

BEFORE THE HEARING PANEL

IN THE MATTER the Resource Management
 Act 1991 (the Act)

AND

IN THE MATTER of applications by Tararua District Council to Horizons Regional Council for application **APP-2005011178.01** for resource consents associated with the operation of the Eketahuna Wastewater Treatment Plant, including a discharge into the Makakahi River, a discharge to air (principally odour), and a discharge to land via pond seepage, Bridge Street, Eketahuna.

SUPPLEMENTARY REPORT OF TIMOTHY MICHAEL BAKER

GROUNDWATER

4 April 2017

A SUPPLEMENTARY COMMENT

- 1 My full name is Timothy Michael Baker.
- 2 I prepared the s42A report on groundwater matters, which has been pre-circulated and I understand will be taken as read.
- 3 I have prepared the following evidence in response to Direction # 2, which asked two questions of me.

QUESTION 1: In paragraph 39 of his evidence he suggests a situation where it will be useful to install 3 monitoring wells around the ponds. Can he mark up a plan showing where those wells should be located?

REPNSE TO QUESTION 1:

- 4 Please find a marked up plan below. Please note the monitoring wells are located based on my best judgement of likely groundwater flow paths, not on known piezometric contours.



QUESTION 2: Can he comment on the TDC Engineers (John Crawford) concern about lining the current ponds and the alternative suggestion about a seepage assessment (paras 11.26 – 11.32 of Crawford’s evidence). If he agrees with Crawford’s approach, what level of seepage losses would be acceptable and why?

- 5 Mr Crawford suggests that the process of relining would be very disruptive to the operation of the WWTP and that an enlargement of the main pond would be required to allow a bund to be installed without losing storage volume. These matters are beyond my area of expertise and experience and as such I have no comment on them.
- 6 Mr Crawford raises concerns that the organic material present in the soil matrix beneath the ponds would generate gas that may cause ballooning of the pond liner. He notes that a gas venting layer would be required to mitigate this issue. I was of the understanding based on communications with TDC and their consultant planner that this was part of the proposed liner design. As such, I included monitoring of any water in this venting layer in my proposed conditions (40 d).
- 7 I agree that the seepage testing and mass balance calculations proposed by Mr Crawford would provide critical (baseline) information that is currently missing from the application (note these are similar requirements as proposed in my evidence).
- 8 I agree with Mr Crawford that if the seepage testing/water balance calculation shows that seepage is occurring then a suitable monitoring programme would be required. In my opinion the monitoring described in my evidence would be sufficient.
- 9 In terms of the acceptable level of seepage, I suggest that the acceptable level of seepage is a volume that results in a no more than minor effect on the water quality/in stream habitat of the river/s. To determine this volume, monitoring of groundwater and a more robust conceptualisation of groundwater would be required. Mr Brown and Dr Ausseil are more qualified to comment on what would constitute no more than minor effect.
- 10 In the interim, I would suggest that a seepage rate of greater than 20% of inflow would be unacceptable. This is based on evidence presented by Mr Robert Docherty of PDP and Mr Derek Railton of Fluent Solutions during the Foxton WWTP consent application process in February 2017. Their evidence addressed what a typical range of seepage rates from unlined ponds could be (a range of 10 – 20% was discussed).

Tim Baker
4 April 2017