

WESTERN WASTEWATER TREATMENT PLANT

Renewal of Resource Consents

Scoping of Issues and Options

6 September 2005

Prepared for: Wellington City Council

Prepared by: Capacity (Wellington Wastewater Management Limited) and in association with MWH and EMS Limited

Capacity is a council controlled organisation which manages all Wellington and Hutt City Council drainage and water assets.

Introduction

- 1 Wellington City Council (**the Council**) owns and operates the Western Wastewater Treatment Plant in Karori (**the Treatment Plant**). The resource consents that authorise the operation of the Treatment Plant expire in mid 2006. Capacity and a number of specialist consultants have been engaged to seek new resource consents.
- 2 The Council currently has three effluent discharge consents and an air discharge consent that authorise the operation of the Treatment Plant. The Council has begun to work on the application process to replace the four consents to allow for the continued operation of the Treatment Plant and is seeking your feedback.
- 3 The Council invites you to provide feedback on the issues which you consider will need to be addressed in the Assessment of Environmental Effects which will accompany the consent applications.
- 4 This document also introduces the issues associated with alternative approaches that Council is considering to obtain the new resource consents for the continued operation of the Treatment Plant in very high rainfall events and seeks your comments on this.

The Existing Consents

- 5 The four resource consents Wellington City Council holds for the Treatment Plant are:
 - 5.1 **WGN 890009** – Coastal permit to continuously discharge disinfected secondary treated effluent to South Karori coastal waters (in the vicinity of the Karori Stream mouth) via an existing outfall.
 - 5.2 **WGN 010133 [20972]** – Coastal permit to discharge screened effluent to South Karori coastal waters (in the vicinity of the Karori Stream mouth) via the existing outfall during significant wet weather events.
 - 5.3 **WGN 010133 [20971]** – Permit to discharge disinfected secondary treated effluent to the Karori Stream during significant wet weather events.
 - 5.4 **WGN 920138** – Air discharge permit to continuously discharge to air through a soil filter at the Western Wastewater Treatment Plant.
- 6 The existing resource consents expire in mid 2006. The Council will apply for new resource consents by the end of December 2005 to provide for the continued operation of the Treatment Plant.

The Treatment Plant

- 7 The Treatment Plant began operating in 1997 and was fully commissioned in 1998. It treats wastewater from the Karori Catchment which has a population of about 11,500 within an area of 400ha. The Treatment Plant includes the buildings and structures which provide for screening, secondary treatment, UV disinfection, storm tank (storage), as well as the pipeline to the coast and the coastal outfall. The location of the facilities, pipeline to the coast and coastal outfall are shown on Figure 1 (*attached*).
- 8 Wastewater from the Karori Catchment flows to the Treatment Plant via gravity. Wastewater arriving at the Treatment Plant is screened, subjected to secondary treatment (sedimentation and bioreactors) and UV disinfection. The treated effluent is discharged via the coastal outfall on the Wellington South coast, via a pipeline which generally follows the alignment of the Karori Stream. The outfall is positioned about 50 metres seawards of the mean high water spring mark at a depth of approximately 1.6 metres below mean sea level. Figure 2 shows the operating regime for the Treatment Plant in a schematic form (*attached*).
- 9 The Treatment Plant also includes biofilters which remove odour from the air prior to discharge to the environment.

Effluent discharges

Description of discharges

- 10 Under normal operating conditions, all wastewater arriving at the treatment plant receives full secondary treatment and is disinfected (ultraviolet treatment) prior to discharge to the coast via the pipeline to the south coast and coastal outfall.
- 11 During wet weather, the flow of wastewater can exceed the treatment capacity of the plant. Flows which exceed the treatment capacity are screened and diverted into a storm tank and later returned to the plant for treatment when flows are reduced. However, during sustained high inflows in periods of very high rainfall the capacity of the storm tank may be exceeded. If this occurs, the following overflow regime operates:
 - Screened and settled wastewater from the storm tank overflows from the storm tank to the pipeline to the coast and is discharged to the South Coast via the coastal outfall;
 - The storm tank overflow displaces all or part of the fully treated effluent from the Treatment Plant which is normally carried by the pipeline. The fully treated effluent is instead discharged to the Karori Stream adjacent to the Treatment Plant;
 - When the inflow rate drops and the storm tank overflow stops, the discharge of treated effluent to the stream immediately stops, and

instead is discharged to the South Coast via the pipeline and coastal outfall;

- The effluent stored in the tank is returned to the plant, treated (disinfected) and discharged via the pipeline to the coast and the coastal outfall.

12 These discharges are reflected in existing resource consents that authorise the:

- discharge of fully treated effluent to coastal waters
- intermittent (wet weather) discharge of screened effluent to coastal waters, and
- intermittent (wet weather) discharge of fully treated effluent to the Karori Stream.

Background to the discharges

13 When the resource consents for the construction and operation of the Treatment Plant were first granted in 1993, it was envisaged that the discharges to the Karori Stream would be eliminated by reducing the wet weather flows arriving at the plant through reducing storm water inflow and infiltration to the sewerage network. Consequently the consents granted only authorised the discharge to the Karori Stream in wet weather events until June 2001, and was subject to a number of milestones set to monitor the reduction of flows during wet weather events.

14 Significant inflow and infiltration work was undertaken by the Council during the 1990's. In addition the storage capacity in the sewer tunnel upstream of the Treatment Plant was increased so that a portion of the wet weather flow could be stored until after the wet weather event had passed and then be released. The combined effect of these initiatives in the Karori Catchment is that the frequency and duration of overflows to the Karori Stream have reduced, but they have not been eliminated.

15 In December 2000, the Council applied for resource consents to continue the two wet weather overflow discharges (ie treated effluent to the Karori Stream and the screened and settled effluent to the South Coast). The Council was granted consent to continue the discharges until June 2006 to coincide with the renewal of the other consents for the Treatment Plant.

The overflow discharge to the Karori Stream

16 A summary of overflow events (treated wastewater) to the Karori Stream since 2000 are as follows:

Year	Overflow events	Duration (hours)	Mean overflow rate (hours)
2000	1	21	151
2001	4	2 to 49	33
2002	2	2 to 9	31
2003	3	4 to 10	44
2004	4	5 to 28	137
2005 (to June)	1	21	119

17 It can be seen that overflows to the Karori Stream are of low frequency (on average three times per year) and typically last less than 12 hours. The overflows are fully treated and only occur when the stream is in flood, that is when high dilution is available. Monitoring indicates that downstream effects on stream water quality are minimal, which is consistent with the decision of the Hearings Committee in 2001.

18 Overflows to the Karori Stream could potentially be eliminated by replacing the existing pipeline with a larger pipeline. The estimated cost of doing this is \$5-6m. However, inspections indicate that subject to reasonable maintenance, the pipeline could have a remaining life of 20-30 years. On the face of it there would appear to be some merit in deferring replacement of the pipeline. Council is currently considering this issue. (See paragraphs 24 and 25 below for more detail on the decision to be made by Council on this issue and paragraphs 27-30 on how you can provide feedback on it).

The discharge to the South Coast

19 The discharge to the South Coast comprises:

- The continuous discharge of fully treated effluent under normal operating conditions;
- The intermittent discharge of screened and settled effluent during very high rainfall events.

20 As part of the process of preparing an assessment of environmental effects to accompany the consent applications, the Council has commissioned Cawthron Institute to undertake an assessment of the effects of the existing South Coast discharge, and the diluting and dispersive characteristics of the receiving environment. The assessment of environmental effects will provide detailed coverage of this issue.

Air discharge

- 21 Bio-filters were built at the Treatment Plant to remove odours prior to discharge to the environment. The soil type odour filters operate by microbial oxidation of odorous compounds. Air is distributed through the beds beneath the soil filters. The odorous compounds are diffused into the wet, biologically active soil/bark layer where they are absorbed prior to taking part in aerobic microbial reactions producing carbon dioxide and bacterial cell material.
- 22 For the 2004/05 compliance year, there have been no confirmed odour complaints lodged with Greater Wellington Regional Council in respect to the Treatment Plant and the bio-filter operation is recorded as fully complying.

Process from here

- 23 The Council intends to apply for a discharge consent to permit the operation of the Treatment Plant in normal operating conditions, for 35 years. It also will seek to consent the discharge to air on the same basis.
- 24 Prior to lodging the consents the Council needs to make a decision on whether to:
- Replace the pipeline to the South Coast in the short/medium term which would eliminate the discharges to the Karori Stream or
 - Defer replacement of the pipeline and seek resource consents to continue the intermittent discharges to the Karori Stream during periods of very high rainfall.
- 25 This specific issue will be considered by the Council at a meeting of the Strategy and Policy Committee scheduled for 13 October 2005. There are a number of issues which Council will consider in making this decision, in particular, the environmental effects on the stream, other effects (such as cultural and recreational), the views of interested parties, and whether there are any other options for eliminating the discharges to the Karori Stream.

Your comments and feedback welcomed

- 26 Council seeks feedback on the issues to be addressed in the assessment of environmental effects that will support the resource consent applications to be lodged by the end of December 2005, in particular:
- The continuous discharge of treated effluent to the South Coast via the existing coastal outfall in normal conditions;
 - The discharge of screened and settled effluent to the South Coast in periods of very high rainfall;

- 27 The Council also seeks your feedback on *when* or not it should replace the pipeline having regard to the circumstances outlined above.
- 28 Later in the year resource consents will be applied for and you will have a further opportunity to become involved if you would like to make a submission as part of the notified resource consent process.
- 29 EMS Limited has been asked to work with Capacity to co-ordinate this consultation process on behalf of the Wellington City Council.
- 30 Please forward your comments to:
- Attn Noreen Barton
EMS Limited
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Kelburn
WELLINGTON
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PLEASE PROVIDE COMMENTS BY WEDNESDAY, 28 SEPTEMBER 2005

Figure 1 – Location Map



Figure 2 – the operating regime

