

Southern Link Inland Port
Mark Scaife – for SLPL - Summary Statement on Groundwater

Introduction

1. My section 55 evidence addresses the suitability of controls proposed for managing groundwater quantity and quality effects of the Southern Link Inland Port (**SLIP**) and is supported by the Stantec Groundwater Assessment report (Part B.11 of the substantive application), to which I was a secondary author.

Summary of the groundwater pathway assessment

2. The only potential pathway for surface contaminants to reach groundwater is limited to infiltration via the base of the stormwater attenuation pond. The stormwater that enters the attenuation pond will comprise of treated stormwater and, only in rare storm events, overflow from the washbay after >30mm of rainfall has washed it relatively clean.
3. Under normal conditions which includes first flush events when surface contaminants have the potential to reach high concentrations and up to 5 mm/hour of rainfall thereafter, all stormwater will be treated prior to being discharged into the attenuation pond. This water will be treated to an appropriate quality to be discharged to the Silver Stream, so it will not be carrying or able to transfer significant contamination to groundwater (I refer to Dr Claire Conwell's evidence on this point). For this reason, infiltration will not be specifically targeted in the design of the stormwater attenuation pond.
4. The washbay collection system is designed to capture washdown wastewater and moderate rainfall falling on the washbay area, directing it to the trade waste system under normal operating conditions. Only in rare storm events greater than 30mm, or a longer duration 10% annual exceedance probability (or rarer, depending on storm duration) would a small portion of relatively clean water, following at least 20 minutes of intense rainfall resulting in very low residual contaminants, potentially overflow the washbay perimeter. This relatively clean overflow would flow over hardstand to the stormwater attenuation pond, where it would be substantially further diluted for those analytes by stormwater from the entire SLIP site before any discharge to land or the Silverstream.

5. Stormwater discharge to land will occur via the attenuation pond, it will not be designed to intentionally recharge groundwater. Groundwater level monitoring indicates there will be an unsaturated zone below the pond. Any proportion of the treated stormwater that infiltrates to ground will pass through the soil profile before reaching groundwater. During this process, the soil provides additional treatment through physical filtration and straining of suspended solids, sedimentation within soil pores, adsorption of particle-bound contaminants to soil minerals and organic matter, and microbial and geochemical processes that may further reduce contaminant concentrations. The infiltrating water would also be subject to dilution within groundwater prior to reaching any receptor. In the unlikely event that the underlying groundwater level rises near to the base of the pond, the reduced hydraulic gradient out of the pond will greatly limit the infiltration rate, and any stormwater-related contaminants entering the groundwater system will be very limited and diluted rapidly due to the high groundwater flows expected during such elevated levels.

Summary of contaminated land and nearby groundwater users

6. Identification and remediation of any contaminated land on site is addressed through the Contaminated Site Management Plan and associated Remedial Action Plans, which must be lodged with, and certified by, Otago Regional Council at least 20 working days prior to the commencement of each development stage of earthworks. This management Plan requires adherence to best-practice options for the safe and efficient management of contaminated soils and materials. Any and all contaminated soils will be removed from the base of the attenuation pond, given the significant excavation depth. Overall, the leaching of contaminants from soils to groundwater will reduce in comparison with the baseline environment, due to the removal of contaminated soils.
7. In relation to nearby groundwater users, the development's effect on groundwater quality is assessed to be negligible. With respect to the bore located at 54 Rutherford Road, the Silverstream causes a groundwater mound as it loses to the underlying aquifer, creating a groundwater divide beneath the stream. As groundwater will not flow uphill, groundwater on the far side of that divide, including at the Rutherford Road bore, will not be in the flow path of treated stormwater discharged to land from the attenuation pond.

Summary of monitoring measures

8. The ongoing groundwater monitoring and reporting framework under the proposed consent conditions (conditions 28 to 31), which require continued monitoring and reporting of groundwater levels below the site and confirms (condition 32) that should monitoring indicate dewatering is required for construction purposes, which in my opinion is highly unlikely, the necessary consents and approvals will be obtained before that occurs.

Summary of recommendations

9. I recommend that:
- (a) groundwater levels below the site continue to be monitored and reported in accordance with proposed conditions 28 to 31;
 - (b) any dewatering required for construction purposes only proceed once the necessary consents and approvals are obtained, in accordance with condition 32;
 - (c) the Contaminated Site Management Plan and Remedial Action Plans be certified by Otago Regional Council at least 20 working days prior to each stage of earthworks; and
 - (d) no additional groundwater monitoring or verification conditions beyond those already proposed need to be imposed, as they are not commensurate with the very low magnitude of potential effects.
10. Overall, in my opinion all groundwater-related effects from the SLIP are appropriately managed through the combination of infrastructure positioned above groundwater, controlled and diluted discharge pathways, contaminated land management, and the proposed groundwater monitoring framework, such that the risk of more than minor effects on groundwater quantity or quality is very low.
11. This evidence does not change the views I expressed in my original Groundwater Assessment report.



Mark Scaife
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