to a higher than normal suspended solids level entering the watercourse from other sources not necessarily within the containment catchment area for the sites storm water.</p> <p>(see doc ref 13460024 for details)</p>
Status Reasoning	<p>Non-compliance with limits however this may have resulted in a less than minor increase to the level of effects authorised. The levels are below the 100g/m³ overall suspended solids limits. The compliance guideline states that:</p> <p><i>There is non-compliance with limits or other direct controls on adverse effects; and</i></p> <p><i>The non-compliance has the potential for, or has resulted in, a less than minor increase in the level of effects authorised;</i></p>
Action Required	<p>Continue to investigate the source of external inputs of suspended solids that are influencing the Sample Site C sample results adversely. Take any actions required to reduce the suspended solids to compliant levels.</p> <p style="text-align: right;">Low priority non-compliance</p>
Authorisation Compliance: High level of compliance	

4 SUMMARY OF COMPLIANCE

Based on the conditions selected for monitoring, compliance has been assessed as:

Authorisation	Authorisation Description	Compliance Status
AUTH108788.01.01	Take up to 4,000 cubic metres per day of water from Waikato River for sewage plant operation purposes	Full compliance
AUTH109199.01.01	Extend an existing box culvert by 24m, place up to 1083 c/m of clean fill material in a gully areas & undertake vegetation clearance & bed disturbance works in association with alignment of Pukete Rd, Hamilton	Full compliance
AUTH111029.01.02	Retain biosolids on land at the existing Hamilton City Council Wastewater Treatment Plant	Full compliance
AUTH114674.01.02	To change three conditions of Resource Consent AUTH114674.01.01 that authorises the discharge of treated wastewater to the Waikato River from Hamilton City Council Pukete Wastewater Treatment Plant.	Full compliance
AUTH114675.01.01	Use existing river outfall structures in/on or over the bed of the Waikato River to the south-east of the Hamilton Wastewater Treatment Plant	Full compliance
AUTH114676.01.01	Discharge contaminants to air from activities associated with the operation of the Hamilton WWTP	Full compliance
AUTH134278.01.01	Discharge stormwater from Pukete WWTP to an unnamed tributary of the Waikato River.	High level of compliance
AUTH137123.01.01	To construct and maintain a pipe bridge and a vehicle access bridge in an unnamed tributary of the Waikato River, adjacent to the Pukete Wastewater Treatment Plant, Hamilton	Not assessed
AUTH138860.01.01	Install a structure in the bed of a river including associated bed disturbance and earthworks in a high risk erosion area	Full compliance

Overall Site Compliance: Full Compliance

5 DISCUSSION AND CONCLUSIONS

Hamilton City Council has addressed several issues of non-compliance over the past few years and these along with the recent change to AUTH114674.01.01 has achieved the desired result and Full Compliance has been attained.

The submitted self-monitoring annual report was assessed by Waikato Regional Council staff and any errors, omissions and queries were flagged with Hamilton City Council for attention. Hamilton City Council have submitted a revised annual report in which all the issues highlighted have been addressed to the satisfaction of Waikato Regional Council.

The only remaining issue is the Sample Point C of the stormwater system which Hamilton City Council considers is not giving an accurate reflection of the stormwater quality from within the WWTP site, as flow is cross contaminated by road run-off via two catchpits outside of the plant that discharge within the plant.

This results in Hamilton City Council attaining a non-compliance for this condition despite the source of the contamination not being wholly derived from within the WWTP. I have recommended to Hamilton City Council there are two options available to resolve this issue:

1. Either Hamilton City Council disconnects the two catchpits from entering the WWTP site and re-directs them to the stream or treatment device as a separate system, or
2. Apply for a S127 change to consent to make allowance for this anomaly.

Hamilton City Council may offer a different alternative solution or may decide to continue to accept the non-compliance rating that this issue raises every year.

6 SUMMARY OF ACTIONS REQUIRED

The following actions are required to be undertaken:

Resource consent	Condition Number	Action Required
AUTH134278.01.01	6	Continue to investigate the source of external inputs of suspended solids that are influencing the site C sample results adversely. Take any actions required to reduce the suspended solids to compliant levels.

7 RECOMMENDATIONS FOR WAIKATO REGIONAL COUNCIL

I recommend that Hamilton City Council is granted continued self-monitoring status for the 2018-2019 compliance year.

I commend Hamilton City Council for achieving Full Compliance in this annual audit.



Edward Prince
Senior Resource Officer – Infrastructure
Resource Use

Date: 30 November 2018

7.1 Decision

I have reviewed this audit report and agree with the recommendations.



Hugh Keane
Team Leader– Infrastructure
Resource Use

Date: 30 November 2018

APPENDIX 1**Compliance Status for Individual Conditions**

Compliance Status	Description
Not assessed	Monitoring of this condition was not undertaken during this monitoring event
High priority non-compliance	The non-compliance has the potential for, or has resulted in, significant adverse effects on the environment.
Medium priority non-compliance	There is non-compliance with limits or other direct controls on adverse effects; and The non-compliance has the potential for, or has resulted in, a greater than minor increase in the level of effects authorised.
Low priority non-compliance	There is non-compliance with limits or other direct controls on adverse effects; and The non-compliance has the potential for, or has resulted in, a less than minor increase in the level of effects authorised; and/or There has been a significant technical non-compliance such as a failure to collect or supply self-monitoring data.
Minor technical non-compliance	There is non-compliance with a condition, or part of a condition, that does not directly control adverse effects; and The non-compliance was not significant in the management of effects. For example a short delay in supplying data or meeting a deadline for a report
Full Compliance	The condition has been complied with

Compliance status for individual consents and the entire site

Compliance Status	Description
Not assessed	Monitoring has not been undertaken at this site during the current financial year
Significant non-compliance	There has been a high priority non-compliance; and/or There have been several medium priority non-compliances.
Partial compliance	There has been a medium priority non-compliance; and/or There have been several low priority non-compliances.
High level of compliance	There has been a low priority non-compliance; and/or There have been several minor technical non-compliances.
Full compliance	All conditions that include limits or other direct controls on adverse effects have been complied with. A small number of minor technical non-compliances may have occurred.

Attachment C

**Resource Consent Certificate
Pukete Wastewater Treatment Plant
Discharge Permit – Discharge to Water¹⁰**

¹⁰ Resource Consent Number AUTH114674.01.02. HCC reference D-2257346.

Resource Consent Certificate

Private Bag 3038
Waikato Mail Centre
Hamilton 3240

waikatoregion.govt.nz
0800 800 401

Resource Consent Number: AUTH114674.01.02

File Number: 60 26 19A

Pursuant to the Resource Management Act 1991, the Waikato Regional Council hereby grants consent to:

Hamilton City Council (Water & Waste Services)
Private Bag 3010
HAMILTON 2020

(hereinafter referred to as the Consent Holder)

Consent Type: Discharge permit

Consent Subtype: Discharge to water

Activity authorised: Discharge treated wastewater from a multi-port diffuser main outfall to the Waikato River to the south-east of the Hamilton Wastewater Treatment Plant; and to discharge the same to the Waikato River via a bypass outfall at times of planned maintenance

Location: (Wastewater Treatment Plant) Pukete Rd - Hamilton

Map Reference: NZMS 260 S14:072-832

Consent Duration: Granted for a period expiring 20 years from the date of commencement of consent as defined in section 116 of the Resource Management Act 1991

Subject to the conditions overleaf:

CONDITIONS**General Conditions**

1. The discharge shall be undertaken in general accordance with the following document:
 - (a) Resource Consents Application: Assessment of Effects on the Environment. Application Edition: May 2006;
 unless inconsistent with the conditions below which shall prevail.
2. The consent holder shall ensure contractors are made aware of the conditions of this resource consent and ensure compliance with those conditions.
3. The discharges to water associated with this consent shall be managed and operated by an appropriately trained operator.
4. This resource consent is granted by the Waikato Regional Council subject to its officers or agents being permitted access to the property at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or taking samples.
5. The consent holder shall pay to the Waikato Regional Council any administrative charge fixed in accordance with section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulations made under section 360 of the Resource Management Act.

Discharge Volume Limits

6. The maximum volume of treated wastewater discharged shall not exceed 224,000 cubic metres per day.

Discharge Quality Limits

7. The consent holder shall ensure that for up to 36 months after the commencement of this consent, the quality of the discharge entering the outfall pipeline shall comply with the following concentration and mass load limits.

<i>Constituent</i>	<i>Sample type</i>	<i>Sample frequency</i>	<i>Standards</i>
cBOD ₅ concentration	24 hour flow weighted composite sample	4 days per week	Over each calendar month, no more than 8 exceedences over 20 g/m ³ , and; Over each quarter (January to March, April to June, July to September and October to December, inclusive) no more than 3 exceedences over 50 g/m ³ .
cBOD ₅ mass load	24 hour flow weighted composite sample	4 days per week	Over each calendar month, no more than 8 exceedences over 750 kg/day, and; Over each quarter (January to March, April to June, July to September and October to December, inclusive) no more than 3 exceedences over 2400 kg/day.
Suspended solids concentration	24 hour flow weighted composite sample	4 days per week	Over each calendar month, no more than 8 exceedences over 30 g/m ³ , and; Over each quarter (January to March, April to June, July to September and October to December, inclusive) no more than 3 exceedences over 100 g/m ³ .
Suspended solids mass load	24 hour flow weighted composite sample	4 days per week	Over each calendar month, no more than 8 exceedences over 1425 kg/day, and Over each quarter (January to March, April to June, July to September and October to December, inclusive) no more than 3 exceedences over 4750 kg/day.

<i>Constituent</i>	<i>Sample type</i>	<i>Sample frequency</i>	<i>Standards</i>
114674 mass load	24 hour flow weighted composite sample	4 days per week	Over each calendar month from December-to-May inclusive, no more than 8 exceedences over 500 kg/day.
Total nitrogen winter mass load	24 hour flow weighted composite sample	1 day per week	Over each 26 week period from June-to-November inclusive, no more than 13 exceedences over 1700 kg/day.
E. coli routine	grab	4 days per week	Over each calendar month, no more than 8 exceedences over 800 cfu/100ml
E. coli diurnal	grab	Once every three months samples shall be collected at hourly intervals over a full 24 hour period	Over each 24 hour period no more than 12 exceedences over 8000 cfu/100ml

8. The consent holder shall ensure that no later than 36 months after the commencement of this consent, the quality of the discharge entering the outfall pipeline shall comply with the following concentration and mass load limits.

<i>Constituent</i>	<i>Sample type</i>	<i>Sample frequency</i>	<i>Standards</i>
cBOD₅ concentration	24 hour flow weighted composite sample	4 days per week	Over each calendar month, no more than 8 exceedences over 10 g/m ³ , and; Over each quarter (January to March, April to June, July to September and October to December, inclusive) no more than 3 exceedences over 50 g/m ³ .
cBOD₅ mass load	24 hour flow weighted composite sample	4 days per week	Over each calendar month, no more than 8 exceedences over 750 kg/day, and; Over each quarter (January to March, April to June, July to September and October to December, inclusive) no more than 3 exceedences over 2400 kg/day.
Suspended solids concentration	24 hour flow weighted composite sample	4 days per week	Over each calendar month, no more than 8 exceedences over 15 g/m ³ , and; Over each quarter (January to March, April to June, July to September and October to December, inclusive) no more than 3 exceedences over 100 g/m ³ .
Suspended solids mass load	24 hour flow weighted composite sample	4 days per week	Over each calendar month, no more than 8 exceedences over 700 kg/day, and Over each quarter (January to March, April to June, July to September and October to December, inclusive) no more than 3 exceedences over 2400 kg/day.
Total nitrogen summer mass load	24 hour flow weighted composite sample	4 days per week	Over each 26 week period from December-to-May inclusive, no more than 50% of the samples shall exceed 450 kg/day.
Total nitrogen winter mass load	24 hour flow weighted composite sample	1 day per week	Over each 26 week period from June-to-November inclusive, no more than 50% of the samples shall exceed 1500 kg/day.
E. coli routine	grab	4 days per week	Over each calendar month, no more than 8 exceedences over 126 cfu/100ml: and Over each quarter (January to March, April to June, July to September and October to December inclusive) no more than 3 exceedences over 2000 cfu/100ml
E. coli diurnal	grab	Once every three months samples shall be collected at hourly intervals over a full 24 hour period	Over each 24 hour period no more than 12 exceedences over 2000 cfu/100ml

9. The consent holder shall ensure that by no later than 1 January 2011, the quality of the discharge entering the outfall pipeline shall comply with the following mass load limits:

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Constituent	Sample type	Sample frequency	Standard(*)
Total Phosphorus Summer mass load	24 hour flow weighted composite sample	4 days per week	Over each 26 week period from December to May inclusive, no more than 50% of the samples shall exceed 95 kg/day
Total Phosphorus Winter mass load	24 hour flow weighted composite sample	1 day per week	Over each 26 week period from June to November inclusive, no more than 50% of the samples shall exceed 700 kg/day.

Monitoring of Discharge Flows

10. The consent holder shall continuously monitor the flow rate of treated wastewater entering the outfall pipe and shall record the daily total volume discharged.

Monitoring Location

11. The consent holder shall define a sampling location, or locations, for monitoring of parameters in conditions 7, 8 and 9. This location, or locations, shall be to the satisfaction of the Waikato Regional Council.

Monitoring Procedures

12. The consent holder shall take grab samples (between the hours of 10am and 4pm) and 24-hour flow weighted composite samples of treated wastewater on at least 4 days each week from the sampling location specified in condition 11 of this consent. The samples shall be analysed for the constituents and at the frequencies and detection limits listed within the conditions of this consent and within Schedule 1 attached to this resource consent.

Note 1: Whole effluent toxicity testing shall be conducted in accordance with Schedule 1 footnote vii unless varied with the written approval of Environment Waikato.

Note 2: All quality analyses of the wastewater discharged shall be undertaken by an IANZ accredited or equivalent laboratory. All methodologies adopted shall be appropriate for wastewater analyses and be to the satisfaction of Environment Waikato.

Risk Notification

13. The consent holder shall, on receipt of any treated wastewater *E. coli* result exceeding 5000 cfu/100ml, ensure that an additional treated wastewater grab sample is taken immediately, and that a further two samples are taken at intervals of not less than two hours. All samples are to be tested for *E. coli* and, in the event any one of the three additional samples also exceeds 5000 cfu/100ml, the consent holder shall:

i) Notify the Waikato Regional Council and Medical Officer of Health of the Waikato District Health Board as soon as practicable and no later than 48 hours afterwards; and

ii) Record the reasons why the situation occurred, the actions taken by the consent holder, and an assessment of what measures can be adopted in the future to minimise such occurrences, and, if requested, shall provide a report to the Group Manager, Waikato Regional Council and the Medical Officer of Health.

Additional Investigations: Viral and Organic Chemicals

14. The consent holder shall in 2012 and thereafter on a five yearly basis undertake an investigation into the likelihood of viral pathogens and organic chemicals (including but not limited to endocrine disrupting chemicals and steroidal hormones) entering the river water from the discharge. An analysis of the likely removal of viral pathogens and substances within each stage of the treatment

system (including bypasses) shall be made and based on actual results. The results of this investigation shall be compared with any relevant literature on the subject on removal of viral pathogens and organic chemicals within treated wastewater and their environmental fate/public health risk. A copy of the investigation and comparison

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shall be supplied to the Waikato Regional Council by 1 December each year the investigation is required to be undertaken.

UV Treatment

15. The consent holder shall, no later than 36 months after the commencement of this consent, ensure that:

- a) Measurements for each of the following parameters are recorded:
 - i) the instantaneous flow rate at each UV channel in the disinfection facility,
 - ii) the instantaneous UV intensity at 254nm within each UV Bank
- b) Continuous recorders for those items listed above in 15(a) are to be provided and maintained in good working order.
- c) An alarm system connected to a 24-hour manned station is to be provided and maintained, and shall be activated:
 - i) when the power supply to the disinfection facility has been interrupted; or
 - ii) in the event of any mechanical or electrical failure of the monitoring system specified in 15(a) or any other failure in the control system for the disinfection facility for more than 30 minutes.
- d) All recorded monitoring data specified in this condition is to be kept on site for a minimum of three years. The monitoring records shall be made available to the Waikato Regional Council and included within the annual monitoring report as detailed within condition 17 below.

Reporting

16. The consent holder shall provide to the Waikato Regional Council, via electronic means and on a monthly basis, a copy of the monthly data as required via conditions 7 or 8 (whichever is applicable) and 9, 10, 12 and 13. In the event that the median total nitrogen mass-load exceeds 450 kg/day and/or the median total phosphorus mass-load exceeds 95 kg/day in any summer month (Dec-May inclusive), the consent holder shall report on the reasons for that exceedance and any actions being undertaken to reduce the level in subsequent months to ensure compliance with conditions 8 and 9. In addition monthly data supplied to the Waikato Regional Council shall include details of any discharges from pump stations within the reticulation system stating the reason(s) for the discharge, nature of the discharge, duration of the discharge, estimated volume discharged, weather conditions at the time of the discharge and fate of the wastewater discharged.

17. The consent holder shall provide to the Waikato Regional Council a written report by 30 September each year, which addresses the following:

- i) A summary of the daily volume discharged;
- ii) A summary of the monitoring results required by conditions 7 or 8 (whichever is applicable), 9, 10, 15 of this consent, and a discussion of any environmentally important trends identified;
- iii) Comment on compliance with conditions 7 or 8 (which ever is applicable) and 9 of this resource consent;

- iv) General comment on the functioning of the Tangata Whenua Wastewater Liaison Group;
- v) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this resource consent;
- vi) A record of bypass events, including volume, duration, causes, health risks and steps taken to avoid reoccurrence; and
- vii) Any other issue considered relevant by the consent holder.

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18. The consent holder shall notify the Waikato Regional Council within 24 hours (where practicable) of the consent holder becoming aware of any non compliance with conditions of this resource consent, or of any accidental discharge, plant breakdown or other circumstance that is likely to result in an exceedance of the limits of this resource consent. The consent holder shall, within 10 working days of the incident occurring, provide a written report to the Waikato Regional Council, identifying the breach, possible causes and steps to ensure future compliance.

Management Plan

19. The consent holder shall provide the Waikato Regional Council with a Management Plan which details the procedures that will be implemented to operate in accordance with the conditions of this consent. This Plan shall be lodged with the Waikato Regional Council within one year of the commencement of this consent and shall be reviewed and updated 36 months following the commencement of this consent and thereafter on a three yearly basis. The consent holder shall undertake the treatment and disposal of treated wastewater generally in accordance with the Management Plan.

The Plan shall address, but is not limited to, the following:

- i) a description of the wastewater treatment plant;
- ii) a description of the sequence, timing and methods of construction of upgrades to the treatment plant;
- iii) a description of routine inspection and maintenance procedures to be undertaken with respect to the treatment plant and discharge structures;
- iv) an outline of the methods to be utilised to monitor the treatment plant in an operational sense including:
 - monitoring of influent wastewater;
 - monitoring of treatment performance;
- v) specific management procedures for the efficient functioning of the treatment system;
- vi) procedures for recording routine maintenance and all repairs that are undertaken;
- vii) chain of command and responsibility, and notification protocols;
- viii) description of alarms;
- ix) trouble shooting procedures;
- x) contingency measures in place to deal with unusual events;
- xi) a bypass strategy that includes operating procedures and current planning to minimise the occurrence of bypass events as far as is practicable;
- xii) other actions necessary to comply with the requirements of this resource consent; and
- xiii) procedures for improving and/or reviewing the Management Plan.

The consent holder shall manage the wastewater treatment and discharge in accordance with the management plan outlined in this condition. Any changes to the management plan shall be notified in writing to the Waikato Regional Council.

Contingency Plan

20. The consent holder shall engage appropriately experienced persons to compile a plan that details contingency measures that will be put in place in the event of any bypasses, other extraordinary events or failure of any critical part of the treatment plant. This plan shall identify measures and notification protocols to be undertaken by the consent holder that will take into account any potential adverse effects on river users, including but not limited to downstream abstractors and the Medical Officer of Health. This plan shall be provided to the

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Waikato Regional Council within 3 months of the commencement of this consent to a standard acceptable to the Waikato Regional Council. Subsequently this contingency plan shall be updated at three yearly intervals with updated copies supplied to the Waikato Regional Council.

Complaints Register

21. The consent holder shall maintain and keep a complaints register for all complaints made about the treatment plant and discharge site received by the consent holder. The register shall record:

- i) the date, time and duration of the event/incident that has resulted in the complaint,
- ii) the location of the complainant when the event/incident was detected,
- iii) the possible cause of the event/incident,
- iv) any corrective action taken by the consent holder in response to the complaint.

The register shall be available to the Waikato Regional Council at all reasonable times. Details of all complaints received by the consent holder shall be forwarded to the Waikato Regional Council within 5 working days of the complaint being received, unless as otherwise authorised by the Waikato Regional Council.

Monitoring and Technology Review

22. The consent holder shall submit to the Waikato Regional Council a Monitoring and Technology Review Report no later than 30 September 2009 and thereafter at three yearly intervals, for the duration of the consent.

The scope of the assessment should address, but not limited to, the following:

- i) Ongoing compliance with the requirements of this resource consent particularly in relation to any reported non-compliance with consent conditions;
- ii) An assessment of compliance/consistency with any relevant national, or regional water quality policies, standards or guidelines in effect at the time.
- iii) An assessment of the results of the permit holder's monitoring undertaken in accordance with the resource consent, including the adequacy and scope of such monitoring.
- iv) A summary of any major improvements made to the reticulation, treatment or disposal system since the commencement of consent that are likely to have an effect on the exercise of this consent.
- v) A summary of any residual actual or potential effects of the discharge, irrespective of whether those effects are in accordance with the conditions of the consent.

- vi) Outline of significant technological changes and advances in relation to wastewater management, treatment, disposal and beneficial use technologies, which may be available to address any residual adverse effects of the discharge.
- vii) An assessment of whether any such options or combination of options represent the Best Practicable Option to minimise the effects of the discharge and whether the permit holder intends to incorporate such changes.
- viii) Information relating to the use, development and success of alternative wastewater disposal techniques in New Zealand, in particular land based disposal, and their relevance and possible application to Hamilton City's situation.

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Tangata Whenua Wastewater Liaison Group

23. The consent holder shall establish and retain for the duration of this consent a Hamilton City Council – Tangata Whenua Wastewater Liaison Group. The consent holder shall provide reasonable organisation and administrative support to facilitate the development and ongoing role of this Liaison Group. Membership of the Liaison Group shall be determined as a minimum in consultation with the Waikato Raupatu Trustee Company, Ngati Te Ata, Ngati Tamaoho Trust and the Turangawaewae Board of Trustees.

- i) The Liaison Group shall meet at least annually to exercise the functions set out below.
- ii) The Liaison Group shall establish its own meeting protocols having regard to the customary practices of tangata whenua and those established between the consent holder, Tainui, Nga Mana Toopu O Kirikiriroa or any other mana whenua group and shall operate in accordance with the principles of the Treaty of Waitangi, especially the principles of consultation, active participation and partnership.
- iii) The functions of the Liaison Group shall include, but not be limited to, the following:
 - a) Review the general performance of Hamilton's Wastewater Treatment Plant and the discharge including any changes to its operation;
 - b) Review of the results of monitoring and the associated assessment of monitoring information carried out in accordance with the conditions of this consent.
 - c) Receipt of and comments on the Annual Report;
 - d) Receipt of and comments on the Management Plan;
 - e) Receipt of and comments on the Monitoring and Technology Review Report;
 - f) To make suggestions to the consent holder and/or Waikato Regional Council as to any physical measures and initiatives further needed to address actual or potential effects of the Hamilton City Council Wastewater Scheme;
 - g) To make suggestions as to any additional investigations, including those relating to land based disposal, the consent holder might undertake in respect of actual or potential effects;
 - h) To make recommendations to the Waikato Regional Council not later than one month prior to the dates specified in condition 24 on issues raised by tangata whenua relating to, amongst other matters, the Annual Plan, the Management Plan and the Monitoring and Technology Review, and how such issues were addressed by the applicant; and
 - i) Consideration of other issues raised by tangata whenua.

Review

24. The Waikato Regional Council may in January, February or March of 2013, 2018 and 2023 serve notice on the Consent Holder under Section 128 (1) of the Resource Management Act 1991, of its intention to review the conditions of this resource consent for the following purposes:

- i) to review the effectiveness of the conditions of this resource consent in avoiding or mitigating any adverse effects on the environment from the exercise of this resource consent and if necessary to avoid, remedy or mitigate such effects by way of further or amended conditions; or
- ii) if necessary and appropriate, to require the holder of this resource consent to adopt the best practicable option to remove or reduce adverse effects on the surrounding environment; or
- iii) to require the consent holder to assess the need for further treatment to improve pathogen removal within the treated wastewater discharge and if necessary reduce the *E.coli* limit as specified within condition 8 of this consent; or

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- iv) to require the consent holder to assess the need for further nutrient removal within the treated wastewater discharge over summer and winter and if necessary reduce the limits as specified within condition 8; or
- v) to require the consent holder, in conjunction with Waikato Regional Council staff, to assess the winter/summer definitions as defined within conditions 8 and 9 and if necessary change the definition of winter/summer as detailed within the conditions of this consent; or
- vi) to review the adequacy of and the necessity for monitoring undertaken by the consent holder; or
- vii) to respond to concerns raised by the Tangata Whenua Wastewater Liaison Group.

Claim under the Treaty of Waitangi Act

25. Within 12 months of the Crown settling any claim made under the provisions of the Treaty of Waitangi Act 1975 Waikato Regional Council may, following service of notice on the Consent Holder, commence a review of the conditions of this consent pursuant to s128(1)(a) of the RMA, for the purpose of ensuring that this consent is in alignment with the provisions of any such settled claim.

Outfall Structure

26. The discharge of treated wastewater to the Waikato River shall be via a multi-port in-river diffuser unless use of the by-pass outfall is authorised via condition 28 of this consent.

27. The consent holder shall demonstrate, on an annual basis, uniformity of mixing by sampling surface water at five points across the main flow of the river at a distance of 300 metres downstream of the outfall. Using appropriate methods to demonstrate wastewater mixing, the concentration in the five river samples shall be uniform within plus or minus 20 percent. The consent holder shall also demonstrate that the concentrations in the left bank littoral margin are within or less than the range of concentrations determined for the main flow.

By-pass Outfall for Inspection/Maintenance Events

28. In the event of planned inspections and/or maintenance of the main Waikato River outfall and/or the diffusers the consent holder may utilise the by-pass outfall for treated wastewater discharge direct to the Waikato River. The consent holder shall notify the Waikato Regional Council a minimum of ten working days in advance of the intention to utilise the by-pass outfall. This notification shall include information on the reason(s) for the proposed use of the outfall, the anticipated date(s) and duration of usage, and the proposed monitoring and mitigation measures, and notification and reporting procedures, that the consent holder will undertake. Written approval for the use shall be obtained from the Waikato Regional Council prior to any discharge from the by-pass outfall occurring.

Schedule 1

Analysis	Monitoring Frequency				Sample type	Units	Detection Limit
	4 days per week	Monthly	Quarterly	Annually			
BOD ₅	√				composite	mg/L	1
Total suspended solids	√				composite	mg/L	1
E. coli (routine)	√				grab	cfu/100ml	10
E. coli (diurnal)			√		grab	cfu/100ml	10
Total Nitrogen	√				composite	mg/L	0.1
Ammonia-Nitrogen		√			composite	mg/L	0.1
Nitrate-Nitrogen		√			composite	mg/L	0.1
Nitrite-Nitrogen		√			composite	mg/L	0.1
Total Phosphorus	√				composite	mg/L	0.1
Dissolved Reactive Phosphorus		√			composite	mg/L	0.1
pH		√			composite	pH	0.1
Alkalinity		√			composite	mg CaCO ₃ /L	0.1
Arsenic (Total)				√	composite	mg/L	0.005
Cadmium (Total)				√	composite	mg/L	0.0001
Chromium (Total)				√	composite	mg/L	0.0005
Copper (Total)				√	composite	mg/L	0.0002
Lead (Total)				√	composite	mg/L	0.0001
Mercury (Total)				√	composite	mg/L	0.00008
Nickel (Total)				√	composite	mg/L	0.0005
Zinc (Total)				√	composite	mg/L	0.001
VOC				√	composite	mg/L	trace
SVOC				√	composite	mg/L	trace
Whole effluent toxicity testing				√	composite		

Schedule Notes

- (i) A "composite sample" is defined as a 24-hour flow weighted sample of the discharge.
- (ii) A "grab sample" is defined as a random sample taken from the discharge flow.
- (iii) The routine E. coli grab sample is to be taken on 4 days per week between the hours of 9am and 4pm.
- (iv) The diurnal E. coli grab samples are to be collected at hourly intervals over a full 24-hour period, at least once every 3 months.
- (v) The Total Nitrogen and Total Phosphorus monitoring is to be undertaken on 4 days each week during the months of December to May inclusive and on only 1 day each week for the remainder of the year.

Advice notes

1. In accordance with section 125 RMA, this consent shall lapse five (5) years after the date on which it was granted unless it has been given effect to before the end of that period.
2. Where a resource consent has been issued in relation to any type of construction (e.g. dam, bridge, jetty) this consent does not constitute authority to build and it may be necessary to apply for a Building Consent from the relevant territorial authority.
3. This resource consent does not give any right of access over private or public property. Arrangements for access must be made between the consent holder and the property owner.
4. This resource consent is transferable to another owner or occupier of the land concerned, upon application, on the same conditions and for the same use as originally granted (s.134-137 RMA).
5. The consent holder may apply to change the conditions of the resource consent under s.127 RMA.
6. The reasonable costs incurred by Waikato Regional Council arising from supervision and monitoring of this/these consents will be charged to the consent holder. This may include but not be limited to routine inspection of the site by Waikato Regional Council officers or agents, liaison with the consent holder, responding to complaints or enquiries relating to the site, and review and assessment of compliance with the conditions of consents.

Attachment D

Compliance with Condition 27 of the Discharge Consent¹¹

The following extract is taken from *Hamilton City Council: Wastewater Treatment Plant: Annual Report: 1 July 2017 – 30 June 2018* (Hamilton City Council, 30 September 2018, p.55)¹²:

Condition 27

The consent holder shall demonstrate, on an annual basis, uniformity of mixing by sampling surface water at five points across the main flow of the river at a distance of 300 metres downstream of the outfall. Using appropriate methods to demonstrate wastewater mixing, the concentration in the five river samples shall be uniform within plus or minus 20 percent. The consent holder shall also demonstrate that the concentrations in the left bank littoral margin are within or less than the range of concentrations determined for the main flow.

The annual analysis for the 2017/2018 period was completed in March 2018 by NIWA Hamilton. The following conclusion was written in terms of compliance with the above condition:

“Near Surface water samples were collected on 14/03/18 from a minimum of six points across the Waikato River, both 100m upstream and 300m downstream of the Pukete WWTP discharge diffuser. The samples were analysed for NH₄-N, NO₃-N and DRP, DIN values, calculated as the sum of NH₄-N, NO₃-N, were used to demonstrate mixing efficiency. DIN analysis indicated that at 300m downstream of the discharge, all samples collected from across the main flow were within ±20% of the average DIN increment from the main flow. The samples from the left bank littoral margin were not within the range of DIN concentrations determined for the main flow, indicating that the effluent may not be fully missed¹³ near the left bank. This result is based on analysis of replicate samples, one of which had high nutrient concentrations. The results of the survey undertaken on 14/03/18 indicate that the diffuser performance does not comply with one criteria of Waikato Regional Council (WRC) Resource consent 114674 Condition 27”

Two of the three sample locations in the downstream left bank littoral margin (15m) had a DIN concentrations inside the range measured in the main flow. At the 15m location the increase in DIN concentration was 15mg m⁻³, this was strongly influenced by one of the duplicates at the location being higher than the other, this increased the mean value at this location. The difference between all other duplicate samples upstream and downstream was less than 10 mg m⁻³. The 15m duplicate with the high DIN value had the highest DRP, NH₄-N and NO₃-N values of all samples.

Further investigation should be considered to clarify whether this value is representative of the 15m location.

Compliance status: Full Compliance

¹¹ Resource Consent Number AUTH114674.01.02

¹² HCC reference D-2771880

¹³ This is most likely a typographical error. This word should probably be “mixed”.

Extracts from HCC's Comprehensive Stormwater Discharge Consent¹⁴

Stormwater Quality & Receiving Environment

Floatable contaminants

- 14) The Consent Holder shall manage the **stormwater network to avoid as far as practicable and otherwise minimise**, the discharge of any substance that is likely to cause the production of conspicuous oil, or grease films, scums or foams, or floatable suspended materials in stormwater receiving water bodies **after reasonable mixing**.

Suspended solids

- 15) The Consent Holder shall manage the stormwater network to avoid as far as practicable and otherwise minimise, the discharge of suspended solids and any other substances that are likely to cause the following effects in stormwater receiving water bodies **after reasonable mixing**:
- a) Conspicuous changes in colour or visual clarity;
 - b) Smothering of benthic organisms by sediment;
 - c) Make the water in the Waikato River unsuitable for contact recreation.

Hazardous substances

- 16) The Consent Holder shall manage the stormwater network to avoid as far as practicable and otherwise minimise, the discharge of hazardous substances in concentrations that are likely to adversely affect aquatic life, or the suitability of water for human consumption after treatment. Where a question arises as to whether the concentration of any particular hazardous substance is causing these effects, it shall be determined through the application of the United States Environmental Protection Agency National Recommended Water Quality Criteria (USEPA, 2009) – Criteria Maximum Concentration, or any other technical publication approved in advance by the Waikato Regional Council in a technical certification capacity.

Micro-organisms

- 17) The Consent Holder shall manage the stormwater network to avoid as far as practicable and otherwise minimise, the discharge of micro-organisms in concentrations that are likely to adversely affect human health. Where a question arises as to whether the concentration of micro-organisms is adversely affecting human health, it shall be determined through the application of the Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas (MfE, 2003), or any other technical publication approved in advance by the Waikato Regional Council in a technical certification capacity.

Adverse effects on aquatic ecosystems

- 18) The Consent Holder shall manage the stormwater network to avoid as far as practicable and otherwise minimise, discharges that are likely to adversely affect aquatic ecosystems and cause the following effects in stormwater receiving water bodies **after reasonable mixing**:
- a) Dissolved oxygen levels to fall below 80% of saturation;
 - b) pH to fall below 6 or exceed 9;
 - c) Suspended sediments to smother benthic organisms;
 - d) Undesirable biological growths;
 - e) Water temperature to change by more than 3°C or exceed 25°C;

¹⁴ Consent Number 105279

- f) *Turbidity levels to exceed 25 NTU between the months of August and December;*
- g) *Ammoniacal nitrogen concentrations to exceed 0.88 grams of nitrogen per cubic metre; and*
- h) *Other contaminant concentrations to exceed the United States Environmental Protection Agency National Recommended Water Quality Criteria (USEPA, 2009) – Criteria Maximum Concentration.*

Extracts from the Waikato Operative Regional Plan re reasonable mixing

This attachment reproduces relevant references to mixing zones in the Waikato Operative Regional Plan. Emphasis has been added to the word "mixing" by shading.

3.2.3 Policies

Policy 8: Reasonable Mixing

The zone of reasonable **mixing** is the area within which a discharge into water (including any discharge that occurs subsequent to a discharge onto or into land) does not need to achieve the standards specified in the water management class for the receiving water body. The size of the **mixing** zone must be minimised as far as is practicable and will be determined on a case-by-case basis, including consideration of the following matters:

- a) The nature of the effluent, including its flow rate, composition and contaminant concentrations.
- b) River flow rate and flow characteristics.
- c) The design of the outfall.
- d) The depth, velocity and rate of **mixing** in the receiving water body.
- e) Existing contaminant concentrations in the receiving water body both upstream and downstream of the discharge point and the assimilative capacity of the water body.
- f) The frequency of the discharge.
- g) The speed with which any contaminants will be diluted.
- h) The ability of the discharger to alter the location of the discharge and the **mixing** characteristics of the outfall so as to ensure that adverse effects of the discharge beyond the zone of non-compliance are not inconsistent with the purpose for which the water body is being managed.
- i) Whether the discharger has taken all practicable steps to minimise the concentration and volume of contaminants at source.
- j) Any effects of the **mixing** zone on other users of the water body.
- k) The extent of adverse effects within the **mixing** zone.

Explanation and Principal Reasons for Adopting the Policies

Policy 8 provides assessment criteria to help guide decisions on the size of **mixing** zone that is reasonable for any given discharge. The policy explicitly extends the concept of reasonable **mixing** to discharges onto or into land that may result in contaminants entering water. This means that the reasonable **mixing** test will be applied to land disposal of effluent. This is necessary to ensure that any subsequent effects on surface water from discharges to land are managed appropriately. To minimise the extent of the non-compliance zone in accordance with this policy, **mixing** needs to be as rapid as practicable. The effect of the policy is that the size of the **mixing** zone that is considered reasonable will be minimised. In many instances this will mean that the size of the reasonable **mixing** zone will be the outermost extent of the initial **mixing** zone.

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3.2.4 Implementation Methods – Water Management Classes and Standards

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3.2.4.2 Waikato Region Surface Water Class Standards

For resource consent applications Method 3.2.4.1 sets out how the classes will be had regard to.

The standards listed must be met where referred to in relevant permitted activity rules.

The standards shall apply:

- a) after reasonable **mixing** of any contaminant or water with the receiving water and disregard the effect of any natural perturbations that may affect the water

b) to all surface water irrespective of whether the waters may also be subject to other water classification standards.

....

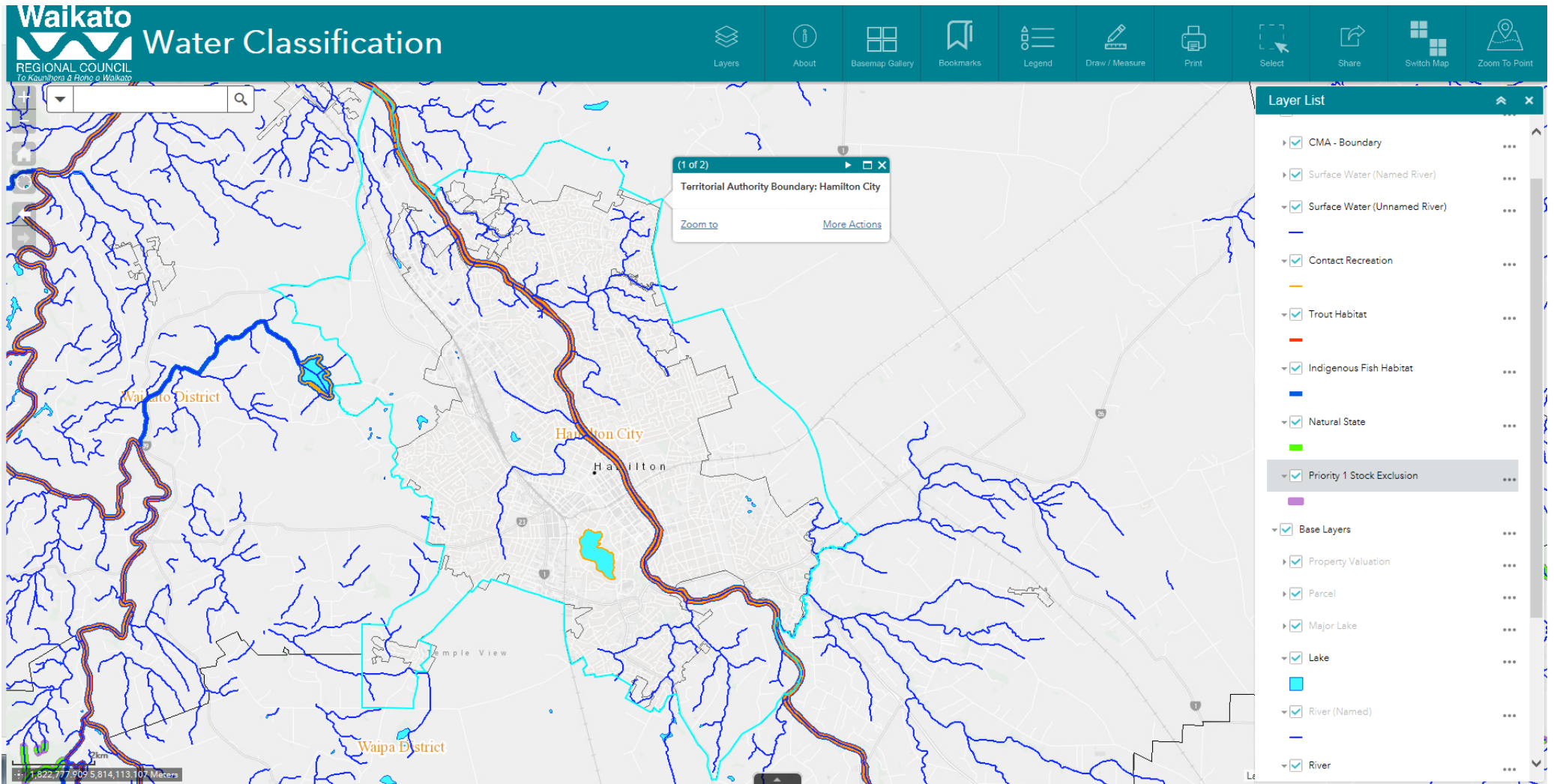
3.2.4.5 Fishery Class

For resource consent applications method 3.2.4.1 sets out how the classes will be had regard to.

The standards listed must be met where referred to in relevant permitted activity rules. The standards shall apply:

- a) after reasonable **mixing** of any contaminant or water with the receiving water and disregard the effect of natural perturbations that may affect the water*
- b) to all surface water mapped as Significant Trout Fisheries and Trout Habitat Class or Significant Indigenous Fisheries and Fish Habitat Class on the Water Management Class Maps.*

The extents of Waikato Region Surface Water Class and Fishery Class in Hamilton City are shown in Figure 1 below.



Source: <https://waikatmaps.waikatoregion.govt.nz/Viewer/?map=11b87e5bebb14ca2a8b4a39ef8be87cb>

Figure 1: The extent of Waikato Region Surface Water Class