



21 April 2009
Consent File: WAR090066

Decision of Hearing Committee

IN THE MATTER OF The Resource Management Act 1991 (the Act).

AND Applications for resource consents made pursuant to
Section 88 of the Act, referenced as:

**WAR090066 [27160] [27161] [27162] [27163]
[27164] [27165] [27166] [27167] [27168] [27169]
[27170] [27171] [27172]**

TO Wellington Regional Council

BY Masterton District Council

IN RELATION TO The upgrade and continued operation of Masterton
Wastewater Treatment Plant incorporating the
discharge of contaminants to air, land and water,
works in the bed of the Ruamahanga River and the
diversion of a watercourse.

AT Masterton Wastewater Treatment Plant, Homebush,
Masterton at or about map references NZMS 260:
T26 2735346-6021812, T26 2736386-6020372, T26
2735477-6019847, T26 2734923-6020722.

HEARING COMMITTEE Councillor Sally Baber (Chairman)

 Te Waari Carkeek

 Rob van Voorthuysen

HEARING DATES 24 February to 27 February, 9 March to 12 March
and 30 March 2009. The hearing was held at the
Frank Cody Room, Masterton District Council and
the Copthorne Hotel, State Highway 2, Masterton.

DECISION That, pursuant to sections 104, 104B, 105, 107 and
108 of the Resource Management Act 1991, consent
is **granted** to the applications by Masterton District
Council, subject to the conditions attached, for the
reasons outlined in this decision.

DATE OF DECISION 21 April 2009

CONTENTS

1	Introduction	4
	Ongoing consents:	4
	One-off construction related consents:	5
2	Background	5
3	Proposal	5
3.1	Further approvals sought - Notice of Requirement	7
4	Notification and summary of submissions	7
4.1	Notification	7
4.2	Submissions	7
4.3	Nature of submissions	7
4.3.1	Consultation	7
4.3.2	Method of land based discharge	8
4.3.3	Discharge to river	8
4.3.4	Odour	8
4.3.4	Infiltration and inflow	8
4.3.5	Consent term	8
4.3.6	Construction effects	8
4.3.7	Iwi concerns	8
5	The Hearing	9
5.1	Case for the applicant	9
5.1.1	Wes ten Hove – Chief Executive Officer, MDC	9
5.1.2	David Hopman – Manager of Assets & Operations, MDC	9
5.1.3	Humphrey Archer – Technical Director, Beca Infrastructure Ltd	9
5.1.4	Dr James Cooke – Director, Diffuse Sources Ltd	10
5.1.5	Malcolm Franklin – Civil engineer, Beca Infrastructure Ltd	10
5.1.6	Gary Williams – Consulting engineer	10
5.1.7	Chris Hickey – Senior Principal Scientist, NIWA.	10
5.1.8	Gregory Ryder – Ryder Consulting Limited	11
5.1.9	Dr Steve Green – Plant and Food Research Institute of New Zealand	11
5.1.10	Dr Graeme Proffitt – Pattle Delamore Partners Ltd	12
5.1.11	Neal Borrie – Aqualinc Research Limited	12
5.1.12	Andrew Ball – Institute of Environmental Science and Research	13
5.1.13	John Harding – Consulting Engineer	13
5.1.14	Robert Schofield – Director, Boffa Miskell Limited	13
5.2	Submitters	14
5.2.1	Malcolm Gardiner – Resident, 219 Masterton-Martinborough Road	14
5.2.2	Annette Wullems - Elmdale Nurseries, Masterton	14
5.2.3	Roger Ternent – Te Whiti Homestead	14
5.2.4	Peter Martin – Homebush resident	14
5.2.5	Perry Cameron – South Wairarapa resident	14
5.2.6	Bruce Perry – Homebush resident	15
5.2.7	Sustainable Wairarapa Incorporated (SWI)	15
5.2.8	Andrew Duncan – Expert witness Sustainable Wairarapa Incorporated	15

5.2.9	John Wardell – Masterton rural resident	15
5.2.10	Andrew Stewart – Masterton rural resident	15
5.2.11	Michael Butcher - Masterton rural resident	16
5.2.12	Ian Gunn - Masterton resident	16
5.2.13	Don Bell - Masterton resident	16
5.2.14	Janice Duncan - Department of Conservation	16
5.2.15	Nadine Bott – Department of Conservation	17
5.2.16	Wellington Fish and Game (WFG)	17
5.2.17	John Pansters - WFG	17
5.2.18	Dr Olivier Ausseil – WFG and DOC	17
5.2.19	Rangitane O Wairarapa	17
5.2.20	Hurunuiorangi Marae	18
5.2.21	Henare Manaena – Masterton resident	18
5.2.22	Rawiri Smith on behalf of Kotahitanga	18
5.2.23	Rebecca Fox - Wairarapa District Health Board (WDHB)	18
5.2.24	Dr Stephen Palmer – Medical Officer of Health WDHB	18
5.2.25	Alec Webster - Kahungunu Ki Wairarapa	19
5.2.26	Haami Te Whaiti - Kahungunu Ki Wairarapa	19
5.2.27	David Holmes – Masterton Rural Resident	19
5.2.28	Hugh Rennie - Riddlesworth Estate counsel	19
5.2.29	Stuart Forbes – Director, Riddlesworth Estate	19
5.3	Officer’s further response	19
5.3.1	Consent conditions	20
5.4	Right of reply	20
6	Evaluation	20
6.1	Consent Category	20
6.2	Statutory considerations	21
6.3	Consideration of effects on the environment	23
6.4	Consultation	23
6.5	Alternatives	24
6.6	Inflow and infiltration	24
6.7	Background environment	25
6.8	Reasonable mixing	26
6.9	Discharge standards	26
6.10	Soil	28
6.11	Flooding	30
6.12	Other land discharge matters	31
6.13	Groundwater quality	32
6.14	Makoura Stream	34
6.15	Ruamahanga River	34
6.15.1	Public Health Issues	35
6.15.2	Instream ecological values	39
6.15.3	Lake Onoke	42
6.15.4	Other instream issues	42
6.16	Air	43
6.17	Maori values	43
6.18	Climate change	44
6.19	Receiving environment standards	44
6.20	Monitoring	45

6.21	Community liaison group	46
6.22	Management plan	47
6.23	Other submitter issues	47
7	Section 105 matters	48
8	Specific regional plan policies	48
9	Section 107 matters	49
10	Duration and review	49
11	Determination	51
12	Interim decision	51

1 Introduction

1. This is the decision of the Hearing Committee which comprised Councillor Sally Baber (Chairman), Mr Te Waari Carkeek (Independent Commissioner) and Mr Rob van Voorthuysen (Independent Commissioner). The Committee was appointed to determine applications by the Masterton District Council (hereafter referred to as the Applicant) for the continued operation of Masterton Wastewater Treatment Plant (MWTP). The application is to replace the existing consent (WAR020074) which expires on 20 January 2010.

This report contains the decision of the Hearing Committee with respect to the following resource consents:

Ongoing consents:

WAR090066 (27160) - Discharge permit to discharge treated wastewater (effluent) to the Ruamahanga River.

WAR090066 (27161) - Discharge permit to discharge stormwater runoff from the wastewater irrigation land to the Ruamahanga River and Makoura Stream.

WAR090066 (27162) - Discharge permit to discharge treated wastewater (effluent) to land via an irrigation system.

WAR090066 (27163) - Discharge permit to discharge partially treated wastewater (effluent) to land and groundwater through the base of the existing oxidation ponds and new oxidation ponds.

WAR090066 (27164) - Discharge permit to discharge wastewater sludge and residual liquid to land from the sludge dewatering process and sludge landfill.

WAR090066 (27165) - Discharge permit to discharge odours and aerosols to air from the oxidation ponds, land irrigation system, and sludge dewatering process and landfill, and other activities from the site.

WAR090066 (27166) - Water permit to divert surface water in the Ruamahanga River during flood events by upgrading existing stopbanks.

WAR090066 (27167) - Water permit to permanently divert the Makoura Stream around the new oxidation ponds.

WAR090066 (27168) - Land use consent to construct, place, use, and maintain a structure (diffuser outfall) in the bed of the Ruamahanga River.

WAR090066 (27169) - Land use consent to disturb the bed of the Ruamahanga River arising from construction and maintenance of the diffuser outfall and erosion protection works adjacent to the existing oxidation ponds.

One-off construction related consents:

WAR090066 (27170) - Discharge permit to discharge sediment-laden stormwater to the Ruamahanga River and Makoura Stream arising from bulk earthworks.

WAR090066 (27171) - Discharge permit to discharge any treated wastewater and groundwater to water arising from dewatering processes at various locations.

WAR090066 (27172) - Water permit to divert and take groundwater arising from dewatering processes from cut-off and drainage trenches during construction activities.

The consents are sought for a period of 35 years.

The Hearing Committee conducted a site visit on 11 April 2008. The hearing commenced at 9.00 am Tuesday 24 March 2009 and closed on 3 April 2009.

2 Background

2. The current MWTP has been operating since the early 1970's. The network leading to the MWTP consists of 127km of piped reticulation within the Masterton urban area and various other infrastructure.
3. Following a delay in processing replacement applications lodged in the mid-1990's for the continued operation of the plant, interim resource consents were issued in 2003 to the applicant for an interim upgrade and continued operation of the plant. These consents (WAR020074) expire on 20 January 2010.
4. Key aspects of the interim resource consents, as set by consent conditions, were an immediate interim upgrade to improve the quality of the discharge and measures to facilitate implementing a long term upgrade by 2010.
5. Replacement resource consent applications for the existing consents were originally lodged with Wellington in May 2007. These applications did not progress. A new set of resource consent applications and Notice of Requirement was lodged by the Applicant to Wellington Regional Council (hereafter the Council or WRC) and Masterton District Council on 20 August 2008.

3 Proposal

6. The proposal is fully described by the applicant in the AEE and again in the Council officer's report and can be summarised as follows.
7. An oxidation pond system with two primary ponds and five maturation cells will be constructed to the north of the existing pond system. The pond system will have the capacity to contain 275,000m³ of wastewater and be lined with compacted silty clay. The system will require a permanent diversion of a 500 metre stretch of the Makoura Stream.

8. Wastewater will be discharged directly to the Ruamahanga River through a diffuser outfall below the river bed upstream of the confluence with the Makoura Stream. An emergency outfall will also discharge to Makoura Stream. The Applicant has not applied for resource consent for this emergency discharge as they believe that s330 of the Resource Management Act 1991 (RMA) provides for such discharges.
9. The Applicant proposes to use a system of border dyke irrigation to discharge the treated wastewater to land. The area of border dykes will be 97ha comprising 75ha on parts of the 91ha and 107ha sites (the purchased farmland), and 22ha on the site of the existing ponds. This method involves contouring land to a uniform level and placing border strips at appropriate intervals. Wastewater will be directed into the borders for short periods at application rates of up to 150mm for each application.
10. Additional wipe-off drains will collect any residual irrigation runoff and stormwater runoff which will be discharged to either the treatment ponds, infiltration beds, or directly to the Makoura Stream in the event of heavy rainfall. A small drip irrigation system is proposed to irrigate planted buffer areas adjacent to the Makoura Stream and the western boundary of the proposed land discharge area. Finally a cut and carry pasture system is proposed for the area to be irrigated which involves periodically harvesting pasture in silage or balage.
11. A further 52 hectares within the proposed designation (the balance of the 107ha site) could also be developed for land based discharge, but this has not been included as part of these applications.
12. Using a water balance model the applicant has devised a regime for the discharge of wastewater to the Ruamahanga River:
 - (a) Between 1 November and 30 April there will be no discharge to the Ruamahanga River when the flow in the river is less than the median river flow ($12.3\text{m}^3/\text{second}$).
 - (b) Between 1 May and 31 October there will be no discharge to the Ruamahanga River when the flow in the river is less than half the median flow ($6.1\text{m}^3/\text{second}$).
13. The discharge of wastewater to land will occur whenever soil conditions allow.
14. The existing oxidation ponds will be decommissioned and the sludge removed. The sludge material (once dried) will be disposed of to a purpose built sealed and capped landfill at the north-eastern end of the decommissioned ponds. Following establishment of appropriate grass cover it is proposed that the 22ha area of the existing ponds will be used as part of the land discharge scheme.
15. The stopbank on the true right bank of the Ruamahanga River upstream of the existing pond system is proposed to be upgraded to a 1:100 year flood return

standard. Also a 30 metre¹ planted buffer zone for river and erosion control will be created in an area adjacent to the decommissioned ponds with minor bank protection works at various sites.

3.1 Further approvals sought - Notice of Requirement

16. A designation covers the existing site of the MWTP, but not the additional 107 hectares most recently purchased on the western side of the Makoura Stream. Accordingly, a Notice of Requirement to alter and amend the existing designation is proposed.

4 Notification and summary of submissions

4.1 Notification

17. The application was publicly notified in the Wairarapa Times Age and Wairarapa News on Wednesday 17 September 2008. Notification of the application was also posted on the Wellington Regional Council website, and signs notifying the public were erected at the main entrance to the MWTP and Ruamahanga River at Wardell's Bridge.

18. All persons and organisations notified originally in 2007 were notified of the revised applications as well as all submitters who made a submission on the original 2007 application. It was made clear to all submitters that if they continued to wish to be heard at a hearing that a new submission would need to be lodged.

4.2 Submissions

19. The submission period closed at 4:30pm on Wednesday 15 October 2008. One submission was received after the closing date. The submission did not raise any substantive new matters and the applicant had no issue with this late submission being accepted.

20. The Council received 30 submissions in total. 26 of the submissions opposed the proposal as outlined in the application, and 4 submitters expressed either a mixed position (opposed in part) or neutral position.

21. A pre-hearing meeting was not held.

4.3 Nature of submissions

22. The issues raised by submitters are briefly summarised below.

4.3.1 Consultation

23. Some submitters expressed concern about the lack of consultation and the consultation process adopted.

¹ Archer evidence in chief paragraph 15.19 says the buffer is 30m while Williams evidence in chief paragraph 5.4 says the buffer is 60m. We accept that 30m is the correct width.

4.3.2 Method of land based discharge

24. Many submitters were concerned about the method of land based discharge chosen by the applicant. They believe that border strip irrigation is outdated and that there are viable and sustainable alternatives that would see wastewater better utilised as a resource. Alternatives suggested by some submitters include more drip line irrigation, spray irrigation, and increased storage of wastewater. Some of those submitters are particularly concerned about the impact of a similar discharge from the Waingawa freezing works in the 1980's and its subsequent effects on soils and groundwater.

4.3.3 Discharge to river

25. A number of submitters are concerned about the quantity of wastewater that will be discharged to the Ruamahanga River. Many of those submitters have a long term desire to see a zero discharge to the river. Concerns also centre around the environmental effect of discharging wastewater to the river and the cumulative effects of the discharge on the wider Ruamahanga River system. One submitter adjacent to the Ruamahanga River is particularly concerned about the shifting of the discharge point directly to the river upstream of a water abstraction point. Another submitter was concerned about the impact of the discharge on angling opportunities and other recreational users.

4.3.4 Odour

26. Some submitters are concerned about the proximity of the plant to neighbouring properties and the potential effects of odours and the land based discharge.

4.3.4 Infiltration and inflow

27. Some submitters are concerned about the level of groundwater infiltration and stormwater inflow into the sewerage reticulation network and the impact that has on the MWTP.

4.3.5 Consent term

28. A number of submitters oppose the consent term sought by the applicant of 35 years.

4.3.6 Construction effects

29. Some submitters raised concerns about potential effects during the construction phase of the upgrade, particularly dust, noise, traffic issues and hours of operation.

4.3.7 Iwi concerns

30. Both Rangitane o Wairarapa and Kahungunu Ki Wairarapa believe that the applications do not satisfy sections 6(e) and 7(a) of the Act and oppose the discharge of wastewater to water on cultural grounds. Many of their other concerns are also summarised in other sections above.

5 The Hearing

5.1 Case for the applicant

31. The applicant's case was led by Mr Philip Milne, counsel for the applicant. Mr Milne called 14 expert witnesses for the applicant covering various aspects of the proposal. These are discussed in the following sub-sections. A number of the applicant's witnesses recommended changes to the draft conditions presented in the Councils' officer reports. These suggested condition changes were collectively presented in a schedule which was tabled as evidence.

5.1.1 Wes ten Hove – Chief Executive Officer, MDC

32. Mr ten Hove gave evidence on the funding and affordability of the proposed MWTP. He discussed the need to provide a sustainable long term solution for the treatment and disposal of wastewater in the context of achieving environmental, social and economic objectives. In particular he discussed the term of the consent in relation to the community's ability to pay for the scheme through rates recovery and reiterated the need for a 35 year consent term.

33. He also acknowledged that anything short of full land treatment would not fully meet tangata whenua concerns. However, he suggested that the relationship of tangata whenua had been recognised and provided for in the scheme design and through the proposed discharge regime.

34. Mr ten Hove advised² that the MDC was committed to exploring zero discharge options in the future and to reviewing options that address community concerns.

5.1.2 David Hopman – Manager of Assets & Operations, MDC

35. Mr Hopman read from his statements of evidence on the proposed development from an operational perspective. He outlined the anticipated improvements in effluent quality, the scale of clean water inflow and infiltration (I/I) into the system and the applicant's on going programme to reduce inflow and infiltration. He stated that the long asset life of the upgrade combined with a wider programme of maintenance and capital works will provide Masterton with a long term solution for sewage treatment.

5.1.3 Humphrey Archer – Technical Director, Beca Infrastructure Ltd

36. Mr Archer read from his statement of evidence on the scheme design including the construction phase as well as providing commentary on the scheme performance. He cited several operational wastewater treatment schemes with which he was familiar, from around New Zealand and Australia, to demonstrate the effectiveness of the proposed MWTP. These schemes all utilised technology and approaches comparable to those proposed for the MWTP. Alternative methods for disposal were also discussed together with justifications as to why these methods were discounted.

² Te Hove supplementary evidence paragraphs 11.4 and 12.2

37. Mr Archer addressed specific comments in the officer's report and made several suggestions to amend the draft conditions. Particular emphasis was given to the adoption of effluent standards as compliance parameters rather than adherence to instream standards.

5.1.4 Dr James Cooke – Director, Diffuse Sources Ltd

38. Dr Cooke gave evidence on hydrological matters relating to the MWTP. In particular he discussed the effects of diffuse sources of pollution on water quality in the Ruamahanga River, illustrating total nutrient and pathogen levels during representative wet and dry years and the percentage contribution of the current MWTP to these levels.

39. Dr Cooke also discussed the concept of reasonable mixing from a scientific perspective. He disagreed with the assertion in the officer's report that reasonable mixing would occur at 200m and that a figure of 300m would be more appropriate to achieving section 107 matters (of the RMA). He also reiterated Mr Archer's concerns regarding the use of instream monitoring standards given that the system does not incorporate any specific nutrient reduction system.

5.1.5 Malcolm Franklin – Civil engineer, Beca Infrastructure Ltd

40. Mr Franklin gave evidence on infiltration and inflow. He discussed the high rates of I/I in the Masterton sewer system and the subsequent high volumes of I/I received at the MWTP. He outlined that the increased cost of upgrading the MWTP to cope with the current influent flows is in the order of \$2.5m whereas the cost to of the works to eliminate I/I and thereby avoid the \$2.5m cost increase is estimated to be around \$50m. It was his opinion that designing the MWTP for the current influent flows is appropriate and that I/I reductions continue to be progressed as a separate works programme.

5.1.6 Gary Williams – Consulting engineer

41. Mr Williams gave evidence on the flood and erosion risk in the vicinity of the MWTP. His evidence indicated that the siting of the new ponds further away from the river than the existing ponds would reduce the flood risk and the removal of the existing ponds would make river channel management easier. Mr Williams suggested in his evidence that the view of some submitters, that elements of the scheme would be at risk from flooding, would not be the case given the commitment to the river management scheme at this location.

5.1.7 Chris Hickey – Senior Principal Scientist, NIWA.

42. Dr Hickey read from his statement of evidence on water quality in the Ruamahanga River. He discussed the effects of the existing MWTP discharge on water quality and the predicted quality following the proposed upgrade. River ecology was also discussed with regard to algal periphyton, macroinvertebrate and fish communities. Dr Hickey also gave considerable commentary on water

quality and effluent compliance guidelines as proposed by both the applicant and in the officer's report.

43. Dr Hickey concluded that the proposed MWTP would lead to a marked increase in water quality in the Ruamahanga River due to the improved effluent quality, the elimination of the discharge during summer low flows and reduced pond leakage to the river. The removal of the existing permanent discharge to the Makoura Stream would also make a significant contribution to the stream quality and its aquatic ecosystems.
44. In responding to our questions on using a receiving water standard for dissolved reactive phosphorus, Dr Hickey said that there would be no benefit for compliance purposes (it would be too difficult to undertake) although a "trigger" value may be of some use to initiate investigative procedures.

5.1.8 Gregory Ryder – Ryder Consulting Limited

45. Dr Ryder gave evidence as an independent peer reviewer to Dr Hickey's and Dr Cooke's findings, as well as providing his own opinion on the predicted effects in his capacity as a water quality scientist and aquatic ecologist.
46. Dr Ryder's evidence concurred with that of Drs Hickey and Cooke in that the proposed MWTP would lead to a significant improvement on the existing situation. In responding to matters raised in the officer's report he disagreed with the proposed discharge rate, limits on bioavailable phosphorus and the recommended 200m mixing zone.
47. With regard to the discharge rate he felt that the effect rather than the magnitude of the discharge should be managed and to this end the evidence suggested that 1200litres/second was an appropriate rate. In Dr Ryder's opinion he could see no reason for setting receiving water standards and that it was more important to monitor the primary potential effect of nutrient discharges and the periphyton cover on the river bed.
48. He also agreed with the applicant's assessment that a 300m mixing zone was more appropriate rather 200m. Finally, he gave a view on the proposed receiving water quality monitoring indicating that the monitoring proposed in the officer's report was wide-ranging, intensive and would require significant resources without necessarily providing any additional information on the environmental effects. He agreed with the frequency and methodology for biological monitoring recommended in the officer's report, suggesting that it was comparable with approaches observed elsewhere.

5.1.9 Dr Steve Green – Plant and Food Research Institute of New Zealand

49. Dr Green presented evidence on the land treatment capacity of the proposal. His evidence was based on computer modelled predictions on the movement of water, nutrients and contaminants through the soil profile of the land treatment area. The model was constructed around a set of disposal rules which sought to maximise land discharge.

50. Based on the model predictions Dr Green's evidence concluded that nutrient leaching (nitrogen and phosphorus) to groundwater would be of little concern. With regard to bacterial contamination the model suggests that while no concerns would arise from the irrigation to the clay soils, infiltration of groundwater from the sandy loam soil areas would likely exceed the drinking water standard. He indicated that evidence presented by Dr Proffitt would address the fate of these contaminants in the groundwater.
51. In addressing concerns raised in the officer's report around the uncertainty of the modelling, Dr Green stressed that a precautionary, conservative approach, that was in favour of the environment, had been taken in an effort to model and predict the worst case leaching scenarios.
52. In response to our questions Dr Green advised that he had been developing this type of model for around ten years and this was supported by many years of field work. The model is based on the most appropriate science of the time and he is confident that the modelled effects will relate to real world events.

5.1.10 Dr Graeme Proffitt – Pattle Delamore Partners Ltd

53. Dr Proffitt gave evidence on the potential effects of the upgrade on the quality and quantity of groundwater. Computer modelling has been used to predict the likely effects on groundwater utilising data obtained from groundwater investigations at the site over the past nine years. He explained that the water table below the site is shallow and flows from north to south eventually draining into the Ruamahanga River and the lower reaches of the Makoura Stream.
54. Dr Proffitt explained that the groundwater model used was standard industry software and had been in use for the last 30 – 40 years. Contaminant modelling had been in existence for the last 20 years or so. He claimed that because of conservatism built into the model any observed effect would be less than that modelled.
55. The model suggests that the recharge of the underlying water table from the application of wastewater to land would not lead to a substantial rise in the water table (referred to as groundwater mounding) that could inhibit the land treatment process. Furthermore, there would be no measureable effect on water quality in private bores to the north and west of the site boundary due to the direction of groundwater flow.
56. With respect to groundwater and surface water interaction, Dr Proffitt explained that the predictions are for a negligible increase of bacteria concentrations, a 7% increase in nitrate in both the stream and river and for phosphorus, a 30% increase in the Ruamahanga River after 30 years (phosphorus effects slowly increase with time) and a 50% increase in the Makoura Stream. In all cases these predicted increases are within the current range of natural fluctuations.

5.1.11 Neal Borrie – Aqualinc Research Limited

57. Mr Borrie gave evidence on the proposed effluent irrigation system, border strip irrigation, the alternatives considered and air discharges arising from the

irrigation area. He also explained that the intended land use, including a cut-and-carry pasture system, would be the most effective means for the uptake of nutrients without compromising the soil structure in the border strips.

5.1.12 Andrew Ball – Institute of Environmental Science and Research

58. Mr Ball gave evidence on the public health issues associated with the proposal. He explained the risk assessment approach used to determine the presence of hazards and exposure to those hazards to quantify the health risk. The highest risk from the MWTP is from pathogens which was the focus of much of his evidence.
59. The best estimate of adenovirus infection for swimmers at times when most aquatic recreation occurs in the Ruamahanga River is 7.3 per 1000. This is estimated to fall to 0.3 per 1000 after the upgrade, largely due to the practice of discharging to land instead of directly to the river at below-median river flows. This is well below the acceptable limit of 10 per 1000.
60. Mr Ball concluded that the proposed upgrade will ensure that health risks are low at times when the river is most used for contact recreation and that overall the discharges will have a no more than minor adverse effects on the environment and will not compromise public health.

5.1.13 John Harding – Consulting Engineer

61. Mr Harding was appointed by the Ministry of Health as an independent peer reviewer to the MWTP design process. His evidence broadly covered the entire process to date from conception through to the final proposal. He indicated that the scale of I/I limits the treatment options available, although the maturation ponds proposed are comparable with alternatives such as ultra-violet disinfection. He considers the design to be the Best Practicable Option and will result in downstream water quality below contact recreation guidelines.
62. Mr Harding's supplementary evidence addressed the findings of the officer's report. He claimed that the report was at odds with the AEE findings on several key issues and that some of the issues raised resulted from the officer's misunderstandings about what is proposed and the modelling work undertaken.

5.1.14 Robert Schofield – Director, Boffa Miskell Limited

63. Mr Schofield gave evidence on the proposal and the process leading up to the hearing with regard to the provisions of the RMA. He discussed the approach taken by the applicant and concluded that the proposal satisfies the relevant statutory and planning provisions. On that basis he recommended that consent could be granted subject to conditions.

5.2 Submitters

5.2.1 Malcolm Gardiner – Resident, 219 Masterton-Martinborough Road

64. Mr Gardiner is an immediate neighbour to the proposal on the northern boundary of the applicant's property. He is not opposed to the proposed MWTP itself but rather its scale, which he considers to be inappropriate compared to the small scale of the neighbouring properties and land uses. Mr Gardiner sought greater provision for buffer zones.

5.2.2 Annette Wullems - Elmdale Nurseries, Masterton

65. Ms Wullems runs a commercial nursery exporting peonies, principally to the US market. Her property is only 300m from the proposed site and some of the flower beds are only 2m from the site in particular the proposed gravel borrow areas. She is concerned about the effects of construction on her business and potential contamination of her household water supply. Ms Wullems seeks a buffer area of 200m and the mitigation of construction effects during her cropping season.

5.2.3 Roger Ternent – Te Whiti Homestead

66. Mr Ternent opposes the proposal and he believes it will impact upon his livelihood. He and his wife manage an orchard and a herd of highland cattle at Te Whiti Homestead and are planning a homestay business. He believed that the riparian rights associated with the property entitle him to reasonable use of the river. He currently abstracts and stores water from the Ruamahanga River during the summer. He is concerned that the applicant has made no provision to provide him with an alternative water supply.

5.2.4 Peter Martin – Homebush resident

67. Mr and Mrs Martin are concerned about the effects of the proposal upon their bore water supply due to the proximity of the bore to the proposed land treatment area. They are also concerned about the visual impact of the proposal as their property is around 50m from a proposed gravel borrow area.

68. Mr Martin would like a buffer area of at least 100m between his property and the site and he would like to reserve the right to request particular landscape enhancements in the buffer area on completion of the MWTP. A five year post-construction consultation with residents on landscaping was suggested. Mr Martin considers that the water quality of all residents' water supplies should be monitored and plans put in place for an alternative supply should contamination occur.

5.2.5 Perry Cameron – South Wairarapa resident

69. Mr Cameron is not opposed to the proposal but expressed disappointment in the way the proposal had been progressed to date. He feels that there should be more emphasis on the Wairarapa catchment as a whole and he does not believe that there has been adequate consultation with downstream users, especially the

downstream district councils. The lack of protocols to deal with an emergency situation or manage long-term or seasonal effects was also a concern. He would like to see these matters addressed through consent conditions.

5.2.6 Bruce Perry – Homebush resident

70. Mr Perry spoke on behalf of himself and Mrs Perry, M & J Griffiths, H Cotter and D & M Limbrick. All are long-term residents of 15 years or longer. As immediate neighbours on the northern boundary they are concerned about potential effects on their properties. Their concerns relate to the size of the designation, the loss of several mature trees and effects on drainage.
71. They would like to see the size of the designation reduced to provide for increased buffer areas. The trees proposed for removal have significant aesthetic appeal to Mr and Mrs Perry and will provide a significant barrier between their property and the works. They would like to see the trees retained. Mr Perry also contends that modifications in the north eastern boundary will alter the surrounding land drainage network which will adversely affect drainage on his property.

5.2.7 Sustainable Wairarapa Incorporated (SWI)

72. SWI's evidence was presented by Andrew Stewart who also made an individual submission on the application. SWI expressed concern about the effects on soils, surface and groundwater from the proposed MWTP. Concern was also expressed about the effects of the MWTP on the social, cultural and economic wellbeing of the community. SWI believe the effects are contrary to the provisions of the Act and the regional plans. If consent is to be granted they have outlined a number issues which they would like to see addressed. They also regard the consent term of 35 years as inappropriate.

5.2.8 Andrew Duncan – Expert witness Sustainable Wairarapa Incorporated

73. Mr Duncan presented evidence as an expert witness for SWI. He discussed the design of the MWTP, in particular the need to account for climate change and inflow and infiltration. He was also concerned about uncertainties involved in the computer models used. He was sceptical about the scale of effects as assessed by the applicant.

5.2.9 John Wardell – Masterton rural resident

74. Mr Wardell's property is located 400m downstream from the proposed discharge point. He is opposed to the discharge of wastewater into the river at any time. He believes that now is the opportunity to reinstate the river to its past glory and to once again make it popular for recreational use.

5.2.10 Andrew Stewart – Masterton rural resident

75. Mr Stewart gave detailed evidence outlining his opposition to the application. He opposes the application as he believes that the actual and potential effects cannot be ascertained from the information provided by the applicant. He

considered that granting the consent would therefore be contrary to the Act and the Council's regional plans.

76. Mr Stewart believes that the applicant's reasons for choosing the proposal are not reasonable and there are more viable alternatives. When questioned by the Committee on the technical information he presented Mr Stewart stated that he was not an expert witness but did have relevant experience and training on which to base his claims.

5.2.11 Michael Butcher - Masterton rural resident

77. Mr Butcher gave evidence as to why he is opposed to the proposed MWTP. His evidence is based on his experience at the Waingawa freezing works during the late 1980s where he was employed as Works Chemist. During this period the freezing works operated a land discharge system using border dyke irrigation. This discharge subsequently resulted in groundwater contamination of the underlying aquifer and this contamination was largely attributed by Mr Butcher to the inherent difficulties in operating a border dyke system.

5.2.12 Ian Gunn - Masterton resident

78. Mr Gunn is opposed to the discharge of effluent using border dykes, the proposed discharge to water and the permanent storage of sludge on the flood plain. Mr Gunn also discussed the former Waingawa freezing works border dyke system and its impacts on groundwater. In his opinion the applicant's models do not accurately predict the scale of the effects, in particular the impact on groundwater, nor do they adequately account for climate change effects. In his view the downstream effect on Lake Onoke has not been adequately assessed.

5.2.13 Don Bell - Masterton resident

79. Mr Bell is opposed to the discharges to land, air and water as proposed by the applicant. He concurred with the views of SWI and its members. He went on to highlight several areas where he considered there to be confusion, in particular the input parameters used in the modelling of environmental effects and that the models had not accounted for the large area of land located in the floodplain. Mr Bell feels that the risk of flooding during the construction and operational periods has not been properly evaluated.

5.2.14 Janice Duncan - Department of Conservation

80. Community Relations Officer, Janice Duncan, elaborated on the Director General of Conservation's submission. The primary interests of the Department are the protection of the integrity of freshwater natural ecosystems and habitats, and the protection of the natural character of lakes and rivers from inappropriate development. The Department supports the application but has concerns about several aspects of the proposal. Ms Duncan discussed the term of consent stating that a 15 year term was appropriate in this instance and imposing such a term would be consistent with recent case law. She acknowledged however that

this case law related to a river covered by a water conservation order which is not the case here.

5.2.15 Nadine Bott – Department of Conservation

81. Conservation Support Supervisor, Nadine Bott, spoke from her statement of evidence. She focussed on the effects of the discharge on freshwater ecology drawing upon evidence to be presented by Dr Olivier Ausseil. In her view, given the scale and uncertainty of the impacts, a shorter term consent of 15 years with robust monitoring requirements would be appropriate.

5.2.16 Wellington Fish and Game (WFG)

82. Environmental Officer, Corrina Jordan, presented the evidence for WFG. WFG is supportive of the upgrade as it offers an improvement on the current discharge but has expressed concerns over some aspects of the proposal, namely the impacts of point and non-point source discharges on trout populations and recreational anglers. Given the uncertainties expressed by WFG's expert witness, Dr Olivier Ausseil, Ms Jordan considered a 15 year duration to be appropriate.

5.2.17 John Pansters - WFG

83. Mr Pansters has been a trout fisherman in the Wairarapa's waterways for more than 25 years. He spoke of the steady decline in the numbers of fish caught and attributed this decline in part to the discharge of wastewater from the MWTP to the Ruamahanga River.

5.2.18 Dr Olivier Ausseil – WFG and DOC

84. Dr Ausseil in reading from his statement of evidence spoke on matters relating to aquatic toxicology. He discussed in detail periphyton and nutrient guidelines, effects on water clarity and downstream effects (Lake Onoke), the discharge regime, monitoring requirements and suggested amendments to certain consent conditions presented in the Officer's report.

5.2.19 Rangitane O Wairarapa

85. Rangitane O Wairarapa are opposed to the application. Their evidence was presented by Michael Joseph Kawana and Elizabeth Burge. In speaking to his evidence Mr Kawana elaborated on the cultural significance of the Ruamahanga River and its influence on the lives and identity of the people of Rangitane O Wairarapa.
86. Ms Burge discussed the consultation process to date and the cultural effects of the proposal. She expressed dismay at how iwi concerns had not been listened to throughout the consultation process and the lack of meaningful inclusion of Maori values. She believes that a term of ten years would be appropriate with measures that work toward a total land based disposal solution.

5.2.20 Hurunuiorangi Marae

87. Evidence for Hurunuiorangi Marae was represented by Charmaine Kura-O-Tahu Kawana, chairperson of the Marae Trust. She is opposed to the proposal as it fails to address their cultural belief that there should be no discharge of human effluent to water. She also believes that the application fails to recognise the needs of tangata whenua as provided for under the RMA.
88. Ms Kawana discussed Maori participation and the relationship between a healthy environment and self-determination. She also gave a historical-environmental perspective using the waiata (traditional song) “Otahoua” to demonstrate the cultural significance to tangata whenua of the Ruamahanga River and the surrounding land which would be affected by the proposal.

5.2.21 Henare Manaena – Masterton resident

89. Mr Manaena’s statement centred on the relationships that he has enjoyed with the Ruamahanga River and Makoura stream since childhood. He stated that it is a bitter disappointment that future generations will not benefit from the gifts that were handed down to him. He is opposed to the diversion of the Makoura Stream and the discharge of effluent treated or otherwise being discharged to water and would like to see the life force of the waterway restored.

5.2.22 Rawiri Smith on behalf of Kotahitanga

90. Mr Smith’s evidence addressed the cultural and traditional relationships that Maori have with the Ruamahanga River and the land in the vicinity of the proposed MWTP and how the discharge of human effluent will affect this relationship. Kotahitanga have expressed a desire to see Cultural Health Index monitoring undertaken and they see that this would go some way to addressing their needs as provided for in sections 6, 7, and 8 of the Act.

5.2.23 Rebecca Fox - Wairarapa District Health Board (WDHB)

91. Senior Public Health Officer, Rebecca Fox, read from her statement of evidence. While not opposed to the scheme the WDHB have a number of concerns with the proposal. These concerns focused on the effects on water quality with regard to recreation, the effect of the land discharge on ground water supplies and the scope of the Health Impact Assessment (HIA). She made a number of suggested changes to the conditions presented in the officer’s report. Ms Fox supported a 15 year consent duration.

5.2.24 Dr Stephen Palmer – Medical Officer of Health WDHB

92. Dr Palmer read from his statement of evidence. He considered that a proper Health Impact Assessment had not been undertaken. He concluded that a consent term of ten years was appropriate. He also recommended the development of a multi-agency discharge protocol to protect recreational water users.

5.2.25 Alec Webster - Kahungunu Ki Wairarapa

93. Mr Webster reiterated the iwi's view that there should be no discharge to water and that the applicant should work towards this. He referred to the cumulative impact upon the Ruamahanga River from point and diffuse sources and the contribution of the applicant's current discharge. He referred to his own experience with irrigation systems to highlight potential deficiencies in border strip irrigation and proposed alternative methods that could be employed.

5.2.26 Haami Te Whaiti - Kahungunu Ki Wairarapa

94. Haami Te Whaiti spoke of the importance of the Ruamahanga River to Kahungunu Ki Wairarapa in the context of kaitiakitanga and matuaranga maori (the principles of stewardship, guardianship and perceptions of the environment). He spoke of the impact of discharging human wastes into a resource that is regarded as taonga (treasured). He stated that a Cultural Impact Assessment should have been undertaken as part of the wider scheme assessment and that the hearing process is an opportunity for the needs of the whole community to be addressed.

5.2.27 David Holmes – Masterton Rural Resident

95. Mr Holmes opposed the discharge of wastewater to the river and opposes the discharge to land using the method proposed by the Applicant. He believes that full time land disposal using centre pivot irrigation poses a more viable alternative. He also believes the treated wastewater should be stored and distributed to landowners, such as himself, for irrigation.

5.2.28 Hugh Rennie - Riddlesworth Estate counsel

96. Hugh Rennie QC acted as counsel for Mr Forbes. He outlined that Mr Forbes supports the proposal to upgrade the current MWTP but he has concerns regarding the land discharge method adopted. Mr Rennie also suggested that there is no guarantee that the proposed discharge to the Ruamahanga River will comply with section 107 of the Act. He suggested that the Evidence Act 2006 broadened the scope of who should be considered as an expert witness.

5.2.29 Stuart Forbes – Director, Riddlesworth Estate

97. Mr Forbes read from his statement of evidence which was based on his experience of farming the land in question, and surrounding land, for over 40 years. He expressed concerns with the land discharge system design and the flooding of the berm area between the stopbank and the river. Mr Forbes also discussed wastewater re-use and alternative land treatment practices.

5.3 Officer's further response

98. Having listened to the evidence of the applicant and submitters the reporting officer, Stephanie Brown, provided a reply with technical assistance from supporting experts Juliet Milne and Hamish Lowe. The officers maintained that uncertainty still existed around the proposed scheme, particularly the proposed

land discharge system and the discharge to the Ruamahanga River at flows just above median or half median. Consequently, the officers recommended that consent be granted for no more than 15 years. Ms Brown provided comments on the tabled consent conditions. She recommended numerical receiving environment standards for groundwater and surface water, together with wastewater quality standards.

5.3.1 Consent conditions

99. Over the course of the hearing Ms Brown and supporting staff worked through the tabled conditions with the applicant and its experts to address areas of disagreement as well as to incorporate the concerns of submitters. A revised schedule of conditions was subsequently tabled by the applicant during the Right of Reply. A number of areas of contention remained and these were highlighted in the schedule for us.
100. We are grateful for the efforts of the Council officers and the applicant's experts to assist us in that regard.

5.4 Right of reply

101. Mr Milne presented the applicant's right of reply.
102. Mr Milne read from his closing statement which encompassed a range of issues including; the term of the consent, providing for innovation, providing for the relationship of Maori to the river, and the consideration of alternatives.
103. He also discussed issues specific to the land discharge and the discharge to water such as the claimed uncertainties in predicted effects and health risks to recreational users. It is his view that there are no outstanding uncertainties or concerns that have not been addressed by the applicant through the course of the hearing and that more than ample evidence has been provided for the granting of a longer consent term.

6 Evaluation

6.1 Consent Category

104. As noted earlier the applicant has applied for thirteen resource consents to enable the construction and ongoing operation of the upgraded MWTP. The activities applied for variously fall under the Regional Freshwater Plan for the Wellington Region (RFP), the Regional Discharges to Land Plan for the Wellington Region (RDLP) and the Regional Air Quality Management Plan for the Wellington Region (RAQMP).
105. In section 10 of her officer's report Ms Brown advised that all of the applications were Discretionary Activities under those three plans. That matter was not contested by the applicant's planning witness Mr Schofield, or by any other party, and we therefore accept Ms Brown's advice.

6.2 Statutory considerations

106. Section 104 of the Act sets out the matters that we must have regard to when determining the applications. Sections 104(1) to (3) are particularly relevant and they state:

104. Consideration of applications

- (1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to –
 - (a) any actual and potential effects on the environment of allowing the activity; and
 - (b) any relevant provisions of –
 - (i) a national policy statement;
 - (ii) a New Zealand coastal policy statement;
 - (iii) a regional policy statement or proposed regional policy statement;
 - (iv) a plan or proposed plan; and
 - (c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.
 - (2) When forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect.
 - (2A) When considering an application affected by section 124, the consent authority must have regard to the value of the investment of the existing consent holder.
 - (3) A consent authority must not –
 - (a) have regard to trade competition when considering an application;
 - (b) when considering an application, have regard to any effect on a person who has given written approval to the application;
 - (c) grant a resource consent contrary to –
 - (i) section 107 or section 107A or section 217;
 - (ii) an Order in Council in force under section 152;
 - (iii) any regulations;
 - (iv) a Gazette notice referred to in section 26(1), (2) and (5) of the Foreshore and Seabed Act 2004;
 - (d) grant a resource consent if the application should have been publicly notified and was not.
107. In this case there is no relevant national policy statement and the New Zealand Coastal Policy Statement does not apply³. We consider the relevant provisions of the Regional Policy Statement and regional plans as appropriate in our evaluation of the actual and potential effects of the proposal on the environment.
108. Section 104 is subject to Part 2 of the Act. Part 2 includes section 5, which provides that the purpose of the Act is to promote the sustainable management of natural and physical resources. The remaining provisions of Part 2 inform and assist the achievement of that purpose.

³ The applications to not fall within the coastal environment.

109. In terms of section 5 of the Act we are satisfied that the proposal will enable the Masterton urban community to provide for its social wellbeing and for its health and safety. In our view it was accepted by all parties that the provision of sewage treatment facilities is essential for that purpose. This finding is also consistent with Policy 4.2.23 of the RFP. There was however contention on what the actual and potential adverse effects of the proposal were and how those effects should be avoided, remedied or mitigated.
110. In terms of section 6 we consider that sections 6(a), (b), (d), (e) and (f) require our attention. Similarly we consider sections 7(a), (b), (c), (d), (f), (h) and (i) to be relevant. We consider these section 6 and 7 matters as appropriate in our evaluation of the actual and potential adverse effects of the proposal on the environment.
111. Section 8 of the Act is relevant. We understand the principles of the Treaty of Waitangi to include appropriate consultation, the exercise of cooperation and mutual goodwill, and the obligation of active protection. We return to section 8 matters later in this decision.
112. We must have regard to section 105 matters (the sensitivity of the receiving environment and any alternative methods of discharge) and we must be sure that the proposed discharges will not, after reasonable mixing, give rise to any of the adverse effects listed in section 107, unless we are satisfied that one or more of the exemptions set out in section 107(2) of the Act apply.
113. We return to the section 105 and 107 matters following our evaluation of the effects of the proposal.
114. Section 104B states that we may either grant or refuse the applications, and that if we grant them, we may impose conditions under section 108 of the Act. Consequently, subject to the restrictions in section 108(1) of the Act, should we decide to grant the applications, we are able to impose any conditions that we consider appropriate, including those matters set out in section 108(2). We are aware that conditions of consent should also meet what is commonly known as the Newbury tests⁴, which are:
- The condition must be for a resource management purpose, not for an ulterior one.
 - The condition must fairly and reasonably relate to the development authorised by the consent to which the condition is attached.
 - The condition must not be so unreasonable that no reasonable planning authority duly appreciating its statutory duties could have approved it.
115. We intend to be very diligent in adhering to the Newbury matters when we come to impose conditions, if the consents are granted.

⁴ The tests for the validity of conditions in a resource consent were laid down in the English decision of *Newbury DC v Secretary of State for the Environment* [1981] AC 578, [1980] 1 All ER 731.

6.3 Consideration of effects on the environment

116. Section 113 of the Act directs us to consider the principle issues of contention and to state our main findings of fact in relation to those issues.
117. Based on the application documents, the submissions, the evidence presented at the hearing and our consideration of it, we will address the following principle issues of contention in a sequential fashion:
- Consultation
 - Alternatives
 - Inflow and infiltration
 - Background environment
 - Reasonable mixing
 - Discharge standards
 - Potential adverse effects on (or of):
 - Soil
 - Flooding
 - Other land discharge matters
 - Groundwater quality
 - Makoura Stream
 - Ruamahanga River
 - Public health issues
 - Instream ecological values
 - Lake Onoke
 - Other instream issues
 - Air
 - Maori values
 - Climate change
 - Receiving environment standards
 - Monitoring
 - Community Liaison Group
 - Other submitter issues
 - Duration and review

6.4 Consultation

118. Several submitters⁵ were critical of either the lack of consultation or the nature of it. Firstly we note that under section 36A of the Act the applicant had no duty to consult any person about the applications. In this case the applicant chose to consult with parties prior to the applications being lodged⁶. We do not intend to summarise the consultation undertaken and there is no need for us to do so. However, in our view the consultation undertaken was wide ranging and extensive and the applicant is to be commended for their proactive stance in that regard.
119. We note that the purpose of consultation is to identify the relevant issues of concern to interested parties. The purpose of consultation is not to reach

⁵ R Cameron, D Holmes, M Gardiner, Sustainable Wairarapa, Rangitane o Wairarapa, A Stewart, DOC, A Wullems, I Gunn

⁶ Section 4 of Schofield evidence in chief, section 7 of Ten Hove evidence in chief

agreement with interested parties regarding their concerns, however if that occurs then it is obviously beneficial. In this case we are satisfied that all relevant issues are on the table before us.

6.5 Alternatives

120. Several submitters⁷ were clearly unhappy with the nature of the scheme selected by the applicant and the proposed method of discharging wastewater to land in particular. Other than for our obligations under section 105 of the Act we do not consider the matter of alternative schemes to be of relevance to us. It is our task to evaluate the actual and potential effects of the activities for which consent has been sought and not to consider the effects, or merits of, some alternative proposal for which consent has not been sought.
121. We are satisfied on the evidence that the applicant's proposal is capable of practicable implementation. It was agreed by all parties that the proposed scheme will have to be managed professionally and carefully, and that a measure of adaptive management (operator experience) will be required for the scheme to perform optimally. We consider that to be a matter for the MDC to address and note that the applicant appears to be well aware of that need. In that regard we accept the view of Mr ten Hove⁸ that "management of the irrigation and water balancing components of the proposed [sic] is an internal matter for the [District] Council".
122. Consequently we do not intend to consider the matter of alternatives further, other than in terms of section 105 of the Act which we deal with later in this decision. Instead we intend to deal with the applications before us on their merits.

6.6 Inflow and infiltration

123. Inflow and infiltration was a matter of concern to a number of submitters⁹. Inflow refers to stormwater that enters a sewerage reticulation system primarily through illegal stormwater connections and infiltration refers to groundwater that enters the system primarily through leaks and holes in the sewerage reticulation pipes and manholes.
124. All sewerage reticulation systems suffer from inflow and infiltration and the scale of the problem varies greatly depending on the age and condition of the system and the nature of the groundwater in the area. In Masterton the rate of inflow and infiltration is high by national standards. Mr Franklin¹⁰ advised us that "...Masterton has wastewater flows more than twice what are typical in New Zealand as a result of high I/I [inflow and infiltration]". Mr Franklin also advised that the average daily flow of wastewater into the MWTP is 15,750m³/day of which some 10,700m³/day comprises inflow and infiltration.

⁷ A Duncan, D Holmes, Riddlesworth Estate, Sustainable Wairarapa, Rangitane o Wairarapa, A Stewart, M Butcher, Kahungunu ki Wairarapa, Papawai Community Trust, I Gunn

⁸ Ten Hove supplementary evidence paragraph 5.1

⁹ A Stewart, Department of Conservation, Fish and Game, Kahungunu ki Wairarapa, Papawai Community Trust, I Gunn

¹⁰ Franklin evidence in chief paragraph 4.4

125. Submitters were concerned that the high level of inflow and infiltration resulted in a greater volume of wastewater requiring to be discharged than should otherwise be the case. We acknowledge that a greater inflow equates to a greater discharge but note that it is not a primary matter of concern to us. In our view the relevant matter is the actual and potential effects of the discharge, whatever its volume and frequency may be, on the receiving environment.
126. We do accept, however, that reducing the inflow and infiltration may allow a discharge to the Ruamahanga River to occur less frequently than might otherwise be the case. That is a desirable outcome, both in terms of the regional plan policy framework and submitter concerns.
127. If the high level of inflow and infiltration in Masterton results in a treatment plant that is more expensive than would otherwise be the case, then we have no concern about that. That is a relevant matter for the Masterton District Council (MDC) to address under their Local Government Act responsibilities and we understand that they have done so.
128. Some submitters¹¹ suggested to us that the infiltration of groundwater to the reticulation system required a water take resource consent. If that were so it may be a matter relevant to us under section 91(1) of the Act. However, we heard no qualified planning evidence suggesting that such consent was necessary and the submitter's contention was not supported by the Wellington Regional Council reporting officers. We make no finding on the matter of whether or not such a consent is necessary. However, we note that even if such a consent was necessary we do not consider that it would require us to have delayed the hearing under section 91(1)(b) of the Act as we would not have required any such application to enable us to better understand the nature of the proposal before us.
129. Mr Franklin¹² and other witnesses for the applicant explained to us the measures the MDC was taking to address the inflow and infiltration problem. We note those commendable measures are extensive, costly and based on appropriate technical advice. The applicant has offered a condition of consent relating to the continuation of the MDC's inflow and infiltration reduction programme. We find that it is appropriate to impose that condition for the reason set out in paragraph 126 above.
130. We wish to make no further comments on the applicant's inflow and infiltration reduction programme.

6.7 Background environment

131. We consider that the proper background environment against which the effects of the proposed wastewater discharges should be assessed is the up-gradient groundwater, and the upstream water quality in the Makoura Stream and Ruamahanga River, inclusive of the effects of authorised point source discharges and discharges associated with authorised land use.

¹¹ I Gunn

¹² Ibid section 6

132. The nature of the background environment was well described in the AEE and the evidence of the applicant's and the Council's various technical experts. We refer to those matters as appropriate in the sections of this decision that follow.
133. We record that the background environment is different than the permitted baseline, and that under section 104(2) of the Act we have decided that the permitted baseline¹³ is not relevant in this case.

6.8 Reasonable mixing

134. The effects described in section 107(1)(c) to (g) of the Act apply after reasonable mixing. This is the concept whereby the contaminants in a discharge mix with and are diluted by the receiving waters. Reasonable mixing occurs when those contaminants are reasonably well mixed with the receiving waters, but it does not mean that the contaminants are fully mixed at that stage.
135. The concept of reasonable mixing is important as within the zone of reasonable mixing contaminant levels are accepted as being higher than they should otherwise be. In general, water quality guideline values are required to be met at the end of the zone of reasonable mixing. There is therefore some allowance made for adverse effects within that zone. The caveat on this is that acute or toxic effects may not be acceptable.
136. Reasonable mixing is not defined in the Act. We note that Policy 5.2.11 of the RFP provides a narrative "recipe" for a reasonable mixing zone which the applicant has followed¹⁴. In this case, by the conclusion of the hearing there appeared to be general technical agreement that the zone of reasonable mixing associated with the main discharge to the Ruamahanga River from the proposed new diffuser should be 300m.
137. We accept that consensus view.

6.9 Discharge standards

138. Discharge standards are routinely imposed on resource consents that authorise the discharge of contaminants to land or water. They are a principal means of avoiding, remedying or mitigating adverse effects on the receiving environment.
139. In this case, if the applications sought are granted then we find it would be appropriate to impose wastewater discharge standards on the continued discharge to the Makoura Stream that will be required prior to the new treatment scheme becoming operational. We find that such discharge standards should be based on the current performance of the oxidation pond system and all parties appeared to agree that the effluent discharge standards imposed on the existing consent WAR020074¹⁵ were appropriate for that purpose.

¹³ Section 104(2) states that when forming an opinion for the purposes of subsection 104(1)(a), a consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect.

¹⁴ Cooke evidence in chief paragraph 5.21

¹⁵ Consent WAR020074 is the existing consent for the treated wastewater discharge which expires on 20 January 2010.

140. We accept that consensus view.
141. Wastewater discharge standards will also be required for the discharge to land and the primary discharge to the Ruamahanga River from the proposed new diffuser once the upgraded scheme is operational. The reporting officers considered that those discharge standards should be derived from the record of historical wastewater quality monitoring for the existing scheme. The officers¹⁶ used a data series for the period March 2003 to September 2008 which followed the interim upgrading of the existing pond system.
142. Conversely, the applicant recommended a suite of discharge standards that differed from those preferred by the officers. Mr Archer¹⁷ based his values on a historical wastewater quality monitoring data series that spanned the period from 1994 to the present. He considered¹⁸ that this data set reflected “a wider range of inflows and climatic conditions”.
143. The allowable concentration of contaminants recommended by Mr Archer is higher than that preferred by the reporting officers for biological oxygen demand (BOD), suspended solids (TSS), dissolved reactive phosphorous (DRP) and nitrogen compounds¹⁹. There was agreement on the appropriate standards for *E.coli*, metals and volatile organic compounds.
144. When we questioned Mr Archer on the reasons for the differing recommendations he replied that in his view the recent historical wastewater quality did not form an appropriate basis for the wastewater quality that would be produced by the upgraded scheme. In particular, he considered that allowance needed to be made for the decrease in inflow and infiltration that MDC anticipated from their reduction programme (generating a more concentrated influent) and the fact that the increased retention time in the new pond system would lead to a greater level of algae (increasing suspended solids and BOD). Mr Archer advised he had also reflected on his knowledge of the wastewater produced by similar systems elsewhere in the country.
145. We note that in the short term the new ponds will be filled with wastewater from the existing ponds. It would therefore have a quality similar to that of the existing discharge. Mr Archer advised us verbally that in his view the quality of the treated wastewater would thereafter slowly change and over a five to ten year period it would reach the levels predicted in Table 24 of the AEE.
146. The issue of appropriate wastewater discharge standards is therefore problematic. We do not wish to set standards at an unnecessarily high level as that would allow a discharge of contaminants greater than what is reasonably necessary. Conversely we do not wish to set the standards at an unnecessarily low level as that would place the MDC in a state of non-compliance for no good reason.

¹⁶ Page 31 of Technical review of discharges to surface water, 9 February 2009

¹⁷ Archer supplementary evidence paragraph 11.3

¹⁸ Ibid paragraph 11.4

¹⁹ Mr Archer advised that the ammonia concentrations he now recommended differed from those in the AEE based on his analysis of historical monitoring data.

147. Importantly, we note that the applicant’s predictions of adverse effects are based on the contaminant levels recommended by Mr Archer and as set out in the AEE.
148. On balance we find that when the new pond system is operational the wastewater discharge standards recommended by Mr Archer should be used. However, in order to avoid setting discharge standards that are unnecessarily high, we also find that the discharge standards should be explicitly reviewed two years following the commencement of a discharge from the new diffuser and every five years thereafter. The review should specifically allow for the discharge standards to be reduced if monitoring shows them to be unnecessarily high.
149. We note that all appropriately qualified parties eventually agreed that the discharge standards to be used for compliance purposes should be 90 percentile figures, other than for *E.coli* which should use median and 95 percentile figures. There was also agreement on the exceedances allowable over defined time periods.
150. We accept the consensus view on those matters.

6.10 Soil

151. The applicant proposes to use a system of border dyke irrigation to discharge the treated wastewater to land. The area of border dykes will be 97ha comprising 75ha on parts of the 91ha and 107ha sites (the purchased farmland) and 22ha on the site of the existing ponds²⁰. The wastewater will be discharged through “pop up valves” and the rate of flow will be controlled by a variable speed pumping system. The applicant proposes to²¹ “... irrigate pasture rather than tree plantations because pasture is more effective in taking up nutrients if a cut and carry system is used”. In that regard we find a pasture based cut and carry system to be appropriate and we have no concerns about the applicant’s ability to implement such a system.
152. Some submitters²² expressed concern about the border dyke construction process. In that regard Mr Borrie²³ advised:
- “The impact on the soils of moving and replacing relatively deep soils, which exist at this site, is minimal provided this work is not carried out in wet conditions” and “Any differential settlement occurring on the border strips post construction that results in the surface ponding of wastewater, will be rectified.”
153. We accept Mr Borrie’s advice in that regard.
154. The applicant engaged qualified and experienced consultants to investigate the soils on the site²⁴ and to model²⁵ the effects of the wastewater discharge on soil

²⁰ Archer evidence in chief paragraph 3.2

²¹ Borrie evidence in chief paragraph 4.9

²² I Gunn, D Holmes, S Forbes, A Stewart, D Bell

²³ Borrie second statement of additional evidence paragraphs 2.7 and 2.8

²⁴ Ibid generally

properties. That modelling was also used to determine the necessary pond storage volumes associated with an intermittent discharge to Ruamahanga River. Dr Green advised²⁶:

“Average irrigation rates proposed are 10mm/day in the summer for free draining and rich clay soils, 5 mm/day in the winter for free draining soils and no irrigation of clay rich soils in the winter. The model used a minimum 10-day stand down period between irrigations. It is important to note that the maximum amount of irrigation applied daily to the land was not allowed to exceed the soil’s hydraulic capacity on that day.”

155. We appreciate that actual applications of wastewater will involve depths of around 100mm. However, Dr Green advised²⁷:

“In order to be conservative in the assessment I modelled the maximum application rates (some 1.5 times that of the anticipated average rates) that represent an extreme situation which might be used in dry conditions and certainly would not apply to every plot throughout the lifetime of the scheme. In addition the modelling for the mass of nutrients and contaminants leached to the groundwater is also conservative in that it included the potential future irrigation area as well as the proposed scheme.”

156. Dr Green used his model to determine the concentrations of nitrate, phosphorus, and *E.coli* that would be present in the soil water at a depth of 1m below the land discharge areas. We note that the passage of the treated wastewater through the soil will result in significant attenuation of those contaminants.

157. In that regard we note there was debate amongst the parties as to whether this was a land treatment or a land disposal scheme. We are not concerned with such semantics and consider that matter to be irrelevant to our evaluation of the actual and potential effects of the proposal.

158. We make no further comment on this matter.

159. We also note that we see no merit in comparing the applicant’s proposal to the former Waingawa meat works system, as some submitters²⁸ urged us to do. In our view the two systems are simply incomparable. One dealt with concentrated meat works effluent while the other deals with treated domestic wastewater.

160. In terms of potential adverse effects on the soil itself, Dr Green advised us that the maximum soil phosphorus concentration will remain at less than 25% of the phosphorus adsorption capacity for the soils for the modelled timeframe of 28 years. We heard no qualified evidence that disputed Dr Green’s advice.

161. We are satisfied on the evidence that the modelling undertaken by Dr Green is appropriate and fit for purpose. Dr Green’s modelling results were used to model effects on groundwater and we consider that matter later in this decision.

²⁵ Green evidence in chief

²⁶ Ibid paragraph 3.4

²⁷ Ibid paragraph 3.9

²⁸ Including M Butcher, Kahungunu ki Wairarapa, Papawai Community Trust, I Gunn

6.11 Flooding

162. The WTP is located adjacent to the Ruamahanga River and so it resides in a natural flood plain. We heard²⁹ that the majority of the area is protected by an existing Council stopbank which the applicant intends to upgrade to a consistent 1 in 100 year return period standard. Mr Williams considered that to be an appropriate standard of protection and we concur with his view.
163. Mr Williams also considered the impact of the proposal on flood levels. He noted that³⁰ “... most of the existing pond embankments will be cut down to the 2 year flood level to allow floodwater to spread over the area of the decommissioned ponds”.
164. Mr Williams concluded³¹:
- “Decommissioning the existing ponds will create a wider floodway, reducing flood levels and avoiding the erosion issues associated with the existing ponds.”
165. We heard no qualified evidence that disputed Mr William’s advice. We find that the proposal will not have an adverse effect on flood levels.
166. The applicant intends to implement the discharge of wastewater outside of the existing stopbank area using the same border dyke system as discussed above. As noted by Mr Williams³², these “... floodable berm areas alongside the river are relatively wide, and in larger events considerable floodwater spills on this land”. Submitters³³ were concerned that this could lead to erosion of the border dyke area during the construction and operation of the scheme. They were also concerned that these areas would become inoperable following a flood and that this would affect the integrity of the overall scheme.
167. Mr Archer addressed these matters in his supplementary evidence. He advised³⁴ that the applicant now intended to construct a levee of up to 1m high “ at the river’s edge to prevent floodwater affecting the berm, other than in greater than 5 year return period floods...”.
168. We find that to be appropriate.
169. Mr Archer also modelled the effect of the berm border dyke areas being inoperable for 4 to 8 weeks following a flood (conservatively assuming that the levee referred to above was not built). He determined the pond storage necessary to cope with such events and concluded that³⁵ “... the proposed scheme could have handled the berm flooding periods over the past ten years, even if the full berm area was out of service for 4 to 8 weeks.”

²⁹ Williams evidence in chief paragraph 4.5

³⁰ Ibid paragraph 4.3

³¹ Ibid paragraph 4.11

³² Ibid paragraph 4.2

³³ Including S Forbes

³⁴ Archer third supplementary statement of evidence paragraph 3.1

³⁵ Ibid paragraph 3.3

170. We accept Mr Archer's advice.
171. With regard to potential erosion, Mr Archer advised that the "... risk during construction will be managed by doing the berm earthworks in multiple stages, so that large areas are not exposed to soil erosion" and that as "... soon as a border bay is completed, it will be sown in grass to stabilise the surface." We are satisfied that these measures will adequately safeguard against erosion.
172. Submitters were also concerned about silt and debris deposition during floods. We note from the verbal evidence of Mr Forbes that siltation of the berm area in the past has been minor and was restricted to the southern end of the area. We note that any debris deposited during floods would be easily removed.
173. We find that we have no concerns regarding potential siltation and debris on the berm areas to be used for the discharge of treated wastewater to land.

6.12 Other land discharge matters

174. There were a number of what we consider to be secondary issues of contention relating to the proposed discharges to land as follows:
- wipe off drains
 - stormwater
 - sludge disposal
 - Makoura Stream diversion
175. We briefly discuss these matters and state our findings in relation to them below.
176. Wipe off drains will be constructed to catch wastewater and stormwater runoff from the border dykes. Initially these were to be permeable but by the conclusion of the hearing the applicant had amended its proposal. The intention is to now seal these drains³⁶.
177. Mr Archer advised³⁷:
- "If there is pond effluent run off to the wipe off drains, it will be pumped into the ponds. The 2 hour "first flush" runoff during rainfall will also be pumped into the ponds. After 2 hours, the pump will stop and rainfall runoff will overflow to infiltration areas formed in irregular shaped portions of the site (not suited to border strip development). It is estimated that these infiltration areas will handle a 5 year return period rainfall and during higher rainfall events, the runoff will discharge to [the] Makoura stream, which will be in flood at that time".
178. As noted above, stormwater from the land discharge area will either soak to ground or be discharged to the Makoura Stream. Given the intention to pump the "first flush" to the ponds (which will be that most likely to contain wastewater contaminants) we find the stormwater discharge proposal to be appropriate.

³⁶ Archer third statement of supplementary evidence paragraph 4.2

³⁷ Ibid paragraph 4.3

179. The applicant proposes to dry the sludge in the existing ponds insitu and thereafter deposit it in a purpose built engineered landfill in a corner of the existing pond area. The sludge disposal area will be lined with a highly impermeable clay liner and it will be capped and graded to prevent stormwater egress into the landfill. We note that to be standard modern landfill practice.
180. The drying of the sludge may be problematic due to the hydraulic connection of the old ponds to the Ruamahanga River. However, in response to our questions Mr Archer advised that if that occurred, the consent holder would simply construct a raised pad within the old pond area and use that to dry the sludge. We find that to be a pragmatic response.
181. We have no concerns with the applicant's sludge disposal proposal.
182. The Council officers recommended to us a condition requiring the consent holder to "consider alternative beneficial reuse options, especially to assist with minimising the ongoing and long term management costs of the land fill". We see no need to impose such a condition.
183. In order to accommodate the proposed border dyke land discharge system the applicant proposes to divert a portion of the Makoura Stream. A number of submitters were concerned about the potential effects of that. Our site visit revealed the Makoura Stream to be a small stream that is heavily compromised by adjoining agricultural land use. As part of the stream diversion process the applicant intends to create a natural meander pattern in the stream bed and retire and plant the stream margins. Once that has occurred the stream will be in a better condition than it currently is.
184. We accept that there may be some short term adverse effects associated with the stream diversion works (such as the loss of instream habitat, some dislocation of instream fauna, and some discolouration of the stream waters), but those effects will be remedied once the diverted stream is established.
185. We also note that the applicant has agreed to have an ecologist on hand to capture any trapped fish and relocate them to the new stream. We are satisfied that the effects of diverting the Makoura Stream will be no more than minor.

6.13 Groundwater quality

186. The discharge of treated wastewater to land will have an effect on groundwater as not all contaminants will be attenuated in the soil. In this case this is a potential issue of concern for two reasons. Firstly, the groundwater in the general area is used for a variety of purposes, including for potable supply, and adverse effects on those existing uses should be avoided. Secondly, the groundwater under the site of the discharge to land area is hydraulically connected with the Makoura Stream and the Ruamahanga River and so contaminants in the groundwater will eventually find their way into one or both of those water bodies.

187. Dr Proffitt advised³⁸ that based on his evaluation of historical groundwater monitoring for the area “... the groundwater flows from north to south” and that the groundwater “... flowing under the site is expected to discharge principally to the Ruamahanga River, but also to the Makoura Stream, including indirectly to the stream via a system of farm drains”.
188. Dr Proffitt constructed a groundwater model of the area. He used this to predict the amount of groundwater mounding that would occur as a result of the proposed discharges to land, and also the fate of the contaminants predicted by Dr Green’s model to drain from the soil profile.
189. The modelling was conservative. Dr Proffitt advised³⁹:
- “The groundwater modelling, and therefore predicted effects, is conservative because it uses high-end application rates which will be the exception rather than the norm, and it does not allow for transformation of nitrogen or phosphorus in the aquifer, nor adsorption of bacteria or phosphorus in the aquifer, all of which will actually occur. In reality, contaminant concentration increases will be significantly lower at the site boundaries than that modelled, as will concentration increases in the receiving waters.
- The modelling is additionally conservative because it assumes irrigation over the complete scheme area, including the potential future land treatment area.”
190. Dr Proffitt predicted⁴⁰ groundwater mounding of less than 200mm. Mr Gunn suggested that this could not be the case as the applicant intended discharging over 2m of wastewater to the land each year. However we note that the wastewater will be applied in doses of around 100mm once every ten days or so to only certain areas of the land. Dr Proffitt has measured the hydraulic conductivities in the shallow aquifer and he advises⁴¹ they “...are indicative of quite permeable conditions...” Dr Proffitt has modelled the effects accordingly. We prefer Dr Proffitt’s evidence on that matter.
191. Dr Proffitt also modelled the potential effects on shallow domestic bores. He concluded⁴² “... there will be no significant effects on shallow domestic water bores in the vicinity of the site, either with or without the additional irrigation area”. We accept Dr Proffitt’s opinion. However, we are also cognisant of the concerns of adjoining property owners who rely on shallow bores for their domestic supply. Accordingly, in order to mitigate those concerns we consider that the applicant should undertake periodic monitoring of shallow domestic bores in the area for nitrate and *E.coli* (providing those bore owners agree to that occurring), namely the bores of M Gardiner, P Martin and A Wullems.
192. Notwithstanding our comments above, we are satisfied on the evidence that the modelling undertaken by Dr Proffitt is appropriate and fit for purpose. Dr

³⁸ Proffitt evidence in chief paragraphs 3.2 and 3.3

³⁹ Ibid paragraphs 3.12 and 3.13

⁴⁰ Ibid paragraph 3.6

⁴¹ Proffitt third statement of supplementary evidence paragraph 2.11

⁴² Proffitt evidence in chief paragraph 10.12

Proffitt's modelling results were used to model effects on surface water quality and we consider that next.

193. We record that we are satisfied that the applicant's proposal satisfies Policy 5.2.7 of the RFP. Of relevance to our finding is the very close proximity of the groundwater resource in question to the Ruamahanga River and the consequential fact that little, if any, domestic or agricultural use⁴³ is made of the groundwater that will be affected by the discharges to land. Namely there are no down gradient users of the groundwater resource prior to its diffuse discharge to the river.

6.14 Makoura Stream

194. The existing discharge of treated wastewater occurs to the Makoura Stream on a continuous basis. It was common ground that this caused a significant adverse effect on that stream. The removal of the direct discharge from that Stream is one of the primary benefits of the proposal.
195. The Council reporting officers recommended that the discharge be removed from the Makoura Stream within 12 months of the consent being granted and in advance of the discharge to land component of the upgraded scheme being completed. This was opposed by the applicant for reasons of potential adverse effects on property owners on the east bank of the Ruamahanga River and the costs of constructing the necessary diffuser in advance of the main scheme works.
196. We note that the discharge to the Makoura Stream has been occurring for around forty years. On balance we consider that it would be better to continue that discharge until such time as the upgraded scheme is completed and the proposed intermittent discharge to the Ruamahanga River can commence. That is, we see no merit in replacing a permanent discharge to the Makoura Stream with a permanent one to the Ruamahanga River, albeit for a period of only several years.
197. We note that the evidence⁴⁴ is that the proposed discharge of treated wastewater to land will result in some diffuse discharge of contaminants to the Makoura Stream. However, that situation will still be significantly better than the current situation and an overall improvement in water quality in the Stream can be anticipated.

6.15 Ruamahanga River

198. The Ruamahanga River will be the main surface water receiving environment for the discharge of treated wastewater. There will be a diffuse discharge resulting from the discharge of wastewater to land and its subsequent passage through the groundwater, and a direct but intermittent discharge from the proposed new diffuser.

⁴³ Other than any bores on the Applicant's land

⁴⁴ Dr Proffitt and Mr Lowe

199. It is important to firstly consider the regional policy framework for the River. The operative Regional Policy Statement is a high order document and its objectives and policies⁴⁵, with regard to the management of Ruamahanga River water quality, provide little guidance additional to that contained in Part 2 of the Act. Policies 5.2.4 and 5.2.9 of the RFP require the river to be managed for contact recreation purposes. Importantly the RFP does not include any water quality standards or water quality numerical guidelines.
200. Consequently, bearing in mind the provisions of Part 2 of the Act and the regional policy framework, we consider that we need to consider potential adverse effects on contact recreation, instream ecological values and Maori cultural values.

6.15.1 Public Health Issues

201. As previously noted, the existing situation comprises a full time discharge of treated wastewater to the Makoura Stream which shortly thereafter discharges to the Ruamahanga River. The existing discharge is therefore effectively a concentrated point source discharge directly to the river. As we have already noted, it is roundly agreed that this is unacceptable and the Applicant proposes to cease that discharge. Consequently we see no need to dwell on the nature of the existing discharge and the adverse effects that it generates.
202. In future, when the new scheme is operative, there will be a direct but intermittent discharge to the Ruamahanga River from a new multi-port diffuser. The applicant plans to maximise the amount of wastewater discharged to land and minimise the amount of wastewater discharged to the river. In addition, the applicant has proposed operating rules for the discharge. In the summer there will be no discharge at river flows below median flow as measured at Wardell's Bridge. In the winter there will no discharge at river flows below half median flow⁴⁶. At all times there will be a minimum 30:1 rate of dilution of the wastewater in the river after reasonable mixing has occurred.
203. We find this to be a significant improvement on the current situation. We observe that a wastewater treatment system such as that proposed by the applicant would be the envy of many other provincial towns and in our view the applicant is to be commended for their initiative.
204. The main consideration in terms of contact recreation is that of indicator bacteria, *E.coli* in this case, which is used to indicate the likely presence or absence of pathogens. Indicator bacteria are used as it is expensive and difficult to monitor for pathogens directly. The applicant plans to decommission the existing ponds and construct six new ponds in series including maturation cells. We heard from Mr Archer how the new pond system would achieve a significant reduction in the level of indicator bacteria in the wastewater. He advised us⁴⁷:

⁴⁵ Objective 2 and policies 1, 4, 5, 6, 9, 10 12 and 12

⁴⁶ We note and accept that prior to the land discharge system being fully commissioned, namely whilst the existing ponds are being converted to border dyke irrigation, the summer and winter discharge will occur at flows above half median.

⁴⁷ Archer third statement of supplementary evidence paragraph 2.2

“The proposed six ponds in-series system at Masterton will produce a tertiary disinfected effluent, equivalent to a UV system following an “in-tank” treatment process.”

205. We heard no qualified evidence contrary to that of Mr Archer and we accept his advice. We see no merit in considering alternative or additional systems of disinfection (such as artificial UV treatment) as sought by some submitters.
206. By the conclusion of the hearing Mr Archer and the Council officers had agreed on the treated wastewater discharge standards for *E.coli* that would apply to the upgraded system. In the summer the wastewater will be required to meet a standard of 330 *E.coli* cfu/100ml with a 95 percentile figure of 1800. In the winter, when there is less natural sunlight to treat the wastewater in the ponds, the median value will be 1000.
207. We find those levels to be appropriate.
208. As we have noted, there will be no discharge to the Ruamahanga River during the summer at flows below median flow. This is the primary period when contact recreation is likely to occur. We heard evidence of how the background water quality rapidly deteriorates once river flows exceed the median flow. This is due to runoff from agricultural landuse in the catchment. People should not be undertaking contact recreation at these flows due to the “natural “water quality of the river.
209. During the hearing, using summer as an example, there was much debate about the risk posed to river users at flows just above the median flow. This was termed the “threshold flow range” by the applicant⁴⁸. The issue of concern was that people might still be using the river at flows just above median flow when the direct discharge was initiated from the diffuser. Some parties were also concerned that people might use the river on the falling limb of a fresh when the direct discharge was occurring.
210. Dr Hickey⁴⁹ undertook complex Monte-Carlo modelling of this situation and he found that in the “threshold flow range” there would be “ ... a median clarity decrease of -15% and an *E.coli* increase of +6.5%”. We also note from the evidence of Dr Cooke⁵⁰ that the “threshold flow range” will only occur a small amount of the time. He advised us that it would occur “... for about 4% of the summer time and 13% of the time that the effluent will be discharging during summer”.
211. Mr Ball also considered the health risks that might arise from the proposed new discharge regime, using the results of Dr Hickey’s Monte-Carlo modelling of indicator bacteria levels. Mr Ball undertook a quantitative health risk assessment. We found his evidence to be thorough and helpful. We note that Dr Palmer⁵¹ was critical of the work of Mr Ball and Dr Palmer advised us that in his view the applicant should have undertaken a full Health Impact Assessment.

⁴⁸ Hickey evidence in chief paragraph 6.30 states that the “threshold flow range” is 12.3 to 14.0 cumecs.

⁴⁹ Hickey evidence in chief paragraph 3.11

⁵⁰ Cooke evidence in chief paragraph 5.37

⁵¹ Regional Public Health (Hutt Valley District health Board) Medical Officer of Health

We do not accept Dr Palmer's criticisms of Mr Ball's work. In our view the study undertaken by Mr Ball is of a high standard and exceeds the assessment of health risks that has occurred for many other provincial wastewater treatment plants. We note that Dr Palmer could not provide evidence of any similar Health Impact Assessments of the nature he was proposing having been undertaken.

212. Mr Ball assessed the risk of adenovirus infection as suitable proxy for pathogens generally. He concluded⁵²:

“At present, the best estimate of adenovirus infection for swimmers at times when most aquatic recreation occurs in the Ruamahanga River is 7.3 per 1000. This is estimated to fall to 0.3 per 1000 after the upgrade, largely due to the practice of discharging to land instead of directly to the river at below-median flows. This is well below the acceptable limit of 10 per 1000”.

213. The issue of public health and contact recreation was also addressed by Mr Harding, a well qualified and experienced peer reviewer retained by the applicant. In our view Mr Harding succinctly summarised the situation regarding the proposed new discharge regime and its proposed level of *E.coli* in the wastewater discharge. He stated:

“... upstream water quality determines water quality downstream when discharge is taking place. If the upstream water quality complies with the guidelines, the downstream water quality will as well. This can be explained by the proposed 30:1 dilution of the treated effluent. In simple terms the upstream to downstream *E.coli* increment is 300 divided by 30, or 10 cfu/100ml.”

214. Having weighed the evidence (only a portion of which we have referred to above), we are satisfied that the health risks posed to recreational river users by the proposed new discharge regime are acceptable. We record that there will be a significant improvement over the current situation.

215. There were a number of what we consider to be secondary issues of contention relating to public health. These were:

- desirable rate of dilution
- the use of the 2003 MfE/MOH Microbiological Guidelines
- the need for a discharge protocol
- the need for a multi-agency decision making protocol
- a higher discharge threshold
- signage
- a public warning system.

216. We briefly discuss these matters and state our findings in relation to them below.

217. We are satisfied on the evidence that the potential adverse effects of the proposal are acceptable at the applicant's proposed minimum dilution rate of 30:1. We note the applicant has stated that at most times they hope to achieve a greater

⁵² Ball evidence in chief paragraph 3.6

level of dilution (40:1 rising to 50:1 at times). We find that to be commendable but see no effects based reason to require it by way of a consent condition.

218. We find that the 2003 MfE/MOH Microbiological Guidelines are not helpful in assessing the potential adverse effects of the proposal before us. Indeed the Guidelines are not designed to cope with intermittent wastewater discharges and as Mr Harding noted⁵³, the Guidelines “... cannot be directly used to determine water quality criteria for wastewater discharges.” In making this finding we note that it would however be useful if WRC, the territorial authorities in the valley, and Wairarapa Public Health collectively implemented the Guidelines as they were intended to be implemented and actually graded the bathing sites on the river. We do not see that as being the responsibility of the applicant in this case.
219. The applicant has volunteered a discharge protocol that would seek to minimise discharges in the winter at flows below median, achieve higher dilution rates in and above the “threshold flow range”, and avoid discharges during the recession of freshes (as river flows recede from 20 cumecs). We find that to be commendable but see no effects based reason to require it by way of a consent condition.
220. Regarding the need for a multi-agency decision making protocol Dr Palmer⁵⁴ stated:
- “I recommend that there should be a consent condition around a requirement to develop a discharge or decision making protocol jointly with Carterton District Council, South Wairarapa District Council, Greater Wellington and Public Health. If it is decided not to impose a consent [sic] like this then we will have to look at what can be done under the Health Act.”
221. We find Dr Palmer’s recommendation to be impractical and we do not accept it. The exercise of the discharge consent, if granted, must be the sole responsibility of the consent holder. It is unreasonable, and moreover unlawful, to require the exercise of the consent to be dependent on the actions or decisions of third parties.
222. Some submitters⁵⁵ sought a higher threshold for the commencement of the diffuser discharge. We see no need for that as we are satisfied with the evidence regarding the minor effects of the proposed discharge at median and half median flows.
223. We find that signage warning of the health risks to river users should be posted at the site of the new diffuser and at either end of Wardell’s bridge. We note that such signage is routinely required for wastewater discharges to surface water bodies. The signage wording suggested by Mr Harding⁵⁶ is helpful and we consider that it can be used to formulate a consent condition.

⁵³ Harding second statement of supplementary evidence paragraph 23

⁵⁴ Palmer evidence in chief page 13

⁵⁵ Andrew Stewart

⁵⁶ Harding second statement of supplementary evidence Attachment 1

224. It is obvious to us that a system needs to be in place for warning the public about when it is safe to swim in the river and when it is not. The signage we have discussed above will serve that purpose to some degree. Mr Harding⁵⁷ recommended to us wording for a “draft Guidelines Assessment and Risk Communication Protocol”. We appreciate his assistance but find the protocol that he has recommended to be overly complex for the proposal before us. We consider that a simpler approach is appropriate, one that seeks to educate river users on the health risks posed at high river flows. We are mindful that the applicant is only responsible for the effects of its discharge, which represents only a minor part of the overall water quality problem within the catchment. However, we consider that the applicant should periodically educate its constituents regarding the general public health risks present at high river flows and the fact that the direct treated wastewater discharge will be occurring during freshes in the river. We consider that this matter can be dealt with in a consent condition.
225. We had Policy 5.2.10 of the RFP drawn to our attention. We do not find that policy to be relevant as we consider that the proposal satisfies Policies 5.2.4 and 5.2.7 of the Plan.

6.15.2 Instream ecological values

226. Our consideration of instream ecological values derives from sections 6(a), 7(c), 7(d), 7(f) and 7(h) of the Act rather than directly from the regional plan framework⁵⁸. Submitters and Council officers were concerned about the potential impacts of the proposal on native fish, the habitat of trout, and periphyton and algae growth.
227. Based on the evidence we are satisfied that the Ruamahanga River comprises an important habitat for native fish⁵⁹ and trout⁶⁰.
228. We heard that the distribution and abundance of native fish is not what might otherwise be expected for a river of this nature. However, we were not presented with any evidence which showed that the existing discharge was having an adverse effect on native fish. The evidence was that there were likely to be many factors affecting native fish distribution and abundance, including rural runoff and general elevated water temperatures and low flows during the summer months, as well as point source discharges.
229. In terms of trout habitat we heard no evidence that the existing discharge was adversely affecting trout habitat, other than in terms of periphyton and algae growth which we deal with shortly.
230. We note that the proposed future discharge regime will result in general improvements in water clarity within the 300m mixing zone compared to what

⁵⁷ Ibid

⁵⁸ Given RFP Policy 5.2.4 which clearly assigns a management objective of contact recreation to the whole Ruamahanga River and the confusing nature of Policy 5.2.6 which seems to preclude the lower and mid Ruamahanga River from being managed for aquatic ecosystem purposes due to the content of Appendix 7 of the Plan

⁵⁹ Bott evidence in chief paragraph 21

⁶⁰ Jordan evidence in chief paragraph 21

occurs currently downstream of the confluence of the Makoura Stream and Ruamahanga River.

231. We note that periphyton and algae occur naturally in rivers. The issue of concern in this case is that the discharge of treated wastewater to the Ruamahanga River could exacerbate existing, or natural, levels of periphyton and algae as the wastewater contains nutrients (nitrogen and phosphorus) that can stimulate periphyton and algae growth. Excessive periphyton and algae growth is undesirable as it can detract from the amenity value of the river (it affects people's appreciation of the river's pleasantness), it can interfere with angling (lines become snared and fisher folk are unable to see their prey) and it can smother macroinvertebrate communities.
232. We heard evidence that the existing discharge exacerbates periphyton and algae growth in the vicinity of Wardell's Bridge⁶¹ when ". *upstream nutrient concentrations are high and river conditions are clear*". We do not intend to dwell on that matter as the Applicant proposes to remove the discharge that causes that adverse effect.
233. We heard much evidence about whether or not the proposed future direct but intermittent discharge to the Ruamahanga River would exacerbate existing, or natural, levels of periphyton and algae.
234. In terms of this issue we note that there are national guidelines on periphyton growth⁶² promulgated by the Ministry for the Environment. We find these to be an important and relevant other matter in terms of section 104(1)(c) of the Act.
235. Dr Ausseil⁶³ provided helpful evidence on the national guidelines. In his opinion there were two relevant guidelines that we should consider. These were "a maximum periphyton biomass of 120mg chlorophyll *a*/m² (filamentous algae) or 200mg/m² (diatoms/cyanobacteria) for the protection of trout habitat and angling" and "a maximum cover of visible river bed of 30% (filamentous algae > 2cm long) or 60% (diatoms/cyanobacteria mats > 0.3cm thick) and a maximum biomass of 120mg chlorophyll *a*/m² (filamentous algae) to protect aesthetic/recreational values."
236. Dr Hickey⁶⁴ considered that the periphyton and algae growth limiting nutrient was dissolved phosphorus (DRP).
237. Accordingly, Dr Hickey developed a site specific DRP guideline value. This is an instream concentration of DRP which if not exceeded should avoid the nuisance levels of periphyton and algae addressed by the national guidelines.
238. The instream DRP value derived by Dr Hickey was initially 0.030g/m³. This was revised by Dr Hickey⁶⁵ to 0.066g/m³ due to an error in his original calculations.

⁶¹ Hickey evidence in chief paragraph 6.28

⁶² The New Zealand Periphyton Guidelines (Biggs, 2000)

⁶³ Ausseil evidence in chief paragraph 15

⁶⁴ Hickey evidence in chief paragraph 6.4

⁶⁵ Hickey, Cooke and Ryder supplementary statement of evidence paragraph 6.7

239. Dr Hickey then modelled downstream water quality for a range of contaminants, including DRP, using "... a median upstream concentration with addition of a 95 percentile (95%ile) effluent concentration allowing for an appropriate dilution". He also factored in pond leakage⁶⁶ and diffuse discharges from the land discharge (border dyke) system⁶⁷. We find that to be an appropriately conservative approach.
240. Dr Hickey⁶⁸ advised us that his modelling showed that at times of low flow (when there is no diffuser discharge occurring) "... DRP concentrations downstream of the ponds, will be less than 0.016g/m³ during low flow conditions, which is significantly less than the DRP guideline value of 0.030g/m³." We accept Dr Hickey's evidence on this matter and note that using a value of 0.030g/m³ as a benchmark incorporates a safety factor of over 2 given the error in the original calculation of that value (namely it should be 0.066g/m³).
241. There was concern expressed by some parties that the contributions of DRP from the diffuser discharge during and above the "threshold flow range" could exacerbate periphyton and algae growth. We consider that potential adverse effect to be within the realms of speculation. At that time river flows will be high and approaching the level at which periphyton and algae will be scoured off and the nutrients discharged at that time will be rapidly carried downstream. As noted by Dr Ryder⁶⁹:
- "... direct discharges during higher flows will provide little opportunity for nutrient uptake by periphyton and this, in association with the rapid transport of water downstream, will inhibit the development of nuisance growths."
242. On the evidence we are satisfied that the applicant's proposal will have no more than minor adverse effects on periphyton and algae growth.
243. Furthermore, in our view there is limited merit in us evaluating the competing opinions on this matter. It is preferable to set instream periphyton and algae standards based on the national guidelines and require monitoring over time to ensure that those standards are met. In that regard we note that both the Council officers and Dr Ausseil recommended the imposition of receiving water standards for periphyton and algae growths. The applicant has accepted the imposition of such standards. Dr Hickey⁷⁰ advised:
- "I agree with the use of compliance criteria for the nuisance growths of periphyton, which is an appropriate measure of effects in the receiving water."
244. We therefore find that receiving water standards for periphyton and algae growths should be imposed and that these standards should apply at the

⁶⁶ Using highest anticipated leaching rates – Ibid paragraph 6.10

⁶⁷ Long term (after 28 years) groundwater discharges – Ibid paragraph 6.22

⁶⁸ Hickey evidence in chief paragraph 6.26

⁶⁹ Ryder supplementary evidence paragraph 3.3

⁷⁰ Hickey second statement of supplementary evidence paragraph 6.3

culmination of the zone of reasonable mixing, namely 300m downstream of the proposed diffuser location.

6.15.3 Lake Onoke

245. The Ruamahanga River flows down to Lake Onoke which in turn discharges into Palliser Bay. We heard evidence⁷¹ about the nature of the lake and its various values. We also heard⁷² that the lake is degraded and that it suffers from the effects of eutrophication, particularly when the outlet from the lake to the sea is blocked. The applicant acknowledges⁷³ that "... the current discharge may be contributing to poor water quality in Lake Onoke."

246. The issue of concern with Lake Onoke is the mass load of nutrients it receives. Dr Cooke⁷⁴ advised us that "... when the upgrade is complete, the contribution from the Masterton WWTP to the P [phosphorus] load at Lake Onoke under summer baseflow conditions will drop from 43% to < 2.5%". At times when the lake outlet is blocked Dr Cooke determined that the discharge would contribute no more than 9.4% of the phosphorus load to the Lake⁷⁵.

247. On the evidence we find that the applicant's proposal will contribute only a minor proportion of the total nutrient load to Lake Onoke. We heard no evidence that this low level of nutrient loading would of itself constitute a significant adverse effect. We acknowledge that it would constitute a cumulative adverse effect, albeit it an unquantified one.

248. Regarding the issue of Lake Onoke we therefore accept the opinion of Dr Ausseil who advised⁷⁶ us:

"... although the potential of the discharges to contribute to nuisance algal growth in Lake Onoke cannot be fully discounted, there is, in my view, insufficient information to drive specific resource consent conditions.

... the state of Lake Onoke ... needs to be monitored as a first step. If a significant issue is found, the contribution of the Masterton discharge would need to be properly assessed ..."

249. We discuss monitoring matters latter in this decision, but we record at this point that whilst we agree with Dr Ausseil, we do not consider that the burden of monitoring Lake Onoke should fall on the applicant. Instead we consider that WRC should coordinate a monitoring programme pursuant to its section 35(2)(a) and (d) responsibilities under the Act.

6.15.4 Other instream issues

250. There were a number of what we consider to be secondary issues of contention relating to instream values. These were:

⁷¹ Bott evidence in chief paragraph 9, Gunn evidence in chief paragraph 3.7

⁷² Gunn paragraph 3.8

⁷³ Cooke evidence in chief paragraph 5.7

⁷⁴ Ibid paragraph 5.8

⁷⁵ Hickey second statement of supplementary evidence paragraph 12.2

⁷⁶ Ausseil evidence in chief paragraphs 58 and 59

- maximum discharge rate
 - diffuser construction
251. The applicant sought a maximum discharge rate from the diffuser of 1200 litres/second. This would be subject to the minimum 30:1 dilution and the median and half median flow discharge thresholds. The Council officers sought to have the maximum discharge rate restricted to 700 litres/second in accordance with the existing consent.
252. We find the limit in the existing consent to be of little relevance. This is a new application for a new proposal and it needs to be assessed on its merits. The applicant has based its storage volume calculations and its effects modelling and evaluation on a maximum discharge rate of 1200 litres/second. We have already found those predicted effects to be acceptable in terms of contact recreation and aquatic ecology and so see no need to limit the maximum discharge rate as recommended by the officers.
253. We are satisfied on the evidence that the diffuser should be constructed insitu in the river. We note, and accept, the applicant's offer to avoid instream works during the trout spawning period.

6.16 Air

254. The proposed discharge of treated wastewater to land has the potential to generate odours beyond the boundary of the applicant's property. To avoid that potential adverse effect the applicant has proposed significant buffer areas, which will be planted if the adjoining landowners so wish. We find that the proposed buffer widths are commensurate with those imposed on other wastewater treatment sites and we find that form of mitigation to be appropriate. The matter of buffer areas is also dealt with in the Notice of Requirement for the site and we do not see the need to impose duplicate conditions on these consents if granted.
255. We note that the applicant has also agreed to conditions that would avoid applying wastewater to land that has anaerobic surface conditions or contains ponded surface water. These provisions provide an extra level of appropriate mitigation against adverse odours.

6.17 Maori values

256. Under section 6(a) it is a matter of national importance to recognise and protect "the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga." Under section 7(a) we need to have particular regard to kaitiakitanga and under section 8 we need take into account the Treaty of Waitangi. We are also aware the regional policy frameworks provide strong support for these statutory principles⁷⁷.
257. We heard directly from iwi submitters regarding their concerns with the proposal. We acknowledge the section 6(e) relationship that the iwi submitters

⁷⁷ RPS chapter 4 Objective 2, Policies 4 and 6, RFP chapter 4 Objective 4.1.2, Policies 4.2.1, 4.2.3, 4.2.4, 4.2.5, RPD Policy 4.2.12

have with the Ruamahanga River and the Makoura Stream. We also accept that the iwi submitters consider that any discharge of wastewater (treated or not) into surface water will lead to the degradation of the mauri of that water.

258. We accept that these are adverse effects that are unable to be avoided, remedied or mitigated. Nevertheless we conclude that on balance those adverse effects do not mean that the proposal should not proceed, as the land discharge system will minimise adverse effects on iwi values to the extent practicable at this point in time.
259. We have considered the matter of a Cultural Impact Monitoring programme. Given that the evidence showed that the majority of water quality degradation derives from catchment wide land use, we find that it would be more appropriate and efficient, and better represent integrated management, if WRC undertook a Cultural Impact Monitoring programme on a catchment wide basis. This matter cannot be addressed through consent conditions.

6.18 Climate change

260. Some submitters⁷⁸ were concerned that the applicant's proposal did not take into account the possible effects of climate change. We note that to be a matter that we must have particular regard to under section 7(i) of the Act.
261. We are satisfied from the evidence that the effect of climate change, insofar as they are able to be predicted, has been taken into account by the applicant. In particular Mr Archer informed us of the sensitivity analysis he had undertaken for his predictions of necessary wastewater storage volume resulting from increased rainfall (affecting inflow and infiltration), increased flood flows (affecting inundation of the berm areas to be used for border dyke wastewater discharge and flood risks), and increased low flows during summer periods. Dr Hickey told us how his modelling of instream contaminant concentrations had considered those issues.

6.19 Receiving environment standards

262. On reviewing the evidence we are satisfied that the potential adverse effects of the upgraded system on groundwater and surface water quality will be no more than minor.
263. A primary issue of contention is whether or not numerical receiving environment standards should be imposed in terms of groundwater and surface water (the Makoura Stream and Ruamahanga River) for contaminants such as nitrogen and phosphorus. The applicant opposed the imposition of such standards and the Council officers recommended them. As we have noted previously the RFP does not contain any numerical standards or guidelines.
264. We have already found that there should be comprehensive discharge standards imposed on the wastewater discharged to land and to surface water. We have

⁷⁸ A Stewart

also found that receiving water standards should be imposed for periphyton and algae growths in the Ruamahanga River.

265. We are reluctant to impose additional numerical receiving water standards in this case. The reasons for that are as follows:
- The imposition of ad-hoc numerical receiving water standards in this case will set a precedent for other discharges to the river. This could lead to inconsistent outcomes along the river as separate discharge applications proceed along their individual consenting paths.
 - There is disagreement amongst the experts on what an appropriate DRP standard should be. The applicant says 0.030 g/m³ (even though their revised calculations show it to be 0.066 g/m³), the Council officers say 0.012 g/m³, and Dr Ausseil noted that a value of 0.015 g/m³ is used by other councils but he then recommends no standard, relying instead on periphyton standards.
 - The determination of appropriate numerical receiving water standards is best undertaken on a catchment wide basis under a coherent and integrated regional plan framework.
 - Section 128(1)(b) of the Act specifically provides for discharge consents to be reviewed if an operative regional plan introduces water quality standards.
266. On balance we find it is inappropriate to impose numerical receiving water standards at this time, other than for periphyton and algae. We consider the section 107(1)(c) to (g) standards later. Rather, if the consents are granted, we consider that the receiving water quality should be robustly monitored and this will allow informed future decisions to be made as to whether or not numerical receiving water standards are required at some later stage to avoid, remedy or mitigate adverse effects arising from the upgraded treatment system.

6.20 Monitoring

267. Wastewater quality and receiving environment monitoring is essential. This was agreed by all parties. The matter of contention before us was the scope of the monitoring required in terms of its location, constituents and frequency.
268. In our view the monitoring programme needs to be integrated across the range of various receiving environments and it needs to generate information that can either be used to assess compliance with consent conditions or determine whether consent conditions need to be amended in the future.
269. In general terms we find that the monitoring programme should be as follows:
- Monthly wastewater quality monitoring for the duration of the consents. However, we see no need to monitor the short term discharge to the Makoura Stream for constituents other than those for which discharge standards will be set. The exception to this relates to general climatic conditions.
 - Monthly monitoring of up gradient and down gradient groundwater quality at suitably representative sites. We see no need to monitor

groundwater quality within the land application area because the issue of concern is groundwater quality leaving the site. The monitoring frequency should move to a two monthly frequency five years after the new system is operational following a section 128 review.

- Monthly monitoring of receiving water quality in the Ruamahanga River at an upstream site and at the end of the zone of reasonable mixing. The monitoring frequency should move to a two monthly frequency five years after the new system is operational following a section 128 review.
- Periphyton and macroinvertebrate monitoring in the Ruamahanga River upstream of the site and at the end of the zone of reasonable mixing in the spring and again in the summer for the duration of the consents.
- Quarterly monitoring of water quality in the Makoura Stream upstream and downstream of the site for the duration of the consents.

270. We make the following additional comments. We note that there is a long history of monitoring at Wardell's Bridge. However, the appropriate compliance point is the end of the zone of reasonable mixing which the parties agree is 300m downstream of the new diffuser. However, to ensure that the utility of the monitoring record at Wardell's is not lost we find that the consent holder should also monitor water quality at Wardell's Bridge for a period of two years following the initiation of discharge from the new diffuser. This will allow the two datasets (at 300m and at Wardell's Bridge) to be correlated.

271. Given our finding that the point of compliance and receiving environment monitoring should be at the end of the zone of reasonable mixing there is no need for the one off mixing study proffered by the applicant.

272. We see no need to undertake ecological monitoring in the Makoura Stream. The Stream, as we observed on our site inspection, is in a degraded condition and it drains a relatively small urban and agricultural catchment. We consider that quarterly monitoring for a limited range of water quality constituents is sufficient. The officers recommended more frequent monitoring, but our finding is that a quarterly monitoring regime commencing immediately is more appropriate, as there is no merit in collecting vast amounts of additional information pointing to the degraded nature of the stream as a result of the existing discharge. We know that to be the case already.

273. The consent holder shall regularly report all the monitoring results, and a critical analysis of them, to the Council.

6.21 Community liaison group

274. Council officers recommended to us the imposition of a community liaison group involving Public Health, Fish and Game, DOC, Sustainable Wairarapa, iwi, adjacent landowners and any other person who has a significant interest in the Ruamahanga River.

275. The applicant did not oppose this recommendation outright, but stated a preference to expend its limited resources on a catchment wide water quality working group.

276. We consider that the comprehensive nature of the recommended consent conditions means that there is no need for a community liaison group. In making that finding we are cognisant of the statutory direction in section 36A of the Act regarding the absence of a duty to consult. We have considered the views and concerns of the above parties in this decision and do not consider that they have a role to play in the ongoing exercise of the consents, if they are granted, other than such as might occur as part of a formal section 128 review process.
277. It should be noted that our finding will not preclude the consent holder consulting with those parties on a voluntary basis if it so desires.
278. We also find that there is, however, considerable merit in a neighbourhood liaison group comprising the immediately adjoining landowners on the west side of the Ruamahanga River, particularly during the possible five year construction period. This will allow any concerns regarding unforeseen localised effects to be discussed and addressed.

6.22 Management plan

279. The applicant has volunteered to produce and adhere to an Operations and Management Plan for the wastewater treatment system. We find that to be a sensible and necessary measure and note it is consistent with Policy 4.2.14 of the Regional Plan for Discharges to Land.

6.23 Other submitter issues

280. We have addressed the wider concerns of many of the submitters in the body of this decision. However there are a number of outstanding matters that we now address.
281. Mr Ternent was concerned about his stock water supply. We note that Mr Ternent currently avoids taking water during and after a fresh due to its turbidity. However, he happily takes and uses river water at times of low flow. We note that the water he takes and uses would contain contaminants that have leached from the existing ponds. The applicant has offered to supply Mr Ternent with additional storage capacity so that he can avoid taking water when the intermittent discharge from the diffuser is occurring. We consider it to be unlikely that he would be taking water at that time in any case, as it is turbid, but we are willing to impose the consent condition volunteered by the applicant.

7 Section 105 matters

282. Section 105(1) of the Act states:

If an application is for a discharge permit or coastal permit to do something that would contravene section 15 or section 15B, the consent authority must, in addition to the matters in section 104(1), have regard to –

- (a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
- (b) the applicant's reasons for the proposed choice; and
- (c) any possible alternative methods of discharge, including discharge into any other receiving environment.

283. We have evaluated the section 105(1)(a) matters in the body of this decision. We understand that the applicant has chosen this site to capitalise on the investment they have in that site (a section 104(2A) matter) and following an assessment of alternative sites. There are only three possible alternative receiving environments, these being the land, groundwater and surface water.

284. In our view the applicant has selected a proposal that seeks to utilise all three of these receiving environments in a manner that minimises, to the extent practicable and affordable to the Masterton community, overall potential adverse effects. The applicant has also evaluated and rejected alternative methods of discharge such as spray or pivot irrigators. While we note that assessment of alternative methods has occurred, we do not find it to be a determinative matter as we are satisfied with the evaluation of the potential adverse effects of the applicant's chosen methods, namely border dyke land discharge in combination with a direct discharge to the Ruamahanga River.

285. We note that the applicant is prepared⁷⁹ to enable the treated effluent to be used by third parties as a nutrient or irrigation source in the future. We find that to be commendable, but imposing it as a consent condition would make the exercise of the consent reliant on a third party, which is unlawful.

286. This concludes our consideration of relevant section 105 matters.

8 Specific regional plan policies

287. At this stage we wish to comment on Policy 5.2.12 of the RFP given its reference to the purpose of the Act (a section 5(1) matter). That policy applies specifically to discharges of sewage into fresh water and is relevant to the discharge from the diffuser. We are satisfied that the consultative requirements of that policy have been met, although the policy does now appear to be in conflict with section 36A of the Act which must take precedence. We are also satisfied that allowing the discharge into the Ruamahanga River at times of elevated flow, when discharges to land are not feasible, does promote sustainable management.

⁷⁹ Hopman evidence in chief paragraph 5.15

288. Policy 4.2.13 of the RPD is also relevant as it refers to discharges to land from reticulated sewerage systems. We are satisfied that the matters referred to in the policy have been considered in the applicant's AEE and evidence and in our evaluation of the effects of the proposal.

9 Section 107 matters

289. We cannot grant consent if the section 107(1)(c) to (g) standards are breached. We are satisfied on the evidence that will not be the case and so consent can be granted in terms of that section of the Act.
290. There then arises the issue of whether or not the section 107 standards should be imposed as a condition of consent. In our view that is not strictly necessary as those standards form an evaluation yardstick which the applicant has passed. However, the officers have recommended the imposition of a condition containing those standards and the applicant has accepted it. We will impose it accordingly on the upgraded discharge to the Ruamahanga River.
291. We do not consider that the short term discharge to the Makoura Stream needs to meet the section 107(1)(c) to (g) standards as the discharge is a temporary discharge in accordance with section 107(2)(b) of the Act.
292. As part of that condition the officers recommended an ammonia receiving water standard. However, we have already found that it is not appropriate to impose numerical receiving water standards other than for periphyton and algae.

10 Duration and review

293. The issue of duration is a significant issue of contention. The applicant seeks 35 years and the Council officers recommend 15 years. Various submitters sought different durations.
294. Firstly, as we have already noted, section 5(2) of the Act states “ ... managing the use ... to provide for their social, economic and cultural wellbeing ...”
295. Secondly, we are aware of section 104(2A) of the Act which states:
- When considering an application affected by section 124, the consent authority must have regard to the value of the investment of the existing consent holder.
296. The applicant has a significant investment in the existing site and the reticulation system leading to it. That is not a matter to be set aside lightly.
297. We also note that the life of the pond and land discharge infrastructure being proposed is well in excess of 50 years. This is not a temporary proposal. Mr ten Hove provided evidence how the treatment system upgrade would be debt financed and the debt serviced by an increase in Masterton's urban rates. He stressed to us the matter of affordability and the level of deprivation of the Masterton urban area⁸⁰.

⁸⁰ Ten Hove supplementary evidence section 3

298. We note that in terms of the submitters we heard from the urban ratepayers were a silent majority whilst the submitters in opposition were largely domiciled in the rural area or even outside of the district.
299. It was clear to us that Masterton is an urban community for whom a proposal of this magnitude causes a significant imposition on rates, in a community which has limited economic ability to absorb major rate increases. Spreading the costs of the proposal over a greater period of time reduces that impact to a more realistic level.
300. On balance we find that the appropriate consent duration is 25 years for all consents.
301. Our reason for this is that it may take up to five years for the upgrade to be completed (and we record that we have no concerns in that regard) and thereafter we consider that it is appropriate for the upgraded wastewater treatment system to have a security of operation for 20 years.
302. At the end of 25 years we consider that a “fresh look” should be taken at the wastewater treatment and discharge system.
303. In making that finding we are mindful of the stated desire of a number of submitters, including iwi, to have a zero discharge to the Ruamahanga River. While based on the evidence of effects of the applicant’s proposal we do not consider that to be necessary at this stage, we are aware that technology advances can be rapid and in 25 years time a full land based system might well be feasible. We also note that at the end of 25 years the consent holder may have been able to address the inflow and infiltration problem and the demographics of the urban area may well have altered such that affordability concerns are not so relevant.
304. Section 128 of the Act enables conditions to be imposed that allow the Council to initiate a review of consent conditions. We find that annual review opportunities are appropriate in this case in terms of unforeseen potential adverse effects. Additionally, we find that specific reviews should be enabled at five yearly intervals to address the adequacy of the monitoring regime and the discharge and receiving environment standards. Any adjustments can then be based on reliable data collected as a result of monitoring conditions imposed. The caveat on that is that the imposition of additional numerical discharge standards should only occur if they are contained in an operative regional plan.
305. We note the support of submitters for such section 128 reviews. In particular we note that Ms Duncan⁸¹ (DOC) advised :
- “... developing a “picture” of the quality of the discharge and the appropriateness of environmental standards, (given existing water quality and other influences e.g. flow) may not be fully accurate until the activity has been operating for

⁸¹ Duncan evidence in chief paragraph 16

some time. For this reason I support the use of review conditions to ensure that the environmental standard or triggers are realistic and achievable.”

306. The applicant volunteered a condition relating to the periodic review of the overall merits of the wastewater treatment scheme. Mr Milne referred to that as a “future proofing” condition. While we are grateful for the applicant’s offer we see no need to impose the condition as in our view there is no effects based reason for it. We are satisfied with the applicant’s proposal as it stands, and any minor effects that it will generate, for the 25 year duration discussed above.

11 Determination

307. Pursuant to the powers delegated to us by the Wellington Regional Council and under section 34 of the Act, we the appointed Hearing Committee record that having read the application documents, the officer reports, the submissions received, and having listened to all of the evidence presented, and considered the various requirements of the Act we are satisfied that:

- i. There is a low level of uncertainty associated with the potential adverse effects of the Masterton District Council’s proposed treated wastewater discharges to land, water and air. The applicant has undertaken an extremely thorough assessment of potential effects using highly experienced experts and state of the art modelling techniques.
- ii. The potential adverse effects of the Masterton District Council’s proposed treated wastewater discharges to land, water and air are either minor or can be adequately avoided, remedied or mitigated by the imposition of conditions under section 108 of the Act as discussed in the detailed reasons set out in the body of this decision.
- iii. The effects of the proposed discharges, when managed in accordance with those conditions, will not be inconsistent with the policies of the operative Wellington Regional Policy Statement⁸², Regional Freshwater Plan, Regional Discharges to Land Plan, and Regional Discharges to Air Plan.
- iv. The activity is consistent with the Purpose and Principles of the Resource Management Act 1991.

308. We therefore find that we are able to **grant** the resource consent applications sought by the Masterton District Council, subject to the imposition of resource consent conditions.

12 Interim decision

309. We have made our substantive decision of the applications. The consents that will be granted are to be subject to 29 pages of detailed conditions. We took the recommended conditions from the Council officers, together with the comments from the applicant and submitters, as a starting point for the conditions that we have developed.

⁸² We have not given any weight to the Proposed RPS as it was notified during the course of the hearing and we heard no evidence regarding its contents. It is also statutorily immature.

310. However, we did not accept all of the recommendations of the officers or the comments of the applicant. We have deleted some of the recommended conditions, and created new ones either in their entirety or as a result of merging some of the recommended conditions. We also significantly reformatted the recommended conditions in order that they followed a more logical sequence.
311. The conditions are complex and the “devil is in the detail” in terms of producing conditions that are thorough but capable of practical implementation. The conditions need to be understandable and workable.
312. Consequently this decision is an interim decision in so far as it relates to the **conditions only**. We will accept written submissions from the parties regarding the detailed wording of the conditions for a period of no more than **15 working days** following the receipt of this decision.
313. We will not entertain submissions that seek to relitigate the substantive issues of contention upon which we have already made findings. We will also not entertain any submissions regarding consent duration or review periods.
314. Once we have considered all comments received we will issue a final set of conditions.

DECISION DATED at Wellington this 21st day of April 2009

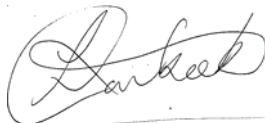
For the Wellington Regional Council:



Councillor Sally Baber
Chairman



Rob van Voorthuysen
Independent Commissioner



Te Waari Carkeek
Independent Commissioner

ONGOING CONSENTS

Schedule 1: General Conditions applying to:

WAR090066 (27160) – Discharge permit to discharge treated wastewater (effluent) to the Ruamahanga River.

WAR090066 (27161) - Discharge permit to discharge stormwater runoff from the wastewater irrigation land to the Ruamahanga River and Makoura Stream.

WAR090066 (27162) - Discharge permit to discharge treated wastewater (effluent) to land via an irrigation system.

WAR090066 (27163) - Discharge permit to discharge partially treated wastewater (effluent) to land and groundwater through the base of the existing oxidation ponds and new oxidation ponds.

WAR090066 (27164) - Discharge permit to discharge wastewater sludge and residual liquid to land from the sludge dewatering process and sludge landfill.

WAR090066 (27165) - Discharge permit to discharge odours and aerosols to air from the oxidation ponds, land irrigation system, and sludge dewatering process and landfill, and other activities from the site.

WAR090066 (27166) - Water permit to divert surface water in the Ruamahanga River during flood events by upgrading existing stopbanks.

WAR090066 (27169) - Land use consent to disturb the bed of the Ruamahanga River arising from construction and maintenance of the diffuser outfall and erosion protection works adjacent to the existing oxidation ponds.

WAR090066 (27170) - Discharge permit to discharge sediment-laden stormwater to the Ruamahanga River and Makoura Stream arising from bulk earthworks.

Consent Duration

1. These consents shall be for a duration of 25 years following the date of commencement.

Works in accordance with application and plans

2. The location, design, implementation and operation of the activity shall be in general accordance with the consent application lodged with the Wellington Regional Council and plans in Appendix D of the AEE except where they are superseded by the wipe-off drain detail as presented in the Archer supplementary evidence 30 March 2009 (his revised Attachment D) and modified Drawing C625 for the gravel borrow areas, showing sightlines when hay bales are installed as a noise/dust control barrier, as included in the Archer supplementary evidence 12 March 2009 (his Attachment H).

3. In the event of any inconsistencies between the application and later information provided by the applicant, the most recent information applies. In the event of any inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.

Management Plans

4. Where a management plan is required to be submitted as a condition of consent it shall:
 - (a) be forwarded to the Manager Environmental Regulation, Wellington Regional Council;
 - (b) address the matters set out in the relevant condition; and
 - (c) be to the satisfaction of the Wellington Regional Council.

Advice note: The term “to the satisfaction of the Wellington Regional Council” means that the management plan shall be certified in writing by the Wellington Regional Council as meeting condition 3(b).

Pond lining and construction

5. The consent holder shall submit to the Manager Environmental Regulation, Wellington Regional Council, at least one month prior to the commencement of construction activities, a “Pond Lining Management Plan” that includes but is not limited to:
 - (a) identifying the source of pond lining material;
 - (b) the placing procedure for the lining material;
 - (c) a testing and quality control regime to demonstrate the attainment of the permeability set in condition 6; and
 - (d) remediation, including pond infilling.
6. Constructed ponds shall be lined with suitable material to ensure permeability does not exceed 5×10^{-9} m/s. Should an earthen liner be used, it shall be no less than 400mm in depth. Measures shall be taken to prevent cracking of the liner, including above the low water level in the wastewater ponds.
7. The wastewater ponds shall have a “live storage” capacity of no less than 275,000m³.

Progress reports

8. The consent holder shall provide to the Manager Environmental Regulation, Wellington Regional Council, an annual report detailing progress of the upgrade of the wastewater treatment plant. The first report shall be due twelve months after the commencement of these consents with subsequent reports provided at twelve monthly intervals thereafter until such time that all construction works are completed and commissioned. The annual report shall as a minimum include:
 - (a) a time line for the upgrade works and comment on any changes to the timeline;
 - (b) a list of works undertaken in the previous twelve months; and

- (c) a list and time line of proposed works for the forthcoming twelve months.

Inflow and Infiltration

- 9. The consent holder shall continue to work to reduce the influence of groundwater inflows and stormwater infiltration on wastewater flows entering the treatment plant. This shall include the preparation and implementation of a ten year “Inflows and Infiltration Reduction Management Plan”. That Plan shall be completed and provided to the Manager Environmental Regulation, Wellington Regional Council, within six months of the commencement of these consents.

Operations and Management Plan

- 10. No later than six months from commencement of the consent, the consent holder shall complete an “Operations and Management Plan” which sets out measures to enable the effective and efficient operation of the wastewater treatment and land discharge system. The Plan shall be provided to the Manager Environmental Regulation, Wellington Regional Council. The wastewater treatment and land discharge system shall be managed and operated in accordance with this Plan, which shall be updated within six months of the commissioning of the upgraded wastewater treatment system.

The Plan shall include as a minimum:

- (a) a brief description of the wastewater treatment and discharge system, including a site map showing as a minimum the location of the wastewater influent pipeline, the oxidation and maturation ponds and any other treatment devices, the diffuser to the Ruamahanga River, discharge points to the Makoura Stream, the layout of the border dyke land discharge system, infiltration beds for the wipe off drains, and monitoring sites;
- (b) operational management and control of the land discharge system including application locations, application depths, application return periods, and soil moisture monitoring;
- (c) on-site responsibilities, including operation and maintenance of the influent pipeline to the site;
- (d) how the wastewater diffuser to the Ruamahanga River will be maintained to ensure it remains intact, is positioned correctly, and how the diffuser outlets control the necessary dilution required to ensure compliance with conditions of these consents;
- (e) the proposed cut and carry pasture or crop regime, including recording of dry matter and nitrogen removal rates;
- (f) operational management and control of the oxidation and maturation ponds (new and existing) and the sludge drying and disposal operation;
- (g) daily, weekly and monthly maintenance checks;
- (h) monitoring procedures; and
- (i) contingency measures in the event of system malfunctions or breakdowns.

Records of maintenance, malfunctions and breakdowns shall be kept in a log and a copy of the log shall be made available to any Wellington Regional Council officer on request.

The Operations and Management Plan shall be reviewed annually during the first 7 years following the commencement of these consents and two yearly after that. Any amendments to the Plan shall be provided to the Manager Environmental Regulation, Wellington Regional Council.

Complaints

11. The consent holder shall keep a record of any complaints received regarding the construction or operation of the wastewater treatment and disposal system. The record shall contain the following details:
 - (a) name and address of the complainant;
 - (b) identification of the nature of the complaint;
 - (c) date and time of the complaint and of the alleged event;
 - (d) weather conditions at the time of the complaint; and
 - (e) any measures taken to address the cause of the complaint

The consent holder shall notify the Manager Environmental Regulation, Wellington Regional Council, of any complaints received within twenty-four hours of them being received by the consent holder, or the next working day.

The consent holder shall forward to the Manager Environmental Regulation, Wellington Regional Council, a copy of any complaints recorded in the annual report required by condition 13 of these General Conditions.

Monitoring Reports

12. The consent holder shall provide a report to the Manager Environmental Regulation, Wellington Regional Council, in electronic and written format, by no later than the last day of each calendar month incorporating the results of all monitoring undertaken in accordance with conditions 7 to 17 of Schedule 2 of these consents for the preceding calendar month. The monthly report shall include copies of the laboratory analytical results and reasons for any non-compliance with standards imposed by consent conditions and subsequent actions undertaken to remedy the non-compliance.
13. The consent holder shall provide to the Manager Environmental Regulation, Wellington Regional Council, in electronic and written format, an annual monitoring report by 31 August each year summarising compliance with the conditions of these consents. The monitoring report shall cover the preceding 12 month period from 1 July to 30 June inclusive. The report shall include as a minimum:
 - (a) a summary of all monitoring undertaken in accordance with the conditions of these consents and a critical analysis of the monitoring information in terms of compliance with consent conditions;

- (b) a discussion of any trends or changes in environmental effects evident from the monitoring data, both within the annual reporting period and compared to previous years;
- (c) a summary of nitrogen application rates for any land discharge portion of the site and crop yields removed from the farm, both in kg N/ha/yr on a per border strip basis;
- (d) a summary of any groundwater inflow and stormwater infiltration reduction measures implemented in the preceding 12 months and a summary of planned measures for the coming 12 months;
- (e) commentary on the overall compliance with the conditions of these consents;
- (f) any reasons for non-compliance or difficulties in achieving compliance with the conditions of these consents;
- (g) any recommendations for alterations or additions to the monitoring programmes; and
- (h) any other issues considered important by the consent holder.

Warning signage, public information, and neighbour liaison

14. For the duration of these consents, the consent holder shall:
- (a) install and maintain appropriate signage on the true right river bank in the immediate vicinity of the wastewater diffuser, at both ends of Wardell's Bridge, and at the public access track adjacent to the Ruamahanga River at the northern end of the site. The signage shall:
 - i. provide clear identification of the diffuser location and the nature of the discharge;
 - ii. advise that at low flows when the river appears clean the water quality is likely to be safe for swimming;
 - iii. advise that at high flows when the river appears dirty the water quality is likely to be unsafe for swimming due to microbiological contamination;
 - iv. advise that swimming is not recommended for at least 24 hours after the river is again running clear after a high flow has receded;
 - v. provide a 24-hour contact phone number; and
 - vi. be visible to the public visiting the area from a distance of 10 metres.
 - (b) maintain appropriate signage on the formal access points to the site warning that partially treated wastewater is discharged to the land.

Written confirmation of the signage wording, size and placement shall be provided to the Manager Environmental Regulation, Wellington Regional Council, within three months of the commencement of these consents and again within three months following the installation of the diffuser outfall.

15. The consent holder shall develop and implement a communication programme designed to inform the Masterton community about the public health risks posed by swimming in the Ruamahanga River at times of high flow when the river appears dirty. Written confirmation of the communication programme shall be provided to the Manager Environmental Regulation, Wellington Regional Council, within three months of the commencement of these consents.

16. The consent holder shall in September of each year for the duration of these consents convene and host a meeting of the landowners located on the western side of the Ruamahanga River immediately adjoining the wastewater treatment plant site boundary and the Manager Environmental Regulation, Wellington Regional Council. The purpose of the meeting shall be to communicate the findings of the annual report required under condition 13 and to provide the adjoining neighbours with the opportunity to raise concerns they may have regarding effects arising from the construction or operation of the wastewater treatment and disposal system. The meeting shall be held in Masterton and the consent holder shall take minutes of the meeting (including any actions agreed to in response to meeting participant concerns) and shall circulate these minutes to all landowners immediately adjoining the wastewater treatment plant site boundary and the Manager Environmental Regulation, Wellington Regional Council.

Breakdowns and emergency notification

17. The consent holder shall provide a 24 hour contact number to the Manager Environmental Regulation, Wellington Regional Council, in case emergency contact is required.
18. The consent holder shall notify the Manager Environmental Regulation, Wellington Regional Council, as soon as practicable and, as a minimum requirement, within 48 hours of any accidental discharge, plant breakdown or other contingency which is likely to result in an exceedance of the discharge standards of these consents.

Review and charges

19. Wellington Regional Council may review any or all conditions of these consents by giving notice of its intention to do so pursuant to section 128 of the Resource Management Act 1991, at any time within one month of 31 August for each year for the term of these consents, for any of the following reasons:
 - (a) to address any adverse effects on the environment arising from the exercise of these consents;
 - (b) to avoid, remedy or mitigate any significant adverse effect on the environment arising from the discharges authorised by these consents.

The review of conditions shall allow for the deletion or amendment of conditions of these consents; and the addition of any such new conditions as are shown to be necessary to avoid, remedy or mitigate any significant adverse effects on the environment.

20. Wellington Regional Council may review any or all conditions of these consents by giving notice of its intention to do so pursuant to section 128 of the Resource Management Act 1991, at the following times and for the following reasons:
 - (a) within one month of 31 August two years after the commencement of a discharge from the diffuser to the Ruamahanga River and every five

- years thereafter to amend the frequency of groundwater and surface water monitoring and the constituents sampled;
- (b) within one month of 31 August two years after the commencement a discharge from the diffuser to the Ruamahanga River and every five years thereafter to amend (either up or down) or add to or delete from the numerical wastewater discharge standards imposed by these consents;
 - (c) within one month of a regional plan becoming operative which sets rules relating to minimum standards of water quality, and in the Wellington Regional Council's opinion it is appropriate to review the conditions of these consents in order to enable the standards set by the plan to be met.

The review of conditions shall allow for the deletion or amendment of conditions of these consents; and the addition of any such new conditions as are shown to be necessary to avoid, remedy or mitigate any significant adverse effects on the environment

- 21. The Wellington Regional Council shall be entitled to recover from the consent holder the costs of the conduct of any review, calculated in accordance with and limited to that Council's scale of charge in force and applicable at that time pursuant to Section 36 of the Resource Management Act 1991.
- 22. A resource management charge, set in accordance with Section 36(2) of the Resource Management Act 1991 shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of resource consents and for the execution of its functions under Section 35 (duty to gather information, monitor and keep records) of the Act.

Schedule 2: Specific Resource Consent Conditions

WAR 090066 (27160) – Discharge permit to discharge treated wastewater (effluent) to the Ruamahanga River.

WAR 090066 (27161) - Discharge permit to discharge stormwater runoff from the wastewater irrigation land to the Ruamahanga River and Makoura Stream.

WAR 090066 (27162) - Discharge permit to discharge treated wastewater (effluent) to land via an irrigation system.

WAR 090066 (27163) - Discharge permit to discharge partially treated wastewater (effluent) to land and groundwater through the base of the existing oxidation ponds and new oxidation ponds.

These consents shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

Commissioning of the diffuser to the Ruamahanga River

1. The diffuser to the Ruamahanga River shall be commissioned as soon as practicable following the construction of the new oxidation and maturation ponds and the discharge to land border dyke system and in any event no later than 31 October 2012.

Discharge regime prior to the commissioning of the diffuser to the Ruamahanga River

2. From the commencement of these consents until the commissioning of the diffuser to the Ruamahanga River treated wastewater shall be discharged to Makoura Stream up to a maximum instantaneous discharge rate of 700l/s.

Discharge regime after the commissioning of the diffuser to the Ruamahanga River

3. Following the commissioning of the diffuser to the Ruamahanga River treated wastewater shall be discharged to the Ruamahanga River:
 - (a) prior to the full land discharge area becoming operational (including the area of the existing ponds which is to be converted to border dykes) when the mean hourly river flow at Wardell's Bridge gauge station is greater than $6.15\text{m}^3/\text{s}$ and less than $300\text{m}^3/\text{s}$;
 - (b) following the full land discharge area becoming operational (including the area of the existing ponds which is to be converted to border dykes):
 - (i) during 1 November to 30 April inclusive, when the mean hourly river flow at Wardell's Bridge gauge station is greater than $12.3\text{m}^3/\text{s}$ and less than $300\text{m}^3/\text{s}$; or
 - (ii) during 1 May to 31 October inclusive, when the mean hourly river flow at Wardell's Bridge gauge station is greater than $6.15\text{m}^3/\text{s}$ and less than $300\text{m}^3/\text{s}$; and

- (c) at all times when the instantaneous flow in the river at Wardell's Bridge gauge station is at least 30 times the instantaneous wastewater discharge rate; and
- (d) at all times up to a maximum instantaneous discharge rate of 1200l/s.

Discharge standards prior to the commissioning of the diffuser to the Ruamahanga River

- 4. From the commencement of these consents until the commissioning of the diffuser to the Ruamahanga River treated wastewater discharged to Makoura Stream shall comply with the relevant wastewater discharge standards in Table 1. The condition 4 standards in Table 1 are a rolling geometric mean and shall be calculated based on the last 12 consecutive sample results from monitoring undertaken in accordance with condition 8.

Discharge standards following the commissioning of the diffuser to the Ruamahanga River

- 5. Following the commissioning of the diffuser to the Ruamahanga River the treated wastewater discharged to the Ruamahanga River and to land shall comply with the relevant wastewater discharge standards in Table 1.

Ternent water supply

- 6. Following the commissioning of the diffuser to the Ruamahanga River, the consent holder shall provide additional storage capacity for the Ternent river intake supply to enable sufficient water to be taken from the river during periods when there is no discharge occurring from the diffuser.

Wastewater quantity monitoring

- 7. The consent holder shall continuously measure and maintain records of the daily wastewater flows entering the treatment plant and the instantaneous discharge rate of the treated wastewater discharged to the Makoura Stream, the Ruamahanga River and the land discharge area. The flow measuring devices shall be capable of continuously measuring wastewater flows of magnitudes up to and beyond the maximum instantaneous discharge rate and shall be maintained to ensure that measurement error is no more than $\pm 10\%$.

Advice Note: There shall be no requirement to monitor the volume or rate of stormwater discharged to the Makoura Stream from the land discharge area.

Wastewater quality monitoring prior to the commissioning of the diffuser to the Ruamahanga River

- 8. From the commencement of these consents until the commissioning of the diffuser to the Ruamahanga River the discharge of treated wastewater and general climatic conditions shall be monitored for the parameters in column 2⁸³ and at the detection limits and frequencies set in columns 3 and 4 of Table 2.

⁸³ The relevant parameters are denoted by a large dot in column 2 of Table 2.

Wastewater quality monitoring following the commissioning of the diffuser to the Ruamahanga River

9. Following the commissioning of the diffuser to the Ruamahanga River the treated wastewater discharged to the Ruamahanga River and to land and general climatic conditions shall be monitored for all of the parameters in Table 2 at the detection limits and frequencies set in columns 3 and 4 of Table 2.

Surface water quality monitoring

10. From the commencement of these consents until their expiry (25 years from commencement) the consent holder shall undertake monitoring of the Makoura Stream for the parameters and detection limits set in Table 3. The monitoring frequency shall be quarterly other than for *E.coli* which shall be monitored fortnightly in the summer and monthly in the winter. The locations of the sampling shall be:
 - (a) Makoura Stream, upstream of the oxidation pond discharge, at or about Map Reference NZMS 260 T26:352-202.
 - (b) Makoura Stream, downstream of the existing (as at 2009) oxidation pond discharge at or about Map Reference NZMS 260 T26:353-197
11. To coincide with the monitoring undertaken in accordance with condition 10, the consent holder shall measure (spot gauge) the flow in the Makoura Stream at the locations set in condition 10. The flow gauging shall be carried out by a suitably qualified or experienced person and the flow gauging error shall be no more than $\pm 10\%$.
12. From the commencement of these consents until their expiry the consent holder shall undertake monitoring of the Ruamahanga River for the parameters and at the detection limits set in Table 3. The monitoring frequency shall be monthly other than for *E.coli* which shall be monitored fortnightly in the summer and monthly in the winter. The locations of the sampling shall be:
 - (a) upstream of the wastewater outfall to the Ruamahanga River (downstream of the influence of the Whangaehu River confluence and upstream of the diffuser outfall at a precise location determined in consultation with the Manager Environmental Regulation, Wellington Regional Council);
 - (b) 300 m downstream of the diffuser location (at or about Map Reference NZMS 260 T26:353-197); and
 - (c) at Wardell's Bridge (at or about Map Reference NZMS 260 T26:346-190.

The monitoring required under condition 12(c) at Wardell's Bridge shall only be undertaken from the commencement of these consents until two years following the commissioning of the diffuser to the Ruamahanga River. Thereafter there shall be no obligation on the consent holder to undertake any Table 3 monitoring at Wardell's Bridge.

13. From the commencement of these consents until their expiry, and coinciding with a monthly water sampling event under condition 12, once during the period 1 September to 30 November and once during the period 1 February to 30 April, the consent holder shall undertake macroinvertebrate sampling and an assessment of the percentage cover of filamentous algae and cyanobacterial mats. The locations of the assessments and sampling shall be:
- (a) upstream of the wastewater outfall to the Ruamahanga River (downstream of the influence of the Whangaehu River confluence and upstream of the diffuser outfall at a precise location determined in consultation with the Manager Environmental Regulation, Wellington Regional Council);
 - (b) 300 m downstream of the diffuser location (at or about Map Reference NZMS 260 T26:353-197).

The periphyton and algae assessment shall include:

- (c) an assessment of the percentage cover of both filamentous algae and algal mats (to the nearest 5%) at 10 points across each of four transects encompassing both riffle and run habitat and extending across the width of the river at each sampling site;
- (d) collection of a composite periphyton sample from riffle and run habitat (a composite of scrapings from 10 rocks, 5 from a riffle and 5 from a run) across each sampling site using method QM-1a from the Stream Periphyton Monitoring Manual (Biggs & Kilroy 2000); and
- (e) analysis of periphyton samples for community composition and abundance using the Biggs & Kilroy (2000) relative abundance method, ash free dry weight and chlorophyll *a*.

The macroinvertebrate sampling shall follow Protocols C3 and P3 from the Ministry for the Environment's report on protocols for sampling macroinvertebrates in wadeable streams (Stark et al. 2001). This shall involve:

- (f) collection of 5 replicate 0.1m² Surber samples at random within a 20m section of riffle habitat at each sampling site;
- (g) full count of the macroinvertebrate taxa within each replicate sample to the taxonomic resolution level specified for use of the Macroinvertebrate Community Index (MCI); and
- (h) enumeration of the results as taxa richness, MCI, QMCI, %EPT taxa and %EPT individuals.

Groundwater quality monitoring

14. From the commencement of these consents until their expiry the consent holder shall undertake monitoring of the groundwater for the parameters and at the detection limits set in Table 4. The monitoring frequency shall be monthly. The consent holder shall collect representative groundwater samples in accordance with the Wellington Regional Council groundwater sampling protocol. The locations of the monitoring bores shall be as follows and as shown on Plan 1 attached to and forming part of these consents:
- (a) HB2
 - (b) HB3
 - (c) HB4

- (d) HB11
- (e) HB13
- (f) New well west of HB13
- (g) HB16
- (h) HB21
- (i) Two new wells west of HB21

The final locations of wells (f) and (i) shall be to the satisfaction of Manager Environmental Regulation, Wellington Regional Council.

15. For five years following the commencement of the discharge to land the consent holder shall undertake six monthly monitoring of the domestic bores on the properties of M Gardiner, P Martin and A Wullems for *E.coli* and nitrate nitrogen. The monitoring required by this condition need not occur if the landowners concerned deny access to the bores.

Soil monitoring

16. The consent holder shall characterise the quality and variability of the physical and chemical properties across the land discharge area. Unless otherwise approved in writing by the Manager Environmental Regulation, Wellington Regional Council, the consent holder shall undertake soil monitoring during June or July of each year. Testing shall be from each soil type (Greytown sandy loam and Greytown silt loam) which shall be divided into three separate areas from which a representative composite sample shall be taken and the following parameters reported upon:
- (a) infiltration capacity (measured under saturated conditions insitu) at two sites within the three separate areas of each soil type as nominated above. Monitoring shall start one year after land discharge has started and then every three years thereafter;
 - (b) bulk density, pH, exchangeable sodium, Olsen phosphorus, total nitrogen%, organic carbon%, C:N ratio, anion storage capacity, cation exchange capacity. Analyses shall be undertaken on composite samples for each soil type at sampling depths of: 0-75 mm and 75-150mm. Monitoring shall be annually every year, starting the year before land discharge commences; and
 - (c) in conjunction with the testing above, the consent holder shall test for the elements Total As, Cd, Co, Cr, Cu, Fe, Hg, Mn, Ni, Pb and Zn in both the irrigated and non-irrigated soils, within the 0-75 mm soil depth. Monitoring shall be every 5 years, starting the year before land discharge commences.

Advice Note: A composite sample shall be made up of five core samples spaced at no closer than 20 metres. Where possible, samples in successive years shall be at similar locations.

Crop monitoring

17. The consent holder shall record crop management practices across the site, including:

- (a) crop renovation areas, species used and reasons for the renovation;
- (b) dry matter content removed from the site;
- (c) the nitrogen and phosphorus content of batches of all dry matter removed from the site;
- (d) any fertiliser application, including type and amount applied; and
- (e) records of any grazing undertaken.

Sampling and analysis

18. All sampling techniques employed in respect of the conditions of these consents shall be to the technical satisfaction of the Manager Environmental Regulation, Wellington Regional Council. Unless specifically approved otherwise in writing by the Manager Environmental Regulation, Wellington Regional Council, all analytical testing undertaken in connection with these consents shall be performed by a laboratory that is IANZ accredited for the analytical tests.

Table 1

Parameter	Condition 4 standards	Condition 5 standards		
		Percentile compliance standard	Sampling frequency/Number of samples	Compliance (Exceedances over period)
BOD5 (g/m ³)	32	42 90%ile	Monthly/12	No more than 3 over 1 year
Filtered BOD (g/m ³)		28 90%ile	Monthly/12	No more than 3 over 1 year
Suspended solids (g/m ³)	42	91 90%ile	Monthly/12	No more than 3 over 1 year
Total phosphorus (g/m ³)	3.3			
Dissolved reactive phosphorus (g/m ³)		4.0 90%ile	Monthly/12	No more than 3 over 1 year
Total Nitrogen (g/m ³)	13	20 90%ile	Monthly/12	No more than 3 over 1 year
Nitrate Nitrogen (g/m ³)		7.5 90%ile	Monthly/12	No more than 3 over 1 year
Nitrite Nitrogen (g/m ³)		2.0 90%ile	Monthly/12	No more than 3 over 1 year
Ammonia-Nitrogen (g/m ³)	2.0 (summer) 7.0 (winter)	14 90%ile 16 90%ile	Monthly/6 Monthly/6	No more than 2 over 6 months No more than 2 over 6 months
<i>Escherichia coli</i> cfu100 mL)	1200 (summer)	330 median 1800 95%ile	Monthly/6	No more than 5 above 330 over 6 months No more than 1 above 1800 over 6 months
<i>Escherichia coli</i> (cfu100 mL)	1200 (winter)	1,000 median	Monthly/6	No more than 5 above 1000 over 6 months
Metals		ANZECC (2000)	Annually	95%ile trigger values
TPH, PAHs, SVOCs, VOCs		ANZECC (2000)	Annually	95%ile trigger values

Advice Note: 'Summer' is defined as the period 1 November to 30 April inclusive and 'Winter' is defined as the period 1 May to 31 October inclusive

Table 2

Parameter	Condition 8 parameters	Measurement unit and detection limit	Frequency
Rainfall	•	0.5 mm	Daily
Temperature	•	0.1 °C	Weekly
Dissolved oxygen	•	0.1 g/m ³	Weekly
pH	•	0.1 pH	Monthly
Electrical conductivity		10 uS/cm	Monthly
Colour		Visual observation	Monthly
Foam and Scum		Visual observation	Monthly
Total BOD ₅	•	1 g/m ³	Monthly
Soluble BOD ₅		1 g/m ³	Monthly
Total suspended solids	•	1 g/m ³	Monthly
<i>Escherichia coli</i>	•	10 cfu/100 mL	Monthly
Ammoniacal nitrogen	•	0.1 g/m ³	Monthly
Nitrite nitrogen		0.1 g/m ³	Monthly
Nitrate nitrogen		0.1 g/m ³	Monthly
Total kjeldahl nitrogen	•	0.1 g/m ³	Monthly
Total nitrogen (by calculation)	•	0.1 g/m ³	Monthly
Dissolved reactive phosphorus		0.1 g/m ³	Monthly
Total phosphorus	•	0.1 g/m ³	Monthly
Sodium		0.05 g/m ³	Six monthly
Calcium		0.05 g/m ³	Six monthly
Chloride		0.5 g/m ³	Six monthly
Total Potassium		0.05 g/m ³	Six monthly
Total recoverable arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver and zinc		0.001 g/m ³	Annually in February or March
Alkalinity & hardness		0.1 g/m ³	Annually in February or March
Semi-volatile organic compounds		0.001 g/m ³	Annually in February or March
Volatile organic compounds		0.001 g/m ³	Annually in February or March

Table 3

Parameter	Measurement unit and detection limit	Makoura	Ruamahanga
<i>Escherichia coli</i>	10 cfu/100 mL	•	•
Total organic carbon	0.5 g/m ³		•
Ammoniacal nitrogen	0.01 g/m ³	•	•
Nitrite nitrogen	0.002 g/m ³		•
Nitrate nitrogen	0.002 g/m ³		•
Total nitrogen	0.01 g/m ³	•	•
Dissolved reactive phosphorus	0.004 g/m ³		•
Total phosphorus	0.004 g/m ³	•	•
Water temperature	0.1 °C	•	•
Dissolved Oxygen	0.1 g/m ³ and 1 % saturation	•	•
pH	0.1 pH	•	•
Electrical conductivity	0.1 µS/cm	•	•

Table 4

Parameter	Measurement unit and detection limit
Water level	0.01 m
Carbonaceous Biochemical Oxygen Demand	1.0 g/m ³
Dissolved Reactive Phosphorus	0.1 g/m ³
Ammoniacal nitrogen	0.1 g/m ³
Dissolved Inorganic Nitrogen	0.1 g/m ³
Nitrate nitrogen	0.1 g/m ³
Chloride	0.1 g/m ³
pH	0.1 g/m ³
Electrical conductivity	0.1 g/m ³
<i>Escherichia coli</i>	1 cfu/100 mL

Surface water quality receiving environment standards

19. The consent holder shall operate the outfall diffuser in the Ruamahanga River to ensure that the discharge is reasonably mixed 300 m downstream of the diffuser.
20. Following the commissioning of the diffuser to the Ruamahanga River the treated wastewater discharged to the Ruamahanga River and to land shall not give rise to any of the following effects in the Ruamahanga River 300m downstream of the diffuser location (at or about Map Reference NZMS 260 T26:353-197):
 - (a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - (b) any conspicuous change in the colour of the river;
 - (c) a reduction in horizontal visibility greater than 33% (black disc measurement) compared with upstream of the discharge;
 - (d) any emission of objectionable odour;
 - (e) the rendering of fresh water unsuitable for consumption by farm animals;
 - (f) any significant adverse effects on aquatic life;
 - (g) the maximum cover of the bed by periphyton as filamentous growths (more than 2cm long) to exceed 30%;

- (h) The maximum cover of the bed by periphyton as diatom or cyanobacteria mats (more than 0.3cm thick) to exceed 60%; and
- (i) The biomass of periphyton as filamentous growths or mats on the bed to exceed 120mg chlorophyll *a*/m² over a representative reach.

The receiving water standards in (g) to (i) shall not be considered to be breached if the standards are already breached at the upstream site identified in condition 13(a).

Land discharge requirements

21. The discharge of treated wastewater to land shall not result in the following:
- (a) an annual application depth exceeding 2,500mm;
 - (b) the application depth over the length of an irrigation bay exceeding an average of 100 mm during a single application;
 - (c) the average daily application rate exceeding 10mm (including rainfall);
 - (d) the distribution efficiency being less than 75% during any single application as observed by visual assessment of the wetted front;
 - (e) the application uniformity being less than 50% during any single application;
 - (f) any significant surface water, including ponding, on the irrigation or wipe-off areas, as a result of irrigation, for a period of more than 24 hours after application; and
 - (g) wastewater being applied to land within 50m of any neighbouring property boundary.

Advice Notes:

Compliance with (b) above shall be determined by a volumetric calculation over the area potentially irrigated.

Compliance with (c) above shall be determined by ensuring that preferential flow does not result and there is a visual coverage (area that is wetted) of at least 75% of each bay irrigated on any given day.

Compliance with (d) above shall be determined by visual assessment and in particular ensuring that the duration of active water application at a point 25% of the distance down a bay is no more than 50% longer than a point 75% down the same bay on any given day.

22. No treated wastewater shall be discharged to land where:
- (a) the annual nitrogen loading of wastewater will exceed 300kg/ha/yr;
 - (b) the mass of nitrogen and phosphorus applied annually as fertiliser and effluent exceeds 100kg/ha and 30kg/ha respectively more than that removed in the harvested biomass;
 - (c) there is surface water ponding on any irrigation area;
 - (d) anaerobic conditions exist at the soil surface;
 - (e) prior to discharge a wheeled tractor cannot be driven over the area to be irrigated without leaving wheel rutting;
 - (f) there is bare land, including weeds, covering more than 15% of the area to be irrigated;

- (g) pasture, or a crop, has less than 4 weeks of growth after being replanted or sown, except in dry weather conditions where the pasture or crop is under stress; or
- (h) the wipe-off volume exceeds 20% of the applied volume.

Advice Notes:

A bay is defined by the wetted area between two borders and its length is from the pop up valve (water source) to the furthestmost wetted extent in that bay. Surface ponding is deemed to be continuous surface water covering an area of more than 10 square metres or saturated soil conditions which cause an adverse effect on grass growth.

23. The annual nitrogen loading as a consequence of:
- (a) the exercise of these consents;
 - (b) the application of nitrogen based fertiliser; and
 - (c) the application of any other material.
- shall not exceed a maximum of 600 kilograms per hectare per year.

Land discharge management

24. The consent holder shall appoint a suitably experienced Irrigation Operator to manage the site.

Advice Note: A suitably experienced person would be considered as someone with a farming background and irrigation experience.

25. The Irrigation Operator shall:
- (a) ensure that the land discharge area is used primarily as a cut and carry operation;
 - (b) allow the occasional grazing of sheep on the borders;
 - (c) not allow the grazing of cattle or horses on the borders;
 - (d) allow the application of fertilisers to optimise pasture or crop growth;
 - (e) allow the growing of crops other than pasture; and
 - (f) provide a 2 day withholding period following wastewater discharge and prior to any animal grazing.
26. The consent holder shall inspect the site at monthly intervals and as soon as practicable after heavy rainfall events, to record the presence of seepages, developing wet areas, changes in pasture or crop growth, and any other physical change to the site which may adversely impact on the performance of the land discharge system. Records shall be kept of those inspections and made available to the Manager Environmental Regulation, Wellington Regional Council, upon request.
27. The application of wastewater to buffer areas using drip irrigation shall comply with the requirements of conditions 21(a) and (c), 22(a) and (d), and 23.
28. Wipe-off drains shall be managed so that they:
- (a) do not intercept or collect groundwater;

- (b) do not allow the direct or immediate passage (through less than 5m of soil) to surface water drainage which enters the Makoura Stream or Ruamahanga River; and
 - (c) do not allow groundwater to be returned to the treatment ponds.
29. After a period of 24 months operation of at least 50ha of the land discharge area, the consent holder may, subject to the satisfaction of the Manager Environmental Regulation, Wellington Regional Council, increase the average daily wastewater application rate to 200mm and the annual application depth to 4,000mm, provided that:
- (a) condition 21(c) to (g) is complied with;
 - (b) condition 22(c) to (h) is complied with;
 - (c) condition 23 is complied with; and
 - (d) the increase in application rates is limited to application areas to the east of the Makoura Stream.

WAR 090066 (27164) - Discharge permit to discharge wastewater sludge and residual liquid to land from the sludge dewatering process and sludge landfill.

This consent shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

Works in accordance with application

1. This consent authorises the landfilling of sludge to the area identified as “Sludge Landfill (~0.7 ha)” on plan Proposed Pond Layout Plan 3202216-560-C602 that formed part of the application.
2. No discharge of wastewater shall occur over the sludge landfill area.

Landfill lining and management plan

3. The sludge landfill shall be lined with suitable material to ensure permeability does not exceed 5×10^{-9} m/s. Should an earthen liner be used, it shall be no less than 400mm in depth.
4. The consent holder shall submit, at least one month prior to any placement of sludge in the landfill, a “Landfill Management Plan” which includes, but is not limited to:
 - (a) design and installation of lining material;
 - (b) design and installation of capping material;
 - (c) design and management of leachate retention and handling facilities;
 - (d) moisture content requirements for placed sludge;
 - (e) management of subsidence and slumping;
 - (f) management of landfill gases;
 - (g) identifying the source of the sludge landfill lining material;
 - (h) the placing procedure for the lining material; and
 - (i) a testing and quality control regime to demonstrate the attainment of the nominated permeability.
5. The consent holder shall ensure sufficient and appropriate rock armouring is used to protect the exterior of the sludge landfill wall from river erosion.

Dewatering and sludge drying

6. The drying of sludge from the base of the existing wastewater treatment ponds shall be undertaken in accordance with the following requirements:
 - (a) Sludge shall be relocated within the base of the existing ponds to facilitate drying and avoid contact with groundwater;
 - (b) Sumps shall be created to assist with dewatering, with ‘clean’ water being pumped to the Makoura Stream and contaminated water to the new wastewater ponds;
 - (c) Sludge with a moisture content of more than 95 %, as measured on a wet weight basis, (i.e. less than 5% solids) may be pumped to the new wastewater ponds;

- (d) No sludge is to be dried or stored, including temporarily, on land which is outside the existing wastewater ponds or the new sludge landfill site. This includes not allowing sludge to be stored on the surface of any remediated pond area; and
- (e) All sludge shall be removed from the base of the existing wastewater ponds within 24 months of wastewater influent discharge to the new ponds commencing.

Advice Note: If dried sludge is to be used as a soil conditioner, or there is a need for temporary storage outside the base of the existing pond, then an additional consent may be required.

- 7. No residual pond sludge, to within practical excavation limits, shall remain in the base of existing ponds following remediation.

Advice Note: For the purpose of this condition, practical excavation limits refer to not having material in clumps or layers which are greater than 25 mm in depth.

Landfill operation

- 8. The operation of the sludge landfill shall comply with the following requirements:
 - (a) Only sludge from the dewatering of the existing wastewater treatment ponds may be placed in the landfill;
 - (b) Only sludge that has a moisture content of no greater than 65%, as measured on a wet weight basis (i.e. 35% solids), may be placed in the landfill;
 - (c) Leachate from the sludge landfill shall be collected and discharged to the new wastewater treatment ponds; and
 - (d) Stormwater from the landfill shall be collected and discharged to ground soakage. It shall not contain any sludge material or leachate.

WAR 090066 (27165) - Discharge permit to discharge odours and aerosols to air from the oxidation ponds, land irrigation system, and sludge dewatering process and landfill, and other activities from the site.

This consent shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

1. There shall be no discharges to air that are noxious, dangerous, offensive or objectionable resulting from the operation of the Masterton wastewater treatment plant and land discharge system at or beyond the boundary of the plant site as designated in the District Plan.
2. Within six months of the commencement of these consents the consent holder shall develop and implement an Odour Management Plan to address odour arising from operations. The Odour Management Plan shall include but not be limited to the recording of events which create objectionable odours or aerosols and measures and maintenance regimes to prevent objectionable odours or aerosols.
3. The Odour Management Plan shall be provided to the Manager Environmental Regulation, Wellington Regional Council, upon request.

WAR 090066 (27166) - Water permit to divert surface water in the Ruamahanga River during flood events by upgrading existing stopbanks.

This consent shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

1. The consent holder shall notify the Manager Environmental Regulation, Wellington Regional Council, at least 48 hours prior to commencement of any works, and upon completion of works so that compliance inspections may be arranged.
2. The consent holder shall implement the following procedures if archaeological artefacts or koiwi remains are discovered:
 - (a) work is to cease immediately;
 - (b) the consent holder shall contact the Manager Environmental Regulation, Wellington Regional Council, Rangitane o Wairarapa, Kahungunu ki Wairarapa and the New Zealand Historic Places Trust immediately;
 - (c) Representatives of Rangitane o Wairarapa and/or Kahungunu ki Wairarapa and the New Zealand Historic Places Trust are to be given sufficient time to carry out an investigation of the site determine any cultural issues and an appropriate course of action. At the discretion of Manager Environmental Regulation, Wellington Regional Council, this action may include a permanent or temporary cessation of work on the site; and
 - (d) Works shall not recommence until all necessary approvals have been obtained from the New Zealand Historic Places Trust.
3. The consent holder shall provide appropriate information to contractors and operational staff regarding the nature of koiwi remains and archaeological artefacts so that if they are uncovered they will be recognised as such.
4. The consent holder shall, within 3 months of completion of the work authorised by this consent, submit a completion certificate prepared by a person suitably qualified in river engineering and stopbank construction which confirms that the work has been undertaken in accordance with the application and all associated plans.
5. Any substantial damage to the stopbank structure arising from causes other than flood events shall be repaired by the consent holder as soon as practicable.
6. The consent holder shall regrass the realigned stopbank and any borrow areas as soon as practicable following the completion of works.

WAR 090066 (27168) - Land use consent to construct, place, use, and maintain a structure (diffuser outfall) in the bed of the Ruamahanga River.

AND

WAR 090066 (27169) - Land use consent to disturb the bed of the Ruamahanga River arising from construction and maintenance.

These consents shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

1. The consent holder shall notify the Manager Environmental Regulation Wellington Regional Council, at least 48 hours prior to commencement of any works, and upon completion of works so that compliance inspections may be arranged.
2. No construction works shall be carried out in the wetted channel of the Ruamahanga River during the trout-spawning period (1 June to 30 August) or within the indigenous fish migration period (1 September to 30 November).
3. The consent holder shall take all practicable steps to minimise sedimentation and increased turbidity of the Ruamahanga River during the construction, implementation and maintenance of the works, including:
 - (a) completing all works in the minimum time practicable; and
 - (b) minimising the area of disturbance at all times.
4. The consent holder shall ensure that:
 - (a) all machinery is thoroughly cleaned of unwanted vegetation (e.g. weeds), seeds or contaminants prior to entering the site;
 - (b) no contaminants (including but not limited to oil, petrol, diesel, hydraulic fluid) shall be released into water from equipment being used for the works;
 - (c) all machinery is regularly maintained in such a manner so as to minimise the potential for leakage of contaminants; and
 - (d) no machinery is cleaned, stored or refuelled within 10 metres of the river.
5. The works shall remain the responsibility of the consent holder and be maintained so that:
 - (a) any erosion, scour or instability of the stream bed that is attributable to the works carried out as part of this consent is remedied by the consent holder; and
 - (b) the structural integrity of the structure authorised by this consent remain sound.
6. During the period of construction, the consent holder, shall to the extent practicable, clear plant, equipment and any hazardous materials from the bed of the Ruamahanga River on receipt of a "Heavy Rain Warning" via the Meteorological Service providing for the possibility of a flood event likely to equal or exceed a 2-year return period.

WAR 090066 (27167) - Water permit to permanently divert the Makoura Stream around the new oxidation ponds.

This consent shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

1. The consent holder shall notify the Manager Environmental Regulation, Wellington Regional Council, at least 48 hours prior to commencement of any works, and upon completion of works so that compliance inspections may be arranged.
2. A riparian management plan consistent with Wellington Regional Council's 'Restoration Planting: A Guide to Planning Restoration Projects in the Wellington Region' shall be prepared. The Plan shall be submitted to the Manager Environmental Regulation, Wellington Regional Council, no less than 2 months prior to this consent being exercised.
3. A minimum riparian buffer of 5 metres surrounding the new stream channel shall be permanently retired from farming and riparian planting undertaken consistent with the conceptual planting diagram attached in Appendix C of the AEE (Boffa Miskell Makoura Stream Diversion: Indicative Planting Plan), unless constrained by embankment and flood protection works.
4. In diverting the bed of Makoura Stream the consent holder shall ensure that:
 - (a) The new channel is sized to ensure that the hydraulic capacity of the channel can contain a 50 year flow event;
 - (b) The new stream bed is consistent with the natural meander and flow environment of the existing channel;
 - (c) The bed of the new channel is constructed in a way that ensures that there is a minimal reduction in the base flow or transport capacity of as result of the diversion;
 - (d) The work necessary to carry out the diversion is done in the dry prior to flows being diverted into the new channel;
 - (e) Water shall be diverted in stages over several hours to allow fish to escape the falling water level in the old stream channel;
 - (f) Fish stranded by the diversion shall be recovered and transferred to the new channel as soon as practicable;
 - (g) Bed disturbance shall not damage any riverbank or cause any flooding or erosion;
 - (h) All reasonable steps shall be taken to minimise the release of sediment during the disturbance;

CONSTRUCTED RELATED CONSENTS

Schedule 3: General conditions applying to:

WAR090066 (27170) - Discharge permit to discharge sediment-laden stormwater to the Ruamahanga River and Makoura Stream arising from bulk earthworks.

WAR090066 (27171) - Discharge permit to discharge any treated wastewater and groundwater to water arising from dewatering processes at various locations.

WAR090066 (27172) - Water permit to divert and take groundwater arising from dewatering processes from cut-off and drainage trenches during construction activities.

Consent Duration

1. These consents shall be for a duration of 25 years following the date of commencement.

Procedures prior to commencement of works

2. The consent holder shall notify the Manager Environmental Regulation, Wellington Regional Council, at least 48 hours prior to commencement of each phase of works, and upon completion of each phase works so that compliance inspections may be arranged.
3. The consent holder shall ensure that a copy of these consents is kept on site at all times and presented to any Wellington Regional Council officer on request.
4. The consent holder shall provide a copy of these consents and any documents relating to these consents, to each operator or contractor undertaking works authorised by these consents, before that operator or contractor starts any works.

Advice Note: It is recommended that the consent holder verbally brief the operators or contractors regarding the conditions of these consents, prior to works commencing.

5. Should any materials from construction or earthworks works enter the Ruamahanga River channel as a result of the works including such materials washed from the site by flood events, the consent holder shall recover those materials to be extent practicable as soon as possible or otherwise ensure they do not cause a hazard.

Review and charges

5. The Wellington Regional Council may review any or all conditions of this consent by giving notice of its intention to do so in accordance with Section 128 of the Resource Management Act 1991 at any time within three months of 31 August for each year for the term of this consent to deal with any adverse effects on the receiving environment which may arise from the exercise of this consent and which it is appropriate to deal with at a later stage.

6. The Wellington Regional Council shall be entitled to recover from the consent holder the costs of the conduct of any review, calculated in accordance with and limited to that Council's scale of charge in force and applicable at that time pursuant to Section 36 of the Resource Management Act 1991.
7. A resource management charge, set in accordance with Section 36(2) of the Resource Management Act 1991 shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of resource consents and for the execution of its functions under Section 35 (duty to gather information, monitor and keep records) of the Act.

Schedule 4: Specific Resource Consent Conditions

WAR090066 (27170) - Discharge permit to discharge sediment-laden stormwater to the Ruamahanga River and Makoura Stream arising from bulk earthworks.

This consent shall be exercised subject to the following conditions together with those conditions specified in Schedule 3: General Conditions.

1. The discharge shall only be stormwater from earthworks associated with the construction of the Masterton Wastewater Treatment Plant and Disposal System Long-Term Upgrade.
2. The consent holder shall submit to the Manager Environmental Regulation, Wellington Regional Council, at least one month prior to the commencement of construction activities, an Erosion and Sediment Control Plan outlining the construction activities and all practices and procedures to be adopted in the construction of the Masterton Wastewater Treatment Plant and Disposal System Long-Term Upgrade.

The Erosion and Sediment Control Plan (ESCP) shall be prepared in accordance with Wellington's Erosion and Sediment Control Guideline 2002, and shall:

- (a) Clearly define the sediment and erosion control measures to be implemented for each stage of the works. The Plan shall include, but not be limited to:
 - (i) a locality map detailing as a minimum the location of roads, property boundaries, surface waterways, the direction of stormwater flows, and the erosion and sediment and control devices;
 - (ii) a detailed programme of works identifying:
 - (a) each stage of construction;
 - (b) an estimate of the maximum area of bare ground (cumulative total) exposed at each stage of construction;
 - (c) the volume of earthworks proposed.
 - (iii) drawings and specifications of all designated erosion and sediment control measures selected from the Erosion and Sediment Control Guidelines, including contingency measures, on-site catchment boundaries, and off-site sources of runoff
 - (iv) a programme for managing exposed areas including progressive stabilisation and minimising areas of exposed soil by:
 - (a) ensuring that any earthworks and/or vegetation clearance should where practicable, be limited to the footprint of the works; and
 - (b) staging of the construction.
 - (v) A schedule outlining the frequency and methods of inspection, monitoring and maintenance of all erosion and sediment control measures.
 - (vi) Details of any proposed monitoring as is adequate to demonstrate the effectiveness of the proposed measures.

3. The Erosion and Sediment Control Plan may be amended at any time during the construction phase. Any amendments shall be:
 - (a) only for the purpose of improving the efficiency of the erosion and sediment control measures and shall not result in reduced discharge quality into the receiving environment;
 - (b) consistent with the conditions of these consents; and
 - (c) submitted in writing to the Manager, Environmental Regulation, Wellington Regional Council, prior to any amendment being implemented.
4. All erosion and sediment control measures shall be installed prior to the commencement of any earthworks, for each stage.
5. All erosion and sediment control measures shall remain the responsibility of the consent holder, and be installed, operated and maintained efficiently and in accordance with Wellington Regional Council's Erosion and Sediment Control Guidelines for the Wellington Region (dated September 2002), and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.
6. The consent holder shall ensure that the site is audited by an appropriately qualified person on a monthly basis to ensure that the erosion and sediment control methods are being maintained in accordance with the Erosion and Sediment Control Plan.
7. The monthly audits of site with respect to the Erosion and Sediment Control Plan as required by condition 6 shall include, but not be limited to, the following information:
 - (a) Date;
 - (b) Name of auditor;
 - (c) Site condition;
 - (d) Weather conditions;
 - (e) Sediment management (identification of areas of potential sediment generation and review of sediment control measures);
 - (f) Runoff control;
 - (g) Condition of sediment control measures, including silt fences, contour drains and sediment retention ponds;
 - (h) Maintenance required and the date this will be completed by; and
 - (i) General comments.

The results of the monthly audits as required by condition 7 shall be forwarded to the Manager Environmental Regulation Wellington Regional Council on request.

WAR090066 (27171) - Discharge permit to discharge any treated wastewater and groundwater to water arising from dewatering processes at various locations.

This consent shall be exercised subject to the following conditions together with those conditions specified in Schedule 3: General Conditions.

Discharge quality and quantity limits

1. The discharge from the dewatering process to Makoura Stream shall not exceed 500 litres per second.
2. The discharge from the dewatering process to Makoura Stream shall not exceed the following standards which are a rolling geometric mean and shall be calculated based on the last 12 consecutive sample results from monitoring undertaken in accordance with condition 8 in Schedule 2: Specific Resource Consent Conditions.

Parameter	Unit	Standard (Maximum)
E. coli	cfu/100 ml	1200
BOD ₅	g/m ³	32
Suspended Solids	g/m ³	42
Total Nitrogen	g/m ³	13
Ammonia-N	g/m ³	7.0
Total Phosphorus	g/m ³	3.3

Notification of dewatering

3. The consent holder shall notify the Manager Environmental Regulation, Wellington Regional Council, no later than 12 hours prior to any pumping of water from the existing ponds to the Makoura Stream. The consent holder shall also notify the Manager Environmental Regulation, Wellington Regional Council, of when pumping ceases, within 24 hours of the pumping ceasing.

Keeping of records

4. The consent holder shall keep a record of the dates, times and volumes of all pumping from the existing wastewater ponds to the Makoura Stream. The records shall be forwarded to the Manager Environmental Regulation, Wellington Regional Council, on request.

WAR090066 (27172) - Water permit to divert and take groundwater arising from dewatering processes from cut-off and drainage trenches during construction activities.

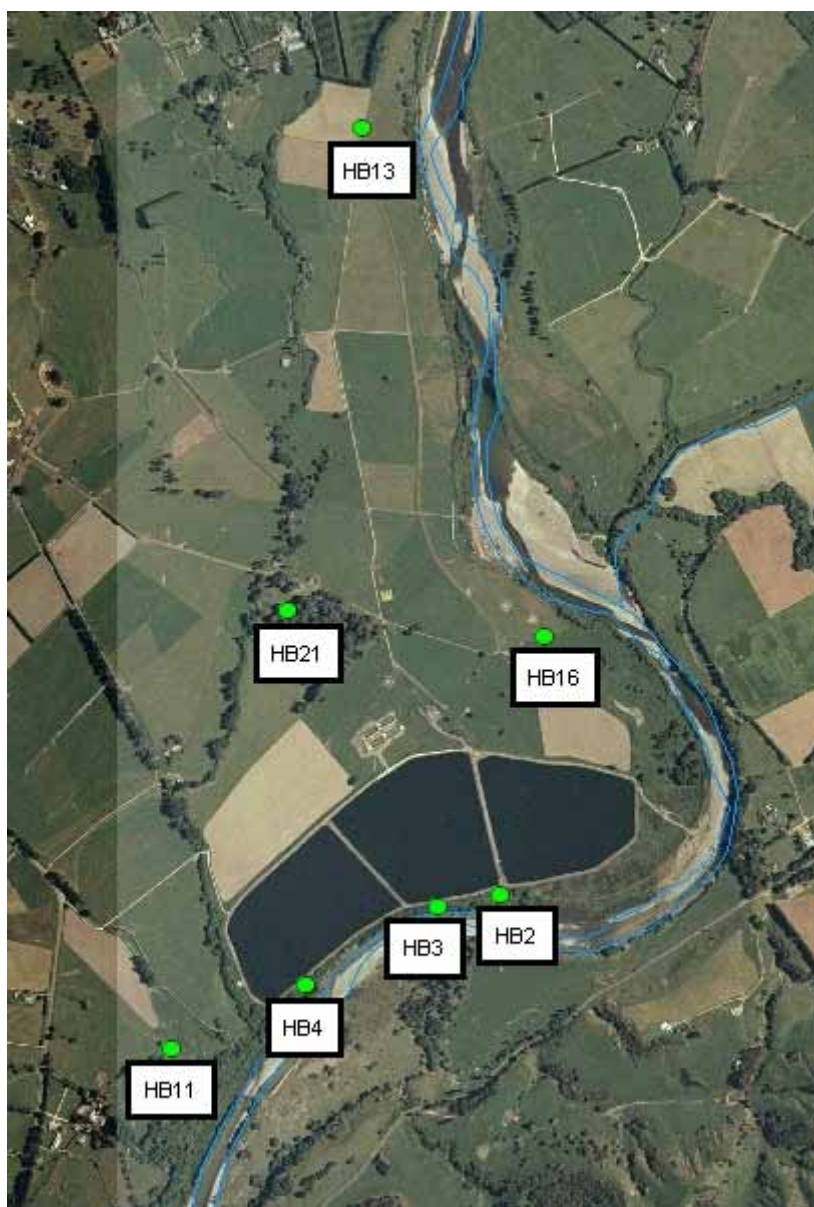
This consent shall be exercised subject to the following conditions together with those conditions specified in Schedule 3: General Conditions.

1. The consent holder shall submit to the Manager Environmental Regulation Wellington Regional Council, at least one month prior to the commencement of construction activities a Dewatering Management Plan outlining the dewatering activities, practices and procedures to be adopted in the construction of the Masterton Wastewater Treatment Plant and Disposal System Long-Term Upgrade.

The dewatering management plan shall include details of:

- (a) the extent of construction activities in relation to the areas where dewatering will be required;
- (b) the types of dewatering methods to be adopted and details of where water will be directed and disposed of;
- (c) a programme including timetable, sequence of events and duration;
- (d) mitigation measures to be adopted; and
- (e) contact details for the person in charge of site works.

Plan 1 – Groundwater Monitoring Bore Locations



Note there are to be additional wells added as follows:

- (a) New well west of HB13
- (b) Two new wells west of HB21