

IN THE MATTER

of the Resource Management Act
1991

AND

IN THE MATTER OF

applications for resource consent
(**APP-2005011178.01** and **APP-
2018201909.00**) to Horizons
Regional Council associated with
the construction of a wetland as
part of the proposed upgrades to
and ongoing operation of the
Eketāhuna Wastewater
Treatment Plant

BY

TARARUA DISTRICT COUNCIL

Applicant

**REPLY ON BEHALF OF
TARARUA DISTRICT COUNCIL**

22 January 2019

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MAY IT PLEASE THE HEARING PANEL:

INTRODUCTION

1. This reply supports the applications for resource consent by Tararua District Council ("**TDC**") associated with:
 - (a) the construction of a wetland (APP-2018201909.00) ("**the Wetland Application**") at the Eketāhuna Wastewater Treatment Plant ("**EWWT**P"); and
 - (b) generally, the operation of the EWWTP (APP-2005011178.01) ("**the First Application**").
2. Together, these applications form TDC's proposal for the upgrade and ongoing operation of the EWWTP ("**the Project**").
3. The First Application was heard before a panel of independent commissioners ("**the Panel**") on 5 to 7 April 2017 and 23 May 2017. The Panel adjourned the hearing on 23 May 2017 pending receipt of further information, and this adjournment enabled TDC to prepare and lodge the Wetland Application.
4. On 27 November 2018, at the hearing of the Wetland Application, counsel provided extensive opening legal submissions on behalf of TDC. This reply does not repeat those submissions but relies on them and focusses on matters raised by Panel members, Rangitāne o Tamaki Nui-a-Rua ("**Rangitāne**") (the sole submitter on the Wetland Application) and Horizons Regional Council ("**Horizons**") officers during the 27 November hearing and through subsequent engagement processes.
5. TDC's principal submission is that granting the Wetland Application and First Application will enable the on-going sustainable discharge of wastewater from the EWWTP and will therefore ensure the Project, as a whole, complies with Policy 5-11 of Horizons' One Plan. In doing so, TDC submits that the Project responds appropriately to cultural effects and will promote the sustainable management purpose of the Resource Management Act 1991 ("**RMA**").
6. In terms of effects more broadly, the Panel has heard the evidence of TDC's and Horizons' experts and may draw the conclusion that any potential adverse environmental effects of the Project are low and, in any event, will be closely monitored and appropriately managed through conditions. This is especially so as TDC is seeking a short-term consent of

seven years. That term is sought as it will enable the discharge point to be located at the Makakahi River well clear of the Ngatahaka confluence. This is a significant benefit as it will provide, for the first time, for the effects of the EWWTP to be monitored.

7. TDC's final set of proposed conditions is attached as **Appendix 1**. These conditions have been informed by discussions that took place between TDC, Horizons and the Panel during, and in the lead-up to, the 27 November hearing, as well as discussions that have taken place post-hearing between TDC and Horizons. Where changes are proposed to the previous set of conditions (the version presented to the Panel on 27 November), these are shown in red tracked changes on the left-hand column. Horizons' comments and/or preferred version are shown in the right-hand column in black tracked changes.
8. Where changes suggested by Horizons or the Panel have been adopted by TDC, those are incorporated in **Appendix 1** accordingly and are not addressed in this reply. Any suggested changes not adopted by TDC, and some changes meriting further clarification, are set out below.
9. In opening legal submissions, counsel noted the potential for overlap between issues relevant to the Wetland Application ("Part A" matters) and issues relevant to the first application (and hearing) but not to the Wetland Application ("Part B" matters). As previously signalled, this reply will provide one integrated response in respect of both the First Application and the Wetland Application.
10. This reply:
 - (a) addresses the Project's effects (positive and negative) in the context of the legal framework and relevant planning provisions, with particular emphases on:
 - (i) in terms of positive effects, the importance of the EWWTP as regionally significant infrastructure and the benefit in relocating the EWWTP's discharge point as proposed;
 - (ii) cultural effects (noting the engagement TDC has undertaken with Rangitāne and Kahungunu ki Tamaki Nui-a-rua ("**Kahungunu**"));
 - (iii) effects of the wetland, including its maintenance and performance;
 - (iv) effects of the Project on water quality;

- (v) effects of infiltration and inflow ("**I&I**"); and
- (vi) effects on groundwater;
- (b) addresses other matters that were discussed during the hearing, including consent term as well as miscellaneous outstanding issues relating to conditions; and
- (c) provides concluding remarks, including reiterating the Project's consistency with the relevant planning provisions and Part 2 of the RMA.

PROJECT EFFECTS IN THE CONTEXT OF LEGAL AND PLANNING FRAMEWORK

11. TDC's analysis of the key decision-making considerations for the Panel, in terms of sections 104, 105 and 107 of the RMA, the meaning of "*subject to Part 2*" and the relevant planning instruments (including One Plan) provisions, was set out in detail in the opening legal submissions.
12. This reply does not repeat that analysis, but rather deals with matters that were a particular focus in the lead up to, and during, the 27 November hearing.

POSITIVE EFFECTS

13. The proposed wetland is an important component of the wider EWWTP Project, which itself is crucial to the continued operation of the EWWTP in a sustainable, environmentally responsible way.
14. The positive effects of the Project generally are, in summary, that:
 - (a) it provides an affordable and sustainable solution to enabling essential infrastructure for the health and safety of the Eketāhuna community;
 - (b) it provides for the efficient use and development of natural and physical resources by enabling the ongoing use of the existing EWWTP;¹
 - (c) it has water quality benefits including:
 - (i) shifting the discharge point (and hence the monitoring locations) to enable clear monitoring of the effects of the discharge (for the first time);² and

¹ This also addresses section 104(2A) of the RMA as to the investment in the existing plant.

² As discussed in the evidence of Dr Ausseil, this will significantly improve the ability to monitor the effects of the EWWTP discharges on the Makakahi River.

- (ii) significant investment in wastewater treatment upgrades, resulting in significant reductions in Total Suspended Solids, DRP and *E.coli* concentrations in the final effluent, with associated benefits, namely:
 - (1) an improvement in the recreational water quality of the Makakahi River (*E.coli*);
 - (2) a significant reduction in the EWWTP's contribution to in-river DRP loads (from 15.6% to 9% at below 20th FEP flows), which will have a related benefit in reduction in periphyton growth; and
 - (3) a reduction in the risk of effects on macroinvertebrate communities via a reduction in the deposition of organic suspended solids and a reduction in the risk of excessive periphyton growth.
 - 15. The positive effects of the Wetland Application specifically are:
 - (a) that from a planning perspective, the wetland will enable the EWWTP Project to comply with Policy 5-11 of the One Plan (addressed in more detail in the cultural effects section below) and respond to cultural concerns; and
 - (b) the ancillary 'polishing' benefits of the wetland as the wastewater travels through it, particularly in relation to nitrate-nitrogen.
 - 16. As the Project deals with regionally significant infrastructure, section 3 of the One Plan applies. Therefore, as relevant, the Panel must:
 - (a) have regard to the benefits derived from the operation of the EWWTP;
 - (b) recognise and provide for the operation, maintenance and upgrading of the EWWTP; and
 - (c) allow minor effects arising from the establishment of new infrastructure (in particular the wetland) associated with the EWWTP.
 - 17. As a local authority, TDC has statutory obligations and functions, including responsibility for providing good-quality wastewater treatment systems and
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processes to the small township of Eketāhuna³ and a duty to perform its regulatory functions in a cost-effective manner.⁴

18. As mentioned in opening legal submissions, the One Plan is clear that solutions need to be practical, appropriate to the scale of the problem and affordable for the ratepayers and communities in the region.⁵ The evidence of Mr King is that the Project achieves these requirements.
19. Currently, the EWWTP discharges treated effluent directly to the surface water of the Makakahi River at a discharge point immediately upstream of the confluence of the Makakahi River with the Ngatahaka Creek.⁶
20. On any overall assessment, the Project will allow TDC to continue treating and processing Eketāhuna's municipal wastewater in a responsible, environmentally sustainable and cost-effective way and in doing so, to enable the people and communities of Eketāhuna to provide for their social, economic and cultural wellbeing, and for their health and safety.

CULTURAL EFFECTS

21. A key aspect of the Project, and indeed *the key* aspect of the Wetland Application, is the possible effect the Project has on Māori cultural values. TDC's opening legal submissions for the Wetland Application focussed heavily on this point, in particular highlighting:
 - (a) the proposed wetland's primary purpose of responding to cultural concerns and ensuring the overall EWWTP Project meets Policy 5-11 of the One Plan; and
 - (b) the engagement TDC has undertaken throughout the EWWTP consenting process with affected iwi, most significantly Rangitāne and Kahungunu.
22. As expressed in the opening legal submissions, TDC is alive to the cultural sensitivities and fundamental concerns associated with discharging treated human effluent to water and has worked hard to address these concerns throughout the Project, in particular through the Wetland Application. The One Plan's recognition of the cultural concerns associated with discharges of human effluent to water is expressed through Policy 5-11. This policy

³ There are approximately 441 residents in Eketāhuna, according to TDC's 2014 Wastewater Asset Management Plan.

⁴ As set out in the opening submissions, these obligations are derived from the Local Government Act 2002 and Health Act 1956.

⁵ One Plan, section 1.5.

⁶ As the Panel is aware, this creates significant issues in determining the effects of the EWWTP discharges.

has been (from a cultural effects perspective) the focal point of the Wetland Application.

23. TDC's engagement with iwi was canvassed thoroughly in opening legal submissions, as well as through previous memoranda of counsel, therefore this reply does not repeat that detail. In summary, and as explained during the 27 November hearing:
- (a) a number of workshops have taken place between Rangitāne, Kahungunu and TDC with a view to understanding the views of those iwi and discussing how those views may inform the design of the wetland, to the extent practicable;
 - (b) TDC's Chief Executive, Mr King, attended those workshops along with Mr MacGibbon, Ms Manderson and Dr Ausseil;
 - (c) Rangitāne and Kahungunu have taken differing approaches to the Project and the proposed wetland, and TDC acknowledges Rangitāne opposed the granting of the Wetland Application in its submission;
 - (d) TDC remains committed to its obligations under the Manawatu River Leaders Accord and focussed on developing meaningful, productive relationships with Rangitāne and Kahungunu through the EWWTP re-consenting process and more broadly; and
 - (e) TDC is grateful for the views it has received from tangata whenua, including through workshops, the Cultural Values Assessment ("**CVA**") received from Kahungunu and ongoing communications, which have influenced the wetland design and TDC's set of proposed conditions.

Points raised during the hearing

24. At the 27 November hearing TDC received questions from both the Panel and from Mr Percy, a planner engaged by Rangitāne, in relation to Policy 5-11 and the extent to which iwi concerns and views have been incorporated in the wetland design and overall Project.

Panel question: Policy 5-11(b) compliance

25. The Panel queried the extent to which TDC considers the Project achieves compliance with limb (b) of Policy 5-11.
26. For ease of reference, Policy 5-11 is as follows:

Policy 5-11: Human sewage discharges

Notwithstanding other policies in this chapter:

- a. *before entering a surface water body all new discharges of treated human sewage must:*
 - i. *be applied onto or into land, or*
 - ii. *flow overland, or*
 - iii. *pass through an alternative system that mitigates the adverse effects on the mauri of the receiving water body, and*
- b. *all existing direct discharges of treated human sewage into a surface water body must change to a treatment system described under (a) by the year 2020 or on renewal of an existing consent, whichever is the earlier date.*

27. In response, TDC submitted there were two possible interpretations of limb (b)'s reference to "*on renewal*" as follows:

- (a) Interpretation 1: On the date that an applicant applies, it is viewed as complying with limb (b) so long as it is moving towards compliance with limb (a); or
- (b) Interpretation 2: "*On renewal*" means on commencement of consent.

28. TDC and Horizons⁷ take the pragmatic view that Interpretation 1 must be the preferred interpretation. As explained during the hearing, were Interpretation 2 to be preferred, the "*on renewal*" aspect of limb (b) could not be achieved because an applicant is unable to lawfully undertake work until a consent has been renewed. Interpretation 1 is the only logical reading of limb (b).

Panel question: Intent and effect of CVA condition

29. During the hearing, the Panel commented on the intent and effect of the CVAs required under condition G25.⁸ TDC proposes amendments to this condition to clarify its intent, that is, that the CVAs will inform the re-consenting process at the end of the term of the consents. TDC suggests further amendments to clarify timing and has added an advice note to ensure the effect of the CVAs, including what they will be used for, is clear.

⁷ Ms Morton agreed with the approach during the hearing.

⁸ References in this reply to the conditions will use the numbering as set out in the left-hand column of **Appendix 1**, which is the most up-to-date version of TDC's proposed conditions.

Points raised by Rangitāne

30. At the 27 November hearing Mr Percy responded to TDC's opening submissions and expanded on points raised in his written brief of evidence. This section solely responds to:

- (a) the location/application of Policy 5-11 in the One Plan framework;
- (b) the interpretation of Policy 5-11 in relation to:
 - (i) reading wording from limb (a)(iii) into the other limbs of Policy 5-11(a); and
 - (ii) whether a wetland is a waterbody such that it is the receiving environment (or alternatively whether it is a lake).

Location/application of Policy 5-11

31. Mr Percy's evidence focussed on the location and application of Policy 5-11. TDC's position remains as stated in its opening submissions. In particular, in response to Mr Percy's comments during the hearing:

- (a) TDC has never claimed that Policy 5-11 does not relate to managing effects on mauri, as Mr Percy stated. As set out in paragraph 117 of its opening submissions, TDC *"understands Policy 5-11 to contemplate adverse effects on the mauri of the receiving water body being mitigated where treated wastewater is applied into or [onto] land, or where it flows over land before entering water"*;
- (b) Mr Percy criticised TDC's opening submissions for not referring to Table 2.1(d) at footnote 54 of the submissions. However, Mr Percy's evidence, to which the submissions were responding, did not refer to that provision. Although relevant, it is a general provision (like Table 2.1(a) as to water quality), which is why it retains the same resource issue as for 2.1(a). Irrespective, as stated in paragraph 114 of TDC's opening submissions, the general water quality provisions were addressed through the first hearing. Policy 5-11 is the focus of this hearing. Further, again as stated in paragraph 114 of TDC's opening submissions, the Project as a whole is, and the Wetland Application itself is, consistent with the relevant policies in Chapter 5 of the One Plan.
- (c) Finally, as noted in paragraph 17 of Mr Percy's evidence, the management objective in Schedule B (Part B.3) of the One Plan is that *"mauri of the water body be maintained or enhanced"* (the same

wording occurs in Table 5.2 under Policy 5-1). The environment against which this provision is to be measured is at the time the One Plan was made operative (consistent with the policies in Chapter 5). TDC's position is that the wetland will enhance the mauri of the Makakahi River compared to the existing discharge (which was lawfully operating as at the time of the One Plan becoming operative) – that outcome is the whole purpose of the Wetland Application. However, at the very least the Wetland Application "maintains" the mauri of the River. The Wetland Application, and the Project as whole, is consistent with this provision.

32. It is further noted that when the Panel queried with Mr Percy whether the logical interpretation of Policy 5-11 would be that (a)(i) and (ii) (and, as TDC understand it, Policy 5-11 as a whole) were formulated as a means of addressing cultural effects, Mr Percy agreed.
33. TDC, too, agrees that that is the logical reading. For this reason, TDC maintains its view that in meeting Policy 5-11 (in particular, through limbs (a)(i) and/or (ii), it is responding to cultural concerns in an appropriate manner, albeit recognising that Rangitāne continues to have concerns. TDC notes that at the hearing, Ms Morton gave her view that the Project meets limb (ii) of Policy 5-11(a), and that TDC had "*made a strong case*" for the Project also meeting limb (i). Given the uncontested evidence of Mr MacGibbon, it is clear the Project also meets limb (i).

Wording of the three limbs of Policy 5-11(a)

34. Mr Percy maintained during the hearing that the requirement under Policy 5-11(a)(iii) that an alternative system "*mitigates the adverse effects on the mauri of the receiving water body*" should also be read as applying to limbs (a)(i) and (ii), expressing the view that where there is ambiguity in the wording of a provision, one may read meaning in.
35. TDC's view remains there is no ambiguity in meaning as Policy 5-11 is quite clear on its face that "*mitigation*" aspect of the policy is only expressed in limb (iii) and there can be no real argument that limbs (i) and (ii) were also intended to reflect that same requirement. TDC relies on its opening legal submissions which express this point in more detail.

Is a wetland a waterbody / lake

36. Mr Percy also reiterated his earlier argument that a wetland ought more appropriately to be considered as a body of water, a "lake", and therefore

would not meet Policy 5-11 in any event. It is clear that the wetland exists solely because it will receive treated wastewater. There is no "body" of water without the discharge of the treated wastewater. When asked by the Panel what he considered limb (a)(ii) ("*flow overland*") was intended to address if not the flow of treated wastewater over or through a wetland, Mr Percy was not able to provide an answer.

37. TDC's opening legal submissions explain its position on how the proposed wetland (and by extension, the Project) meets Policy 5-11. However, for the avoidance of any confusion (and as the Panel has identified), there is no logical purpose served by the differentiation of limbs (i) and (ii) of Policy 5-11(a) if a direct discharge to land were the only method envisaged and wetlands were excluded. Policy 5-11 clearly anticipates the flow of wastewater through wetlands.

Conditions relating to cultural effects

38. As above, during the hearing there was some discussion around condition G25 and the need to ensure the intent and effect of the condition (including what the CVAs will be used for) is clear. TDC proposes amendments accordingly, as set out in **Appendix 1**.

EFFECTS OF THE WETLAND

39. There was a large emphasis, at the 27 November hearing, on the wetland's performance and maintenance. TDC has taken the points that were raised on board in preparing its final set of proposed conditions.
40. Mr MacGibbon gave evidence at the hearing as to the functioning of the proposed wetland, including in terms of denitrification and the interaction between water and organic material, and maintenance of the wetland.

Denitrification

41. While the wetland is not proposed for denitrification purposes (as clearly explained in the evidence of Dr Ausseil, the nitrate content of the discharge and contribution to in-river loads is so small as to not be measurable), as an ancillary benefit through 'polishing" Mr MacGibbon's evidence was that:
- (a) surface-flow wetlands (such as the one proposed as part of the Project), have the ability to extract over 90% of the nitrate that enters as discharge;
 - (b) high levels of denitrification occur when water remains in the wetland for a prolonged period (or 'residence time') enabling the water and the

nitrate molecule's interaction with the soil and vegetation in the wetland to be maximised;

- (c) this maximised interaction between wastewater and soil is important in terms of mitigating effects on cultural values and achieving both the spirit, and specific wording, of Policy 5-11; and
- (d) in order for the proposed wetland to operate to its full denitrifying potential, it should be fully planted with appropriate plants (sedges, reeds and rushes) without any open areas, contain water levels up to a maximum of 500 mm, and be flat-bottomed.

Maintenance

- 42. Sound maintenance is critical to the effective functioning of a wetland system.⁹ TDC, with input from Mr MacGibbon (and in light of his comments during the hearing), has proposed robust wetland maintenance conditions to ensure the success of the wetland.
- 43. During the hearing it became apparent that conditions on the consent relating to nitrogen removal, total phosphorous ("**TP**") and *E.coli* would be needed to ensure that the wetland is appropriately maintained. These provisions are solely a management tool, not a compliance obligation, and if not achieved would result in a review of the system to ensure it is functioning as designed, for example though having appropriate vegetation cover.
- 44. Mr MacGibbon also commented, at the hearing, on the importance of designing the wetland to allow for a minimum of 10% seepage through the clay base, noting this would enable the water to percolate through the soil and achieve the maximum denitrification benefits while also – importantly – meeting Policy 5-11 of the One Plan.
- 45. In terms of wetland size, although Policy 5-11 does not have a timing requirement for any flow over land to achieve its provisions, the wetland will provide for the median treated wastewater flow to be 72 hours. That, along with the percolating of some of the treated wastewater through the bottom of the wetland, and the engagement of the treated wastewater with the wetland vegetation, provides a robust response to recognising the intent of Policy 5-11.

⁹ Mr Crawford also emphasised the need to ensure the wetland is carefully maintained.

46. In terms of *E. coli*, Mr MacGibbon's evidence was that this would not be an issue if the wetland were well-maintained (see above), although some levels of faecal contamination from birds such as Pukeko was unavoidable, and should be provided for in any management trigger.
47. The Panel asked Mr MacGibbon whether he had any residual concerns about the wetland's functioning and he responded that he did not, noting that previous concerns around potential flooding and capacity at the proposed site had been addressed.

Conditions relating to the wetland

48. In addition to the robust conditions already proposed, following the 27 November hearing TDC made further amendments to its proposed conditions in light of discussions with the Panel and Horizons. TDC and Horizons have reached agreement on the majority of the wetland conditions, and there are only a select few outstanding matters, which relate to TDC's proposed new (or substantially amended) conditions on a Remedial Management Plan for the Treatment Wetland (DLW5, DLW7 and DLW8).

DLW5

49. This condition requires monitoring for TP, nitrate-nitrogen and *E. coli* and provides that should triggers be exceeded the wetland shall be surveyed and remedial measures shall be undertaken.
50. TDC and Horizons largely agree on this condition, with the only differences relating to the first sentence of the condition and Horizons' proposed advice notes.
51. In relation to the first sentence, it is important the wording "*To monitor the efficient functioning of the treatment wetland*" be retained in order to clarify the intent of DLW5. This condition is aimed at monitoring the wetland's functioning only, and is not a compliance tool.
52. Horizons' proposed advice notes relate to the definition of "growing season". In TDC's view, based on advice from Mr MacGibbon, it is not appropriate or necessary for the condition to include reference to, nor a definition of, a growing season. In any event TDC does not agree (again based on Mr MacGibbon's advice) that August to December is an appropriate growing season and notes Horizons provided no evidence to support its position in that respect. As its expert advice is that Horizons' wording does not reflect best practice and will lead to ongoing compliance

and certainty issues, TDC's final proposed condition DLW5 does not adopt the two advice notes.

DLW7

53. Condition DLW7 deals with the steps that must be taken in the event certain wetland monitoring triggers are exceeded.
54. Again, there is not much difference between the two parties' versions of this condition, save for a minor difference at clause c. TDC's version reads "*an increase between inflow and outflow in E. coli concentration of more than 50% and exceeding 1000 MPN/100 ml in more than 2 out of 12 consecutive samples*" whereas Horizons' version reads "*an increase between inflow and outflow in E. coli concentration of more than 50% and the 95th percentile exceeds 540 MPN at the outflow.*" ¹⁰
55. In drafting this condition, TDC has used a similar approach as it used for its end-of-pipe conditions (for instance, DSW4) which accords with the New Zealand Wastewater Monitoring Guidelines. TDC does not adopt the use of the 95th percentile on the basis of 12 samples, because estimating the 95th percentile of annual concentrations on the basis of 12 samples only carries a high level of uncertainty. Dr Ausseil's advice is that it is generally accepted that a far greater number of samples is required to robustly estimate a 95th percentile, especially for a non-normally distributed variable such as *E. coli*. For example, the NPSFM (2017) prescribes a minimum of 60 samples to calculate the 95th percentile of *E. coli* concentration. An approach based on a maximum number of samples exceeding a certain threshold provides more clarity and certainty and is consistent with the end-of-pipe standards set in conditions.
56. With regards to the actual trigger number, condition DSW4(a) sets a standard for the treated effluent (ie the entry point to the wetland) of 1000 *E. coli*, not to be exceeded in more than 2 out of 12 consecutive samples. TDC's position is that it would be nonsensical to impose a trigger value at the end of the wetland that is more stringent than the standard at its entry point, and therefore suggests using the same value and number of exceedances as in condition DSW4(a).

¹⁰ As specified in **Appendix 1**, TDC amended clause c following Horizons' review of the proposed conditions.

DLW8

57. TDC and Horizons agree on the substance of this condition (which deals with remedial maintenance) with the exception of Horizons' proposed advice note regarding the definition of growing season and a reference to the growing season in the body of the condition. TDC's reasoning for omitting this advice note and reference is set out above in respect of DLW5.

EFFECTS OF THE PROJECT ON WATER QUALITY

58. The Project's effects on the quality of surface water in the Makakahi River were addressed in detail in the First Application, and in the various briefs of evidence of Dr Ausseil. In short, Dr Ausseil gave evidence that:
- (a) as it stands, the EWWTP is very minor contributor to in-stream nitrate-nitrogen concentrations and loads;
 - (b) although there is an increase in periphyton growth downstream of the discharge/Ngatahaka confluence, it does not generally exceed the One Plan targets;
 - (c) there is no clear evidence that ammoniacal-nitrogen from the EWWTP discharge/Ngatahaka confluence plays a significant role in the increase in periphyton downstream of the discharge, and other factors are much more likely to dominate and drive the periphyton response; and
 - (d) the amount of periphyton growth that ammoniacal nitrogen from the discharge is capable of accelerating is very small.
59. Dr Ausseil's evidence acknowledges there remain uncertainties around the EWWTP discharge's effects on water quality and freshwater ecology. These uncertainties will be best addressed through the relocation of the discharge point away from the Ngatahaka confluence, followed by robust monitoring.
60. Dr Ausseil's opinion, in response to questioning from the Panel, was that the conditions proposed by TDC around monitoring were sufficiently robust.

Monitoring and compliance

61. In response to concerns raised by Horizons, TDC proposed a shift in the location of compliance monitoring from the end of the UV treatment process to the end of the wetland. The exception was the compliance point for *E. coli*, which TDC proposes to retain at the post-UV treatment process

location due to the potential for bird faecal matter entering through the wetland (noting the wetland monitoring conditions address this potential issue).

62. At the 27 November hearing Mr Brown noted that TDC's proposed new compliance monitoring point was a significant positive change for Horizons. Mr Brown stated that shifting the compliance point to post-wetland provided sufficient certainty such that Horizons did not consider it necessary to have as much wetland monitoring (in terms of inflow and outflow) as previously considered.
63. In terms of the *E. coli* compliance monitoring point, although Mr Brown noted it would be simpler to have the one compliance monitoring point post-wetland, he acknowledged the practical limitations of this as well as the evidence of Mr MacGibbon in relation to the maintenance and management of the wetland.
64. The conditions proposed by TDC ensure that the monitoring points (both in terms of compliance monitoring and the separate wetland management monitoring) are clear.

Conditions relating to water quality

65. At the hearing there was some discussion around conditions DSW1 – 2 (current/pre-upgrade effluent standards) and DSW3 – 4 (future/post-upgrade effluent standards). Following these discussions, TDC has confirmed the wastewater standard figures and has updated those conditions accordingly.
66. TDC also proposes amendments to the advice notes contained in conditions DSW1 – 4 to clarify the compliance points for each parameter.
67. While TDC and Horizons have reached a high level of agreement on these conditions, there remain some minor drafting differences (explained below and in Horizons' comments in **Appendix 1.**)

DSW1

68. Horizons' proposed versions of conditions DSW1 – DSW5 and DSW21 specify timeframes of "*Until 24 months from commencement of these permits*" or "*From 24 months from commencement of these permits.*" No basis for this timeframe is given, other than general comments that 32 months (the time frame TDC proposes) is too long.

69. While TDC agrees the approach of using time periods (rather than fixed dates) is sensible, 24 months is not achievable and would result in a set of upgrades that are rushed and of sub-par quality. TDC's evidence clearly explains why 32 months is the required length of time for the upgrades.¹¹ Horizons provided no evidence for its assertion that 24 months is appropriate and enables sufficient time. As the only evidence before the Panel is that 24 months is not sufficient time, the Panel must make its decision on the evidence from TDC before it.
70. As above, TDC has revised the wastewater standard figures based on updated data. Horizons proposes a different set of figures, noting TDC is currently meeting those standards and Horizons does not see a need for a reduced discharge standard.
71. In response, and by way of explanation for the different sets of figures:
- (a) In terms of Ammoniacal-nitrogen:
 - (i) TDC acknowledges Horizons' point that the ammonia standards for the ponds are presently good. However, TDC is concerned this performance may be significantly affected by current infiltration from the sewer system, diluting the ammonia;
 - (ii) As addressed elsewhere in this reply, and as provided for in condition G16, TDC is undertaking measures to improve its I&I;
 - (iii) As these improvements are made, the volume of discharged wastewater will reduce. This will then mean that concentrations of Ammoniacal-nitrogen will increase, giving a perception of a poorer performing wastewater treatment plant;
 - (iv) If the Panel were to adopt Horizons' Ammoniacal-nitrogen figures, there is a real risk of non-compliance due to the effect of TDC's I&I improvements, however this would be based on a false perception, rather than any actual effect on the environment;
 - (v) If the Panel is minded to accept Horizons' standard it will need to reconsider the I&I condition to ensure integration and to ensure that achievement of one does not result in non-compliance of the other;

¹¹ Refer to the timeline appended to Ms Manderson's evidence at the 27 November hearing, paragraph 11.40 of Mr Crawford's evidence dated 14 March 2017 and paragraph 34 of Mr Crawford's evidence dated 12 November 2018.

- (vi) In any event, the difference between the parties' figures is immaterial from an effects perspective (although not from a compliance risk perspective);
- (b) In terms of ScBOD₅:
 - (i) TDC's proposed standards (6-12 g/m³) correspond to an in-river increase of 0.027 to 0.055 g/m³, or 1.8 to 3.7 % of the One Plan target (1.5 g/m³), while Horizons' proposed standards correspond to an in-river increase of 0.014 to 0.023 g/m³, or 1 to 1.5% of the One Plan target (calculations based on a river low flow (half median flow) of, and a median effluent daily volume of m³/day);
 - (ii) Both standards correspond to increases that are far below the standard detection limit for ScBOD₅ (1 g/m³), and are immaterial from a risk of effects point of view;
 - (iii) TDC's proposed standard poses a de minimus risk of effect on in-river ScBOD₅ concentrations or on the actual effect the One Plan target seeks to control, ie the presence of heterotrophic growths (sewage fungus); and
 - (iv) The 'tightening' of the standard as recommended by Horizons serves no purpose in terms of controlling a material risk of environmental effect, but if adopted could place TDC in a de facto non-compliance situation.

72. In light of these reasons, TDC invites the Panel to adopt its proposed condition DSW1 to enable TDC to provide effective treatment of wastewater, taking into account effects on the environment and the I&I upgrades.

DSW2 – DSW4

73. TDC's proposed changes regarding timeframes and wastewater standard figures are addressed above under heading *DSW1* and are not repeated here.

DSW5

74. Likewise, the only remaining point of contention regarding DSW5 (timeframe) is explained under heading *DSW1*.

DSW8

75. DSW8 relates to receiving water quality in the Makakahi River. The key differences between TDC's proposed condition DSW8 and Horizons' corresponding condition are:

- (a) TDC proposes, from 32 months from commencement of the permits, a reasonable mixing distance of up to 300 metres (amended from the previous 100 metres) and identifies this area on Plan APP-200511178.01 A) whereas Horizons' version does not appear to accept these changes, nor comment on them;
 - (b) Horizons proposes the inclusion of "*a more than minor adverse effect on aquatic life*" at clause e. of its condition, which is not adopted by TDC; and
 - (c) Horizons proposes the inclusion of a clause k which addresses Chlorophyll a levels moving between bands as prescribed in the NPSFM, which is not adopted by TDC;
76. In terms of the reasonable mixing zone, Dr Ausseil deals with this at paragraph 5.7 of his supplementary evidence dated 5 April 2017. It is further noted that 100 metres, if measured from the surface discharge point from the wetland, would not be suitable as it would be within the groundwater influenced area. For these reasons, it preferable and clearer to identify a point – greater than 100m – on a map (Plan APP-200511178.01 A).
77. TDC's reasoning for omitting the clause "*a more than minor adverse effect on aquatic life*" has been well-canvassed both in the context of the EWWTP, and in the Pahiatua WWTP proceedings. In particular, Dr Ausseil deals with this at paragraph 6.2(d) of his supplementary evidence. Further, as explained in the Pahiatua WWTP proceedings the approach proposed by TDC (using the phrasing "*no more than 20% reduction in QMCI*" as an appropriate gauge for assessing significant effects on aquatic life in the context of point-source discharges):
- (a) was the approach accepted by the Environment Court (and favoured by Horizons) in the *Feilding* case;¹² and
 - (b) was the approach favoured by Horizons in its *Feilding Meat Processing Plant* decision.¹³

¹² *Manawatu District Council & Others v Manawatu District Council & Others* [2016] NZEnvC 53, at [18]-[119], [199]; [2016] NZEnvC 230, condition W13(e).

¹³ Decision Report *Feilding Meat Processing Plant*, AFFCO New Zealand Limited's Resource Consent Applications to Manawatu-Wanganui Regional Council, 3 February 2017, at [77] "*Mr Logan Brown told us that at the time the One Plan was being developed it was proposed that if the targets were complied with, the effects of an activity on the receiving water body were likely to be no more than minor.*"

78. Horizons has provided no evidential basis for including this clause, and has simply stated its view that *"the inclusion of QMCI and periphyton cannot be considered the surrogate for all aquatic life."*
79. TDC's reasoning for omitting clause I (clause k in Horizons' version) is explained at paragraph 6.2(g) of Dr Ausseil's supplementary evidence and, again, Horizons has not provided an evidentiary basis for its different approach.

DSW9 (and Horizons' proposed DSW9A)

80. As discussed at the hearing, TDC proposes adopting the condition granted by the Panel in relation to the Pahiatua WWTP discharge. The original condition DSW9 recommended by Horizons is problematic for a number of reasons, including, as explained by Dr Ausseil at the hearing, that a statistical test cannot determine significant adverse effects; it can only determine whether there are statistically significant differences between upstream and downstream.
81. TDC and Horizons have now, to a large extent, reached agreement on DSW9. The key differences outstanding between the parties are:
- (a) TDC's version includes clause f (which deals with exceedances of periphyton cover limits and the steps TDC must take in that event) whereas Horizons addresses this in a separate proposed condition (DSW9A); and
 - (b) TDC defines "high flow conditions" as 8.224 m³/day whereas Horizons defines it as 9.54 m³/day.
82. Dealing first with periphyton cover, Horizons has provided an explanation for its preferred approach in **Appendix 1** at DSW9A and it notes this accords with the *Feilding* decision. Aside from the fact that no evidence has been given by Horizons in support of this approach, TDC does not support Horizons' proposed condition DSW9A because:
- (a) The first part of the condition is aimed at identifying a degree of change in periphyton cover that an observer may find detectable (agreed as a 15 point increase). This is sufficient to determine compliance with the condition and it is noted that this part of DSW9A is already incorporated in clause f of TDC'S proposed condition DSW9; and

- (b) The second part of the condition relates to an additional assessment of the duration of the exceedance, to provide further characterisation on the effect on aesthetic values. This was offered in *Feilding* because of the significance of the discharge and the visibility of that reach of the Oroua River, however weekly sampling is resource-intensive and is not justifiable in the case of a significantly smaller discharge (such as the EWWTP discharge). Horizons' position is not based on potential effects associated with Eketāhuna but rather consistency with another discharge in entirely different circumstances without providing evidence.
83. In terms of the high flow conditions, 8.283 m³/s is the 20th FEP for the Makakahi River at Hamua.¹⁴
84. Horizons has provided no evidence has been offered as to why a 3 x median flow should be used to define high flow conditions. Dr Ausseil does not agree this is appropriate from a technical perspective. 20th FEP is the common flow in the One Plan. Although a true flushing flow in the Makakahi River may be greater than 20th FEP, shear stress at 20th FEP would ensure that biomass was less than 120 mg/m² and Dr Ausseil's view is that a full flushing flow is not required to achieve this.
85. TDC's preference is to use the 20th FEP. The Panel accepted this in the Pahiatua WWTP proceedings in the corresponding condition. It therefore provides consistency. It also, practically, avoids the risk of observations being made when it is known periphyton biomass would be less than 120 mg/m², but the condition does not allow TDC to count it as such.

DSW21

86. The only remaining difference between the parties' condition DSW21 relates to the timeframe, which is dealt with above under heading *DSW1*.

Horizons' proposed DSW24

87. Horizons proposes a condition (identified as DSW24) relating to post-development assurance in the case of unexplained increases in flows.
88. This condition is unnecessary, and TDC does not propose adopting it. The conditions proposed by TDC are already comprehensive and sufficient to address the EWWTP's performance and respond to any issues. This condition, if adopted, would simply be a 'review for review's sake' condition

¹⁴ Henderson and Dietrich, 2007.

and would be unduly onerous, particularly given it is suggested to be implemented at Year 5 of a seven-year consent.

89. Rather, TDC's priority is to ensure a sustainable system is in place, collect data on potential in-river effects and then use that information collected when re-consenting the EWWTP.

DSW27

90. This condition relates to an expert assessment of the water quality, periphyton and macroinvertebrate monitoring data collected. TDC and Horizons have reached agreement on the majority of this condition, except for the advice note that Horizons proposes, which TDC does not adopt on the basis it is unnecessary.
91. Horizons provided no evidence during the hearing to support its proposed advice note. All experts involved in the hearing have been independent. Further, it would necessitate extra expenditure if TDC was required to engage a new expert.

EFFECTS OF INFILTRATION AND INFLOW (I&I)

92. At the 27 November hearing the Panel raised I&I as a possible concern in the context of the wetland's ability to function as designed. In particular, the Panel was concerned to understand the consequences, from a cultural effects perspective, of increased I&I leading to less percolation and retention time as the treated wastewater travels through the wetland.
93. Mr MacGibbon's overall view, in terms of consequences for the wetland, was that maintenance and establishment were more significant than I&I in terms of making the difference between a failed and successful wetland. That said, Mr MacGibbon noted the work that TDC is doing to reduce I&I, which was also addressed in the evidence of Mr King. As Mr King discussed, TDC's Long Term Plan includes a strategy for investigating I&I into the wastewater networks, and TDC has allocated \$1,170,000 for this work.
94. In addition, as above, the median flow (with current I&I) will be retained within the wetland for 72 hours. That provides significant time and TDC has increased the size of the wetland to respond to the issue of residence time and cultural benefits. Ongoing I&I improvements may increase the residence time but that is not required (as above Policy 5-11 does not stipulate a time).

Conditions relating to I&I

95. TDC and Horizons have reached agreement on condition G16 save for the wording "*must*" which Horizons prefers, where TDC prefers "*shall*". Horizons' reasoning for this wording is that "*must*" is clearer than "*shall*". TDC does not object, in principle, to either word being used, however whichever word is used should be used consistently throughout the conditions. Therefore, TDC does not propose amending G16 in light of Horizons' comments but will abide the decision of the Panel in that regard, noting that if the Panel changes the word it should make that change throughout the conditions.

EFFECTS ON GROUNDWATER

Wetland

96. As explained in the evidence of Ms Boam, any adverse effects on groundwater resulting from the proposed wetland will be less than minor. There is a high level of agreement between the groundwater experts (Ms Boam for TDC and Mr Baker for Horizons), notably:
- (a) as to the land and groundwater topography of the site surrounding the wetland;
 - (b) that the groundwater in the alluvium is hydraulically connected with the Makakahi River;
 - (c) that no monitoring bores are required at the wetland; and
 - (d) that the estimated 10% leakage will be able to be measured using inflow/outflow data and by looking at the water balance.

Treatment ponds

97. During the hearing the sole issue in respect of treatment ponds related to leakage from the existing treatment ponds and whether they should be lined and/or have monitoring bores installed. As alluded to in opening legal submissions,¹⁵ and discussed during the 27 November hearing by Mr Crawford, TDC does not propose to line the EWWTP treatment ponds.
98. When asked about the reasoning behind this by the Panel, Mr Crawford gave evidence that:
- (a) in the context of the EWWTP it would be too disruptive to the general functioning of the EWWTP as the ponds would need to be completely

¹⁵ Paragraph 134.

taken out of commission one at a time (hence significantly increasing contaminant levels being discharged) and the conditions would have to be amended by the Panel to enable this – noting Horizons gave no evidence on what would be required;

- (b) the ponds would need to be vigorously cleaned (and a gas extraction system installed at considerable cost) to try and ensure that all remnants or organic material at the base of the ponds are removed, to prevent 'whales' occurring; and
- (c) it would not be appropriate to take the ponds out of commission where it could not be demonstrated there would be any significant leakage from the ponds.

99. When asked if Mr Crawford would support monitoring bores, Mr Crawford responded it would be preferable to implement a pond 'drop test' to inform the extent to which further action was necessary.¹⁶

100. The primary point of difference between the groundwater experts was in relation to Horizons' recommended one up-gradient, two down-gradient monitoring wells (in the event the ponds are not lined).

101. Mr Baker's view was that this monitoring would be useful to understand whether there was any leakage from the ponds and if so, any effect it might have on the receiving environment (the River). As Ms Boam points out in her evidence, this is unnecessary given the impermeable mudstone bedrock observed at the ground surface near the EWWTP. The presence of this bedrock means that any seepage could not interact with a groundwater system in any event, therefore there could be no effect on groundwater quality.

Conditions relating to groundwater

102. Accordingly, TDC proposes conditions DLW1 – DLW2 providing for permeability investigations, subsequent reporting to Horizons, and the implementation of a system for ensuring leakage is maintained at a level below 25m³/day.¹⁷

DLW2 (and DLW3)

103. TDC and Horizons largely agree on the wording of DLW2, with the only substantive difference being that Horizons' preference is to split the

¹⁶ TDC's proposed DLW1, which Horizons agrees to, provides for such a test.

¹⁷ DLW1 is largely agreed between the parties, save for a minor wording amendment ("*The methodology shall also include...*") which was inserted subsequent to Horizons' review of the proposed conditions.

condition into two, with DLW3 dealing with the steps to maintain leakage levels following permeability investigations. TDC does not consider it necessary to split out the condition, however has no strong objection if the Panel is minded to adopt that approach (provided any renumbering/cross-referencing is corrected).

104. Horizons also queries the basis for TDC's proposed 25m³/day seepage rate, but does not oppose it. Ms Boam has confirmed that the 25m³/day value equates to a permeability of approximately 2.4x10⁻⁷m/second, assuming the base of the pond is 0.12 ha.

OTHER MATTERS

Other general conditions

105. In respect of condition G17 (Annual Environmental Report), TDC has proposed some minor amendments. These are:
- (a) The addition of "*of all monitoring and sampling required by the conditions*" at the end of clause c; and
 - (b) The removal of "*and against any relevant targets in Schedule E of the One Plan*" at the end of clause d.
106. TDC's suggested amendment to clause c ties in with its proposed removal of condition DSW31, as it considers that with this amendment to G17, DSW31 is redundant and duplicative. Horizons has agreed to this change.
107. TDC proposed change to clause d aims to eliminate the uncertainty of requiring compliance with "*any relevant*" targets. Horizons does not agree with this change. TDC's position is that:
- (a) the conditions provide a robust and bespoke set of standards for the operation of the EWWTP;
 - (b) those conditions should be determinative, not subject to another assessment against One Plan provisions;
 - (c) the terms "*any relevant*" is vague and uncertain, begging the question: who determines which provisions are relevant and why?; and
 - (d) the Panel has heard detailed evidence focussed on potential effects of the Project such that the inclusion of "*any relevant*" targets is unnecessary and, as above, unhelpful.

Term

108. TDC seeks a seven year term (from commencement of the consents) in respect of all consents it seeks as part of:
- (a) the First Application; and
 - (b) the Wetland Application.
109. This is a very modest term and is, as TDC explained in opening legal submissions, the shortest time practically available to enable TDC to collect further information, build and optimise the proposed treatment plant, construct the wetland and undertake monitoring and an investigation into alternatives.
110. From a legal perspective, the case of *Bright Wood NZ Ltd v Southland Regional Council* is authority for the proposition that consent should be granted for such a term as best accords with the sustainable management purpose of the RMA.¹⁸ It is TDC's submission that the term sought will achieve this.

CONCLUSION

111. TDC's opening legal submissions set out the key decision-making considerations for the Panel in terms of:
- (a) the application of section 104 generally;
 - (b) the application of relevant planning instruments, including the National Policy Statement for Freshwater Management and the One Plan;
 - (c) sections 105 and 107; and
 - (d) the meaning of "*Subject to Part 2*".
112. This reply does not repeat those earlier submissions but relies on them and the evidence on behalf of TDC in concluding:
- (a) There is agreement between TDC and Horizons that granting the applications that form the Project would accord with the One Plan and the RMA's sustainable management purpose (there is limited argument on the conditions to be imposed).
 - (b) Granting consent for the Project will enable TDC to continue collecting, treating and disposing of Eketāhuna's municipal

¹⁸ *Bright Wood NZ Ltd v Southland Regional Council* EnvC Chch C143/99, 17 August 1999.

wastewater in a sustainable, environmentally responsible and cost-effective way, and in doing so will enable the people and communities or Eketāhuna to provide for the social, economic and cultural wellbeing, and for their health and safety.

- (c) Through discussions before, during, and following the 27 November hearing, TDC and Horizons have been able to agree on the vast majority of conditions and any differences in opinion that remain are relatively minor (and explained in this reply and **Appendix 1** attached).

113. Finally, TDC notes the final set of conditions it proposes has been the result of a great deal of effort, input and insight from independent experts, Horizons officers, submitters and Panel members. TDC is grateful for the constructive efforts of others throughout the re-consenting of the EWWTP, efforts which have contributed greatly to producing a robust framework for managing any residual effects of the Project.

22 January 2019

David Allen / Esther Bennett

Counsel for Tararua District Council