

Southern Link Inland Port
Dr Claire Conwell – for SLPL - Summary Statement on Stormwater Quality

1. My section 55 evidence addresses the solution proposed for managing stormwater quality effects of the Southern Link Inland Port (**SLIP**) on the Silver Stream and is supported by my Stormwater Contaminant Load Model (**CLM**) Assessment dated 17 April 2026.

Summary of the contaminant assessment

2. My assessment applied Auckland Council's Contaminant Load Model (CLM v2, 2010) as a screening-level, first-order and conservative tool to estimate likely annual contaminant loads and concentrations from the fully operational SLIP site. It was not intended to be an event-based compliance model. The principal contaminants assessed were total suspended solids (**TSS**), total zinc, total copper and total petroleum hydrocarbons.
3. Paved operational areas, including heavy-duty pavement, container yards and hardstand, make up around 60% of impervious area but more than 85% of modelled contaminant load. This finding supports directing stormwater treatment to those areas.

Summary of the proposed treatment solution

4. The proposed operational treatment train comprises roadside catchpits across the internal road network to capture heavy grits and litter, gross pollutant traps within manholes at site discharge points to trap larger suspended solids, particulate-bound contaminants, floating litter and hydrocarbons behind baffles, proprietary filter components with engineered media to capture fine particulates and soluble metals, and final polishing through contact time across grass and topsoil within the attenuation basin floor before controlled discharge to Silver Stream.
5. The devices are capable of capturing suspended sediments in the order of 20 to 50 microns and are consistent with an industry-accepted minimum performance standard of more than 75% TSS capture, with higher overall contaminant capture expected when the components operate together as a treatment train.
6. Modelled load reductions are approximately 97% for TSS, 75% for total zinc, 74% for total copper and 57% for hydrocarbons. Resulting modelled annual average discharge concentrations were in the order of approximately 0.9 mg/L TSS, 0.13 mg/L total zinc, 0.02 mg/L total copper and less than 0.002 mg/L hydrocarbons. These modelled reductions are consistent with Mr Nick Keenan's evidence that the combined treatment train is expected to achieve contaminant capture closer to 90% for TSS and associated contaminants when operated as an integrated system.
7. Modelled concentrations are within the range measured at Port Chalmers and near or below URQIS¹ industrial-site medians. Comparison with Port Chalmers monitoring also showed CLM estimates were broadly consistent for TSS, zinc and hydrocarbons, and conservative for copper.

¹ [Urban Runoff Quality Information System \(URQIS\) | Earth Sciences New Zealand | NIWA](#)

8. The Port Chalmers comparison provided a useful 'real-world' check on the CLM outputs because it reflects monitoring from a current operating port environment with activities comparable to those proposed for the SLIP. That comparison supports the conclusion that the CLM is appropriate for assessing likely operational stormwater contaminant loads and, if anything, conservative for copper.
9. Notwithstanding the intention to reduce on-site contaminant sources as far as practicable, it is important to recognise the relative scale of the upstream catchment, which is approximately 200 times larger than the site footprint. Accordingly, any residual contaminant concentrations in stormwater discharges occurring during and shortly after rainfall, when stream flows are elevated, are likely to be diluted sufficiently to levels that do not pose an ecological risk in the downstream receiving environment. In addition, the attenuation pond will temporarily store runoff and release it at a controlled rate, so very small events may result in little or no discharge, while larger events will generally coincide with increased receiving-water flow and resultant dilution.

Summary of source control and monitoring measures

10. Contaminants outside the CLM, including container washing, vehicle maintenance, refuelling and hazardous substances, are managed through operational source controls. These include bunded washbay and refuelling areas directed to trade waste, sealed and swept yards, covered or bunded storage, spill containment and response areas, and cessation of washdown activities during storm events that exceed the washbay collection system design capacity.
11. Implementation of the Stormwater Monitoring Plan as required through the condition set will ensure discharge quality is monitored at the attenuation pond outlet and upstream/downstream Silver Stream sites, including TSS, hydrocarbons and total and dissolved metals, against baseline data and site-specific triggers, with investigation and escalation if results indicate a project-related effect.
12. The proposed pond outlet or forebay sampling location can, in principle, also act as an event-representative proxy for the quality of stormwater discharged from the site after treatment and attenuation.
13. A defined operational treatment standard may be considered, such as a 75% TSS removal benchmark or equivalent recognised stormwater design guideline, noting the treatment train is modelled to achieve substantially higher TSS reduction.
14. The indicator suite in the SMP appropriately focuses on TSS, hydrocarbons and total and dissolved metals, nutrients and core physico-chemical parameters (pH, hardness, conductivity etc). SVOCs, cleaning agents or other analytes are able to be escalated and included in additional sampling and analysis if baseline data, operational activities or trigger exceedances indicate they are part of the site-specific contaminant profile. Comparison of the proposed SLIP monitoring suite with the current Port Chalmers monitoring suite confirms that the wide range of parameters aligns closely with those currently monitored at the Port Chalmers site. The exception is chemical oxygen demand (**COD**) and biological oxygen demand (**BOD**) which are indicators of organic enrichment and are

commonly assessed in effluent associated with wastewater treatment plant, or log yard stormwater that are likely to have higher organic loads.

15. The draft conditions set out the notification process to ORC, and triggers for follow-up sampling and investigations, as well as adaptive management responses.

Setting end-of-pipe limits

16. Paragraph 22 of Minute 9 (Silver Stream / Whakaehu freshwater issues) requested consideration of 'whether there is an alternative involving discharge limits, appropriate testing and monitoring procedures and adaptive management provisions that can achieve something similar to the "ideal" outcome.'
17. The feasibility of establishing 'end of pipe' discharge limits of the stormwater from the site was carefully considered. I am aware of several examples for which end-of -pipe limits have been established for several coastal ports, including Port of Tauranga, Eastland Port, and Port of Napier. For discharges to marine waters, a single dilution factor is applied to the calculation. As described below, establishing a single robust dilution factor for freshwater environments is extremely challenging.
18. Further to this, in recent information provided by the Water Services Authority Taumata Arowai, it is understood the national direction is focused on establishing and implementing National Engineering Design Standards². There is no national direction to consider end-of-pipe stormwater standards.
19. While end-of-pipe stormwater quality limits can be mathematically calculated, the process is impractical to both derive and logistically implement for the purpose of a stormwater discharge consent framework to Silver Stream freshwater environment
20. The method to set and end-of-pipe thresholds is to work backwards from the receiving-environment threshold at the 50 m reasonable mixing point, using background concentrations and application of a pre-defined dilution ratio. Within the Silver Stream, flow (and dilution) can vary substantially with rainfall duration, intensity, antecedent conditions and upper catchment influence. This means no single dilution factor or rainfall condition would provide a reliable basis to establish a fixed end-of-pipe limit.
21. Further, given the modelled efficacy of the proposed treatment train described earlier, it is my opinion that end-of-pipe limits are not required for the SLIP site. It is intended that the site will implement a treatment system that comprises the Best Practicable Option for onsite stormwater management and quality control through a multiple-barrier approach, This approach will rely on on-site treatment, source control, first-flush capture, staged treatment, attenuation, discharge

² Water New Zealand Stormwater Interest Group Meeting Thursday 3 September. Presentation and general discussion on the proposed National Engineering Design Standards was given by representatives of Taumata Arowai, who also confirmed engineering design was the focus of the national direction.

characterisation, receiving- environment monitoring and adaptive management. This approach aligns with the outcome sought by paragraph 22 of Minute 9 in that it provides an enforceable and responsive framework for managing actual discharge quality and receiving-environment effects, rather than relying on a single numerical end-of-pipe limit that would be difficult to derive and apply consistently across variable storm events, antecedent conditions and Silver Stream flow conditions.

22. If adopted, an end-of-pipe threshold could be used to inform treatment-train performance, investigation and adaptive management, not as a stand-alone compliance mechanism.

Recommendations and Conclusion

23. I support the approach set out in the SMP to establish the baseline monitoring prior to operation that captures baseflow, stormflow and seasonal variability as far as practicable, and informs site-specific trigger and response thresholds before operational monitoring begins.
24. I recommend detailed design confirms the final configuration and sizing of treatment devices and the attenuation pond, with particular focus on paved non-road areas as the dominant contaminant source. This should include confirmation of catchpit sizing, GPT/UPT locations, proprietary filter media performance for fine particulates and dissolved metals, and the configuration of the grassed/topsoil basin floor that provides the final biofiltering and polishing stage.
25. I recommend operational monitoring include total and dissolved metals, and that the attenuation pond outlet or forebay be used to characterise actual discharge quality to Silver Stream.
26. I confirm that the SMP allows for escalation or refinement of the monitoring suite as data accumulate. The draft conditions set out the notification process to ORC, and triggers for follow-up sampling and investigations, as well as adaptive management responses.
27. In my opinion, the conservative CLM assessment, demonstrated treatment train, Port Chalmers validation, substantial Silver Stream dilution, source controls and adaptive monitoring framework provide a robust basis for concluding that SLIP stormwater discharges can be managed to achieve low environmental risk and no significant adverse effects on Silver Stream. That conclusion is reinforced by the engineering evidence that the full attenuation system will be commissioned from Stage 1, the available stormwater devices have established New Zealand supply and maintenance pathways, and the treatment system can be incorporated into operational environmental management procedures.
28. This evidence does not change the views I expressed in my section 55 Evidence or the Stormwater Contaminant Load Model Assessment.



Dr Claire Conwell
10 September 2026