

Oral Submission from The Water Protection Society on the Pahiatua WWTP Resource Consent Applications

WPS position:

1. In our written submission of 16/5/2016, the Water Protection Society (WPS) neither supported nor opposed the applications for consents. That was because we believed insufficient information had been provided in the application. We said that upon provision of further relevant information it may be able to take a more definite position.
2. During the 12 months since then, various further information has been provided. However, what has become apparent is that even basic information such as groundwater flow direction is largely lacking.
3. Also, despite the majority of the proposed upgrade already having been in place for many months, TDC has yet to achieve the desired reductions in contaminant concentrations through fine-tuning the system. We wonder why it has taken since 2015 which, we were told yesterday, is when the plant upgrades were completed, to do this.
4. Furthermore, a tack-on wetland has also been added to the proposal as a belated attempt to address One Plan Policy 5-11.
5. In submitting on a number of consents for WWTPs over the past 5 years, we have never encountered such a poor application as these from TDC. In our view, TDC has not shown the competence that we believe is necessary to demonstrate that its activities will not cause further stress on an already stressed river environment and so we oppose the application for discharge of treated wastewater to water or to land from where it may enter water for the term sought.
6. We do not intend to cover points that have been covered by other submitters and experts, instead focussing on things which we feel have not been given adequate attention and on things where we disagree with others.

RMA s107

7. WPS is sure you are familiar with this section but wants to emphasise two things within it.
8. Firstly, subsection 2 provides for exceptional circumstances, temporary discharges and necessary maintenance. WPS does not believe any of these these apply to the Pahiatua WWTP.
9. In particular, it should not be seen as an exceptional circumstance since communities all over the country have wastewater treatment plants, their Councils know when the discharge consents will expire and there are politicians and officials who claim that the residents cannot afford anything more than is being proposed to be done. In our view, exceptional means something that happens very rarely and is

beyond the reasonable control of the Council concerned such as when there is a catastrophic failure of the plant.

10. Secondly, in subsection 1, the phrase

the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water)

is critical to the meaning of this subsection.

11. Our interpretation of this is that the discharge cannot be seen in isolation but must be assessed in combination with whatever is coming down the Mangatainoka River. It is the DRP and SIN and other contaminants contained in the discharge, combined with those already in the river, which determines the effects on aquatic life and which must be considered.
12. The implication of this is that it is not good enough for TDC to just improve the discharge quality to above that which has been achieved in the past, something which various Councils are putting forward as a reason their applications should be granted. WPS commends all Councils which improve their discharges BUT mere improvement is not the standard by which efforts should be judged. Instead, any discharge must be improved sufficiently so that, combined with whatever is coming down the river, it does not have a significant adverse effect on aquatic life.
13. In a river in which the pollution-assimilative capacity is already exceeded, such as the Mangatainoka, this could be interpreted in different ways.
14. One way is to say that the WWTP should not add any further contaminants to the river since the assimilative capacity is already fully allocated. This would require either cessation of discharge from the WWTP or treatment of the wastewater to a very high level, perhaps to potable quality. This is, ideally, what WPS would like to see.
15. Another, more practical way, recognising TDCs responsibility for ensuring sanitary services are provided, is to say that, at the very least, the WWTP should not make the level of pollution any worse, i.e. it should not increase the concentrations of contaminants in the river.
16. In our view this latter expectation is perfectly reasonable and should have been the starting point for TDC. It could be achieved by removing its discharge from the river altogether or treating the wastewater so that the concentration of contaminants in the discharge is no higher than in the river.
17. Any discharge that has concentrations of contaminants higher than in the river will increase the concentration in the river no matter what the dilution level, exacerbating an already bad situation in which there are clearly significant adverse effects on aquatic life (see Tables 2-4 in Mr. Patterson's s42A report).
18. To be very clear about what we are saying, WPS believes that s.107 prohibits decision-makers from granting consents, in a case where the existing assimilative capacity is already over-allocated resulting in a significant adverse effect on aquatic

life, as in this case, unless any discharge results in no increase in the concentration of contaminants in the river.

19. This would also be consistent with One Plan Policy 5-4 which states

Enhancement where water quality targets are not met*

(a) Where the existing water quality does not meet the relevant Schedule E water quality targets within a Water Management Sub-zone*, water quality within that sub-zone must be managed in a manner that enhances existing water quality in order to meet:*

(i) the water quality target for the Water Management Zone* in Schedule E, and/or*

(ii) the relevant Schedule B Values and management objectives that the water quality target is designed to safeguard.*

20. Taking SIN as an example, this approach would mean that instead of discharging wastewater with a SIN concentration in excess of 2-3g/m³ (Tables 6 and 7, Patterson s42A report), the applicant would need to treat the wastewater to decrease the SIN to below the level it is in the river (about 0.8g/m³, Ausseil, Appendix A, Figure 6).
21. Of course, if the SIN concentration in the river, upstream, decreases then TDC would be expected to further improve the quality of its discharge so that, while the assimilative capacity is still over-allocated, it doesn't increase the in-river concentration of SIN. It would not be too difficult to craft a condition to this effect.
22. In our view, it is not valid for TDC to argue that its application should be approved simply because it is improving the quality of its discharge. Nor is it valid to argue that its effect is little because the river is so polluted already. The basis of s.107 and Policy 5-4 is that a downstream polluter has to consider what is already in the river and adjust its treatment and discharge methods and/or timing so that it doesn't make things worse.
23. Allowing a discharger to just improve its discharge relative to past performance is a recipe for ongoing harm to the river since what is then to stop lots of other would-be dischargers applying the same argument.
24. It is because we have lots of individual polluters in the Mangatainoka River, each having just a little effect, that it is in such a poor state today.

One or both DRP and SIN

25. The applicant states (Ausseil, S41B report, para 4.3(a))

P-limited conditions dominate in the Mangatainoka River under all flow conditions.

26. It is not very clear what we are meant to take from this. Perhaps we are supposed to focus on the WWTP's DRP contribution rather than on SIN.
27. However, this would be a mistake.

28. It is true that the SIN concentration in the Mangatainoka River has been obscenely high in all years from 2010 to 2016 (see Patterson, s42A, Tables 9 and 10). However, it is also true that, in some of those years, the DRP concentration in the river has also exceeded the One Plan target of 0.01g/m³ (see Patterson s42A Tables 9 and 10; Ausseil, s41B report paras 4.1(e), 6.11 and Appendix A Figure 7).
29. So although the ratio of SIN to DRP has often been high, this is not especially relevant when DRP levels are adequate for algal proliferation. This is acknowledged by Dr Ausseil at para 6 on p6 of Appendix A to his s41B report where he states

When both nutrients are in sufficient supply, nutrient concentrations are unlikely to strongly limit algal growth.

30. Thus, TDC should be concerned about both DRP and SIN since both are at excessive levels in the Mangatainoka and, in WPS's view, it is incumbent on the Council to, at the very least, not make the in-river concentrations of both these contaminants any worse.

DRP and SIN as subsidiary factors

31. At this and other hearings, Dr. Ausseil has talked about DRP and SIN as being subsidiary factors, only indirectly affecting river values (see Ausseil s41B report, para 5.4(c)). This has been used as reasoning to suggest relatively little attention should be given, in consent conditions, to DRP and SIN concentrations and more to periphyton levels and QMCI changes.
32. WPS believes this is inappropriate. DRP and SIN are controlling variables of periphyton growth and compared with other controlling factors, such as temperature and sunlight, are more easily influenced, especially for point source discharges.
33. The DRP and SIN targets were set at levels that were believed to be low enough that if they were met then there should not be any excessive periphyton growth or adverse effects on macroinvertebrate communities. Mr. Patterson, at para 19 of his s42A report wrote

if the targets set out in the One Plan are complied with, the effects of an activity on the receiving water body are likely to be no more than minor.
34. Therefore, it seems sensible for consent conditions to require these targets to be met (or at the very least for in-river concentrations to be made no worse than upstream, consistent with One Plan Policy 5-4, and wording to this effect has been used in other consents in recent years). It is far better to prevent effects from being more than minor than to simply observe excessive periphyton growth as a result of DRP and SIN levels being too high. Setting conditions for DRP and SIN will help to do this.
35. Thus, WPS specifically requests that, if the consent is granted, that specific conditions be placed on the discharge of SIN and DRP so that, at the very least, in-river concentrations of those contaminants are not increased by the discharge.

36. As mentioned earlier, such conditions should also require future downward adjustment to the discharge concentrations should the upstream concentrations of these contaminants decline as a result of actions higher up the catchment.

Alternatives

37. WPS believes that the alternatives considered by TDC were inadequate, being all end of pipe considerations, i.e. what to do with wastewater rather than aimed at decreasing the amount of wastewater generated. Even the alternatives considered appear to have been inadequate as end of pipe solutions.
38. It appears that TDC, like so many councils, has tried to maximise its use of its existing infrastructure. This may seem logical if the main objective is to minimise costs. However, minimising costs must be secondary to the objective of ensuring environmental effects are acceptable.
39. TDC appeared to dismiss land discharge options early on even after only superficial consideration of them and other submitters have made the case that this should be more thoroughly investigated. We support them.
40. Even if it was possible to discharge to land only during summer, this would decrease the stress on the river at a time when temperature and sunlight, about which TDC can do nothing, are most conducive to periphyton growth.
41. Data provided by TDC in file 'Sample-data-for-submission.xlsx' suggests that pond 3 has very little effect on wastewater quality making WPS wonder whether that part of the treatment plant couldn't be better used in some other way. Perhaps this is where the proposed wetland could be located, instead of having to purchase additional land.
42. Other small communities are trialling highly effective treatment systems and WPS feels that TDC has not really explored alternatives adequately.
43. One example of a very promising system is one in use at the Lifestock Improvement Centre near Hamilton involving a woodchip denitrifying bed. This decreased the nitrate concentration in the effluent by 99% (Rambags et al. 2016, table 1, attached) even though the influent to the bed had been treated only by septic tank and textile filtration and had high nitrate concentration (30g/m³).
44. Another example, is Gisborne District Council's 6-month pilot study on the effectiveness of a sequence of high rate algal ponds, algae settlers, woodchip denitrifying bed and surface flow wetlands on the quality of effluent (influent being from a biological trickling filter). Final effluent contaminant concentrations were:
- TSS 5g/m³
 - TBOD₅ 3g/m³
 - sBOD₅ 1.5g/m³
 - TN 2.1g/m³
 - NH₄ 0.3g/m³
 - NO₃ 0.7g/m³
 - TP 1.4 g/m³
 - DRP 1g/m³
 - E.coli 20cfu/100ml (Parks, Craggs and Tanner, 2017, attached).

45. With the exception of TP and DRP these concentrations compare well with the relevant One Plan Schedule E targets for in-river concentrations in the Mangatainoka River. Even if phosphorus still had to be dealt with by chemical precipitation and settling/filtering, such a system could achieve very high levels of treatment and may be suitable for Pahiatua.
46. A further advantage of such systems is that they can be set up as parallel modules adding resilience to the overall system.

Groundwater

47. WPS is seeing a disturbing pattern of applicants, including the TDC, seeking to discharge effluent through groundwater. We have concerns that groundwater is being seen as a receiving environment for which proper investigation of effects doesn't have to be carried out. It seems to be a case of out of sight, out of mind. This is the sort of thing that has contributed to the situation that exists around the Rotorua Lakes, which can hardly be altered until contaminated groundwater has made its way through to the lakes.
48. Furthermore, groundwater has value not just for drinking, stock or irrigation water but as habitat for invertebrates and even fish (the stygofauna). WPS believes that for an applicant to dismiss the need for providing any information about effects on groundwater because there are no down-gradient extraction points is not justified.
49. TDC's application is totally lacking in information about the groundwater at the site and the effects of its proposal upon it. It astounds WPS that the application was even accepted as sufficiently complete by the consenting authority.
50. Given that denitrification rates in groundwater near Pahiatua have been found to be low (Rivas et al., 2015), groundwater cannot be relied on to decrease SIN concentrations of the discharge before it reaches the river.
51. Ms. Manderson seems to dismiss concerns about effects on groundwater in saying that there is no evidence before her regarding groundwater. That is a case of 'don't look, won't see'. Such an approach is appalling and shouldn't be acceptable for any discharge, including one from a Council.
52. In connection with both Eketahuna and Pahiatua applications there seems to be an intent to persuade us that groundwater near the river is really just the river flowing underground so that separate consideration of the groundwater is not needed, that the effects on groundwater are 'captured as effects on surface water'. We do not agree with that perspective. In some cases it may be the case and in others it may not be. It may simply be the groundwater approaching the river. The point we wish to make is that the effects on it should be considered separately from that on surface water.

Flow rate below which contaminant averaging should be done.

53. WPS has long-pointed out the crudeness of setting nutrient targets. In particular, we have pointed out that the effects of SIN and DRP on periphyton growth are not a result of their concentrations averaged over a year for flows below the 20th FEP.

Instead, they are a result of the nutrient concentrations during periods of periphyton accrual.

54. Ideally, the concentrations of these nutrients would be monitored continuously. We understand that technology which can do just that is being trialled in the Manawatu River, but that it is still too early to say how successful it is. In the meantime, average concentrations based on periodic sampling have to be used.
55. Periods of accrual have been assumed to occur when river flow is below some level, commonly assumed to be 3x the median flow or, in the One Plan, at flows at and below the 20th FEP. This is thought of as the flow rate that is likely to produce sufficient shear stress, abrasion and tumbling of bed substrate to remove periphyton from the bed of the river.
56. However, recent research (Hoyle et al, 2017, esp. Table 2) has found that the flow rate at which periphyton is removed (and therefore after which accrual begins again) varies widely between rivers and even between reaches of the same river. For example, on the Makakahi River at Hamua, further up the Mangatainoka catchment, the threshold flow rate was calculated as 38m³/s, more than 12x the median flow rate whereas in the Manawatu at Teachers' College the ratio was only 2. New understanding such as this needs to be taken into consideration when setting consent conditions.
57. The point of telling you this is that it follows that any conditions set for SIN and DRP concentrations should be for concentrations at flow rates below that which results in mass periphyton removal (what Hoyle et al. call the threshold flow rate, Q_{pr}). If such information is not already available, an applicant should have to determine what that flow rate is for the reach of river into which it intends to discharge. Sticking with using the average nutrient concentration for flows below the 20th FEP when Q_{pr} is possibly a much higher flow rate is senseless.

Wetland

58. The proposal to discharge effluent into a constructed wetland appears to be an attempt to address concerns about the effect of the discharge on the mauri of te awa. We leave the adequacy of the proposed wetland for that purpose as a matter for iwi submitters to comment on.
59. WPS was concerned that the proposed unlined nature of the lower part of the wetland would have resulted in a diffuse discharge of the effluent to the river at a point which is not actually known.
60. Presumably, the effluent would have passed into the groundwater through the base of the unlined wetland. However, in which direction it would have traveled is unknown as no actual data has been provided on groundwater flow direction. The applicant suggested that it would flow into the river more or less at right angles to it.
61. However, it could be that the groundwater flow is actually parallel to the river along that stretch. This may be suggested by the possible increase in stream flow in Town Creek mentioned by Dr Ausseil yesterday. If this is the case, the discharge from the wetland may actually reach the river downstream of the proposed downstream

monitoring point. If that is the case, any effect of the discharge will be impossible to detect at the monitoring point.

62. This possibility of groundwater flow being parallel to the river in the vicinity of the proposed wetland site is even greater if, as the applicant suggests, the groundwater is really just the river flowing underground.
63. It would be far better, from a monitoring perspective to have a point source discharge into the river so that the zone of reasonable mixing can be precisely known and the downstream monitoring point can be rationally determined.
64. WPS supports the most recent proposal for the wetland in which the discharge from the wetland will flow to the river through a confined channel but believes the wetland and discharge channel should be fully lined.
65. Yesterday a question was asked about where the effluent quality monitoring point should be. WPS's position is that it should be at the end of the wetland just before discharge to the river. After all, it is the quality and volume at that point that will determine its effects on the river. There is no harm to also have testing immediately prior to the wetland to help identify where any problems are occurring, if in fact they do occur.

Term

66. The term sought is 15 years. WPS sees no good reason for this long a term to be granted, if a consent is granted at all.
67. WPS is of the view that if the proposal is considered to be good enough then a long term should be granted, e.g. 25 years. If it is not good enough (including if the likely outcomes are not certain enough) then a short term should be granted.
68. How short?
69. Just long enough to put in place the infrastructure required, to fine tune the operation of that infrastructure and then a period long enough to gather data to assess how well the system is doing.
70. Given that most of the infrastructure is already in place and time has already been available for fine tuning, a further year could reasonably be granted for further fine tuning. That may mean that a concerted effort is required utilising people with the necessary skills, contracted in if necessary. Indefinite fine-tuning mustn't be permitted.
71. Subsequently, a period for data gathering should be allowed that is only long enough to include a reasonable range of environmental conditions (such as comparatively dry or wet summers) and in any case no longer than 5 years.
72. So WPS suggests a term of 5 years extendable to up to 7 years if a suitable range of environmental conditions are not experienced within the first three years after the additional 1 year of fine-tuning. This would provide 1 year after fine-tuning and data gathering to develop a proposal for a new consent at that time (which may be just

for a continuation of what exists at that time if it is performing well or may require additional measures if it is not).

73. TDC has shown itself to attach little urgency to upgrading its wastewater treatment plants to adequate levels. More than 10 years has passed since the former long term consent expired in 2004, with application 103246 being placed on hold once submissions were received. This is an extraordinary length of time and should have been ample to gather abundant data pertaining to the town's wastewater and its effect on groundwater and the river. Unless any consent granted is for a relatively short period, with clearly defined actions to be taken at specified times, we fear that such behaviour will continue.

Thank you.

Chris Teo-Sherrell
Chairperson
Water Protection Society Incorporated

24th May 2017