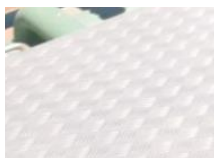
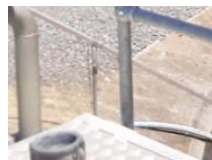
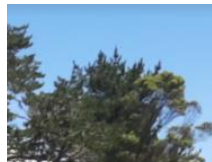
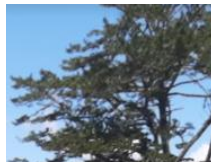




# HAHEI WWTP MANAGEMENT PLAN December 2020



# **Hahei WWTP Management Plan 2020 Resource Consent 135636**

Client:

**Thames-Hahei District Council**

515 Mackay Street, Thames

Telephone (07) 868 0200

Prepared by:

**Veolia Water Services (ANZ) Pty Ltd**

101 Burke Street, Thames

Telephone (07) 868 0000



# Document Control Sheet

Revision No	Status	Date Issued	Details of revision
1	Draft		Draft Management Plan.

## **Contents**

1	Introduction	6
1.1	Hahei WWTP Management Plan	6
1.2	Hahei Township	7
1.3	Hahei WWTP	7
2	WWTP Overview & Description	9
2.1	Plant and Component Locations	9
2.2	Process Diagram	9
2.3	Plant Component Descriptions	9
2.3.1	Key Parameters of Components	9
2.3.2	Inlet Screen	10
2.3.3	Aeration Pond	10
2.3.4	Retention Pond	10
2.3.5	Membrane Filtration Unit (MFU)	10
2.3.6	Wigmore Stream	11
3	WWTP Responsibility & Chain of Command	13
3.1	Management Plan Responsibility	13
3.2	Operational Responsibility	13
3.3	Maintenance Responsibility	14
3.4	Asset Upgrade and Renewal (Capital) Responsibility	14
4	WWTP Management	15
4.1	Resource Consent Discharge Quality	15
4.2	Resource Consent Reporting	15
4.2.1	Resource Consent Discharge Quality Monitoring	15
4.2.2	Wigmore Stream Flow Monitoring	17
4.2.3	Scheduled Reporting	18
4.3	Unauthorised Discharge Management	19
4.4	Complaints Management	19
5	WWTP Operations, Maintenance & Monitoring	20
5.1	Critical Plant Assets	20
5.2	Monitoring Procedure	21
5.2.1	Laboratory Sampling	21
5.2.2	On Site Testing	21
5.3	Data Collection	21
5.3.1	SCADA Data	21

5.3.2	Field and Laboratory Data	22
6	Hahei WWTP Incident Responses & Contingency Plans	23
6.1	Odour Complaints	23
7	Proposed WWTP Physical Works	24
8	Management Plan Review & Improvements	24
8.1	Management of the Review of Resource Consent Conditions	24

## **List of Figures**

Figure 1:	Hahei Township on Hahei Peninsula	7
Figure 2:	Service Connections and WWTP within Hahei Township	8
Figure 3:	Hahei WWTP Component Locations	9
Figure 4:	Membrane Filtration Unit (MFU) showing the inlet into the unit and outlet to Wigmore Stream	11
Figure 5:	Treated Effluent Discharge Point into Wigmore Stream	12
Figure 6:	Hahei WWTP Chain of Command	13
Figure 7:	Wigmore Stream Flow Gauging Station	17

## **List of Tables**

Table 1:	Key Parameters for Plant Components within Hahei WWTP	10
Table 2:	Resource Consent Discharge Quality Limits	15
Table 3:	Resource Consent Monitoring Programme	16
Table 4:	Required Reports to be submitted to Waikato Regional Council	18
Table 5:	Critical Plant Assets (Priority 1 to 5), Performance Checks, Signs of Sub-Optimal Performance and the Potential Impact of Asset Failure	20
Table 6:	SCADA Data and corresponding SCADA Tags	22

## **References**

### **Reference 1:**

*Hahei WWTP Contingency Plan 2020*

### **Reference 2:**

*Hahei WWTP Monitoring Implementation Plan 2020*

## 1 Introduction

A thirteen-year resource consent (no 135636.01.01) was granted by the Waikato Regional Council (WRC) to Thames Coromandel District Council (TCDC) for the discharge of treated effluent from the Hahei Wastewater Treatment Plant (WWTP) to the Wigmore Stream. The consent was granted in December 2017 and will expire in December 2030. A copy of the resource consent is provided in **Appendix A**.

The Consent provides for the discharge of up to 700 cubic metres of treated municipal wastewater in a 24 hour period from the Hahei WWTP into the Wigmore Stream.

### 1.1 Hahei WWTP Management Plan

Condition 24 of the Consent requires:

*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 Resource Consent And The Procedures That Will Be Put Into Place To Maximise Wastewater Treatment And Minimise Odour Production. This Plan Shall Be Lodged With The Waikato Regional Council Within 3 Months Of The Commencement Of This Consent, And Shall Be Reviewed And Updated As A Minimum Annually. The Plan Shall Address, But May Not Be Limited To, The Following:*

*A. A Description Of The Entire Treatment And Disposal System Facility And How It Is Operated;*

*B. A Description Of Routine Maintenance Procedures To Be Undertaken;*

*C. An Outline Of The Methods To Be Utilised To Monitor The Treatment Plant In An Operational Sense Including: Monitoring Of Influent Waste Water And Monitoring Of Treatment Performance;*

*D. A Description Of The Methods To Be Used To Ensure That Sampling Of The Discharge As Required By Condition 16 Of This Consent Is Representative Of Overall Discharge Quality;*

*E. Specific Management Procedures For The Efficient Functioning Of The Treatment System Including Micro Filtration Unit, Including Measures To Ensure Compliance With Condition 8 Of This Consent Relating To Discharge Quality Parameters;*

*F. Procedures For Recording Routine Maintenance And All Repairs That Are Undertaken;*

*G. Contingency Measures In Place To Deal With Unusual Events;*

*H. Chain Of Command And Responsibility, Including Contact Details;*

*I. Other Actions Necessary To Comply With The Requirements Of This Resource Consent;*

*J. Procedures For Improving And/Or Reviewing The Management Plan.*

This Management Plan has been prepared in accordance with and for the purposes of compliance with Condition 24 of the Consent.

## 1.2 Hahei Township

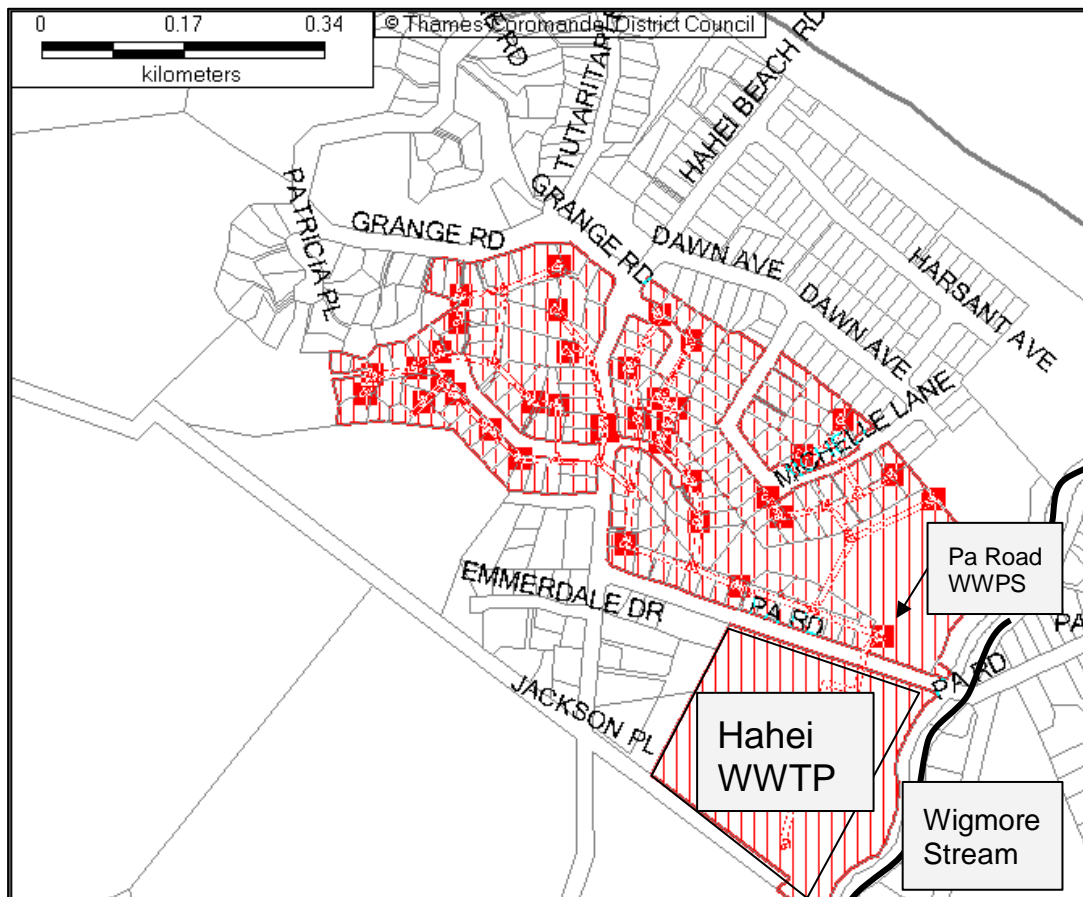
Hahei is a small town located at the Eastern Seaboard of the Coromandel Peninsula (Refer to Figure 1). The usual population during non-peak seasons is 250 but can accommodate up to 4,000 tourists during the peak summer season (2016 population data). Hahei township's wastewater is treated in two (2) different systems, being (i) private septic tanks and (ii) Hahei WWTP.



**Figure 1: Hahei Township on Hahei Peninsula**

## 1.3 Hahei WWTP

The WWTP is located on Pa Road and receives mostly domestic wastewater from the Hahei Township. The plant receives a small amount of septage waste from residential septic tanks and local camping grounds. Approximately 130 service connections within the township are connected to the wastewater reticulation network along Beach Road, Grierson Close, Margot Place, Wilbow Place, Michelle Lane, Pa Road and the camping ground (Refer to Figure 2). Wastewater is gravity fed into Pa Road Wastewater Pumping Station (Pa Road WWPS), which is then pumped into Hahei WWTP via a 100mm rising main. Properties which are not connected to the reticulation network have individual septic tanks to treat their wastewater.



**Figure 2: Service Connections and WWTP within Hahei Township**

All collected wastewater goes through the treatment process prior to discharging into the Wigmore Stream.

Overall management responsibility for the Hahei WWTP lies with the asset owner, TCDC. Daily operation of the WWTP is performed by Veolia Water under contract to TCDC.

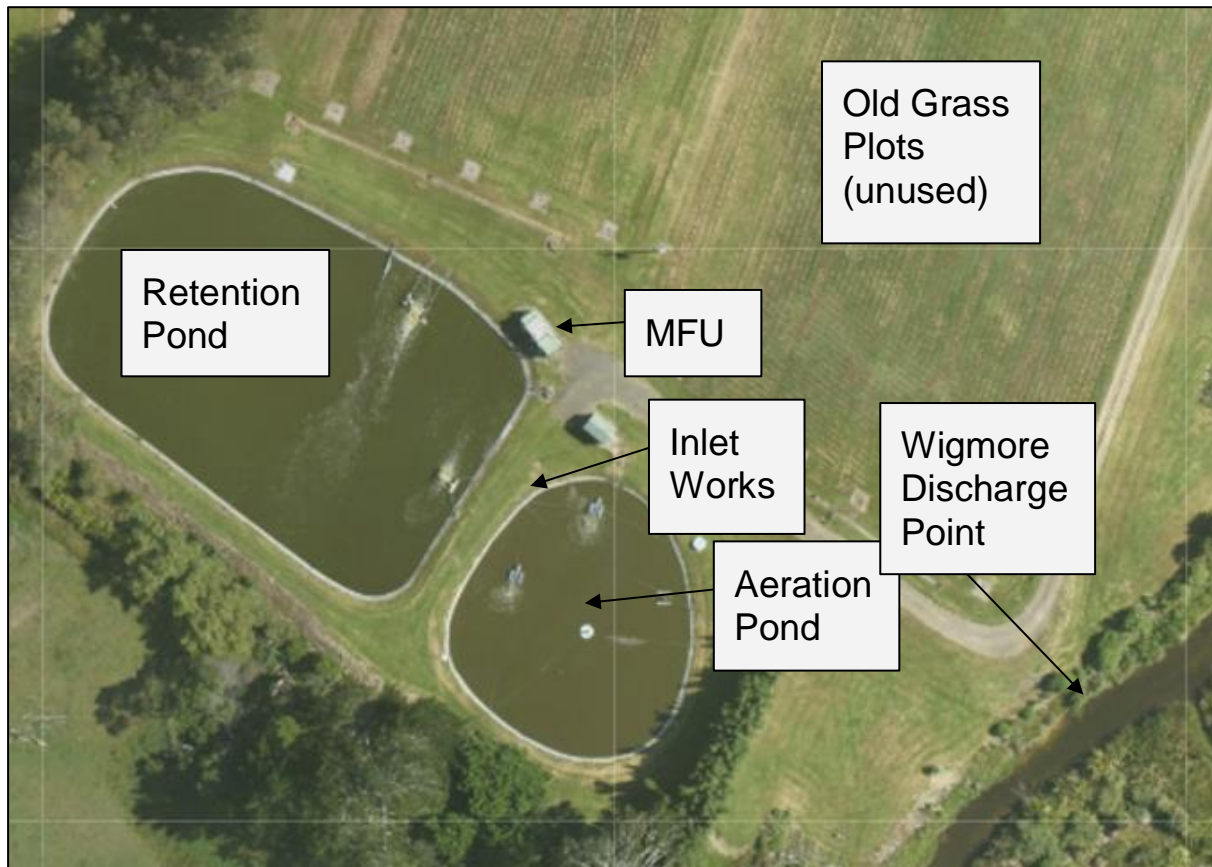


## 2 WWTP Overview & Description

The following section provides an overview and description of the plant components, disposal system facility and the operations within Hahei WWTP.

### 2.1 Plant and Component Locations

The WWTP consists of an inlet screen, an aeration lagoon, a retention pond, and a Membrane Filtration Unit (MFU).



**Figure 3: Hahei WWTP Component Locations**

### 2.2 Process Diagram

Appendix B; Hahei WWTP Site Plan, and Appendix C; Hahei WWTP P&ID, show more information on the Hahei WWTP layout and process.

### 2.3 Plant Component Descriptions

#### 2.3.1 Key Parameters of Components

Key parameters for the various processes are shown in Table 1.

**Table 1: Key Parameters for Plant Components within Hahei WWTP**

Component	Area (m <sup>2</sup> )	Max. Depth (m)	Volume (m <sup>3</sup> )
Aeration Lagoon	700	2.5	1,720
Retention Pond	2,610	1.3	3,320

### 2.3.2 Inlet Screen

The Pa Road WWPS pumps the wastewater to the inlet works which comprises an in channel auger screen.

### 2.3.3 Aeration Pond

Influent is pumped into the aeration lagoon from Pa Road WWPS via the inlet screen. The aeration lagoon comprises three aerators. Two of these aerators are submersibles with the other aerator being a surface aqualator aerator. Dissolved oxygen (DO) is introduced into the lagoon by operating the aerators to achieve the Biochemical Oxygen Demand (BOD<sub>5</sub>) of the wastewater. To enable this, the target DO level is 2 mg/L. Aerators can be turned off and on as necessary to achieve this. Due to the seasonal loading at the plant, different times of year require increased use of aeration. The primary functions of the lagoon are:

- Reduction of soluble organic content in the wastewater by promoting biological growth, and
- Reduction of suspended solids.

The retention time in the aeration pond is approximately 15 days, based on the average inflow of 112 m<sup>3</sup>/day.

The partially treated influent then flows by gravity into the retention pond.

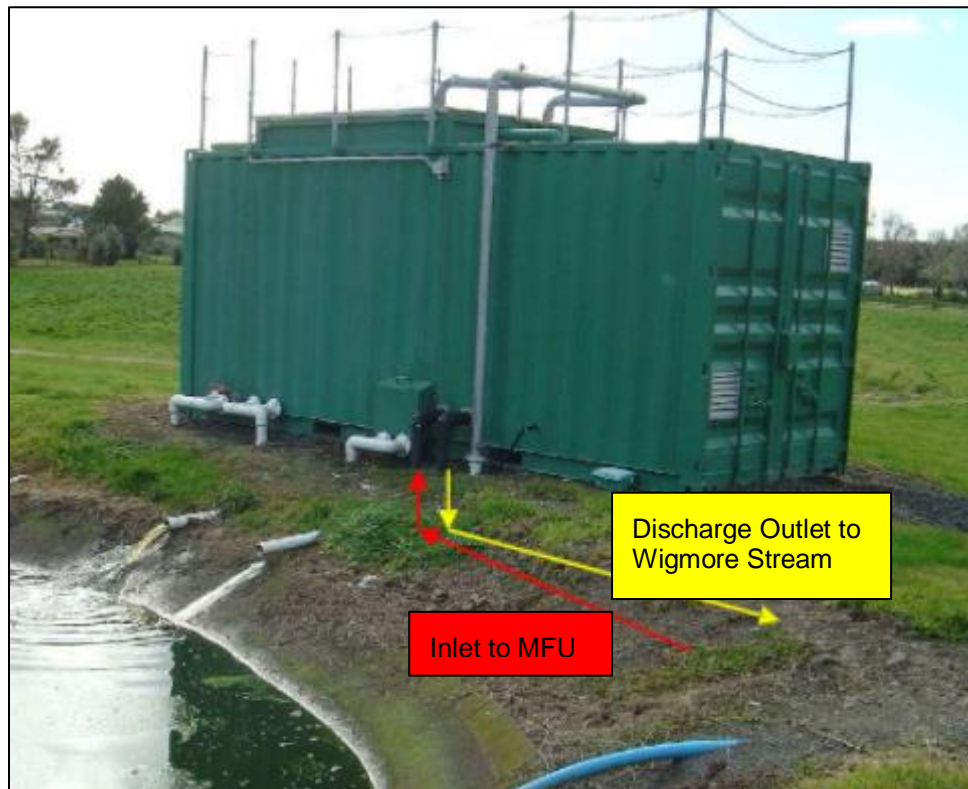
### 2.3.4 Retention Pond

Effluent flows into the retention pond via a rectangular weir. The retention pond further reduces the organic content and suspended solids in the wastewater. It consists of two surface aerators. The pond is also used to balance plant flows during peak summer periods and severe weather events and also provide some additional treatment. A DO level of 2 mg/L is targeted to maintain treatment and the pond health. The retention time in this pond based on the average inflow of 112 m<sup>3</sup>/day and consent maximum discharge rate of 700 m<sup>3</sup>/day is approximately 26 days and 4.7 days respectively. The normal operating level in the retention pond is approximately 65%, to provide additional capacity for storm events.

### 2.3.5 Membrane Filtration Unit (MFU)

The Membrane Filtration Unit (MFU) is designed to filter the effluent by passing it through a series of membrane filters within the unit. The effluent is pumped from the chamber located next to the retention pond into the MFU. The MFU run is dependent on the level of effluent in the pump chamber, which is measured via the level sensor in the chamber. Figure 4 shows

the inlet from the retention pond into the MFU and the discharge outlet pipe to Wigmore Stream. The MFU is operator controlled and therefore, discharge to the Wigmore stream is not constant. Effluent is treated through the MFU in batches when the site visits occur.



**Figure 4: Membrane Filtration Unit (MFU) showing the inlet into the unit and outlet to Wigmore Stream**

### 2.3.6 Wigmore Stream

The Wigmore Stream is located adjacent to the treatment plant and is the discharge point for treated effluent from the WWTP. The treated effluent discharge point to the Wigmore stream is shown in Figure 5. In compliance with Condition 29 it is necessary to ensure that the Wigmore Stream, from the treated effluent discharge point to its mouth, is kept clear of debris and that the stream mouth is not blocked by sand.

The discharge volume shall not exceed 700 m<sup>3</sup> in any 24 hour period and the maximum rate of discharge shall not exceed of 8.1 L/s as required by Condition 4 and 6 of the Consent. An effluent flow meter is installed at the MFU outlet in order to determine the volume of treated effluent discharged into the Wigmore Stream as per Condition 11. As per Condition 12, when a calibration of the flow meter is performed, the calibration certificate needs to be forwarded to the Waikato District Council within one month of the calibration being performed. The average discharge flow rate for the period 1 April 2019 to 30<sup>th</sup> March 2020 was 120 m<sup>3</sup>/day. Please note that the MFU does not discharge every day.



***Figure 5: Treated Effluent Discharge Point into Wigmore Stream***

### 3 WWTP Responsibility & Chain of Command

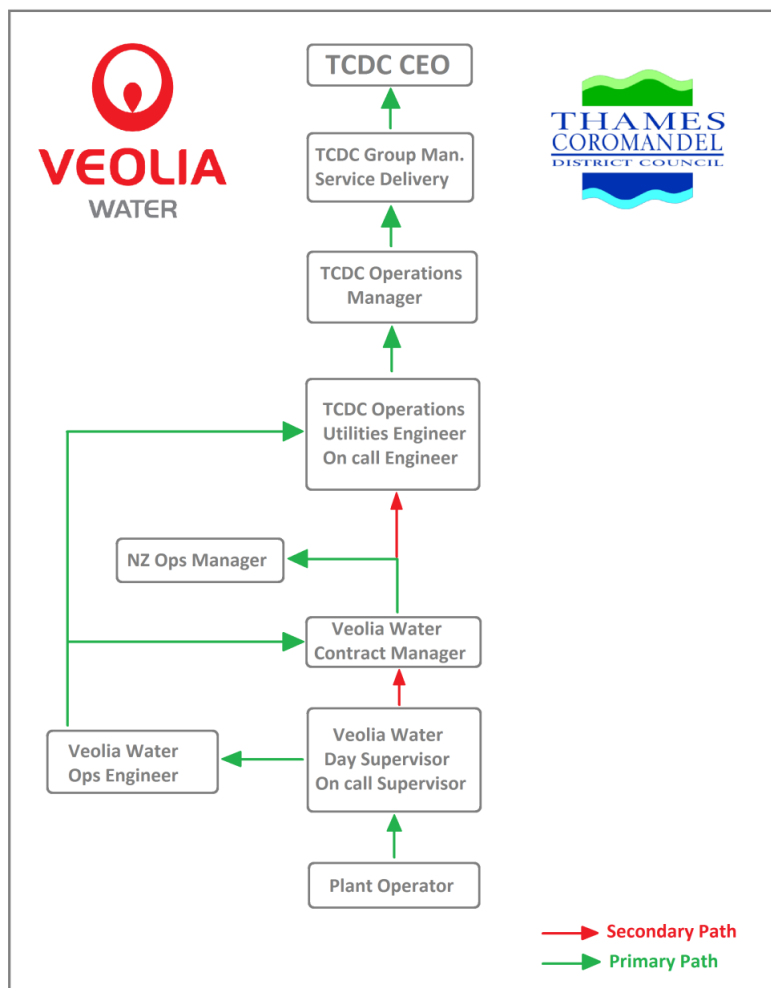
Overall management responsibility for the Hahei WWTP lies with the asset owner, Thames-Coromandel District Council (TCDC).

#### 3.1 Management Plan Responsibility

The overall responsibility for the management of the WWTP Management Plan rests with the consent holder, TCDC.

#### 3.2 Operational Responsibility

Operation of the Hahei WWTP is performed by Veolia Water under contract to TCDC. Day to day operation is undertaken by the Veolia Water field operator. The chain of command between Veolia Water and TCDC is shown in Figure 6. Operational events are to be escalated to the on call Supervisor and Operations Engineer. The primary path is to be followed during normal work hours and the secondary path to be followed after hours.



**Figure 6: Hahei WWTP Chain of Command**

### **3.3 Maintenance Responsibility**

All process components are maintained by Veolia Water under contract to TCDC.

### **3.4 Asset Upgrade and Renewal (Capital) Responsibility**

TCDC is responsible for any de-sludging and sludge disposal works required within the Aeration Pond or Retention Pond along with all necessary asset upgrades and renewals (capital works) activities.



## 4 WWTP Management

This section of the Hahei WWTP Management Plan outlines requirements with respect to the management of the Hahei WWTP.

### 4.1 Resource Consent Discharge Quality

Condition 8 of the Consent provides the required treated effluent discharge quality. **Table 2** summarises the Consent discharge quality limits.

**Table 2: Resource Consent Discharge Quality Limits**

Parameter	90th percentile, <i>not more than one sample in each preceding 10 samples shall exceed:</i>	Running Average, <i>Over any consecutive 10 samples shall not exceed:</i>
(a) Suspended Solids	20	10
(b) Carbonaceous Biochemical Oxygen (g/m <sup>3</sup> )	20	10
(c) Escherichia Coli (cfu/100ml)	20	10
(d) Total Ammoniacal Nitrogen (g/m <sup>3</sup> )	15	10
(e) Total Kjeldahl Nitrogen (g/m <sup>3</sup> )	20	15
(f) Total Phosphorus (g/m <sup>3</sup> )	20	14

Consent Condition 9 states that: despite these limits, TCDC shall operate the treatment system with the objective of achieving the highest final effluent quality that can reasonably and practicably be achieved within the capabilities of the treatment system.

### 4.2 Resource Consent Reporting

#### 4.2.1 Resource Consent Discharge Quality Monitoring

Condition 16 of the Consent requires:

*The Consent Holder Shall Measure And Characterise The Quality, Quantity And Variability Of Treated Effluent Being Discharged To The Wigmore Stream And The Effects Of The Discharge On The Quality And Variability Of Surface Water.*

Table 3 below shows the monitoring requirements for the Hahei WWTP.

**Table 3: Resource Consent Monitoring Programme**

Frequency	Sample Type and/or Location	Parameter
a) Every 15 minutes	Wigmore Stream Refer to <u>Condition 14</u>	<ul style="list-style-type: none"> <li>Water level</li> <li>Instantaneous flow</li> </ul>
b) Daily	Treatment Plant	<ul style="list-style-type: none"> <li>Rainfall</li> </ul>
c) Daily	Discharge	<ul style="list-style-type: none"> <li>Volume</li> <li>Instantaneous flow</li> <li>Average flow</li> </ul>
d) Weekly - during the period from the start of the third week of December to the start of the third week of February, otherwise, Monthly.	<ul style="list-style-type: none"> <li>Inlet of MFU</li> <li>Discharge, following all treatment stages and prior to entering the Wigmore Stream</li> <li>Wigmore Stream 50m upstream of the discharge</li> <li>Wigmore Stream downstream at Pa Road bridge</li> </ul> <p>Downstream samples to be collected within the period 1 hour either side of local low tide during daylight hours and while the discharge is operating.</p>	<ul style="list-style-type: none"> <li>Total Ammoniacal Nitrogen</li> <li>Escherichia Coli</li> <li>Enterococci</li> <li>Conductivity</li> <li>pH</li> <li>Sample date and time</li> <li>Time of low tide occurrence closest to sample time</li> </ul>
e) Monthly to coincide with d)	<ul style="list-style-type: none"> <li>Inlet of MFU</li> <li>Discharge, following all treatment stages and prior to entering the Wigmore Stream</li> <li>Wigmore Stream 50m upstream of the discharge</li> <li>Wigmore Stream 50m downstream at Pa Road bridge</li> </ul> <p>Downstream samples to be collected within the period 1 hour either side of local low tide during daylight hours and while the discharge is operating.</p>	<ul style="list-style-type: none"> <li>cBOD<sub>5</sub></li> <li>Nitrate Nitrogen</li> <li>Suspended Solids</li> <li>Total Kjeldahl Nitrogen</li> <li>Soluble Reactive Phosphorus</li> <li>Total Phosphate by Persulphate Digestion</li> <li>Turbidity</li> <li>Sample Date and Time</li> <li>Time of low tide occurrence closest to sample time</li> </ul>
f) Once per year in January or February	<ul style="list-style-type: none"> <li>Wigmore Stream 50m upstream of the discharge</li> <li>Wigmore Stream 50m downstream at Pa Road bridge</li> </ul> <p>Refer to <u>Condition 19</u> for sampling and assessment methodology.</p>	<ul style="list-style-type: none"> <li>Aquatic Macroinvertebrate Assessment</li> <li>Habitat and aquatic plant assessment</li> <li>Sample date and time</li> <li>Time of low tide occurrence closest to sample time</li> </ul>
g) At least once per year - to coincide with summer low flows	Wigmore Stream  Additional gauging each summer may be required if low flow conditions are prolonged, to capture a series of low flow records. Refer to <u>Condition 15</u> .	<ul style="list-style-type: none"> <li>Flow (via flow gauging)</li> <li>Sample date and time</li> </ul>
h) Once every five years in January or February, commencing 2019	<ul style="list-style-type: none"> <li>Wigmore Stream 50m upstream of the discharge</li> </ul>	<ul style="list-style-type: none"> <li>Fish populations</li> </ul>



	<ul style="list-style-type: none"> <li>Wigmore Stream 50m downstream at Pa Road bridge</li> </ul>	
--	---	--

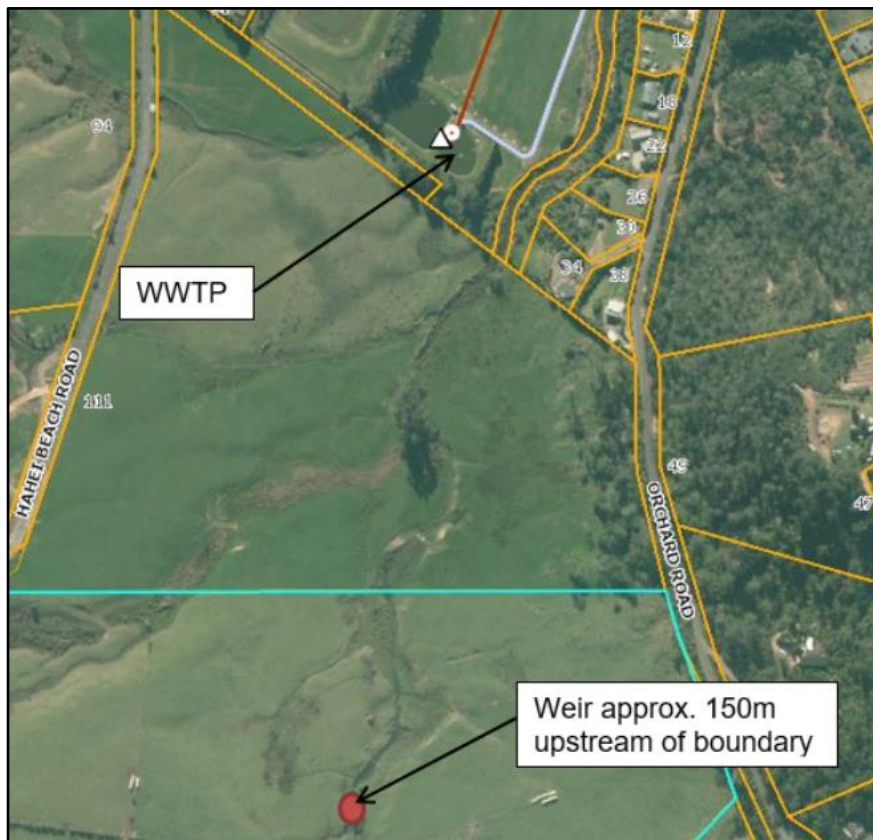
The sample monitoring programme is maintained and issued by the Veolia Environmental Technical Officer on a quarterly basis.

Note: there is currently no monitoring of influent wastewater. Additional on-site tests are performed to monitor dissolved oxygen (DO), pH, temperature and ammonia levels across the ponds. This enables the site operator to monitor the treatment efficacy across the works and make decisions on treatment optimisation. The on-site sampling also serves as an early warning system for any potential discharge outside of resource consent limits.

More information on the monitoring conducted at Hahei WWTP can be found in the Monitoring Plan; Reference 2.

#### 4.2.2 Wigmore Stream Flow Monitoring

A number of consent conditions; *Conditions 14, 15* and *16*, mention a requirement to monitor the Wigmore Stream flow. A flow gauging weir was installed on the Wigmore stream, upstream of the WWTP. Figure 7 below shows the approximate location of this installation.



**Figure 7: Wigmore Stream Flow Gauging Station**

At the time of writing, the flow gauging station on the upper Wigmore Stream is not currently functional. It is understood TCDC are in discussion with the Waikato Regional Council and the landowner about re-establishing the flow gauging on the Wigmore Stream.

As the flow gauging on the Wigmore stream is not operational, the manual low flow gauging required by Condition 15 to verify the flow gauging station, is not being conducted.

#### 4.2.3 Scheduled Reporting

TCDC, in accordance with the requirements of the Consent Conditions 20, 21, 22, and 31, is to provide the following periodic reports (Refer to Table 4) on the specified dates.

Reports shall be provided to the Waikato Regional Council for approval.

**Table 4: Required Reports to be submitted to Waikato Regional Council**

Condition	Requirements	Submission by	Period
<u>17</u>	<u>Monitoring Plan</u> Methods and sample locations for how, when and where sampling is to take place.	07 February 2018	Updated every two years
<u>20</u>	<u>Periodic Reporting</u> Provide a data report covering the requirements of <u>Condition 16</u> for the period 1st April to the 30th September.	01 December	Annually
<u>21</u>	<u>Monitoring Report</u> To include: <ul style="list-style-type: none"> <li>• A summary of the monitoring results required by <u>Condition 16</u> for the previous 12 months between the 1st of April and 31st of March.</li> <li>• A critical analysis of the data to assess any environmental effects.</li> <li>• A comparison with historic data to identify emergent trends.</li> <li>• Comments on compliance or non-compliance with <u>Condition 8</u>.</li> <li>• Comments on work undertaken at the WWTP to improve the performance of the WWTP.</li> <li>• Report and discuss any complaints, and</li> <li>• Any other issues considered important.</li> </ul>	01 June	Annually
<u>22</u>	<u>Ecological Assessment:</u> To include: <ul style="list-style-type: none"> <li>• A summary of the ecological monitoring and environmental sampling results collected under <u>Condition 16</u>.</li> <li>• A comparison with historic data to identify emergent trends.</li> <li>• A critical analysis of the current health of the Wigmore Stream including the potential causes of an</li> </ul>	01 June	Every two years

	degradation and the potential impact of the WWTP discharge on the health of the Stream and downstream coastal waters, and <ul style="list-style-type: none"> <li>Any other issues deemed important by the ecologist.</li> </ul>		
<u>23</u>	<u>Contingency Plan</u> To cover events such as bypasses or other extraordinary events and include measures and notification protocols.	01 June 2018	Updated every three years
<u>24</u>	<u>Management Plan</u> Requirements discussed in Section 1.1.	07 February 2018	Reviewed annually
<u>31</u>	<u>Additional Reporting:</u> A report to discuss long-term strategy for the Hahei WWTP discharge including potential options upon the expiry of the consent.	07 December 2020	Every 5 years

#### 4.3 Unauthorised Discharge Management

Resource Consent under Condition 26 requires that:

*The Consent Holder Shall Notify The Waikato Regional Council As Soon As Practicable, And As A Minimum Requirement Within 24 Hours, Of Any Discharge To Wigmore Stream From A Source That Has Bypassed Any Part Of The Treatment System, Or Any Discharge To The Redundant Disposal Beds And/Or Redundant Storage Pond. The Consent Holder Shall, Within 7 Days Of The Discharge Occurring, Provide A Written Report To The Waikato Regional Council, Identifying The Extent Of The Discharge, Possible Causes, Steps Undertaken To Remedy The Effects Of The Discharge And Measures That Will Be Undertaken To Ensure Future Compliance With This Consent.*

Reference 1, the Hahei WWTP Contingency Plan, discusses unauthorised discharges and the responses to these events occurring in more detail.

#### 4.4 Complaints Management

As per Condition 27, all complaints associated with the Hahei WWTP such as odour, water quality, discharge issues shall be recorded in a complaints register. TCDC is to hold a register which logs all calls and complaints received regarding the Hahei WWTP. TCDC is to manage this complaints register and it shall be available to the Waikato Regional Council at all times as per Condition 28. Complaints which may infer non-compliance with the resource consent conditions shall be notified to the Waikato Regional Council within 24 hours of the complaint being received and a follow up report will be provided, detailing the complaint, potential causes and follow up actions, within 5 working days of the complaint being received.

## 5 WWTP Operations, Maintenance & Monitoring

Veolia maintain the Hahei WWTP in accordance with the Operations & Maintenance Manual. See **Reference 4** which covers the operation of the plant and maintenance of plant assets in more detail.

Under Condition 2 of the Consent, TCDC shall be responsible for all operations and must ensure contractors are made aware of the relevant conditions of the Resource Consent and ensure compliance with those conditions.

Under Condition 3, the treatment plant and discharge to the Wigmore Stream shall be managed and operated by an appropriately trained operator.

### 5.1 Critical Plant Assets

Critical plant assets are inspected at every site visit to ensure adequate treatment is maintained. Veolia complete programmed maintenance on these assets to reduce the risk of failure and maintain performance. Work orders to complete programmed maintenance are created automatically by Veolia's Asset Management System (VAMS). Time to complete the maintenance, any parts replaced or sub-contractor input required is recorded against the job number assigned to a specific asset.

Table 5 summarises the critical assets, performance checks, signs the asset may not be functional at optimal performance and the potential impact of this on the treatment process.

**Table 5: Critical Plant Assets (Priority 1 to 5), Performance Checks, Signs of Sub-Optimal Performance and the Potential Impact of Asset Failure**

Plant Asset (Priority 1 Highest)	Performance Check	Signs of Sub-Optimal Performance	Potential Impact
<i>Inlet Screening (3)</i>	Check screenings bin	Rag in the aeration pond Reduced amount of screenings.	Grit passing to the aeration ponds could eventually cause silting of the pond. Grit and rag/detritus can also have a negative impact on other plant assets
<i>Aerators – surface (1)</i>	Check the Aerator is running well and appropriately submerged	Low DO levels in the aeration pond. Higher levels of ammonia in the site samples.	Reduced DO and mixing provided by the aerators can lead to reduced treatment efficacy which jeopardises the resource consent compliance
<i>Aerators – sub- surface (1)</i>	Check the aeration bubble pattern and blower	Poor or patchy bubble pattern. Low DO levels in the aeration pond. Higher levels of ammonia in the site samples.	Reduced DO and mixing provided by the aerators can lead to reduced treatment efficacy which jeopardises the resource consent compliance
<i>MFU Feed Pump (2)</i>	Check the pump is running	Reduced discharge volume. Higher pond levels	Over time and with higher inflow volumes pond levels could increase, elevating the risk of a flooding event

<i>MFU (1)</i>	Check the membrane cartridges. Check the necessary backwashing is occurring. Check the chemical dosing.	Increased backwashing cycles. Increased effluent turbidity. Increased bacterial counts and suspended solids in the site samples.	Reduced MFU performance can lead to higher suspended solid concentrations and bacterial counts in the effluent. Both of these can impact resource consent compliance.
<i>DO Probe (5)</i>	Check DO is above 2 mg/L and numbers are fluctuating. Perform a verification.	Probe not submerged enough. End cap damaged. Result not being recorded or changing.	The DO probe monitors the aeration efficacy within the pond. If the probe is inaccurate or unreliable, the necessary DO levels in the aeration pond may not be achieved leading to a risk of resource consent non-compliance.

## 5.2 Monitoring Procedure

### 5.2.1 Laboratory Sampling

Reference 2, the Hahei WWTP Monitoring Implementation Plan contains more information on the sampling conducted at Hahei WWTP.

### 5.2.2 On Site Testing

As part of the site visits, various parameters are recorded on the daily field sheets. This information, while not specifically required by the resource consent, helps the WWTP operators gauge the plants performance and track changes over a longer period. Information is recorded on:

- Weather condition including wind direction, speed and rainfall,
- Any odours noticed at the plant,
- Influent DO, pH and temperature data,
- Aeration and Retention pond DOs,
- Retention pond level,
- Pond colours to identify treatment issues, and
- Data on the MFU including chemical usage, discharge rate and backwash data.

Appendix D contains the consent summary sheet that is kept on site to help the operators keep track of the necessary sampling and site monitoring.

## 5.3 Data Collection

### 5.3.1 SCADA Data

There is remote monitoring system, ie. SCADA at the WWTP to monitor the inflow and outflow from the MFU, an alarm was installed recently to alert the operator if the effluent volume exiting the MFU approaches the alarm level of 650m<sup>3</sup>. The volume on the SCADA can be adjusted lower if it is necessary.

Hahei WWTP is connected to TCDC's SCADA system for both remote access and monitoring. Data from the plant is connected to the Online Data Monitoring System for both reporting and

monitoring purposes. Table 6 below lists the monitoring data that is available for the site through the SCADA system and the corresponding SCADA tag names.

**Table 6: SCADA Data and corresponding SCADA Tags.**

Data	SCADA Tag
Daily Influent Volume	HHSew_Daily_Flow
Daily Effluent Volume	HHWWTP_Daily_Outflow
Aeration Pond DO	HHWWTP_Aeration_DO
Retention Pond DO	HHWWTP_Retention_DO
Site Rainfall	Hahei_Daily_Rain
Retention Pond High Level	HHWWTP_Pond_High

### **5.3.2 Field and Laboratory Data**

Field data is entered into TCDC's Online Data Management System (ODMS), Water Outlook. Sample results are also uploaded to the ODMS via the laboratories database.

## **6 Hahei WWTP Incident Responses & Contingency Plans**

Any incidents which may infer non-compliance with the conditions of the Consent are to be responded to as outlined in table 5. An incident can be escalated to an emergency under the following situations:

- Affect the health and safety of workers or the general public;
- Cause adverse effects to the environment; and
- Cause damage to Veolia, TCDC or private property.

Emergency response for the Hahei WWTP is to be undertaken in accordance with the Thames Coromandel Emergency Response Plan, maintained by Veolia. Examples of potential emergency events include:

- Raw effluent and Stormwater Overflow / Discharge
- Power Failure
- Extreme Weather Conditions
- Security and Vandalism
- Health and Safety
- I.T. Failure
- Natural Disasters

Reference 1, the Hahei WWTP Contingency Plan contains further information on reacting to extraordinary events at the Hahei WWTP.

### **6.1 Odour Complaints**

The plant has been designed and is operated in a way to minimise the inherent odours. At the inlet works, the screen auger is enclosed as is the rag bin. Maintaining a positive DO level in the aeration and retention pond reduces the risk of odours. Additionally the MFU system is enclosed. Odour complaints may occur as a result of an extraordinary event such as surface flooding. Reference 1, the Hahei WWTP Contingency Plan discusses such potential events in further detail.

Under Conditions 27 and 28, a complaints register is required to be kept and maintained and made available to WRC at all reasonable time. TCDC hold and update the complaints register for Hahei WWTP.

## **7 Proposed WWTP Physical Works**

Consent Condition 21 requires that TCDC provide an annual monitoring report by 1 June each year to the Waikato Regional Council.

This report shall include any works that have been undertaken to improve the environmental performance of the treatment system or that are proposed to be undertaken in the up-coming year to improve the environmental performance of the treatment system.

Veolia completes this annual report for TCDC as part of the operation contract. The reports are sent to TCDC for review before submission to the Waikato Regional Council.

## **8 Management Plan Review & Improvements**

This Hahei WWTP Management Plan is to be maintained by TCDC and utilised for the management and operation of the Hahei WWTP within the requirements of resource consent 135636.

This Hahei WWTP Management Plan shall be reviewed and updated annually. This will be done alongside the annual monitoring report.


Under Condition 25, TCDC shall manage the WWTP and the discharge in accordance with the management plan referred to in Condition 24. Any changes to the management plan shall be advised to the Waikato Regional Council in writing after consultation between TCDC and the Waikato Regional Council.

Under Condition 30, TCDC are required to complete the installation of additional aeration within the aeration pond as outlined in the “Hahei WWTP Consent Ammoniacal Nitrate Reduction” memo produced by Harrison Grierson in June 2017. This upprage work has been completed.

### **8.1 Management of the Review of Resource Consent Conditions**

Under Condition 33, the Waikato Regional Council may serve notice on TCDC, under section 128(1) of the Resource Management Act 1991, of its intention to review the conditions of the resource consent within the year of the second, fifth and tenth anniversary of the commencement of the consent.



- 
- A. Appendix: Resource Consent 135636.01.01**
  - B. Appendix: Hahei WWTP Site Plan**
  - C. Appendix: Hahei WWTP P&IDs**
  - D. Appendix: Resource Consent 135636 On-Site Summary**