Memo

To: Nicholas Woodley, Watercare
From: Mark James (AES), Aslan Perwick (PDP)
CC:
Date: 4 December 2014
Re: Field visit 24 November 2014

Background

Watercare and its consultants conducted a site visit with members of the Consultative Group on Monday 24 November. The purpose of the visit was to inspect various surface drains between the irrigation areas associated with the Jones Rd and the Omaha Golf Course irrigation fields and to identify specific areas of concern to the Consultative Group.

Notes from the visit

1. Areas inspected

The visit included inspection of:

- Man-made drains on the Jones Rd side (western side) of the Waikokopu Arm of the Whangateau Harbour.
- Two areas along the western shoreline of the Waikokopu Arm – near the causeway and adjacent to 145 Jones Rd.

- The eastern side of the Waikokopu Arm from the causeway along to a stream that comes in from the Kahikitea Forest adjacent to WSL monitoring bore PAX.

2. Points of interest to the Omaha Consultative Group

Areas of particular interest to the Consultative Group members present included:

1. The Jones Road drains and differences in water quality (appearance and smell) and vegetation appearance
2. The current sampling locations within the Jones Road drains
3. The capacity of the ground material to continue to 'treat' irrigated TWW (particularly on the Jones Road side) into the future and the cumulative effect of the practice
4. Whether irrigation to Omaha Golf Course (OGC) was emerging as seepage onto Omaha Beach. One member of the consultative group described significant discharge of groundwater along Omaha beach, especially after larger rains. The member was concerned that the current "theory" that groundwater irrigated on OGC flows westwards requires further evaluation.
5. The close proximity of the northern portion of the OGC (not currently irrigated with Treated Waste Water (TWW)) to the Whangateau Harbour, and the potential for irrigation expansion in that area
6. The potential for the OGC to further reduce their use of fertiliser
7. Existence and location of groundwater take consents; particularly on the Mangatawhiri Spit

3. Recommendations and actions

Suggested changes to the Investigation Plan following the visit are:

Groundwater

- PDP review of existing groundwater sampling methodology, water quality suite, and monitoring bore infrastructure. This is in regards to confirming that existing sampling methodology is appropriate/best practice, monitoring bores are up to standard, and that existing results are subsequently accurate and defendable. This will aide in supporting information relating to areas of interest 1,2 and 4 above.
- Complete ~10x hand augers (as per Investigation Plan) at the locations marked on *Figure 1.* These have been located to provide maximum benefit to conceptual geological knowledge, geophysics ground-truthing, and future monitoring bore drill planning. The hand augers will also aid supporting information to area 3 of interest above.
- Physically locating/confirming existence and condition of Mangatawhiri Spit bores' P1, P5, P8, and PE (The Consultative Group commented that some may no longer exist). The existing Investigation Plan was based on these bores potentially needing to be replaced if they were either un-locatable or of insufficient construction quality. This will aide in supporting information relating to areas of interest 4 from above list.
- Addition of 3 Omaha Beach seepage monitoring sites (as part of Stage 1). Samples from these locations could be incorporated into the groundwater monitoring work for this consent application. Samples would be collected at low tide by digging a small hole in the seepage area (at as higher elevation as possible) and collecting a sample for water quality analysis. This will aide in supporting information relating to areas of interest 4 from above list.
- Providing existing map created by PDP showing existing groundwater takes within the Omaha region to the Consultative Group for their information (Appendix A). This will address area of interest 7 from the above list.
- Areas of interest 5 and 6 are planned to be addressed at a later stages within the project.

Water quality

The Investigation Plan included a survey of the water quality in surface drains between the irrigation areas and the Harbour to be carried out and then monthly

monitoring be set up. Likely sites are provided in *Figure 1* plus a sample will be taken at the mouth of where the Waikokopu Creek enters the Harbour. The monitoring would be undertaken monthly and include the following parameters:

- Temperature, pH, TSS, turbidity
- Nutrients (ammonia, nitrate and nitrite-nitrogen, dissolved reactive phosphorus, total nitrogen, total phosphorus).
- Dissolved organic carbon
- Faecal coliforms, *E.coli*

Sampling and analyses would be undertaken by Watercare staff with data being collated and reported as part of a Water Quality workstream. Initially sampling would run for 3 months and then the data would be assessed before any long-term sampling is recommended.

Summary

The consultative group field visit was overall highly useful for both interested parties. None of the areas of interest raised by members of the consultative group during the site visit contradicted the existing site conceptual model; which provides some added confidence in the existing conceptual model itself and its' founding data. The issue of groundwater seepage along the Omaha Beach will be investigated further. Some additions were added to the Investigation Plan following the visit including checking certain bores still exist and confirming sites for monitoring surface drains.

Figure 1. Map showing water quality sites for surface drains

Appendix A.

Maps showing bores and consented takes