

**BEFORE A HEARINGS PANEL OF THE GREATER WELLINGTON REGIONAL
COUNCIL AND MASTERTON DISTRICT COUNCIL**

[GWRC Ref: WAR 070077]

IN THE MATTER of resource consent applications to
Greater Wellington Regional Council
pursuant to section 88 of the
Resource Management Act 1991

AND

IN THE MATTER of a Notice of Requirement to
Masterton District Council pursuant
to section 168, 168A and 181 of the
Resource Management Act 1991

BY Masterton District Council

FOR the proposed upgrade of the
Masterton Wastewater Treatment
Plant

**SECOND SUPPLEMENTARY STATEMENT OF EVIDENCE OF HUMPHREY ARCHER
ON BEHALF OF MASTERTON DISTRICT COUNCIL**

RESPONSE TO OFFICER'S REPORT AND SUBMISSIONS

Subject: Engineering Aspects Of The Scheme And Consent Conditions

1. INTRODUCTION

I will first address revisions that the applicant wishes to make to the Consent Conditions proposed in the Officer's Report. Then I will address concerns raised by neighbours regarding the borrow areas.

2. COMMENTS ON REVISED CONDITIONS SCHEDULE 2 WAR 090066 (27160, 27161, 27162, 27163)

(Minor grammatical changes are noted in the comments column and will not be repeated here.)

2.1 Condition 1 - Stockwater Standards can be met. Whilst an alternative water supply or management provisions are under consideration. There is no need for that to be a requirement of consent. It is noted that the duration of the Ternents take is quite limited and could be scheduled when the discharge is not occurring.

2.2 Condition 2 - The 15,750 m³/d value is the average raw wastewater inflow volume and cannot be linked to the discharge rate because of storage in the ponds and reduced duration of discharges to the river.

The trigger for the discharge to the river until the existing pond area is available for land treatment, should be half median all year round – refer to Archer main evidence, Para 14.22

2.3 Condition 3 - Consents need to allow for the possibility of appeals, hence “from commencement”. The 5 year period allows for the existing ponds to be converted to land treatment area and for two wet summers during construction. Four construction seasons are required for the full scheme to be commissioned. That could be achieved in 4 years after commencement but that depends upon what time of year the consents commence. There needs to be time for the final design and tendering process. So for example if the consents commenced a few months before the start of the construction seasons, that season may be missed. The scheme has been designed with a pond discharge rate of 1200 litres/sec and is not viable with a maximum pond discharge rate of 700 litres/sec, which would require a further 55,000 cubic metres of storage to be provided. Because the pond banks are nearing maximum height, the extra storage would likely be provided by increased pond area (with reduced area for irrigation).

There is linkage between the pond discharge rate and dilution available in the river. The AEE concluded that 30 times dilution would have negligible effects and Dr Cooke demonstrated in Figure 6 of his evidence, that upstream river water clarity substantially reduces at flows approaching, and greater than, median. Thus effects from the discharge of pond effluent at flows above median, will not be noticeable against that background of turbidity. We have modelled the storage required if dilutions greater than 30X were to be stipulated and the storage volume for 40X dilution would be 350,000 cubic metres, and for 60X dilution, storage would be 550,000 cubic metres. These amounts can be compared to the proposed 275,000 cubic metres and substantial extra costs would result from 40X or 60X dilution requirement.

- 2.4 Condition 4** - There will be no treated wastewater discharged directly to Makoura Stream. Stormwater runoff from pasture will be discharged to Makoura Stream in high rainfall events, which will be difficult to measure accurately. Event durations will be recorded
- 2.5 Condition 6** - The adequacy of mixing can be checked in the long term by the monitoring at Wardell's Bridge. The applicant agrees to a one-off verification of mixing. This would require monitoring of various parameters at 300m downstream of the diffuser and comparing that to the dilution predictions in the AEE.
- 2.6 Condition 7** - It is less confusing to just state the compliance point. It should be 300m (the AEE describes reasonable mixing as being between 300m to 500m and nominated 400m as the point of reasonable mixing for compliance purposes, but 300m was used in assessment of effects to be conservative.).

The following sub-clauses were deleted, for these reasons;

(g) numerical standards are not proposed for in river monitoring.

(h) is addressed by condition 19

- 2.7 Condition 15** - Permanent flow measurement devices in Makoura Stream would be expensive and are not needed. Also the size to handle flood flows would prevent good accuracy at normal flows. Flow measurement is only needed at the time water quality samples are taken to determine mass loads. Hence portable velocity meters can be used to measure flows.

- 2.8 Condition 16** - The numerical limits proposed in the Officers Report have been replaced with Table 54 AEE values. It would not be possible to comply with a number of the WRC limits as illustrated by the trend plots in Attachment I to my evidence.

Effluent standards need to apply to both land and to river, as the discharge may occur to both simultaneously. The 90/95 percentile standards are in accordance with NZ Municipal Wastewater Monitoring Guidelines and will provide better protection for receiving water quality. Geometric mean compliance standards are not appropriate for receiving waters, but useful for monitoring trends in pond performance.

It is noted that composition will not “vary significantly”. Reduction of inflow due to reduced infiltration into the sewerage system may occur, but the changes will be minor and gradual.

- 2.9 Condition 17** - Weekly measurements of DO and temperature using a portable meter, are standard practice to confirm that there is sufficient DO in the ponds. This would not be done by sending a sample to a Laboratory.

The ponds have long retention time and effluent quality variations are buffered and are gradual with time. Weekly measurement would be expensive and is not needed. All other similar pond systems in NZ, have monthly monitoring for most parameters.

- 2.10 Condition 19** - Numerical limits are not appropriate for compliance enforcement of the “*not cause undesirable biological growths*” objective. Biological growths result from complex interaction of nutrient concentrations and river flows. There is no need for an instream DRP standard, however if such a standard is included, it should only apply at flows below median flow and should be 0.030 g/m³ and should apply at Wardells Bridge. (downstream of all of the diffuse discharges).

- 2.11 Condition 20** - It will take three years for groundwater concentrations to “ramp up” and six years of annual monitoring, will be a long enough period to assess effects, with reviews at five intervals thereafter.

Clauses (b) and (c) were deleted because of excessive cost and they were not needed to monitor overall effects.

The main monitoring point should be the current monitoring point at Wardells Bridge. Monitoring at that point will detect changes from upstream values attributable to the indirect discharges, including contribution from Makoura Stream.

There needs to be provision to reduce this monitoring once it has been verified that any effects on these parameters is minor. The condition also overlaps with condition 23.

2.12 Condition 22 - Sampling from the Bridge during a river fresh would be safe but possibly not safe at the upstream location. The sampling at 200m from the diffuser is not needed to assess overall effects and would be an unnecessary expense.

2.13 Condition 25 - Intermediate sampling locations were deleted because downstream sampling point will determine effects, which are predicted to be minor.

2.14 Condition 26 - Deleted original (b) because difficult/impossible to measure in practice but will be practical to assess the application uniformity visually as in new (c) and (d).

For new 26(f), the minimum buffer shown on the Drawings in the AEE is 50m. This buffer distance agrees well with those issued by Environment Waikato for the Taupo DC effluent **spray** irrigation system, as set out below. It should be noted that the Taupo effluent, which is treated by sedimentation tanks and trickling filters, is **not disinfected** and would have median faecal coliform concentrations about 500,000 cfu/100ml. The proposed ponds at Masterton will have faecal coliform (similar to E Coli) median concentrations of 300 cfu/100ml. Allowing for the fact that Masterton pond effluent will not be spray irrigated, the proposed buffer distance of 50m to property boundaries and roads at Masterton, is generous and does not need to be extended in my opinion.

The amenity separation distance of 150m in Taupo condition 7B, needs to be appreciated in the context that the Taupo effluent is not disinfected at present.

Environment Waikato presumably incorporated a range of faecal coliform values into the condition, because Taupo DC is considering the installation of UV disinfection, and buffer distances could be reduced if that happens.

7A *“At all times the consent holder shall maintain a specified irrigation free buffer zone from areas of sensitive development (housing, gardens, play areas, intakes to drinking water supplies and crops for human consumption). The size of the irrigation free buffer zone will be determined by the quality of the irrigated waste water determined by median faecal coliform concentrations. Buffer zone distances will apply as detailed below:*

Disinfection Standard, median values	Buffer Zone Distance	With 10 m width of tree planting, >5m high	Roads and water courses
<i>No Disinfection</i>	<i>150m</i>	<i>150m</i>	<i>50</i>
<i>10,000 cfu/100 ml</i>	<i>100m</i>	<i>75m</i>	<i>50</i>
<i>1,000 cfu/100 ml</i>	<i>50m</i>	<i>40m</i>	<i>30</i>
<i>200 cfu/100 ml</i>	<i>40m</i>	<i>30m</i>	<i>30</i>
<i>25 cfu/100 ml</i>	<i>20m</i>	<i>20m</i>	<i>20</i>

7B. *For amenity reasons a separation distance of 150 metres will be maintained between irrigation areas and existing neighbouring residences. The separation distance may be reduced with the prior written approval of both the owner and occupier of that residence or property. At no time will the amenity separation distance be less than the buffer zone distance, as detailed in Condition 7A.”.*

2.15 **Condition 27** - Deleted Officers report (i) because not practical to measure in the field and is covered by 26 (c) and (d), based on visual assessment.

2.16 **Condition 33** - Refer Archer evidence Attachment D for proposed separation distance of 5m of the wipe off drain from the proposed deep drain.

2.17 **Conditions 36-40 and 46-18** – These relate to groundwater, are addressed in the further Supplementary Evidence of Dr Proffitt.

2.18 **Condition 41** - Infiltration capacity and bulk density of a disturbed soil sample will not indicate the in situ values. Thus in situ testing has been agreed for infiltration testing.

3. **CONSENT WAR 090066 (27164) SLUDGE LANDFILL**

3.1 Condition 6 - It will be difficult to distinguish between leachate from the area of the existing ponds and up gradient sources. Also leaching of contaminants from the lined sludge landfill will be insignificant. Therefore this condition could be deleted. The overall groundwater monitoring will detect if leaching of contaminants is occurring.

3.2 Condition 7 - Convention for sludges is the normal scientific basis where moisture is expressed as a % of oven dry weight. Therefore change “wet” to “dry”. Also applies to Condition 9(b).

4. CONSENT WAR 090066 (27166) UPGRADING OF EXISTING STOPBANKS

4.1 Conditions 4 and 5 - GWRC owns the stopbank and is therefore responsible for monitoring and repairs. GWRC could instruct MDC to carry out repairs if required under the normal provisions of the river scheme.

5. CONSENTS WAR 090066 (27170, 27171, 27172) DEWATERING OF EXISTING PONDS

5.1 Condition (27171) - WRC Condition limit is 200 l/s but AEE Section 6.3.7, page 97 requested 500 l/s, in order to control groundwater during river floods, which is less than the existing consent maximum discharge rate of 700 l/s. Therefore effects on the Stream will be no more than at present.

5.2 Condition 2 - By using a rolling geomean, the first few results will have to comply with the standard, so the intent of the condition will be achieved – i.e. to continue discharging to the Stream at a similar quality as at present.

6. SUBMITTERS CONCERNS REGARDING OPERATION OF BORROW AREAS

6.1 The submitters closest to the proposed borrow areas, raised concerns regarding construction effects from the proposed borrow areas. The Hearing Panel requested that further information be presented regarding the operation of the borrow areas. This information is included in the draft Gravel Borrow Area Management Plan, which is Attachment H to this supplementary evidence.

- 6.2** In summary, it will be possible to comply with the requests of Wullems that use of the southern borrow areas be avoided during the flower growing season from July to December, and by Martins, that the northern borrow area be not used in January. Thus, excavation will start on the northern borrow area from September to mid-November, and move to the middle area from mid-November to January, and then the Southern area from February to May.
- 6.3** Working hours have been discussed with a Wairarapa based contractor and normally accepted hours are stated in section 2.3 of the draft Borrow Area Management Plan.
- 6.4** Dwg C625 which was in Appendix D of the AEE, has been updated to show sight lines from houses and is included in Attachment H. With a hay bale noise and dust control barrier located in the 20m set-back area, the residents will not be able to see the excavation activity in the borrow areas.