Under The Resource Management Act 1991

In the matter of an application for resource consent to discharge wastewater overflows from Queenstown Lakes District Council's wastewater network

Second Statement of Supplementary Evidence of Dr Dean Antony Olsen

6 December 2019

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Second Statement of Supplementary Evidence of Dr Dean Antony Olsen

1 Introduction

1.1 My full name is Dr Dean Antony Olsen. I am an Environmental Scientist and Associate Director at Ryder Environmental. My qualifications and experience are set out in my evidence in chief. I have prepared this supplementary evidence in accordance with the obligations in the Environment Court Code of Conduct for expert witnesses.

1.2 This statement of evidence responds to Minute #5 dated 11 November 20019 that sought clarification regarding some parameters presented in Table 6 of my evidence in chief.

2 Approach to risk assessment

2.1 The first part of the risk assessment was an assessment of the probability of wastewater entering freshwater (Table 3 of my EIC). I assessed the following risk factors:

(a) the distance to water;

(b) the presence of a flow path; and

(c) the vegetation/surface permeability of the flow path.

2.2 I assessed distance as the total distance from the potential source of wastewater to the receiving water body:[1].

> "The risk of wastewater entering freshwater … was assessed based on a measurement of the distance from the potential source of wastewater to water. Where a clear flow path was identified during the site visit or from aerial photographs , the distance to water was measured along this path. Such flow paths included roadways and stormwater systems, where these discharged to surface waters. Where no clear pathway was identified, the distance to water was measured as the shortest straight-line distance to water considering the local topography (i.e. water cannot flow up hill)." [Emphasis added]

2.3 I assessed the risk associated with the permeability of the surface of the flow path as being high for impervious surfaces (concrete, asphalt), meaning that in instances where the flow path was paved, I typically assessed the risk as high because I anticipated that wastewater could travel a long distance on impervious surfaces with little or no infiltration.

3 Site #6 – Pump station on Dungarvon Street, Wanaka

3.1 Paragraph 5 of Minute #5, states:

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[1] page 2 of the Ecology Report attached to the AEE

> "… it would appear that any wastewater overflow from the pump station would flow over land for a short distance, then across the road before flowing down the kerb and channel of Dungarvon Street to a stormwater catch-pit. There appears to be a white PVC pipe from the catch-pit that emerges on the banks of Bullock Creek. If this arrangement is correct, then we question whether the 'distance to water' should, in fact, be the distance between the PVC pipe and Bullock Creek, being in the order of 1 to 2 m, as the end of the PVC pipe would be the effective 'point of discharge' of any overflows from this pump station. We note in this situation that the Applicant would have full control of the overflow discharge from the pump station until control is lost at the end of the PVC pipe."

3.2 I have checked and confirmed that distance to water from pump station #6 to Bullock Creek is 71 m.

3.3 I identified and considered a potential flow path from the pump station to Bullock Creek via kerb and channel and stormwater infrastructure was in my risk assessment for this site.

3.4 I assessed the risk associated with vegetation/surface permeability as "High" given the impervious surfaces throughout the potential flow path. Overall I assessed the probability of wastewater entering water in the event of an overflow at Site #6 as "High". This is the highest probability I used in my assessment. If would also assess the flow path via the PVC pipe identified by the Commissioners as having a "High" probability of wastewater entering water in the event of an overflow at Site #6.

3.5 Therefore, the points raised by the Commissioners would not change my assessment of the probability of wastewater entering water in the event of an overflow at Site #6.

4 Site #27 – Pump station beside Park Street, Queenstown

4.1 Paragraph 6 of Minute #5, states:

> "any overflow from the pump station beside Park Street, Queenstown, would appear to flow into a stormwater catch pit that has a pipe which discharges very close to the edge of Lake Wakatipu. However, Dr Olsen's table identifies the distance as being 25 m, which appears to be the distance from the pump station to the lake edge, rather than the distance from the end of the pipe to the lake edge."

4.2 I assessed the total distance from the original source of wastewater (in this case, the pump station) to the receiving water body. I have checked and confirm that the distance to water from pump station #27 to Lake Wakatipu was 25 m.

4.3 I identified and assessed a flow path from the pump station to Lake Wakatipu via kerb and channel and stormwater infrastructure I assessed the risk associated with vegetation/surface permeability assessed as "High" given the impervious surfaces throughout the potential flow path.

4.4 Overall I assessed the probability of wastewater entering water at Site #27 as "High". This is the highest probability I used in my assessment. I would also assess the flow path via the PVC pipe identified by the Commissioners as having a "High" probability of wastewater entering water in the event of an overflow at Site #27.

4.5 Therefore, the points raised by the commissioners would not change my assessment of the probability of wastewater entering water in the event of an overflow at Site #27.

5 Site #25 – Pump station at Frankton Beach

5.1 At paragraph 7 of Minute #5, the Commissioners query the distance from pump station #25 to Lake Wakatipu. In my Table 6, this distance was listed as 61 m, but this is an error (likely a transposition error) and the distance for this site is approximately 15 m, as estimated by the Commissioners.

5.2 The change from 61 m to 15 m increases the overall risk of wastewater entering water at Site #25 from "Mod-High" to "High". I present an updated assessment for Site #25 in Table 6 below.

Table 6 Updated risk assessment associated with potential discharge points from QLDC wastewater infrastructure.

Location Number	Area	Distance to water (m)	Receiving water body/bodies	Description	Probability of waste water entering water (based on criteria in Table 3)	Risk associated with wastewater discharge
25	Queenstown	15	Lake Wakatipu (Frankton Arm)	Pump station on lake shore on Shoreline Road at Frankton Beach.	High	**Moderate, but high locally**

5.3 There is no change to the "Risk Associated with Wastewater Discharge", which was calculated independently of the probability of wastewater entering water.

5.4 I note that the existing redundancy at this pump station and QLDC's programmed capital works that will divert wastewater from this site have already been discussed in Mr Hansby's supplementary evidence.[2]

Dr Dean Antony Olsen

6 December 2019

[2] BoE HANSBY Peter, Supplementary Clarifications dated 7 November 2019.