Tauranga Wastewater Treatment Plants Compliance Report

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Environment Bay of Plenty
REGIONAL COUNCIL

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Chapter 1: Introduction

Tauranga City Council operates two wastewater treatments plants to treat all wastewater within the greater Tauranga area.

Sewage from Tauranga, Greerton, Bethlehem and surrounding areas is treated via the Chapel Street wastewater treatment plant. Installation of the Western Bay of Plenty District Council reticulation sewer line, is at present under construction and all wastewater from the Omokoroa area will be treated at the Chapel Street wastewater treatment plant.

Treated wastewater from Chapel Street is either piped directly to the wetland area at Te Maunga for further treatment, or discharged by irrigation to different locations within the Tauranga city area.

Wastewater from Mount Maunganui, Bayfair and Papamoa is treated via Te Maunga wastewater treatment plant.

Once wastewater has passed through the wetland area at Te Maunga, it is then discharged via the Omanu ocean outfall to the Pacific Ocean. (Refer Figure 1 for overview of process).

The previous report on the Tauranga City Council wastewater treatment plants was presented in December 2001 and covered consents 02 3540 and 02 3803. Since then, both these consents have expired. Tauranga City Council now hold nine new consents covering both treatment sites.

This report covers the compliance levels of the expired consents leading up to their expiration and the latest compliance levels of all the current Tauranga City Council Wastewater Treatment Plant consents. A draft of this report has been reviewed by Tauranga City Council.

This report will assess compliance levels over the period January 2002 through to May 2006.

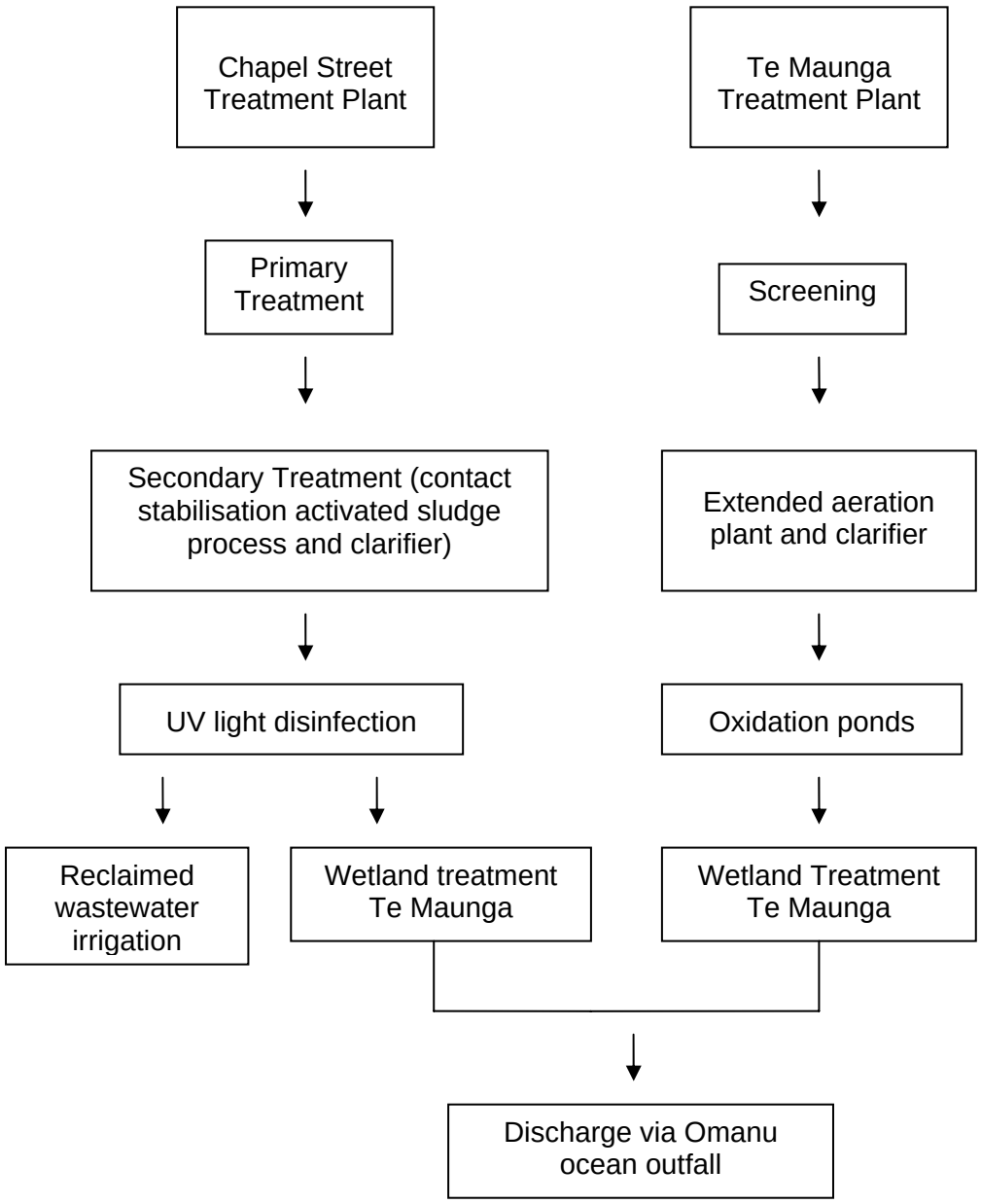


Figure 1 Overview of processes at each treatment plant

Chapter 2: Background

2.1 Expired consents

02 3540 Discharge treated sewage from the Tauranga and the Te Maunga sewage treatment plants into the Pacific Ocean

02 3803 Discharge reclaimed water from the Chapel Street wastewater treatment plant on to land at various publicly accessed sites within the Tauranga City.

Both these consents expired on the 30 April 2005 however, Tauranga City Council continued to operate under section 124 until February 2006 when the new consents were granted.

2.2 Current consents

62722 To discharge odorous gases from Chapel Street wastewater treatment plant to the air – granted 17 September 2005.

62723 To discharge odorous gases from Te Maunga wastewater treatment plant to the air – granted 17 September 2005.

62878 A coastal permit granted 23 January 2006:

(a) to discharge treated wastewater from Chapel Street wastewater treatment plant and Te Maunga wastewater treatment plant to the coastal marine area; and

(b) to occupy space in the coastal marine area; and

(c) to use a structure in, on, under or over foreshore and/or seabed; and

(d) to alter the Omanu ocean outfall in, on, under or over foreshore and/or seabed of the Pacific Ocean

62881 To discharge seepage from the oxidation ponds to land where it may enter water – granted 17 September 2005.

62882 To discharge secondary treated sewage to the Tauranga Harbour during extreme wet weather – granted 7 November 2005.

62883 Authorises the occupation of space and use of overflow structure adjacent to the Chapel Street plant – granted 17 September 2005.

62884 To abandon the existing Tauranga Harbour outfall structure – granted 17 September 2005.

62885 To discharge secondary treated wastewater to land then to water during extreme wet weather periods – granted 17 September 2005.

62886 To discharge reclaimed water from the Chapel Street wastewater treatment plant on to land at various sites around Tauranga – granted 17 September 2005.

Chapter 3: Methodology

Compliance with consent conditions and the monitoring of the impact these activities have on the environment, have been determined in the following ways:

Permit holder to undertake:

- Extensive monitoring and analysis of treated wastewater prior to discharge to the Pacific Ocean, sampling and analysis of the receiving environment and the sampling and analysis of shellfish within the receiving environment.
- Community odour surveys to assess effects these activities have upon the surrounding environments.
- Operate and maintain a complaints register.
- Regular site inspections undertaken to assess potential adverse effects on the receiving environment.
- Initiate and implement improvements to the plants to reduce any adverse effects within the receiving environment.
- Regular reporting to Environment Bay of Plenty.

Environment Bay of Plenty to undertake:

- Physical site inspections undertaken at least twice yearly - once during the peak loading period during the summer months and again in winter.
- Respond and report on complaints received from the community.
- Undertake periodic sampling and analysis to check compliance with consent conditions.
- Regular contact with Tauranga City Council staff.

After each compliance inspection, staff issue a fieldsheet to the consent holder detailing any issues that may require addressing.

Chapter 4: Compliance

4.1 Consent 02 3540: Sewage discharge, Omanu outfall (expired)

This consent authorised the discharge of treated sewage from the Chapel Street and Te Maunga wastewater treatment plants into the Pacific Ocean.

Tauranga City Council undertook all sampling requirements as set out in the consent with the results being forwarded for recording purposes.

4.1.1 Compliance

In the month of May 2005, 13 results exceeded the limits imposed on the daily quantity permitted to be discharged. However, at the same time the rate of discharge (litres per second) was not exceeded.

These results reflect the extreme weather conditions experienced in May 2005, which caused extensive flooding in the Tauranga area. Since this time, no other results exceeded the limits imposed.

Upgrades have been undertaken at the Chapel Street and Te Maunga wastewater treatment plants and are discussed later in this report.

4.2 Consent 02 3803: Reclaimed water discharge (expired)

This consent authorised the discharge of reclaimed water from the Chapel Street sewage treatment plant on to land on various publicly accessed sites around the Tauranga district.

All water discharged under this consent was treated to secondary standard at the Chapel Street treatment plant and also included a final disinfection treatment by means of ultra violet light prior to irrigation.

Although the consent allowed the irrigation of treated wastewater at 10 different locations around the Tauranga area, irrigation was only carried out at Sulphur Point, Tauranga Domain and Omanu.

4.2.1 Compliance

Sampling of all treated wastewater prior to irrigation was being undertaken with no results exceeding the limits imposed by consent 02 3803.

4.3 Consent 62722: Discharge odorous gases from the Chapel Street plant

4.3.1 Odour assessment

In March 2006, Tauranga City Council engaged URS New Zealand Limited to undertake an odour assessment on the Wastewater Treatment Plant. The findings are summarised below:

Primary sedimentation tanks (PST)

Noticeable odours detected along the boundary adjacent to Palmers attributed to the scum blanket within the PST. Upgrades are planned in the near future to reduce odours occurring.

Gas engine

Strongly recommended that until the gas engine is installed, the plant carries out regular checks to make sure it is operating correctly.

Remedial work undertaken or planned

Roofs are expected to be erected over all primary sedimentation tanks in November 2006. This should reduce odour complaints within this area.

The gas engine has been installed and will be commissioned in September 2006.

4.3.2 Odour Management Plan and community survey

These are presently being prepared and will be supplied to Council shortly. The community survey should have been supplied by May 2006.

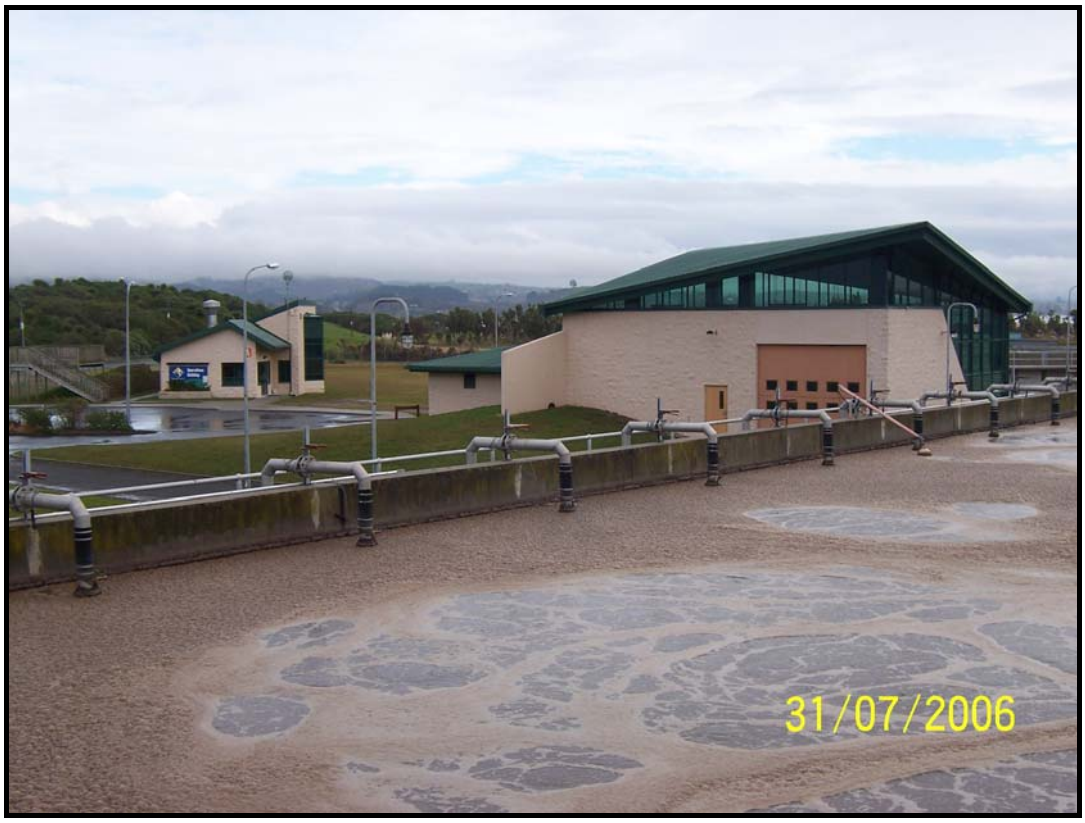
4.3.3 Complaints to Tauranga City Council

All air complaints are being logged, however, the details as required by condition 9.4 are not being provided to the regional council as soon as practical or within 24 hours.

Compliance staff are working with the consent holder to implement a satisfactory and appropriate reporting mechanism.

4.3.4 Complaints to Environment Bay of Plenty

There have been no odour complaints received by Environment Bay of Plenty since the commencement of this consent in September 2005.



Te Maunga Wastewater Treatment Plant

4.4 Consent 62723: Discharge odorous gases from the Te Maunga plant

4.4.1 Odour assessment

In March 2006, Tauranga City Council engaged URS New Zealand Limited to undertake an odour assessment on the Wastewater Treatment Plant. The findings are summarised below:

Clarifier and aeration ditch

While there were clear odours attributed to these areas, none were considered to be offensive beyond the boundary of the waste management designation of the plant. Odour from the clarifier was noticeable along Tip Lane, but could not be detected at any significant distance.

Screening building

Odours inside the building were strong and care needs to be taken to ensure doors are kept closed to avoid release of offensive odours to the environment.

Manhole riser

There was a significant amount of highly odorous air flowing out of the manhole at the end of the biofilter bed. This needs to be properly sealed, as this could potentially be a source of odour complaints.

Remedial work undertaken

Manhole sealed.

Automatic irrigation system installed on bio-filter to ensure optimum soil moisture.

4.4.2 Odour Management Plan and Community Survey

These are presently being prepared and will be supplied to Council shortly. The community survey should have been supplied by May 2006.

4.4.3 Complaints

Complaints continue to be received from residents to the north of the Te Maunga area. Between 7 and 9 June 2006, an offensive odour was identified by compliance staff as originating from the wastewater treatment plant.

A report was completed as required by condition 9.2. A copy of this report is attached as appendix 2.

All air complaints are being logged, however, the details as required by condition 9.4 are not being provided to the regional council as soon as practical or within 24 hours.

Compliance staff are working with the consent holder to implement a satisfactory and appropriate reporting mechanism.

4.5 Consent 62878: Discharge from the Te Maunga outfall

This consent allows for the discharge of secondary-treated and disinfected wastewater from the Chapel Street and Te Maunga wastewater treatment plants into the coastal marine area.

It also provides for the ongoing occupation of the coastal marine area by the Omanu ocean outfall structure and allows for maintenance of the structure.

4.5.1 Compliance

- **Quantity and rate**

  The first quarter flow rates for February, March and April 2006 have been received and comply with limits imposed by this consent.

- **Outfall**

  This was inspected in March 2006 and a report was received in compliance with condition 7.

- **UV disinfection**

  Secondary treatment and UV disinfection is being undertaken at Chapel Street wastewater treatment plant already. It is expected that Te Maunga wastewater treatment plant will be secondary and UV treated in approximately five years. This falls well within the time limit imposed by the consent, which is seven years following the issue of the consent.

- **Operations and maintenance**

Te Maunga wastewater treatment plant

The second clarifier and upgraded bioreactor was commissioned in March 2006.

Chapel Street wastewater treatment plant

Work on the extensions to the final effluent wet well is due to be completed shortly. The Co-generation project under construction (utilising digester gas to generate electricity) is due to be completed September 2006, and roofing of primary sedimentation tanks is underway and due to be completed around November 2006.

All wastewater from Chapel Street and Te Maunga pass through the wetland area at Te Maunga prior to discharging to the ocean outfall.

- **Monitoring**

Tauranga City Council is conducting all monitoring requirements as required by condition 9, 10 and Schedule 1. Results and returns are being forwarded to the regional council within the timeframes required.

Figures 2, 3 and 4 show compliance with conditions 10.1 and 10.2 of consent 62878. The number of allowable exceedances relate to every 13 week reporting period. There have been no breaches of any of the consent limits to date.

Condition 10.1 states:

Based on twice-weekly sampling, as required by condition 9.2 of this permit, and take over each 13-week period commencing on 1 February, 1 May, 1 August, and 1 November of each year during the term of this permit, all wastewater discharged through the ocean outfall shall meet the following BOD_5 and total suspended solids standards:

Analyte	*Sample Type*	*No more than 16 values shall exceed*	*No more than 3 values shall exceed*
BOD_5 (mg/L)	Composite	25	30
Total suspended solids (mg/L)	Composite	50	80

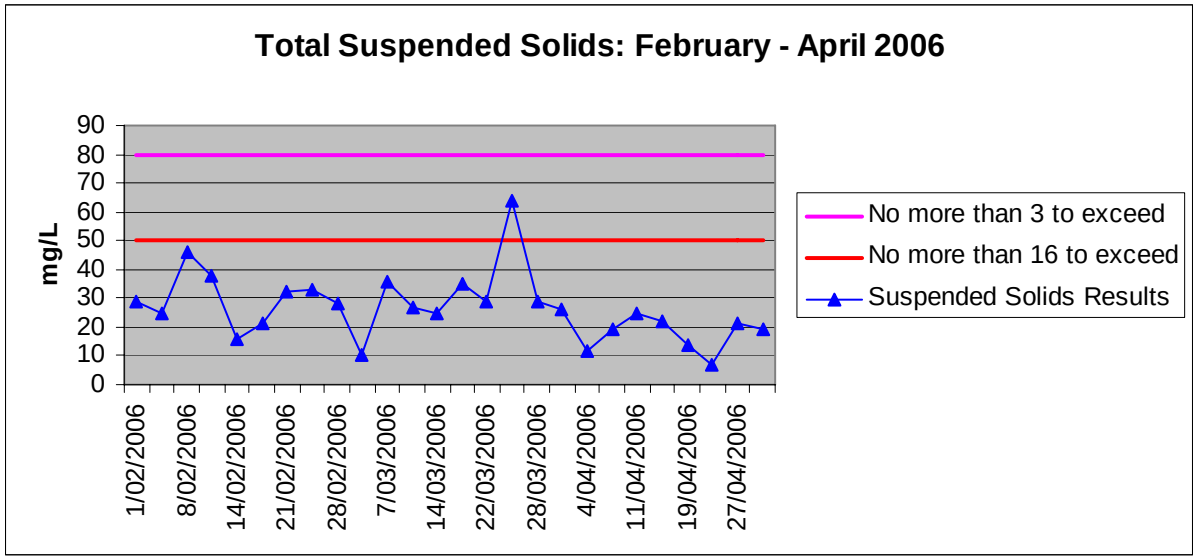


Figure 2

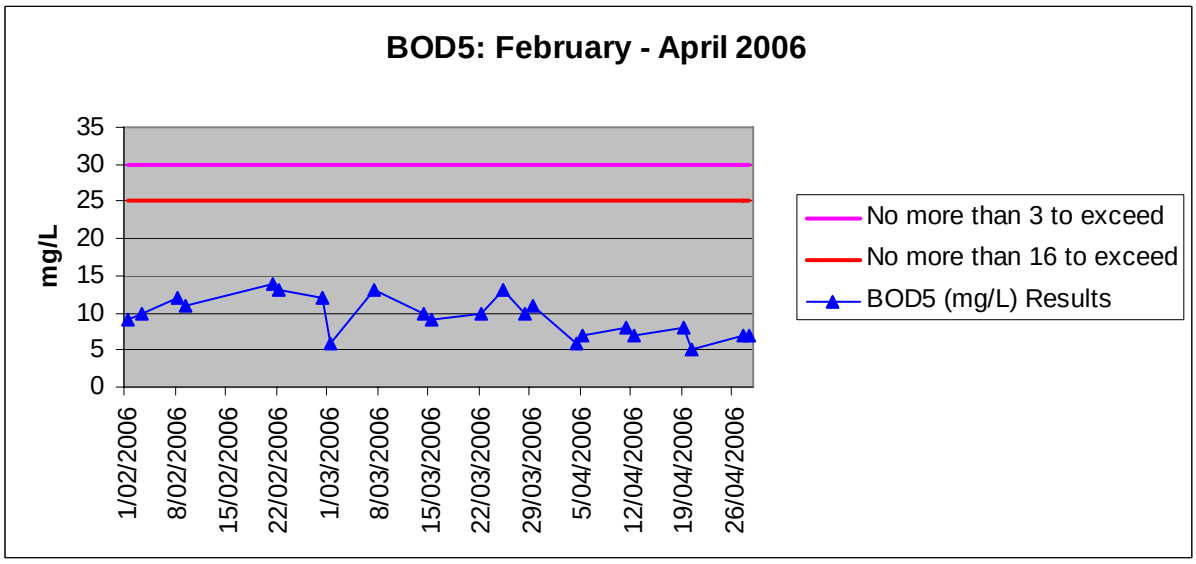


Figure 3

Condition 10.2 states:

The following enterococci standard shall apply to all wastewater discharged through the ocean outfall:

- Based on twice-weekly sampling as required by condition 9.2 of this permit, and taken over each 13-week period commencing on 1 February, 1 May, 1 August and 1 November of each year, no more that 16 enterococci values shall exceed 3 500 cfu/100 mL.

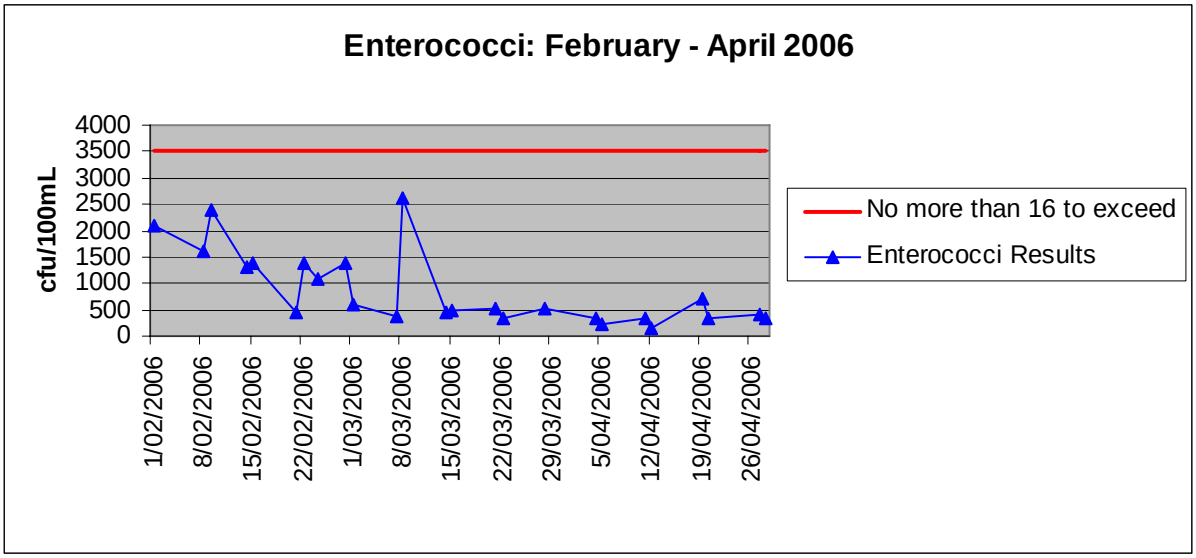


Figure 4

Receiving water monitoring

Condition 11 involves monitoring the enterococci bacteria in the receiving environment by taking samples from nine locations offshore adjacent to the outfall.

A total of five samples are to be collected per location during the months of December, January, February and March.

Results have been received from Tauranga City Council as per consent condition with no results exceeding the limits imposed.

Shellfish monitoring

During February of each year, five replicate shellfish samples shall be collected from five separate locations within the inter-tidal zone adjacent to the outfall.

Samples were to be analysed for Escherichia Coli, Arsenic and Trace metal contents in the soft tissue of shellfish.

Specific limits are imposed on Escherichia coli, arsenic, copper, lead, mercury and nickel with no limits being exceeded.

- **Wastewater management review committee**

  The Review Committee has not been set up yet. This has also delayed the submitting of the Management Plan which was due within three months of the commencement of this permit. Discussions with Tauranga City Council Staff reveal that a new position has been created who will be responsible for the compliance monitoring of all Tauranga City Council's discharge consents. Once this position has been filled, the Review Committee can be established and Management Plan submitted.

- **Environmental mitigation and enhancement fund**

  Fifty thousand dollars has been budgeted in the 2006 – 2007 Annual Plan and in all subsequent years as per consent conditions. This fund will be tapped for suitable projects once the Review Committee has been established.

4.6 Consent 62881: Discharge seepage from ponds where it may enter water

This consent requires assessments to be undertaken in February of each year, in and around Rangataua Bay adjacent to the oxidation ponds.

The aim of this consent is to identify any indicator organisms or unusual biological features that could indicate the presence of leakage from the ponds.

Opus International Consultants undertook the monitoring of bores holes down and up gradient of the oxidation ponds (refer Figure 5).

MWH New Zealand Limited completed the inspection of intertidal sand flats, to identify any indicator organisms or unusual biological features that could indicate presence of leakage from the ponds.

MWH New Zealand Limited also undertook the survey of Titiko abundance at six different locations.

The information supplied within these reports meets all the requirements of the consent. For a summary of the report is attached as Appendix 1.

Figure 5 Location of groundwater monitoring bores (62881)

4.6.1 Compliance

The only area on non-compliance was that the survey and monitoring was undertaken in March and not February as required by the consent. This issue has been raised with Tauranga City Council staff to ensure compliance in the future.

4.7 Consent 62882: Discharge treated wastewater from the Chapel Street plant to Tauranga Harbour during extreme wet weather

This consent authorises an emergency discharge into the harbour during extreme wet weather. There has been no emergency discharge since this consent was granted in November 2005.

4.8 Consent 62883: Chapel Street overflow structure

This structure is in place but has not been used since the commencement of the consent. The consent only authorises the structure, it does not authorise any discharge from it (discharge covered by consent 62882).

4.9 Consent 62884: Abandon the existing Tauranga Harbour outfall structure

This consent allows for the abandonment of the Chapel Street discharge pipeline into the Tauranga Harbour. Works to disconnect the pipeline have to be completed by 30 April 2010.

4.10 Consent 62885: Discharge treated wastewater from the Te Maunga plant to land then to water in extreme wet weather

This consent allows for a discharge in extreme weather conditions into the Tauranga Harbour via an unnamed tributary of the Mangatawa Drain.

There has been no discharge since the granting of this consent.

4.11 Consent 62886: Discharge reclaimed water from the Chapel Street wastewater treatment plant on to land at various sites in the Tauranga area

Three sites are presently set up for irrigation, Omanu Golf Course, Sulphur Point Reserve and Tauranga Domain. However no irrigation has occurred since the granting of this consent.

Notification has been received from Tauranga City Council stating that the sampling programme will be interrupted due to modification and enlargement of the final effluent wet well, at the Chapel Street plant. It is anticipated that these upgrades will take several weeks.

Discussions with Tauranga City Council staff confirm that this does not breach their consent condition, as no irrigation is occurring during these upgrades.

A Management Plan will be submitted shortly.

Chapter 5: Summary and conclusions

With the development of a new position of Consents Manager City Waters, Tauranga City Council is committed to maintaining a good compliance record. This position will be responsible for the management and compliance of all discharge consents held by the city council. Once this position has been filled, a closer relationship can be maintained between the consent holder and Regional Council.

In May 2005 there were several breaches of the daily volume discharge limit of consent 02 3540, however these breaches related to the extreme rainfall and flooding that occurred in Tauranga during that period.

Monitoring of all current consents is being undertaken as required by the consent holder with no results exceeding the limits imposed. The new consents have only been issued within the last year or so therefore there is only a small amount of compliance information for these.

The non-compliance issues relating to the Wastewater Management Plan and times for surveys have been addressed. Compliance in the future will be the responsibility of the Consents Manager City Waters.

Overall, compliance with the various sewage treatment plant consents held by Tauranga City Council has been high.

Appendices

Appendix 1 - Assessment of seepage into Rangataua Bay, Te Maunga Ponds

Completed by MWH New Zealand Limited

Conclusions

The 2006 water quality study identified three small seepages from the Te Maunga Ponds into the adjacent intertidal area at stations W5, W6 and W8.

The distribution and flows of these seepages differ slightly from those detected in 2002, when seepages were detected at station W5, W6 and W7.

In 2006, the seepage at station W6 was evident to the observer as a result of the increased wetness of the sand, a grey/green discolouration on the sand surface and by the absence of mud crab burrows, which were found elsewhere at a high density. At stations W5 and W8, this visible evidence was less obvious and could easily be overlooked.

Faecal coliform bacteria concentrations in seepage areas W5 and W6 were low but were elevated at site W8 and in the tributary of the Mangatawa Stream (sites W1 and W2) which drains the tidal marsh between the pond and the closed landfill.

The ammonia-N concentration in seepages at station W6 and W7 had increased progressively between 1987 and 2002 but this trend did not continue in 2006. This result may be related to the volume of sludge, which had accumulated in the adjacent pond and which was subsequently removed after the 2002 survey.

Due to the small scale of the seepage, the potential impact on the ecology of sand flats adjacent to the ponds are minor. Small areas of surface sands are discoloured in the immediate area of the seepages but outside of these areas there are no obvious adverse effects.

There is no evidence that the pond seepage are having any effect on the abundance, distribution or size of titiko, which are abundant throughout the intertidal area surrounding the ponds.

Appendix 2 - Te Maunga Odour Complaints Report

On Wednesday 6 June 2006, I was contacted by John Morris, Environmental Compliance Officer for Environment Bay of Plenty who was investigating an odour complaint.

John identified the odour as originating from the oxidation ditch. I mentioned to John I thought it was unlikely that the odour would be coming from the ditch, as there was no foam or scum on the ditch and that we weren't carrying out any maintenance or operational changes to the process, that would have created or caused odours.

Pointed out to John that there were contractors working at the sewer inlet structure and that possibly this is where the odours were coming from. Advised John that over the next couple of days, the concrete slab on top of the inlet chamber would be removed but would immediately be replaced the same day.

On Friday 9 June, again contacted by John following further odour complaints. It was on this day that the inlet structure chamber lid was removed. Having the lid removed may have contributed to odour complaints, as the inlet structure receives the wastewater as far afield as the far end of Papamoa and Mount Maunganui. As this waste takes many hours to be pumped to the treatment plant, it can be odorous on arrival. Generally, these odours are extracted at the pre-treatment stage of the treatment process and passed through a bio-filter. Because of the lid removal they were released directly to the atmosphere.

Having been present at the time of the lid removal, I did not however, notice any significant odours coming from the chamber.

While speaking to John, I mentioned that the odour complaint received on 6 June, was possibly due to scum in the distribution chamber at the end of the oxidation ditch. This distribution chamber is a structure divided in two by a steel bulkhead and allows activate sludge from the oxidation ditch to flow evenly between the two secondary clarifiers.

Currently, Number 1 clarifier is out of service for maintenance and has been for several months. However, late May, the clarifier was filled for a day and emptied again. In isolating the clarifier from the distribution splitter chamber, the chamber does not get emptied. This is partly due to the fact there is no draining system and the dividing wall not being completely water tight, meaning there will always be liquid present. As a result, scum forms on the liquid surface creating an odour.

To mitigate this problem we will be setting up a pump in the closed off section of the division chamber and will pump the chamber out at frequent intervals, to remove any accumulated activated sludge that could possibly cause odours. This appears to be the only solution at this time, as to try and seal the division wall requires a major plant shutdown.

Once the clarifier maintenance is complete, the intention is to put it back into service.