Before the Expert Panel appointed under the Fast-track Approvals Act 2024

FTAA-2604-1207

Under	**the Fast-track Approvals Act 2024 (FTAA)**
In the matter	**of the Southern Link Inland Port**
By	**Southern Link Property Limited**

STATEMENT OF EVIDENCE BY SIMON HENRY BLOOMBERG ON BEHALF OF SOUTHERN LINK PROPERTY LIMITED

WATER QUALITY

19 August 2026

SIMPSON GRIERSON

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1. INTRODUCTION

1.1 My full name is Simon Henry Bloomberg. I hold a BSc in Geology and Geography (endorsed in environmental science) and a MSc (Hons) in Geology from the University of Canterbury. I am a member of the Australasian Land and Groundwater Association, The New Zealand Hydrological Society, the Waste Management Institute of New Zealand and I am Certified Environmental Practitioner (no. 1395) under the CEnvP Scheme. I am currently employed by e3Scientific Limited (**e3s**) as a Senior Environmental Scientist, based in Christchurch.

1.2 I have worked in the Natural Resource and Environmental sector since 2010, which included time as a contaminated land officer, an exploration geologist, and a geotechnical advisor. In these roles I undertook desktop research, field sampling campaigns for soil, water, and gas, analysed and processed data, developed conceptual site models, and wrote scientific reports and technical assessments.

1.3 I have worked for e3s since May 2017 as a Senior Environmental Scientist. At e3s, I have been involved with stormwater monitoring including long term assessments of stormwater quality, consenting of discharges to land and water, erosion and sediment control, and surface water quality assessments.

1.4 My role in the Southern Link Inland Port Project (**SLIP**) is not set out in any reporting submitted to date. I have been brought into the project to address water quality matters related to stormwater including contributing to the drafting of the draft Stormwater Monitoring Plan (**SMP**) and draft Standard Operating Procedure (**SOP**).

1.5 I have been asked by Southern Link Property Limited (**SLPL**) to provide a response to questions regarding the SMP and Whakaehu / Silver Stream water quality contained in written comments from entities invited by the Panel to comment under s53 of the FTAA on the SLPL application, being:

(a) Otago Regional Council (**ORC**) Appendix 4: Technical advice relating to Freshwater Ecology). Emily Lion-Cachet and Raymond Change (**Beca Review**) 31 July 2025;

(b) Otago Fish and Game Council; and

(c) Te Rūnaka O Ōtākou, Treaty Impact Assessment for the Proposed Southern Link Inland Port (June 2026) (**TIA**).

1.6 Throughout my evidence, I copy extracts from the reports I am responding to in ***bold*** text, and my reply evidence to that point is then set out.

1.7 **Attached** to this evidence is:

(a) **Appendix A:** Summary of Available Baseline Data

(b) **Appendix B:** Stormwater Monitoring Plan (**SMP**)

(c) **Appendix C**: Draft Standard Operating Procedure (**SOP**)

Code of Conduct

1.8 I confirm that I have read the Code of Conduct for Expert Witnesses contained in section 9 of the Environment Court Practice Note 2023 and have complied with it in preparing this evidence. I confirm that the issues addressed in this evidence are within my area of expertise, and I have not omitted material facts known to me that might alter or detract from my evidence.

2. ORC, 'APPENDIX 4 TECHNICAL ADVICE RELATING TO FRESHWATER ECOLOGY', EMILY LION-CACHET AND RAYMOND CHANG, (BECA REVIEW)

Review of application material has identified information gaps including… Insufficient baseline data to support trigger calibration. Page 2 matters of contention.

2.1 The baseline data collection commenced in April 2026. To date, three samples have been collected in accordance with the process set out in the SMP and SOP, and one sample was collected in support of the Freshwater Ecological Impact Assessment. The SOP sets out the monitoring methodology for establishing the baseline, during construction and operation phases, and is to be incorporated into the SMP prior to that plan being certified. Baseline data is reviewed in **Appendix A**.

2.2 To characterise the reference baseline water quality for Whakaehu / Silver Stream, the SMP currently specifies that a minimum of four storm flow samples will be collected prior to commencement of construction. Further work had been completed on defining this baseline monitoring approach and was provided to ORC (through ongoing engagement) in the form of the draft SOP for stormwater monitoring (dated 16 July).

2.3 Table 2 of the SOP (since updated, 19 August 2026) indicates the frequency and type of samples to be collected, and under what stream flow conditions these should be sampled. The SOP states that 'Base Flow' (dry weather) conditions (e.g. flows of <1 m^3/s and a flat hydrograph) should be sampled at least seasonally and Storm Flow (wet weather) conditions (e.g. flows of >1 m^3/s in response to rainfall events, rising and falling limb hydrograph) should be monitored over a minimum of four events (quarterly) to provide a robust data set which covers a range of flows.

2.4 To ensure the reference baseline is relevant to the monitoring of stormwater discharge events it is recommended that 'Storm Flow' events be targeted as frequently as possible prior to the commencement of the stormwater discharge. To achieve this within the required timeframes, multiple samples could be collected from the same Storm Flow event at different flow rates (e.g. rising limb/peak flow/falling limb).

2.5 The Australian and New Zealand Guidelines for the Protection of Freshwater and Marine Water Species (**ANZG**, 2018) provides an assessment of the samples required to reflect different percentiles of a baseline dataset. To calculate the 80th percentile of a reference dataset, a minimum sample size of 24 samples is required. Once the appropriate number of samples has been collected (n≥24) the median of the data from the reference site(s) should be compared to the appropriate guidelines in Table 1 of the draft SMP. This will provide an assessment of the natural variability with respect to the published guidelines for the protection of freshwater species. Further discussion of the setting of site-specific trigger limits and the baseline modification factor is included from paragraph 2.20 to 2.29.

2.6 The NPS-FM states that 30 samples in 3 years is a good target for monitoring data to be representative of instream conditions and for comparison to the adopted national bottom-line attributes.

2.7 Thus, for the purposes of setting a robust baseline at least 24 baseline (Base Flow or Storm Flow) samples will be collected. The proposed conditions have been updated to reflect this.

"… As the CLM no longer appears to form part of the evidential basis for the effects assessment, further detailed discussion of its methodological limitations is redundant, but the lack of reliance on this tool highlights our wider concern about a lack of transparency of lines of evidence supporting the assertions about the baseline and the level of assessed effect." page.3, Section: Adequacy of Effects Assessment

2.8 As noted in the evidence of Ms Miller, the stormwater treatment system has been developed iteratively, which involved e3s providing Stantec with ecological and baseline water quality data to inform the level of treatment required to maintain water quality within the Silver Stream and the high ecological values identified.

2.9 As described in Dr Conwell's evidence, she used a contaminant load model as part of that iterative assessment process and Dr Conwell has attached the CLM to her evidence. Dr Conwell also confirms that the existing stormwater discharge at Port Chalmers and the stormwater compliance monitoring data available from that site has also informed the Stantec stormwater system concept design work.

2.10 Dr Conwell concludes that the system is suitably designed for potential contaminants of concern and potential contaminant loads and the performance of the system will be sufficient to maintain water quality in the Whakaehu / Silver Stream.

2.11 The conceptual site model (**CSM**) links sources of pollutants (Upstream catchment, inland port activities, and historic landuses), the pathway (sitewide stormwater runoff via an onsite treatment system), and the sensitive receptor (Silver Stream). This is the basis for the assessment of effects on the environment, and aids in developing a monitoring and management strategy (as proposed via the SMP) to maintain the existing water quality and freshwater ecological conditions in Silver Stream.

"…While adaptive management is a legitimate tool for managing residual uncertainty, considering our prior comments, in this case it is compensating for unresolved uncertainties in the assessment itself. The proposed framework relies on future monitoring to establish baseline conditions, calibrate triggers, and confirm the significance of effects, resulting in limited confidence that the conclusion of a Low level of effect is adequately supported or that adverse effects on the High-value receiving environment can be effectively managed." Page 4. Section: Adaptive Management

and

"…As only one storm flowing sampling event has been undertaken, there is insufficient information to characterise baseline variability or evaluate whether the proposed trigger values and management responses are appropriate. There is uncertainty regarding the effectiveness of the proposed adaptive management

framework." Page.4, Section: Adaptive Management a. Baseline Water Quality Sampling

2.12 ANZG (2018) provide a framework for determining effects from proposed developments on water quality and instream ecological values. Multiple lines of evidence are suggested as a key concept for monitoring and understanding effects. This approach is adopted by the proposed conditions of consent which specify analytical and trigger parameters to compare with water and sediment quality guidelines and biological indicators.

2.13 In my opinion, any unresolved uncertainties in the ecological assessment are not significant. Adaptive management allows flexibility to ensure the most up-to-date and fit for purpose treatment systems are utilised and that the effects of the discharge can be isolated from other inputs nearby. Dr Conwell has undertaken a robust assessment of the potential stormwater contaminants of concern and potential contaminant load through both the CLM and the assessment of Port Chalmers stormwater discharge compliance monitoring data. She is satisfied that the proposed system is sufficiently robust to treat the site stormwater to the level required to maintain water quality and from that I conclude that aquatic ecology of the Whakaehu / Silver Stream where it is affected by the proposed discharge will be suitably protected.

2.14 The 'future' monitoring, setting of baseline conditions, and calibration of triggers will follow the same process that would be followed if the work had been completed prior to submission. Whilst the triggers have not been confirmed, the process of setting the triggers has been provided which is more important to review than the actual number.

2.15 Construction phase discharges will likely be limited to sediment and sediment-bound contaminants. The attenuation pond is the first piece of infrastructure to be constructed, and stormwater will be routed to the attenuation pond via stage-based sediment retention ponds. Treatment of sediment laden waters may be required for removing fine sediment. The evidence of Mr Keenan provides more detail on the erosion and sediment control and management of construction phase discharges. The initial stages of the construction (1A and 1B) only relate to a portion of the site; providing the ability to refine the stormwater management as use of the site intensifies and more impervious surfaces are installed.

2.16 Section 4.1 of the SMP (version: July 2026) included a methodology for determining the site specific trigger limits. The approach was designed to allow for natural variability (e.g. diurnal, seasonal, annual, decadal) over the short reach between the upstream and downstream monitoring points while also being suitable for detecting a change to water quality from the discharge of treated stormwater. The SMP has since been updated with more detail around the setting of site-specific trigger limits (version 19 August 2026). Further discussion is also included in paragraph 2.20 to 2.35.

"…Grab sampling is poorly suited to quantifying the actual effects of an intermittent stormwater discharge. In a discharge event, small number of discrete grab samples are unlikely to:

- ***Represent a discharge event as a whole;***
- ***Reliably capture first-flush periods; or***
- ***Have the various confounding variables that may influence concentrations at any one specific point from which a grab sample might be taken, to give adequate comparability across events."***

Page.4, Section: Adaptive Management b. Characterisation of the stormwater discharge.

and

"…A monitoring method that is capable of providing a representative event mean concentration (EMC) should be adopted, such as:

- ***sampling from a certain stage of an attenuation pond immediately prior to discharge; or***
- ***Integration of a separate buffering device that is capable of capturing first flush / size / timing that provides a stronger and more replicable basis for***

assessing discharge quality, and hence the magnitude of effect on Silver Stream

This should be reflected in both the SMP and the associated conditions."

Page 5, Section: Adaptive Management b. Characterisation of the stormwater discharge

2.17 Grab sampling is in my view a robust sampling method for most purposes and is standard across many discharge consent monitoring programmes. Samples will always be collected from the same locations as specified in the proposed ORC consent conditions. The SOP (19 August 2026) reflects the guidance for sampling in rivers (NEMS, 2019), and the NIWA (2019) guidance for monitoring stormwater.

2.18 The above discussion is consistent with Dr Conwell who states that "The most appropriate sampling method (e.g. stage-based, flow-weighted or equivalent sampling) from the attenuation pond outlet or forebay should be confirmed through detailed design and be reflected in the final SMP and consent conditions." I agree with those suggestions.

2.19 With respect to the samples being representative of the discharge event "as a whole", this is primarily achieved through the design of the attenuation pond which provides a "stronger more replicable basis for assessing discharge quality". The attenuation pond will capture the first flush and attenuate the timing of the discharge by up to several hours (depending on the event size). In the attenuation pond, later stage inflows carrying lower contaminant loads will dilute the discharge from a typical 'first flush/peak concentration' discharge. The attenuation pond is also expected to reduce the overall event contaminant load to surface water through settlement. Thus, the risk of first flush peak concentrations discharging to Whakaehu / Silver Stream is significantly reduced by the proposed treatment system. As a result, it is my opinion that grab samples are a suitable monitoring method.

"…There is insufficient baseline data available to determine whether the proposed 10% trigger value exceeds the natural variability of the receiving environment for

the relevant analytes. In highly variable natural systems, fluctuations greater than 10% may occur under normal conditions, creating uncertainty as to whether the trigger would identify genuine project-related effects – or conversely, this system may also be relatively stable, and a 10% allowance for variability may also hide some project-related effects.”
Page.5, Section: Adaptive Management c. Monitoring Triggers – Water quality]

and

“…The applicant proposes the use of a baseline modification factor to account for natural variability. While this approach is generally appropriate, the basis for deriving the modification factor has not yet been established due to the limited baseline dataset currently available. The proposed methodology provides little detail regarding the statistical approach that will be applied to derive modification factors, determine trigger thresholds, or define meaningful change for different analytes.
As a result, there is currently limited confidence that the proposed trigger framework will be appropriately calibrated to distinguish project-related effects from normal environmental variation.”
Page.5, Section: Adaptive Management c. Monitoring Triggers – Water quality]

and
“…The appropriateness of the proposed 10% trigger should be reviewed once a sufficient baseline dataset has been collected. To make sure that trigger values represent a detectable and meaningful change from baseline conditions, rather than normal environmental variation, this review should:
- ***Consider the variability of individual analytes; and***
- ***Apply an appropriate statistical approach.”***

Page 5, Section: Adaptive Management c. Monitoring Triggers – Water quality]

2.20 In the light of the matters raised by the ORC comments, I have undertaken a careful review of the proposed 10% and Baseline modification factor methodology. That work has identified that the approach may be difficult to implement and there is a risk that it may not meet the required statistical robustness. For these reasons, I have revised the approach. The revised approach follows the recommendations of the ANZG water management framework, that is the use of the 80%ile of baseline dataset consisting of 24 or more reference condition samples. A description of the assessment methodology is set out in **Table 1**. The following definitions apply to the revised methodology:

(a) The ANZG Default Guideline Values (**DGV**) or other similar published environmental guideline value are used where the 80%ile value of the baseline dataset as a concentration meets the DGV. Note, a DGV can be for a particular parameter that is a Physical-Chemical Stressor (PC Stressor), or for a parameter that exhibits toxicological effects;

(b) The Site-Specific Trigger Limit (**SSTL**) is used where the 80%ile of the baseline dataset exceeds the DGV (PC Stressor or toxicity). The SSTL is the 80%ile of the baseline dataset as a concentration.; and

(c) The baseline modification factor (**BMF**) is defined as the 80%ile difference between the upstream and downstream baseline samples.

2.21 To provide a clear framework for the assessment of the monitoring data for the purpose of assessing compliance, the following flow charts are provided (Error! Reference source not found.) and worked examples (**Table 2**). These charts present the process for determining a non-compliance and whether a monitoring trigger and response is required or not when concentrations in the downstream / compliance sample exceed the adopted DGV or SSTL for a given parameter (PC Stressor or toxicity).

Table 1. Setting of limits and adjusting for reference / baseline site conditions

Approach	Reference Condition	Trigger Value
For all analytes in condition B.26 a trigger limit must be adopted following the approaches outlined in steps 1a to 1c.		
1a:Using a published Guideline Value	If 80th percentile concentration values of the baseline dataset meet the published guideline value, then the published guideline values are appropriate	Published Guideline Value (e.g. ANZG 99% Species Protection DGV)
1b: Setting a site specific trigger limit	If 80th percentile concentration values of the baseline dataset exceed the published guideline vale (e.g. 99% Species protection DGV), then the site specific reference condition for the contaminant of concern may be set as the 80%ile value of the baseline dataset*	Site Specific Trigger Limit (SSTL)
1c: Alternative Limit Assessment	An alternative trigger limit may be set for any key analyte where, in the opinion of the Suitably Qualified and Experienced Person(s) undertaking the review, it is appropriate to do so, based on the results of the baseline monitoring and specific characteristics of the key analyte	Alternative Trigger Limit
Once the adopted trigger limit has been set, the Baseline Modification Factor will be set as outlined in step 2.		
2: Baseline Modification Factor	The 80%ile of the difference between the paired baseline dataset samples is the Baseline modification factor (BMF)	Baseline Modification Factor (BMF)
*If the aquatic ecosystem has a limited ability to tolerate substantial further increases in concentration, then it might be necessary to set the site specific trigger limit at a value below the 80th percentile of the baseline dataset (closer to the median value), and to implement biological monitoring as a condition of using the guideline value in a weight-of-evidence process to understand the reference condition.		

Table 2. Example compliance assessment

For a given parameter with an adopted trigger limit of 10 mg/L and BMF of 3 mg/L	Example monitoring data	Compliance Result
Example1: If the downstream sample meets the adopted trigger limit (DGV or SSTL or other) then discharge is compliant	Downstream = 5 mg/L	COMPLIANT, meets adopted limit
Example2: If the downstream does not meet the adopted trigger limit, then there is a possible non-compliance and the BMF will be applied.	Downstream = 12 mg/L	POSSIBLE NON-COMPLIANCE, apply BMF
Example2a: Adopted trigger limit is exceeded but measured difference between upstream and downstream is accounted for by the BMF	Upstream = 9 mg/L Downstream = 12 mg/L BMF=3 mg/L =	COMPLIANT, difference less than or equal to BMF
Example2b: Adopted trigger limit is exceeded and Measured difference between upstream and downstream is greater than the BMF	Upstream = 9 mg/L Downstream = 14 mg/L BMF=3 mg/L	NOT-COMPLIANT, difference greater than BMF
Example 3: if the upstream also exceeds the adopted trigger limit then the BMF is applied.	Upstream = 12mg/L, Downstream = 15 mg/L	POSSIBLE NON-COMPLIANCE, apply BMF
Example 3a: Adopted trigger limit is exceeded but measured difference between upstream and downstream is accounted for by the BMF	Upstream = 12 mg/L Downstream = 15 mg/L BMF=3 mg/L	COMPLIANT, difference less than or equal to BMF
Example3b: Adopted trigger limit is exceeded and Measured difference between upstream and downstream is greater than the BMF	Upstream = 12 mg/L Downstream = 17 mg/L BMF=3 mg/L	NOT-COMPLIANT, difference greater than BMF
Not-Compliant means the conditions for monitoring and response trigger 1 is met.		

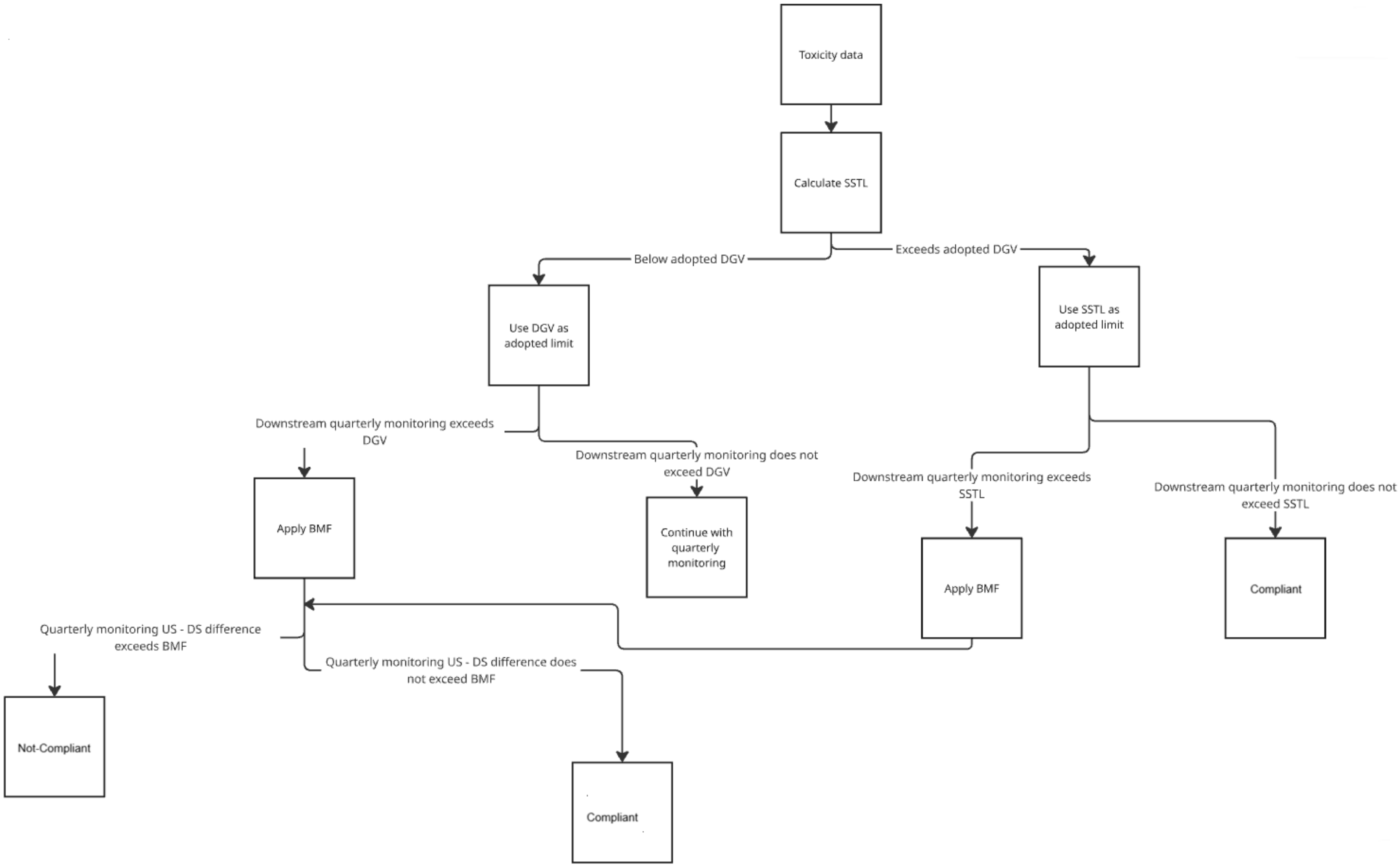

Figure 1. Monitoring for parameters with toxicological effects

2.22 Natural variability includes short-term and long-term effects (diurnal, seasonal, annual, decadal), and catastrophic effects (recoverable and non-recoverable shift to the baseline e.g. landslides, plantation clear felling). To address this variability, the baseline dataset and site-specific triggers will be continuously supplemented with data from the upstream / reference site for storm flow conditions, and at both downstream / compliance and upstream / baseline site for base flow/ dry weather conditions if samples are collected during trigger response. This data will be used to continuously calibrate the site-specific trigger limits so that natural variability is able to be accounted for in a practicable manner. For any analyte which already exceeds the adopted trigger limits at baseline conditions then the use of the baseline dataset to set site specific trigger limits and the baseline modification factor is an appropriate adaptation.

2.23 The SMP requires that assessment against the triggers is made quarterly, rather than over annual timescales as recommended in the ANZG. This ensures that actions are taken promptly. This also reduces the likelihood of excessive trigger events, recognising that a) stormwater discharges are infrequent and transient rather than continuous, and that b) reference site conditions are naturally variable with flows and seasons.

2.24 In contrast, following the ANZG guidance precisely (rather than in principle) may result in a) problematic discharges occurring over a long period as the annual medians mask high concentrations occurring during discharge events, or b) unnecessarily triggering a response due to natural variability between the reference and impact sites.

2.25 Annual biological monitoring is to occur under the stormwater monitoring plan and trigger 3 includes a one-off biological monitoring event as well. Therefore, the existing plan includes multiple lines of evidence for impact detection.

2.26 NB. The guidelines suggested as trigger limits in Table 1 of the SMP (e3scientific, 2026a) include chronic and acute toxicity DGVs. Chronic toxicity DGVs may be inappropriate for assessing transient stormwater discharges. Thus, if acute DGVS are not published and the chronic DGVs are considered overly protective, then the guidance provided in Warne et al. (2025) should be followed to derive short-term guideline values.

"…The framework appears to require both the site-specific trigger - a percentage change from baseline - and the relevant ANZG guideline value to be exceeded before a management response is initiated.
Where existing baseline concentrations sit well below the ANZG guideline a substantial proportional increase attributable to the discharge could occur without triggering a response, because the absolute guideline value has not been exceeded. This materially reduces the early-warning function of the trigger.
The site-specific trigger should operate independently as an investigation and early-warning trigger, with the ANZG guideline retained separately as an absolute upper limit, rather than the two operating as a combined test."
Page 5, Section: Adaptive Management c. Monitoring Triggers – Water quality]

2.27 The adopted trigger limits will be in practice limits of no observable effect. If the discharge difference is more than the BMF but does not approach or exceed the adopted trigger limit then while there is likely to be a change to the water quality, it is likely that there is no adverse effect from that change within the measured reach.

2.28 However, as noted in Appendix A, some parameters already exceed the DGVs in the Whakaehu / Silver Stream either due to natural sources of contaminants or land use modification in the catchment above the site. For those elevated parameters, ANZG recommend keeping water quality at the ambient/background concentration. If the SSTL or DGVs is exceeded, but the difference between upstream and downstream is within the 80%ile BMF, then the difference is considered to be within natural variability, and not attributable to the site's discharge. If the difference between the upstream and downstream is greater than the 80%ile difference of the baseline data then that is considered to be the effect of the discharge and monitoring and response trigger 1 occurs.

2.29 I agree that where a large increase is identified (e.g. above the baseline modification factor), but where the adopted trigger limit is not exceeded then this should be noted in the annual report under a section regarding trends. For example, if consecutive sampling rounds report increasing concentrations of a contaminant that are trending towards the adopted trigger limit, then it would be appropriate for the annual report to make some recommendations to investigation into the cause.

"…The SMP should be revised to address the matters outlined above following completion of baseline monitoring, and the updated SMP should be submitted to ORC for certification, prior to construction commencing."
Page 6, Section: Adaptive Management d. Monitoring programme]

2.30 This is addressed in the proposed ORC conditions. The SMP is currently in draft form and will be updated as more data becomes available, and once the baseline sampling has been completed (see condition B.22). The SMP will be submitted to the ORC for certification prior to the commencement of operation.

"…The SMP proposes first-flush sampling but does not specify the method by which the first flush will be captured. For reasons outlined above, the methodology should specify a defensible first-flush sampling approach, together with defined antecedent dry-period and rainfall-depth or similar thresholds for initiating sampling."
Page 7, Section: Adaptive Management d. Monitoring programme – Fine deposited sediment

2.31 Consent conditions B.34 and B.35 (operation phase monitoring) address these matters. Further, as discussed above, the SMP will be certified by ORC before operation commenced.

"…The proposed framework provides limited detail and certainty on the timing and escalation of management responses following a trigger exceedance.

In particular, it does not appear to provide for immediate notification of ORC in the event of an exceedance nor for an increase in monitoring frequency once a trigger has been activated.
It is recommended that the framework includes a defined immediate-notification pathway for exceedances, sitting outside the routine tiered process, together with a stepped increase in monitoring frequency following any trigger activation."
Page 7, Section: Adaptive Management d. Monitoring programme – Response and escalation pathway]

2.32 Consent condition B.35 sets out the trigger response which requires action from the consent holder in the event of the exceedance of a site-specific trigger limit and BMF. Further the SMP must be certified prior to the commencement of operation of the SLIP as per proposed condition B.22 so there is scope for addressing this concern in addition to the conditions. It is not consistent with the level of risk from the discharge that the consent authority should be notified for early warning / trigger 1 or investigate / trigger 2, as at this point in the management process, the discharge has not been confirmed as a consistent issue that requires a management intervention. Once Trigger 3 occurs then the issue is confirmed to the consent holder and the consent authority is notified within 48 hours as per condition B.35

2.33 Furthermore, all results of the water quality sampling will be provided to the consent authority within 30 days of receiving them. In addition SLPL is required to submit an annual report to the ORC that outlines the results of the water quality monitoring undertaken and this will include details of any site-specific trigger limit exceedances (refer to Condition B.37).

3. OTAGO FISH AND GAME COUNCIL

"…Uncertainty for stormwater management: the e3 memo is not a copy of the Stormwater Monitoring Plan but rather a set of recommendations. It cannot set out a complete draft of the monitoring plan because the baseline monitoring which

underpins it has not been completed. This means that the baseline modification factor, and therefore the final trigger limits, are unknown." Page12, Point 42a.

3.1 The SMP will undergo further review prior to construction commencing including certification by the consenting authority. As part of the certification process the baseline dataset will be reviewed and any baseline modification factors will be derived and provided to the consenting authority for review and certification. Regardless of the actual values determined by baseline monitoring, it is my opinion that there is certainty in the methodology that will be used to confirm the final trigger limits.

"The proposed 10% buffer for a trigger limit is not justified: Fish and Game can find no justification in the application for why an additional 10% buffer is proposed to be applied to the downstream trigger limit. This approach is concerning as it allows a 'ratcheting up' of contaminants. Where the water body already does not meet the recommended guidelines, the proposed discharge would increase the levels still by 10%, whereas what is required from an ecosystem health and values perspective is for the concentration of that contaminant to be going down. It is also not sustainable, as if all dischargers were enabled to increase the contaminant concentrations 10% above recommended guidelines, then the Silverstream would quickly become polluted as water moved downstream." Page 13. P42c.

3.2 For the reasons set out in paragraph 2.20 to 2.29 above, the 10% difference has been revised so much of this comment is no longer applicable. The approach now adopted is consistent with the ANZG framework in that it applies the DGVs as a starting point but allows local data and site-specific context to refine the trigger framework, i.e. where baseline data show that relevant published guideline values are exceeded, the site-specific baseline dataset should inform the monitoring and response trigger limit. In this case the BMF provides for a process of distinguishing any project-related change from existing upstream or catchment-scale variability. Further, the assessment of site-specific trigger limits is a necessary step as it may result in the derivation of high flow and low flow limits or other such adaptations such as duration limits.

3.3 Dr Allibone states that "The key ecological factor for the SLIP development is not to have a cumulative effect in conjunction with the existing modifications to the Silver Stream that degrades the aquatic ecosystems rather than attempt to meet guidelines that are on occasion already exceeded." I agree with this statement.

"The baseline is not robustly established: The ANZG page on accounting for local conditions makes it clear that at least two years of monthly monitoring data is required to set an adequate baseline. A similar recommendation is made on the page for deriving guideline values using reference-site data. The proposed 4 sample at different flow baseline study being carried out by the applicant seems likely to fall short of this recommendation. Page 14, p42c.

3.4 Addressed in paragraph 2.4 – 2.7 in response to The Beca Review (Lion-Cachet and Chang).

"…Parameters are excluded due to their detection limits: the e3 memo forewarns that the laboratory detection limit for dissolved copper and zinc approaches the 99% guideline value for acute and chronic toxicity and as a result, may not be suitable for adoption. Fish and Game submit that it is suitable to continue monitoring in this situation, with the presence of the parameter above the detectable limit indicating a problem that should be investigated." Page 14, p42c.

3.5 This issue will be addressed following the baseline dataset collection and review of the site-specific trigger limits. No parameters are to be excluded based on their detection limits and specifically copper and zinc are to be monitored for the duration of the consent (see condition B.34).

"Fish and Game submit that the impact of stormwater discharges from the SLIP development cannot be determined at this stage. The trigger values in the Stormwater Monitoring Plan are not determined and, even if they were, are subject to potential future change. There are no consent conditions setting limits or describing environmental outcomes that are to be achieved, meaning that the

Stormwater Monitoring Plan could be materially different to what is currently recommended in the e3 memo." Page 14, p43.

3.6 It is my opinion that the discharge will have a low effect on water quality within the Whakaehu / Silver Stream. There is a small residual uncertainty which will be managed appropriately with the SMP and adaptive management process.

3.7 The objective of the SMP is to maintain the existing water quality and aquatic ecology. This can only be achieved by first collecting baseline data and robustly analysing the natural variability of Whakaehu / Silver Stream so that any change which poses a risk can be detected and appropriately managed.

"Fish and Game recommends a consent condition be added to the ORC suite of consents to require a regular inspection of the discharge during large rain events. If the water is turbid, then the application should be directed to take steps to stop the discharge and address the issue within a short timeframe." Page 16, p51.

3.8 As per Mr Keenan's evidence (3.3), during construction the Erosion Sediment Control Plan (**ESCP**) requires inspections of the Erosion Sediment Control (**ESC**) devices.

3.9 The onsite treatment train including the attenuation pond are designed to capture gross pollutants and sediment, resulting in low levels of fines suspended sediment in the discharge.

3.10 As discussed throughout this statement of evidence, the intent is for the discharge quality to have a negligible effect on the Whakaehu / Silver Stream such that water quality and aquatic ecology are maintained at the existing level. There is a small residual uncertainty with respect to the concentration of fine suspended sediment that will be discharged, however this is adequately managed under the ESCP and SMP. The ESCP and SMP will include inspections during rainfall events, and quarterly sampling will occur. These management methods are suitable for assessing the potential effects of the discharge. In addition, stormwater treatment device maintenance schedules should be refined during the first two years as the treatment system beds in, so as to avoid the situation where a trigger is exceeded due to poor site housekeeping.

4. TE RŪNAKA O ŌTĀKOU, TREATY IMPACT ASSESSMENT (TIA)

Potential contaminant impacts for wash bay overflows.

4.1 Dr Conwell provides clear responses to the potential risks from the wash bay overflows.

Concerns that the proposed monitoring of Silver Stream is inadequate and should run for longer.

4.2 Condition B.36 provides for cessation of monitoring if after five years without construction and if biological monitoring indicates no discernible change in the aquatic ecological indicators. Any plan to cease monitoring of the operational phase discharges would be assessed by Suitably Qualified Experienced Persons (**SQEP**) and certified by the consenting authority under the process for amendments to management plans (Condition 9 of general conditions).

4.3 The cessation of monitoring following five years of data is reasonably common for discharge consents. The cessation of quarterly water quality sampling could be considered onerous if the discharge is acceptable and no-effects were discerned. Generational monitoring such as 3-5 yearly aquatic habitat and macroinvertebrate studies may be useful for validating the long-term effects of the discharge.

5. CONCLUSION

5.1 I support the views I contributed to which are expressed to date in the SMP and SOP. The transient stormwater discharge must be assessed in the correct context, that of a short duration intermittent discharge of highly treated stormwater to a waterway most likely to be in flood conditions. It is my opinion that the potential for adverse effects is so low as to be acceptable, especially with the use of an adaptive management framework which will allow for continuous and responsive management of the discharge.

5.2 The feedback from ORC and Fish and Game has been valuable and improved the level of detail presented in support of the SMP.

5.3 It is considered that with the improvements to be made to the SMP and SOP, as well as the proposed conditions, that there will be a robust methodology for maintaining the water quality of the Whakaehu / Silver Stream that is consistent with nationally adopted guidance (e.g ANZG). Baseline monitoring is occurring and will continue during the pre-construction period.

Dated: 19 August 2026

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Simon Bloomberg

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Appendix A: Additional info memo re: Baseline Monitoring Dataset

MEMO

To:	Southern Link Inland Port	Ref:	25055
Cc:			
From:	Simon Bloomberg		
Date:	19/08/2026		
Subject:	Appendix A: Additional information re: baseline monitoring dataset		

1 Introduction

In June 2026, e3scientific drafted a Stormwater Monitoring Plan for the Southern Link Inland Port (SLIP). The SMP (e3scientific, 2026a; dated 5 June 2026) characterised the proposed stormwater discharge and provided a monitoring framework for determining baseline conditions and for monitoring the impacts of the discharge on the Silver Stream.

Following ORC's review of the SMP, it was clear that there was limited confidence in the collection of baseline data. This memo presents the data collected to date so that any party can review the data collection process and draw their own conclusions on the project context that the data provides.

2 Baseline Water Quality Dataset

For the purposes of this comparison, base flow is considered ≤1 m^3/s and a flat hydrograph. Storm Flow is >1m^3/s.

Table 1. BASELINE SAMPLING EVENTS (METADATA)

Site	Flow type (base/storm), hydrograph	Date	Time (24hr)	Sampled by	Weather conditions during sampling	Photo?	Water odour	Water clarity	Previous Rainfall Day and Amount	Flow (m3/s) during sampling	peak event flow (m3/s)	Time of peak event flow (24hr)	Date of peak event flow (24hr)
Upstream	base flow, flat	9/09/2025	12:00	Mark H (FEcIA)	overcast	e3s records		clear	7/9/25, 1.5mm	0.38			
Downstream	base flow, flat	9/09/2025	11:00	Mark H (FEcIA)	overcast	e3s records		clear	7/9/25, 1.5mm	0.4			
Upstream	Storm Flow, Falling limb	21/04/2026	11:00	Nicole + Trevor	Overcast, drizzle recently stopped	e3s records		Slight tannin	21/4/2026, 4.5mm	1.01	1.31	8:00	21/04/2026
Downstream	Storm Flow, Falling limb	21/04/2026	10:30	Nicole + Trevor	Overcast, drizzle recently stopped	e3s records		Slight tannin	21/4/2026, 4.5mm	1.07	1.31	8:00	21/04/2026
Upstream	Storm Flow, Falling limb	6/07/2026	12:17	Grant	Overcast, drizzle	U1, U2, U3	-	brown	6/7/2026, 161.5mm	41	117	4:00	6/07/2026
Downstream	Storm Flow, Falling limb	6/07/2026	11:30	Grant	Overcast, drizzle	D1, D2, D3	-	brown	6/7/2026, 161.5mm	46.7	117	4:00	6/07/2026
Upstream	base flow, flat	22/07/2026	12:35	Trevor	fine/sunny	U1	nil	clear	19/7/2026, 1.5mm	0.46			
Downstream	base flow, flat	22/07/2026	12:20	Trevor	fine/sunny	D1	nil	clear	19/7/2026, 1.5mm	0.46			

Table 2. GENERAL WATER QUALITY PARAMETERS

Site	Sample type	Date	Time	Temp (field)	DO (field)	DO (field)	SPC/EC (field)	pH (field)	ORP (field)	Turb. (field)	pH (LAB)	Dissolved Oxygen (Lab)	Conductivity (Lab)	Turbidity (LAB)	Total Suspended Solids	Escherichia coli	Total Coliforms
		Units		C	%	mg/L	mS/m	Units	mV	NTU		mg/l	mS/m	NTU	mg/l	cfu/100 ml	cfu/100 ml
		Detection Limits										#N/A	#N/A	10			
Upstream	Base flow	9/09/2025	12:00								7.6		18.9	2.37	< 3	65	325
Downstream	Base flow	9/09/2025	11:00								7.5		18.8	1.59	< 3	64	219
Upstream	Storm flow	21/04/2026	11:00	7.5	100.4	12.16	14	7.1	154		7.6		14.5	2.8	3	150	1414
Downstream	Storm flow	21/04/2026	10:30	7.4	98.8	12	14.1	7.1	148		7.6		14.5	3	3	218	2420
Upstream	Storm flow	6/07/2026	12:17								6.9		9.8	160	365	1300	> 8000
Downstream	Storm flow	6/07/2026	11:30								6.9		9.8	170	298	1200	> 8000
Upstream	Base flow	22/07/2026	12:35	8.8		11.6	18.9	7.4	157	1.5	7.4	11.6	18.9	1.5	<6	90	1500
Downstream	Base flow	22/07/2026	12:20	8.9		11.8	19	7.4	158	2	7.4	11.8	19	1.9	<6	80	1800
1. ANZG (2018) 99% Species Protection Toxicity DGV					81 - 101			6.5 - 8.5		1 - 20	6.5 - 8.5			1 - 20			
2. NPS-FM (2025)						>=7.5						>=7.5				130	n/a
3. Long-term water quality guidelines for the protection of aquatic life (ORC, 2016)				Below 25° C or within 3° C of upstream											Increase of 5 mg/L from mean baseline level		
4. Physical and chemical stressors for cool, dry, low-elevation New Zealand stream (McDowell, Snelder, & Cox, 2013)							11.6						11.6				
ORC Regional Plan: Water - Schedule 15 of characteristics and numerical limits and targets for good quality water in Otago lakes and rivers (ORC, 2014)										5				5		260	
n/a – not applicable																	

Highlighted cells indicate exceedance of most conservative guideline

Table 3. HEAVY METALS AND METALLOIDS

Site	Sample type	Date	Time	Dissolved Arsenic	Dissolved Cadmium	Dissolved Chromium	Dissolved Copper*	Dissolved Lead	Dissolved Mercury	Dissolved Nickel*	Dissolved Zinc*	Total Arsenic	Total Cadmium	Total Chromium	Total Copper	Total Lead	Total Mercury	Total Nickel	Total Zinc	Dissolved Calcium	Dissolved Magnesium	Dissolved (NP) Organic Carbon
		Units		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		Detection Limits		#N/A	#N/A	#N/A	#N/A	0.1	0.005	0.002	0.002	0.003	0.0005	0.01	#N/A	#N/A	0.0002	#N/A	#N/A			
Upstream	Base flow	9/09/2025	12:00								<0.001	<0.0005	<0.00002	0.0003	0.0003	<0.00005	<0.0001	0.0007	<0.003			
Downstream	Base flow	9/09/2025	11:00								<0.001	<0.0005	<0.00002	0.0002	0.0003	<0.00005	<0.0001	0.0006	<0.003			
Upstream	Storm flow	21/04/2026	11:00									0.0011	0.000053	0.00053	**0.00053**	0.00011	0.00011	0.00099	0.0011	11.8	5.3	
Downstream	Storm flow	21/04/2026	10:30									0.0011	0.000053	0.00053	**0.00053**	0.00011	0.00011	0.00095	0.0013	11	4.5	
Upstream	Storm flow	6/07/2026	12:17	<0.001	<0.0002	<0.001	**0.0013**	<0.0005	<0.0005	0.0015	0.003	0.005	<0.001	**0.01**	**0.011**	**0.011**	<0.001	**0.012**	**0.032**	4.72	2.07	9.4
Downstream	Storm flow	6/07/2026	11:30	<0.001	<0.0002	<0.001	**0.0014**	<0.0005	<0.0005	0.0015	0.003	0.004	<0.001	**0.007**	**0.007**	**0.008**	<0.001	**0.008**	**0.024**	4.81	2.12	9.4
Upstream	Base flow	22/07/2026	12:35	<0.001	<0.0002	<0.001	**0.0008**	<0.0005	<0.0005	0.0008	0.003	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	**0.005**			
Downstream	Base flow	22/07/2026	12:20	<0.001	<0.0002	<0.001	**0.0009**	<0.0005	<0.0005	0.0009	0.003	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.005			
1. ANZG (2018) 99% Species Protection Chronic Toxicity DGV				0.001	0.00006	0.00001	0.0002	0.001	0.00006	0.00031	0.0015	0.001	0.00006	0.00001	0.0002	0.001	0.00006	0.00031	0.0015	*pH, Dissolved Mg and Ca (hardness), and DOC (DNPOC) are used to calculate chronic and acute DGVs for identified metals following the methods of Gadd J; Hickey C; Snelder T. 2024 and ANZG technical briefs.		
1. ANZG (2018) 95% Species Protection Chronic Toxicity DGV				0.013	0.0002	0.001	0.00047	0.0034	0.0006	0.002	0.0041	0.013	0.0002	0.001	0.00047	0.0034	0.0006	0.002	0.0041			
5. ACUTE 95% species protection (Gadd, Hickey, & Snelder, 2024), subject to review pending baseline monitoring							0.0013				0.024				0.0013				0.024			

Highlighted cells indicate exceedance of 99% species protection DGV

Bold indicates exceedance of 95% species protection

Table 4. NUTRIENTS

Site	Sample type	Date	Time	Total Nitrogen	Total Kjeldahl Nitrogen	Nitrite-N	Nitrate-N	Ammonia Nitrogen	Total Phosphorus	Dissolved Reactive Phosphorus
		Units		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		Detection Limits		#N/A	#N/A	0.15	#N/A	0.002	#N/A	#N/A
Upstream	Base flow	9/09/2025	12:00	0.1	<0.1	<0.001	0.113	<0.005		<0.002
Downstream	Base flow	9/09/2025	11:00	0.1	<0.1	<0.001	0.114	<0.005		<0.002
Upstream	Storm flow	21/04/2026	11:00	0.26	0.2	0.002	0.057	0.01	0.016	0.004
Downstream	Storm flow	21/04/2026	10:30	0.28	0.21	0.002	0.059	0.01	0.017	0.004
Upstream	Storm flow	6/07/2026	12:17	2.12	1	<0.01	1.23	0.03	0.271	0.008
Downstream	Storm flow	6/07/2026	11:30	2.13	<0.8	<0.01	1.23	0.02	0.304	0.01
Upstream	Base flow	22/07/2026	12:35	0.566	<0.8	<0.01	0.48	<0.01	0.01	0.006
Downstream	Base flow	22/07/2026	12:20	0.53	<0.8	<0.01	0.45	<0.01	0.012	0.007
1. ANZG (2018) 99% Species Protection Toxicity DGV					n/a	n/a	1	0.24*		
2. NPS-FM (2025)										
3. Long-term water quality guidelines for the protection of aquatic life (ORC, 2016)							1	0.03		
4. Physical and chemical stressors for cool, dry, low-elevation New Zealand stream (McDowell, Snelder, & Cox, 2013)				0.913			0.265	0.01	0.014	0.008
5. 95% species protection (Gadd, Hickey, & Snelder, 2024), subject to review pending baseline monitoring										
ORC Regional Plan: Water - Schedule 15 of characteristics and numerical limits and targets for good quality water in Otago lakes and rivers (ORC, 2014)							0.075	0.1		0.01
n/a - not applicable										
*ammonia and nitrate toxicity dependent on temperature and pH, alkalinity (pH 7.5, 20°C)										

Highlighted cells indicate exceedance of most conservative guideline

Table 5. Total Petroleum Hydrocarbons

Site	Sample type	Date	Time	TPH C7-C9 (water)	TPH C10-C14 (water)	TPH C15-C36 (water)	Total Hydrocarbons C7-C36 (water)
		Units Detection Limits		g/m3	g/m3	g/m3	g/m3
Upstream	Base flow	9/09/2025	12:00				
Downstream	Base flow	9/09/2025	11:00				
Upstream	Storm flow	21/04/2026	11:00	<0.1	<0.2	<0.4	<0.7
Downstream	Storm flow	21/04/2026	10:30	<0.1	<0.2	<0.4	<0.7
Upstream	Storm flow	6/07/2026	12:17				
Downstream	Storm flow	6/07/2026	11:30				
Upstream	Base flow	22/07/2026	12:35				
Downstream	Base flow	22/07/2026	12:20				
n/a - not applicable				>LOR	>LOR	>LOR	>LOR

3 Summary of Available Data

3.1 Baseline Sampling Metadata

To date two samples have been collected under base flow conditions and two samples under storm flow conditions. Both storm flow samples have been collected during the falling limb of a storm flow event.

3.2 General water quality parameters.

E. coli concentrations from storm flow samples were elevated above the NPS-FM limit of 130 MPN/100ml, while base flow samples met the limit.

Turbidity and TSS were elevated above the adopted limits for one storm flow event (6/7/2026) which was the larger of the two storm flow events. Turbidity and TSS were only slightly elevated during the other storm flow event.

Conductivity was lower during the storm flow events, likely due to higher input from rain water which has lower conductivity due to less soil/rock water interaction. Base flow is largely derived from groundwater recharge and so is likely to have a higher conductivity due to longer time for water-rock interactions to have occurred. Conductivity in both base flow samples was approximately the same which is indicative of a similar source irrespective of season.

Water temperature was measured for one base flow and one storm flow event, and both were below 10°C; there was no clear difference between storm flow and base flow conditions.

pH was measured for one base flow and one storm flow event, with an average of pH 7.25; there was no clear difference between storm flow and base flow conditions.

Dissolved Oxygen was measured for one base flow and one storm flow event, with an average of 11.9 mg/L; there was no clear difference between storm flow and base flow conditions.

3.3 Metals and Metalloids

Metal and metalloid concentrations were measured as total concentrations for all four events and dissolved concentrations for two events.

Arsenic: Total concentrations were elevated above the 99% DGV for the two storm flow events, but met the limits at base flow. Dissolved concentrations were not reported above the laboratory limit of reporting (LOR) and met the adopted limit at both storm flow and base flow.

Cadmium: Total concentrations were only reported above the LOR for one storm flow sample. All samples met the 99% DGV. It is noted that the LOR was changed for the most recent events. While this may not be an issue for base flow as there is no discharge occurring at this time, it will be noted that the LOR needs to be relevant for assessing storm flow samples against the adopted limit.

Chromium: Only total concentrations should be compared to the limit for chromium unless weak-acid extract method is used. The total concentrations were above the 99% DGV for three events and one storm flow event exceeded the 95% DGV.

Copper: Total concentrations were elevated above the 99% DGV for the two storm flow events and one base flow event, one storm flow event exceeded the 95% DGV. Dissolved concentrations exceeded the adopted 95% chronic limit (e.g. base flow and storm flow) for both samples, however further calculations are required to assess whether the acute limit was exceeded by the storm flow samples.

Lead: Total concentrations exceeded the 99% DGV for the two storm flow events and one storm flow event exceeded the 95% DGV. Dissolved concentrations met the adopted limits during both storm flow and base flow.

Mercury: Total concentrations were reported above the LOR for one storm flow sample which also exceeded the 99% DGV. All samples met the adopted limits for dissolved concentrations.

Nickel: Total concentrations exceeded the 99% DGV for three samples; one storm flow sample exceeded the 95% DGV. Dissolved concentrations all exceeded the 99% DGV.

Zinc: Total concentrations were reported above the LOR for three samples; one storm flow and one base flow sample (upstream only) reported concentrations above the 95% DGV. Dissolved concentrations were available for three samples, and two of the samples exceeded the 99% DGV but met the 95% DGV. However more calculation is required to assess whether the acute limit was exceeded by the samples.

3.4 Nutrients

Total Nitrogen: Total nitrogen was reported above the LOR for all four samples. Concentrations were most elevated for the largest storm flow event and exceeded the adopted limit. Concentrations in base flow samples were elevated but met the adopted limit.

Nitrate: The largest storm flow event samples had the highest nitrate concentration which exceeded all of the adopted limits, however the other storm flow sample met all of the guidelines, even the PC stressor. Concentrations in base flow samples met the adopted chronic toxicity limits but exceeded the physico-chemical stressor limits and the ORC schedule 15 limits for good water quality.

Ammonia: All samples met all adopted ammonia limits. Concentrations were reported above the LOR for the two storm flow samples with the larger storm flow event sample having the highest concentration. The adopted limit for ammonia was not calibrated to the temperature and pH on the day however where information is available this will be completed.

Total Phosphorus: Concentrations were reported for three samples - two storm flow and one base flow. Both storm flow events reported elevation concentrations which exceeded the adopted physico-chemical stressor guideline value. The single base flow sample met the limit. This is likely due to the increased sediment load during storm flow events, as total phosphorus includes particulate or sediment bound phosphorus.

Dissolved Reactive Phosphorus: Concentrations were reported for all four samples. One storm flow sample from the downstream location exceeded the physico-chemical stressor value but met the adopted Schedule 15 limit for good water quality, whilst the upstream location was at the PC stressor limit. Dissolved concentrations in the most recent base flow sample met both limits by a marginal amount.

3.5 Total Petroleum Hydrocarbons

Only one sampling round was completed for TPH, and all concentrations were below the LOR as to be expected.

4 Summary

To date four baseline sampling events have been completed - two at 'storm flow' and two at 'base flow'. The trends observed to date are generally consistent with the expectations where storm flow = increased contaminant load, base flow = generally good water quality.

Dissolved copper, nickel, and zinc were elevated above the adopted 99% species protection chronic toxicity DGV limit in both the storm flow and base flow samples collected in July 2026, however further work still needs to be done to calibrate the guideline for toxicity modifying factors for these parameters.

Nutrients are elevated in the stream at base flow, but concentrations markedly increase during storm flow which is associated with mobilisation of sediment and runoff from intensive land uses. Considering the flow rates observed at the time of sampling, this is considered a significant overall contaminant load to the catchment.

Upstream and downstream differences are generally small (<10%), however larger differences were observed in the July storm flow sample for total metals (although dissolved concentrations differences were generally small). Further analysis will be completed when the required number of samples has been collected.

Limits of reporting sometimes exceeded the published trigger limits. Trace analysis should be used where the LOR are greater than the adopted limits (e.g. cadmium).

Appendix B: Stormwater Monitoring Plan (**SMP**)

SOUTHERN LINK INLAND PORT

DRAFT STORMWATER MANAGEMENT PLAN (SMP)

AUGUST 2026

Contents

1 Introduction

Southern Link Property Ltd. proposes to develop and operate the Southern Link Inland Port (SLIP) at 270–292 Dukes Road North, Mosgiel, under the Fast-track Approvals Act 2024 (Figure 1). As part of the application, e3Scientific was engaged to provide a freshwater ecological impact assessment (FEcIA) to characterise the ecological value of Silver Stream and assess the potential and actual effects of the proposed development and operation of SLIP on the nearby freshwater values (e3Scientific, 2026). The effects considered within this report were primarily related to stormwater discharge from the site.

Figure 1 SLIP project area overview.

The proposed development includes an inland port, bulk storage, and logistics hub, with a high proportion of impervious surfaces such as large warehouses and sealed yard areas that will generate runoff. Stormwater from the developed site has been designed by Stantec to be directed through treatment and attenuation systems, including catchpits, gross or universal pollutant traps (GPTs/UPTs), vegetated conveyance, and a large attenuation pond, prior to discharge to Silver Stream (Stantec, 2026a). An overview of Stantec's conceptual stormwater infrastructure is presented in Figure 2.

These treatment measures are expected to significantly reduce the potential for adverse effects during construction- and operational-phase stormwater discharges to the receiving waterway, Silver Stream. Without appropriate stormwater treatment and attenuation, nutrient and contaminant inputs, sediment effects, and thermal/oxygen stress could adversely affect the high ecological values of Silver Stream.

Utilising the Environmental Institute of Australia and New Zealand (EIANZ, 2018) ecological impact assessment guidelines and Stantec's stormwater treatment design, e3Scientific (2026) determined that the overall level of effect from the stormwater discharge to Silver Stream was "Low", provided the stormwater treatment systems function as designed and can therefore maintain water quality in Silver Stream to current baseline conditions. However, in order to provide an early warning system regarding any treatment issues or weaknesses, a stormwater monitoring plan (SMP) was proposed to monitor the treatment systems (catchpits, GPT/UPT's and attenuation pond) and ensure they are operating effectively.

This memo incorporates the Stantec technical assessment of stormwater contaminants (Stantec, 2026b) and further information and recommendations from evidence of Claire Conwell and Nick Keenan provided in support of the application. Monitoring recommendations from the FEcIA (e3Scientific, 2026) provide a framework for the sites' SMP. Please note this SMP supersedes the monitoring recommendations provided in the FEcIA (e3Scientific, 2026) and the previous version submitted as part of the application. This SMP is updated following the drafting of evidence and is intended to remain as a live document which is updated as required prior to certification.

This SMP also assumes that sources of contamination from HAIL activities on the site, as determined in the preliminary site investigation (PSI) (e3Scientific, 2025) and the subsequent detailed site investigation (DSI) (ECOtago, 2026), have undergone remediation prior to site construction and/or development, as is detailed in the DSI and associated Contaminated Site Management Plan (CSMP) prepared by ECOtago.

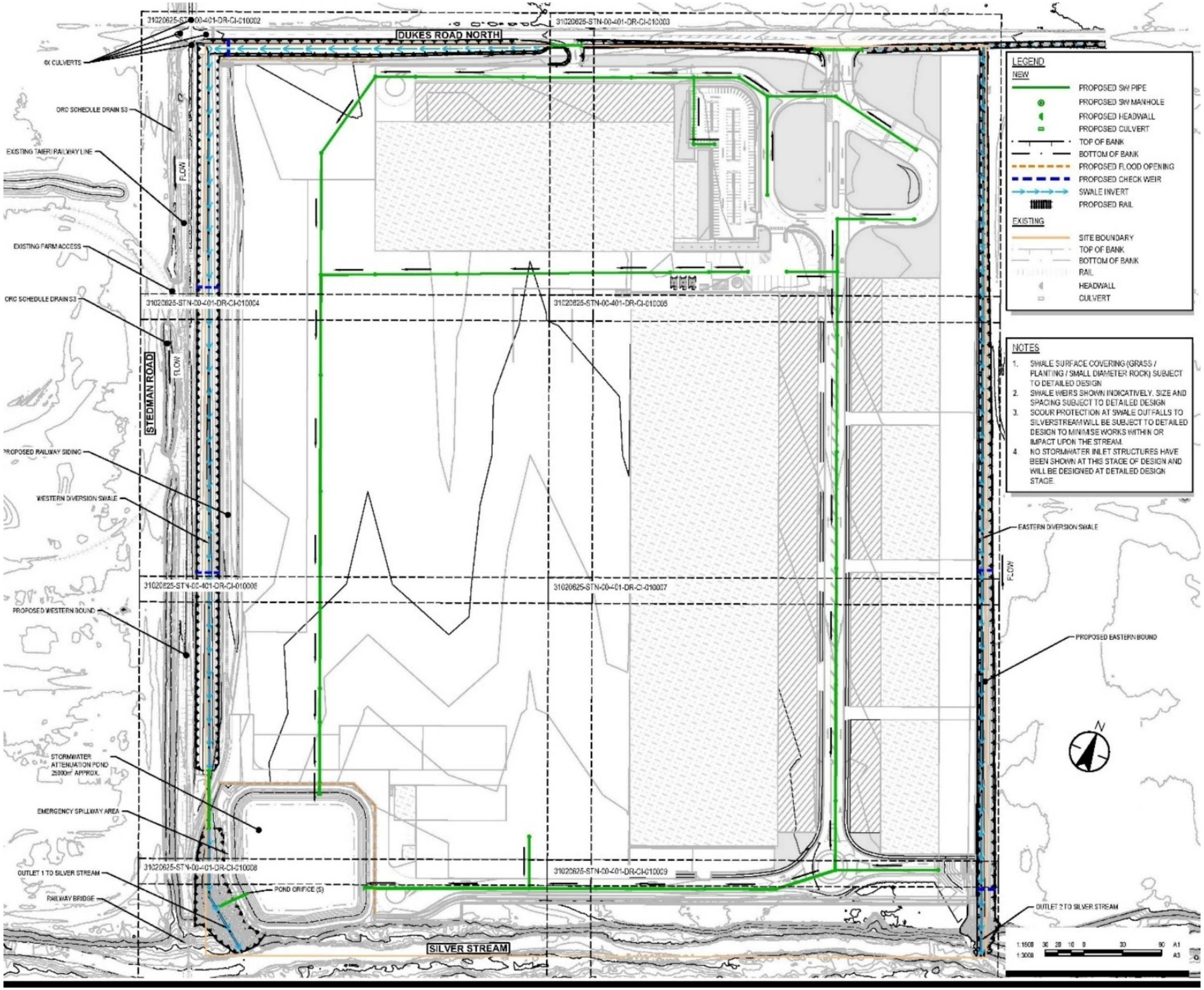

Figure 2. Current Conceptual Stormwater Configuration

2 Scope of Document

As per the proposed consent condition B.22:

1. The Consent Holder must engage a Suitably Qualified and Experienced Person(s) to prepare a Stormwater Monitoring Plan.

2. The objective of the Stormwater Monitoring Plan is to verify stormwater treatment performance by:

a) Setting out the measures that will be implemented to monitor the operational phase stormwater discharge into Silver Stream during the operation of the Southern Link Inland Port, including where construction of Stage 2 and 3 of the development is occurring; and

b) Setting out the management response to avoid, remedy or mitigate any potential effects of the stormwater discharge on the water quality and ecology of Silver Stream.

3. The Stormwater Monitoring Plan must be provided to the Otago Regional Council for certification in accordance with Conditions 4-6 of this consent.

and B.23:

The Stormwater Monitoring Plan must include:

a) Details of the measures that will be undertaken to monitor the water quality and ecology of Silver Stream during the operation of the Southern Link Inland Port;
b) Details of the water quality sampling methodology, which must be undertaken in accordance with best practice as outlined in the National Environmental Monitoring Standards (2019) for river sampling; and guidance for stormwater sampling (NIWA, 2019;
c) Details of the location, timing and duration of water quality and ecology monitoring;
d) Details of the results of the baseline water quality monitoring that must be completed prior to the commencement of the operation of the Southern Link Inland Port in accordance with Condition B.24 of this consent;
e) Details of the water quality parameters that must be monitored in accordance with Condition B.26 of this consent;
f) Identification of water quality monitoring trigger limits for each of the key analytes outlined in Condition B.27 of this consent including details of the process for identifying the trigger limits adopted in accordance with Condition B.25 of this consent;

g) Identification of monitoring triggers for sediment and ecological parameters, in accordance with Condition B.31 of this consent, and the associated ANZG sediment DGVs;
h) Details of the response and management measures that must be implemented in the event of the exceedance of any identified triggers;
i) Details of the cultural monitoring programme, including any cultural health indicators to be monitored, in accordance with Condition 12(c) of the general consent conditions that apply to all Otago Regional Council consents;
j) A description of the reporting requirements; and
k) Consent Holder roles and responsibilities for implementing the Stormwater Monitoring Plan.

While this memo has been updated to reflect other changes to the consent conditions, it has not been formatted to address all of the requirements in condition B.23. This will occur during drafting updates prior to certification.

Consent condition B.33 outlines the methods and actions regarding a kanakana habitat survey and associated management plan. This is to be prepared as a separate document to the Stormwater Monitoring Plan and is therefore not discussed further within this document.

3 Water Quality Monitoring

3.1 Baseline Water Quality

3.1.1 Assessment of Stormwater Contaminants of Concern

A PSI (e3Scientific, 2025) reported possible sources of contamination from HAIL activities. It is understood that prior to development of the site, these areas will have undergone remediation via offsite disposal to remove all possible contamination. Thus, e3Scientific (2026) determined that without additional knowledge of the confirmed site-specific activities, a precautionary approach to determining the potential contaminants of concern was appropriate. Thus, a broad suite of water quality analytes commonly associated with construction and industrial activities were proposed to be monitored to establish baseline conditions (Table 3; e3Scientific, 2026). Similarly, Stantec (2026b) recommended a robust analysis suite to assess the baseline prior to stormwater being discharged from the site. Additional water quality parameters currently monitored by Port Otago at Port Chalmers are the suite of semi volatile organic compounds (SVOC) that includes pesticides. Although SVOC concentrations at Port Otago are predominantly reported less than laboratory reporting limits (SLR Consulting New Zealand, 2026), this analysis suite would be relevant to test for in the event of a tradewaste overflow occurring. **Noting that:** overflow from the washbay system to the stormwater network would only occur during storm events that exceed the design capacity of the dedicated washbay collection system.

Therefore, the suite of water quality parameters for the SMP has been refined by incorporating analytical testing suites from existing Port Otago stormwater monitoring programmes and the potential activities occurring on site (Table 1). Alterations to the original suite recommended in Table 3 of the FEcIA report (e3Scientific, 2026) include:

- Removal of parameters associated with sodium adsorption ratio (SAR);
- Removal of continuous temperature monitoring as the attenuation pond is now planned to be empty between rainfall events; and
- The addition of SVOC testing associated with tradewaste overflow events.

Table 1 below sets out the updated suite of analytes proposed to be monitored during water quality surveys. Parameters measured include total recoverable metals, nutrients, petroleum hydrocarbons, and faecal bacteria. These parameters are currently monitored by Port Otago for the operation of a commercial port, and relate to industrial activities, such as vehicle tyres and brakes, roofs and guttering, concrete and asphalt, along with general earthworks associated sediment risks (SLR Consulting New Zealand, 2026). For each parameter, the associated ORC and / or the Australian & New Zealand Guidelines for Fresh & Marine Water quality (ANZG, 2018a) ecological water quality guideline is provided, where available.

Key parameters included in Table 1 may be adopted as triggers limits for monitoring the stormwater discharge unless they are exceeded by baseline water quality in which case a site-specific trigger limit will be adopted.

Other parameters, such as pH, dissolved oxygen, *E. coli* etc, are included to support understanding of physico-chemical conditions, toxicity modification factors, and mahinga kai collection but will not be used as specific triggers associated with the construction or operation of the site. Heavy metals should be assessed for both total and dissolved fractions where appropriate for a given parameter.

The adoption of guidelines for dissolved copper, zinc and possibly nickel will be subject to review pending results of baseline sampling. The laboratory detection limit for these parameters approaches the 99% guideline value for acute and chronic toxicity and may not be suitable pending results of baseline monitoring (Gadd, *et al*., 2024). Dissolved non-purgeable organic carbon (DNPOC), dissolved calcium, and dissolved magnesium are to be analysed for toxicity modification factor calculation for dissolved copper and zinc and possibly nickel.

Table 1. Water quality parameters and/or analytes recommended to be monitored and their corresponding published guideline value. Key parameters are in bold.

Parameter/Analytes	Guideline Values		
In field parameters			
pH	6.5 – 8.5 [1]		
Dissolved Oxygen (%)	Below 81 / Above 101 [4]		
Turbidity (NTU)	1 – 20 [1]		
Conductivity (µS/cm)	116 [4]		
Water temperature	Below 25° C or within 3° C of upstream [3]		
Analysed by certified laboratory			
Total Suspended Solids (mg/L)	Increase of 5 mg/L from mean baseline level [3]		
METALS AND METALLOIDS	**Chronic 99% DGV[1]**	**Chronic 95% DGV[1]**	**Acute 95% DGV[5]**
Arsenic (mg/L)	0.001	0.013	
Cadmium (mg/L)	0.00006	0.0002	
Chromium (mg/L)	0.00001	0.001	
Copper (mg/L)	0.0002	0.00047	0.0013
Lead (mg/L)	0.001	0.0034	
Mercury (mg/L)	0.00006	0.0006	
Nickel (mg/L)	0.00031	0.002	
Zinc (mg/L)	0.0015	0.0041	0.024
Dissolved non-purgeable organic carbon (DNPOC) [6]	n/a		
Dissolved magnesium (mg/L) [6]	n/a		
Dissolved calcium (mg/L) [6]	n/a		
NUTRIENTS			
Total Kjeldahl Nitrogen (mg/L)	n/a		
Total Nitrogen (mg/L)	0.913 [4]		
Total Ammoniacal-N (mg/L)	0.01 [4] – 0.24 [1*]		
Nitrite-N (mg/L)	n/a		
Nitrate-N (mg/L)	0.265 [4] - 1.0[1]		
Dissolved Reactive Phosphorus (mg/L)	0.008		
Total Phosphorus	0.014 [4]		
Total Coliforms (MPN/100mL)	n/a		
Escherichia coli (MPN/100mL)	130 NPS-FM [2]		
Total Petroleum Hydrocarbons (TPH)	n/a; If TPH monitoring results are greater than detection limit, further analysis of specific hydrocarbons (e.g. BTEX/PAHs) is required for assessment against ANZG (2018) water quality guidelines for specific hydrocarbon [1]		

[1] ANZG (2018a) chronic toxicity DGV for 99% and 95% species protection.

[2] NPS-FM (2025)

[3] Long-term water quality guidelines for the protection of aquatic life (ORC, 2016)

[4] Physical and chemical stressors for cool, dry, low-elevation New Zealand stream (McDowell, Snelder, & Cox, 2013)

[5] 95% species protection (Gadd, Hickey, & Snelder, 2024), subject to review pending baseline monitoring

[6] Measured for toxicity calculation factor for copper and zinc, not for assessment of effects

* Calculated based on pH and temperature n/a = not applicable (no guideline values).

3.1.2 Baseline Monitoring Locations

Samples of surface water from Silver Stream will be collected from three locations

- Upstream (10 m upstream of the site boundary)
    - Reference / control site / baseline
- Downstream (50 m mixing zone below proposed outlet)
    - Compliance point

ORC provides guidance on the mixing zone which is to be 10 times the wetted width (ORC, 2023). At this location the wetted width was measured to be 5 m wide and therefore, the mixing zone is considered to be 50 m for this site.

The following sections outline the monitoring frequency proposed before development begins (baseline) at the SLIP.

Sampling and processing of water quality samples will follow best practice as defined by NEMS (2019). A reporting schedule and survey summary is provided in Section 5 (Table 3), and approximate locations of the monitoring sites are provided in Figure 3.

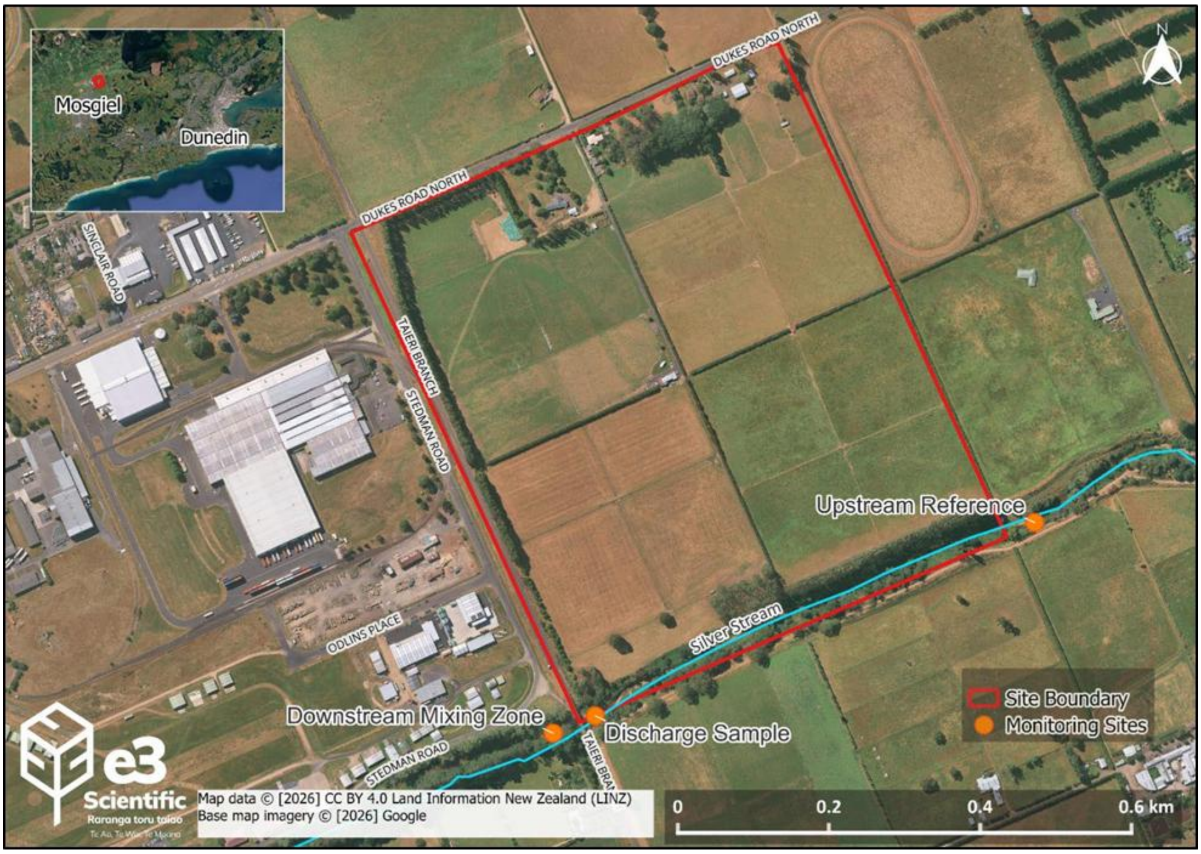

Figure 3. Approximate location of water quality monitoring sites

3.1.3 Baseline Monitoring Frequency and conditions

As described in e3Scientific (2026), baseline water quality monitoring of Whakaehu / Silver Stream is needed to assess the effectiveness of the proposed stormwater treatment measures. This monitoring will establish baseline conditions against which operation-phase monitoring results can be compared, helping to confirm whether the treatment system is performing as intended.

The following baseline monitoring conditions are proposed:

- Storm flow samples are to be collected during storm events when flows are >1m^3/s as measured at Gordon Road[1], and the hydrograph position is rising limb, peak flow, or falling limb. At least two samples shall be collected during each storm flow event targeting the different flow conditions (rising limb, peak flow, or falling limb).
- Base flow samples may be collected when flows are ≤1m^3/s and the hydrograph position is flat.

During each event, samples will be collected at two sites (i.e., Upstream, Downstream).

Water quality samples from all events will be tested for parameters included in Table 1. Results will then be compiled to be used as the baseline data set which will be used to establish the reference conditions for determining the adopted trigger limits and baseline modification factor.

A total of twenty four samples must be collected for the reference condition assessment as per guidance from the ANZG. Samples will be collected to cover different seasons in order to fully represent the variability in site conditions. Storm flow samples are preferable as they represent the typical conditions during which a discharge may occur. Quarterly baseline storm flow sampling is required prior to the commencement of operational discharge, and at least two samples should be collected during each sampling event. Base flow baseline samples can be collected during dry weather conditions to supplement the storm flow samples and provide a solid reference for the predominate water quality conditions of the Whakaehu / Silver Stream.

[1]https://envdata.orc.govt.nz/AQWebPortal/Data/DataSet/Chart/Location/EM156/DataSet/Discharge/Master/Interval/Latest

3.1.4 Setting the trigger limits

As per proposed condition B.25, once the baseline dataset has been collected (minimum 24 samples) then the trigger response framework will be determined following the method outlined in the proposed conditions and set out in Table 2.

The baseline dataset will be compared to the published guidelines in Table 1 to allow for the setting of the adopted trigger limit.

In addition, a baseline modification factor will be assessed for each analyte by assessing the 80%ile difference between the upstream and downstream baseline samples. This difference will be set as the baseline modification factor (BMF).

Table 2. Setting of limits and adjusting for reference / baseline site conditions

Approach	Reference Condition	Trigger Value
For all analytes in condition B.26 a trigger limit must be adopted following the approaches outlined in steps 1a to 1c.		
1a:Using a published Guideline Value	If 80th percentile concentration values of the baseline dataset meet the published guideline value, then the published guideline values are appropriate	Published Guideline Value (e.g. ANZG 99% Species Protection DGV)
1b: Setting a site specific trigger limit	If 80th percentile concentration values of the baseline dataset exceed the published guideline vale (e.g. 99% Species protection DGV), then the site specific reference condition for the contaminant of concern may be set as the 80%ile value of the baseline dataset*	Site Specific Trigger Limit (SSTL)
1c: Alternative Limit Assessment	An alternative trigger limit may be set for any key analyte where, in the opinion of the Suitably Qualified and Experienced Person(s) undertaking the review, it is appropriate to do so, based on the results of the baseline monitoring and specific characteristics of the key analyte	Alternative Trigger Limit
Once the adopted trigger limit has been set, the Baseline Modification Factor will be set as outlined in step 2.		
2: Baseline Modification Factor	The 80%ile of the difference between the paired baseline dataset samples is the Baseline modification factor (BMF)	Baseline Modification Factor (BMF)
*If the aquatic ecosystem has a limited ability to tolerate substantial further increases in concentration, then it might be necessary to set the site specific trigger limit at a value below the 80th percentile of the baseline dataset (closer to the median value), and to implement biological monitoring as a condition of using the guideline value in a weight-of-evidence process to understand the reference condition.		

3.2 Construction Stage 1

The updated proposed ORC Consent conditions indicate that this SMP does not apply to stormwater discharges from construction phase 1.

3.3 Operational Phase and Construction Phase 2 & 3 Monitoring

3.3.1 Context of Stormwater Discharge

Once the site is operational, the stormwater treatment systems identified and proposed by Stantec (2026a) will actively intercept, manage and treat stormwater prior to discharging to Silver Stream. For smaller rainfall events, the attenuation pond is large and has reasonably short residence times, with 12 hours or less of discharge to remove stormwater from the pond[2]. Discharges to Silver Stream will be intermittent and only associated with rainfall events (Stantec 2026a).

Operational-phase monitoring (i.e. post-construction stage 1) includes quarterly 'first flush' water quality monitoring which is proposed for validating the effectiveness of the stormwater treatment system. The proposed ORC consent conditions require the collection of water quality samples from the three monitoring locations (see Section 3.1.1). First flush sampling is triggered when a rainfall event exceeds 5 mm within 24 hours (as recorded at Mosgiel airport), after a period of 5 dry days, provided water leaves the attenuation pond and discharges to Silver Stream. The first flush sample should be taken as soon as practicable after commencement of flow from the stormwater treatment system.

Water from the washpad/truckwash area is to be directed to trade waste from Stage 1 operation; however, for large storm events (design criteria of greater than the 1 in 10 year rainfall), the container washbay wastewater system overflow will discharge via an overland flow path to the attenuation pond. This could add additional contaminants to the attenuation pond; however, Stantec (2026b) consider this risk to be low due to a significant first flush of contaminants into the wastewater system occurring, prior to any overflow.

If a large storm event (defined as greater than the 1 in 10 year rainfall event) resulted in overland flow from the washpad/truckwash area, water quality monitoring (covering Table 1 parameters with the addition of semivolatile organic compounds (SVOC) analysis) will be completed at the three sites (i.e., upstream, discharge, and downstream) as soon as is practicably safe after the overflow event.

3.3.2 Operational-phase Monitoring Locations

Samples of surface water from Silver Stream will be collected from three locations as per Figure 3:

- Upstream (approximately 10 m upstream of the site boundary)
    - Reference / control site / baseline
- Stormwater discharge outlet

[2] During regular rainfall events the attenuation pond is expected to hold various low levels of water which will be discharged over a 12-24 hour time period, after which time it will return to a grassed area.

    - Treated discharge prior to mixing with Silver Stream
- Downstream (approximately 50 m mixing zone below outlet)
    - Compliance point

Table 3 below presents an example compliance assessment and Figure 4 presents a flow chart for assessing compliance.

Table 3. Example Compliance Assessment

For a given parameter with an adopted trigger limit of 10 mg/L and BMF of 3 mg/L	Example monitoring data	Compliance Result
Example1: If the downstream sample meets the adopted trigger limit (DGV or SSTL or other) then discharge is compliant	Downstream = 5 mg/L	COMPLIANT, meets adopted limit
Example2: If the downstream does not meet the adopted trigger limit, then there is a possible non-compliance and the BMF will be applied.	Downstream = 12 mg/L	POSSIBLE NON-COMPLIANCE, apply BMF
Example2a: Adopted trigger limit is exceeded but measured difference between upstream and downstream is accounted for by the BMF	Upstream = 9 mg/L Downstream = 12 mg/L BMF=3 mg/L =	COMPLIANT, difference less than or equal to BMF
Example2b: Adopted trigger limit is exceeded and Measured difference between upstream and downstream is greater than the BMF	Upstream = 9 mg/L Downstream = 14 mg/L BMF=3 mg/L	NOT-COMPLIANT, difference greater than BMF
Example 3: if the upstream also exceeds the adopted trigger limit then the BMF is applied.	Upstream = 12mg/L, Downstream = 15 mg/L	POSSIBLE NON-COMPLIANCE, apply BMF
Example 3a: Adopted trigger limit is exceeded but measured difference between upstream and downstream is accounted for by the BMF	Upstream = 12 mg/L Downstream = 15 mg/L BMF=3 mg/L	COMPLIANT, difference less than or equal to BMF
Example3b: Adopted trigger limit is exceeded and Measured difference between upstream and downstream is greater than the BMF	Upstream = 12 mg/L Downstream = 17 mg/L BMF=3 mg/L	NOT-COMPLIANT, difference greater than BMF
Not-Compliant means the conditions for monitoring and response trigger 1 is met.		

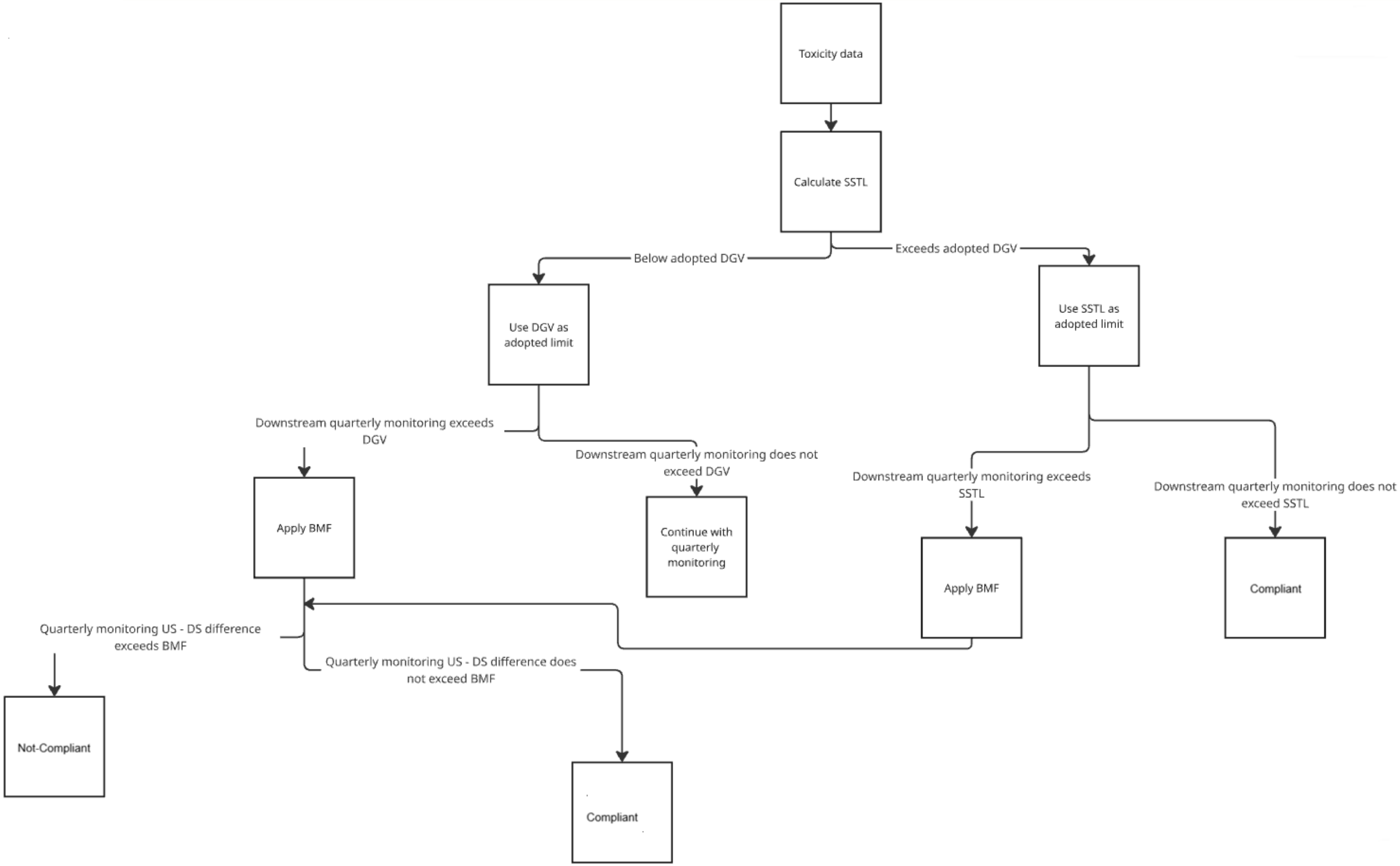

Figure 4. Water quality compliance assessment using the adopted trigger limit and baseline modification factor (BMF)

3.4 Compliance Water Quality Monitoring and Response Triggers

To assess compliance of the stormwater discharge from SLIP to Silver Stream, trigger limits and baseline modification factors should be established for selected analytes shown in bold in Table 1. Other parameters, such as pH, dissolved oxygen, and *E. coli*, are included to support understanding of Silver Stream's physico-chemical condition and mahinga kai values but are not proposed as compliance triggers for construction or operation. The proposed ORC Condition B.35 triggers and responses is reproduced below:

1. In the event the results of the water quality monitoring undertaken during the operation of the Southern Link Inland Port in accordance with Condition B.34 of this consent identifies that one or more of the key analytes measured at the downstream "compliance" site exceeds the adopted trigger limit and the corresponding Baseline Modification Factor for that analyte as set out in the Stormwater Monitoring Plan, the Consent Holder must:
   (a) Undertake a review of the stormwater catchment and cleaning/maintenance schedule of the stormwater infrastructure within 48 hours of the identification of the exceedance. The review must investigate the cause of the elevated contaminant(s) and identify any measures that the Consent Holder must implement to address the exceedance; and
   (b) Implement any measures identified in the review to address the cause of the exceedance.
2. Following completion of the review required by (1), the Consent Holder must undertake an additional one-off first-flush water quality sample following the next precipitation event greater than 5mm over a 24 hour period to ensure that changes that are identified as being necessary in the review required by (1) have been effective at addressing the matter that created an exceedance of the trigger.
3. In the event the water quality monitoring results required by (2) identifies that one or more of the analyte(s) of concern identified from the sampling in (1) has again exceeded the adopted trigger limit and baseline modification factor at the downstream "compliance" site, the Consent Holder must implement the following additional matters:
   (a) Notify the Otago Regional Council within 48 hours of becoming aware of the trigger having been exceeded;
   (b) Undertake a further review to investigate the cause of the exceedance and prepare a response plan. The response plan must include the following:

i. A review of the stormwater treatment specific for the contaminant of concern and its source;

ii. Identify the cause of the exceedance;

iii. Management measures to address the exceedance of the identified contaminant, including modifications or improvements that can be made to the stormwater treatment system; and

iv. Any recommended monitoring and reporting requirements;

(c) Provide the response plan to the Otago Regional Council within 20 working days of the identification of the consecutive exceedance and implement the response plan. The Consent Holder must also provide the response plan to the Mana Whenua Consultation Group.

4. Following completion of the review required by (3), in the event the results of the next consecutive quarterly water quality sampling event, undertaken in accordance with Condition B.34(1), identifies the key analyte(s) of concern from the sampling undertaken under (1) and (2) has again exceeded the adopted trigger limit and baseline modification factor at, the Consent Holder must:
   (a) Notify the Otago Regional Council within 48 hours of becoming aware of the exceedance;
   (b) Engage a Suitably Qualified and Experienced Person to undertake a further review of the stormwater treatment system in accordance with 3(b); and
   (c) Provide the outcomes of the review to the Otago Regional Council within 30 days of becoming aware of the exceedance. The Consent Holder must also provide the outcomes of the review to the Mana Whenua Consultation Group.

5. The Consent Holder must implement the response plan and undertake further monitoring of Silver Stream in accordance with (2). The process set out in (2)-(4) must be repeated until the exceedance of the adopted trigger limit and baseline modification factor for the identified parameter has ceased.

4 Ecological Monitoring

Aquatic habitat and macroinvertebrate surveys at the upstream and downstream sites assessed in the FEcIA (e3Scientific, 2026) should be repeated annually in spring (September to November) during the Stage 1 Construction phase of the project. The purpose of the aquatic habitat and macroinvertebrate monitoring is to verify that earthworks are being effectively managed in a way that ensures the freshwater ecology of Silver Stream is not being adversely affected by the construction of the Southern Link Inland Port. Surveys should be undertaken consistently during spring each year to support comparison between results and minimise seasonal variability. This timing is recommended because it reflects winter and spring stormwater inputs to Silver Stream as per Conditions B.30 and B.31.

4.1 Triggers and Response

Results from ecological monitoring should be interpreted by a suitably qualified environmental practitioner and included in the annual report provided in accordance with Section 5.

Annual ecological monitoring at the downstream mixing zone site should be assessed against baseline conditions from the FEcIA and adjusted for any change in the upstream site. For the downstream site, no more than one of the Macroinvertebrate Community Index (MCI), Quantitative Macroinvertebrate Community Index (QMCI) and Average Score Per Metric (ASPM) can exceed a 10% decrease from baseline values, unless the upstream reference site shows a similar change[3].

If the upstream site shows a change from the FEcIA upstream baseline sample, the downstream sample metrics should be adjusted by that same proportional change prior to being assessed against the 10% change threshold. If after this correction factor is utilised, 2 out of 3 of the metrics at the downstream site have not been reduced by 10%, then this is not deemed attributable to the discharge activity.

In the event one or more of MCI, QMCI and ASPM abundance has decreased by greater than 10% from the baseline monitoring completed and the upstream reference site has not shown a similar change, the Consent Holder must engage a Suitably Qualified and Experienced Person(s) to undertake a review of the erosion and sediment control and stormwater treatment measures that are being implemented by the

[3] FEcIA values in September 2025 were: MCI = 94; QMCI = 6.2; ASPM =0.44.

Consent Holder in accordance with the process set out in the Stormwater Monitoring Plan. If this trigger is exceeded, stormwater and any sediment monitoring results, along with relevant on-site practices from the preceding year, should be reviewed. A response plan outlining recommendations to maintain or improve ecological values should then be provided to ORC within 90 days of receiving the ecological monitoring results.

5 Sediment Monitoring

Deposited fine sediment is to be assessed in run habitat[4] at the "upstream baseline" site and "downstream compliance" site during each annual ecological assessment whilst the Project is within Stage 2 and 3 Construction Phase, as per Condition B.32.

The SAM-2 method of Clapcott, *et al*., (2011) is to be used to carry out this assessment. This method consists of five transects across a run with four observations of sediment proportions made across each transect. The data collected from this assessment is then compiled to an average for the run at that site. In the event the deposited fine sediment survey identifies an increase by more than 10% at the downstream "compliance" from that measured at the upstream "baseline" site, a minimum of two deposited sediment samples must be collected from the upstream "baseline" site and the downstream "compliance" site. These samples shall be tested for:

- Particle size;
- Heavy metals listed in Condition B.26(g)-(n);
- Semi-volatile organic compounds (SVOC); and

The following nutrients:

- Total Ammoniacal-N (mg/L);
- Nitrite-N (mg/L);
- Nitrate-N (mg/L);
- Dissolved Inorganic Nitrogen (mg/L); and
- Dissolved Reactive Phosphorus (mg/L).

[4] Run habitat = smooth unbroken uniform flow, often between a riffle and a pool.
Pool habitat = area of deep slow flowing water, often on an outside of a bend.
Riffle Habitat = fast, shallow, turbulent flow over coarse substrate.

Results from this monitoring survey will be assessed against relevant ANZG (2018b) sediment ecological guidelines and included in the annual monitoring report provided to ORC (Table 4). If results show exceedances of these sediment guidelines, a review of the sediment and erosion practices and stormwater treatment will be undertaken within 1 month of these findings, with results and planned on-site improvements provided to ORC, this is outlined in more detail in Section 4.2.1.

Table 44. Deposited sediment parameters and/or analytes recommended to be monitored and their corresponding guideline value.

Deposited sediment Parameters / Analytes	Guideline Values
Particle size	n/a – information to aid in bioavailability assessment
pH	n/a - information to aid in toxicity assessment
Total Organic Carbon	n/a - information to aid in toxicity assessment
Heavy metals (mg/kg dry weight)	**DGV (ANZG 2018) initially then GV-High**
Arsenic	20
Cadmium	1.5
Chromium	80
Copper	65
Mercury	0.15
Nickel	21
Lead	50
Zinc	200
Semi volatile Organic Compounds	**DGV (ANZG 2018)**
Total Petroleum Hydrocarbons (mg/kg dry weight)	280
Polycyclic Aromatic Hydrocarbons (µg/kg dry weight, 1% OC)	10, 000
Organochlorine Pesticides	DGV (ANZG 2018)
Nutrients	
Total Nitrogen	n/a – information to aid in source assessment
Olsen P	n/a – information to aid in source assessment

5.1 Triggers and Response

If the Downstream sample sediment results are above DGV ANZG (2018b) and this is not consistent with the Upstream samples; the following responses will occur:

1. A review of the most recent stormwater results, stormwater cleaning schedules and catchment cleaning procedures at the location of the sediment exceedance shall be undertaken.
2. If it is determined during this review that the elevated deposited fine sediment or contaminant concentrations are a direct result of activities conducted by Southern Link Property Ltd, additional water quality sampling will take place at the outlet with the exceedance.
3. Southern Link Property Ltd shall prepare a report which includes the findings from

Step 1, Step 2, and includes details of on-site activities that are resulting in the deposition of contaminants into the stream. The report shall also contain a timetable detailing measures to be implemented to reduce discharges of the contaminants.

4. If it is determined that the elevated contaminant concentrations are *not* a direct result of activities conducted during the construction or operation of SLIP, the sampling results and rationale of why it was determined that the exceedance was not direct result of the project shall be forwarded to ORC within 30 days of initial laboratory results. If it is determined that the elevated contaminant concentrations are a direct result of activities conducted during the construction or operation of SLIP, a report shall be forwarded to ORC within 30 days of initial laboratory results which includes the results and measures to be implemented to reduce discharges of the contaminant.

6 Schedule of Reporting

6.1 Proposed Reporting Consent Condition

During the development and operation of SLIP, one annual report, response plans as required, and the ongoing presentation of raw data will be supplied to ORC. Specifically, the following proposed ORC condition B.37 is reproduced here:

1. For the duration of the operation of the Southern Link Inland Port, the Consent Holder must engage a Suitably Qualified and Experienced Person(s) to prepare an annual Silver Stream Monitoring Report. The purpose of the Silver Stream Monitoring Report must be to present, summarise and analyse the Silver Stream stormwater monitoring data collected in the preceding year. The report must include:
   (a) Details of the sampling events, including time, date and flow conditions;
   (b) Details of the results of the Silver Stream water quality monitoring that has been undertaken in the preceding year, including the four quarterly water quality sampling events and any additional overflow monitoring undertaken during the operation of the project;
   (c) Details of the results of the aquatic habitat and macroinvertebrate monitoring surveys undertaken in accordance with Condition B.30 that have been undertaken in the preceding year when construction of Stage 2 or 3 is occurring;
   (d) Details of the results of any monitoring undertaken in accordance with the cultural monitoring programme outlined in the Stormwater Monitoring Plan;
   (e) An assessment of the results compared to the relevant guidelines;
   (f) Comparison of the upstream "baseline" site and the downstream "compliance" site findings;
   (g) If relevant, details of any changes to the monitoring regime made under Condition D.34(4); and
   (h) If relevant, details of any management and/or mitigation measures that have been implemented to:
      i. Address any exceedance of a key analyte(s) identified during the construction or operation of the Project in accordance with the stormwater monitoring trigger and response procedure required by Conditions B.29 and B.35;
      ii. Address any change in Silver Stream ecology identified during construction of development Stage 2 and 3 in accordance with Condition B.31; and
      iii. Address any identified elevated deposited fine sediment identified during the construction of development stage 2 and 3 in accordance with Condition B.32.

2. The first annual Silver Stream Monitoring Report must be provided to the Otago Regional Council and Mana Whenua Consultation Group one year following the commencement of the construction of the Southern Link Inland Port, and thereafter the report must be provided annually for the duration of the consent.

6.2 Application of consent conditions

Table 55 provides an overview of the recommended monitoring surveys and associated frequency.

Table 55. Silver Stream surveys and annual report content to be provided to ORC.

- ✓ **refers to number of sampling events within the stated timeframe**

<table>
<tr><th rowspan="2">Monitoring</th><th rowspan="2">Survey</th><th colspan="3">Stage</th></tr>
<tr><th>Baseline</th><th>Construction</th><th>Operation</th></tr>
<tr><td rowspan="3">Stormwater</td><td rowspan="3">First flush water sampling at three sites (Upstream, discharge, downstream)</td><td>Minimum 24 samples</td><td colspan="2">Annual
✓✓✓✓</td></tr>
<tr><td rowspan="2">n/a</td><td colspan="2">AND</td></tr>
<tr><td colspan="2">Within 1 week following any large storm event (defined as a 10% annual exceedance probability (AEP)) that has resulted in any overland flow from the washpad/ truckwash area</td></tr>
<tr><td>Ecological</td><td>Habitat and macroinvertebrate. Two sites (Upstream and downstream).</td><td>Completed 9 Sep 2025 (FEcIA)</td><td>Annual (Spring)
✓</td><td>n/a</td></tr>
<tr><td rowspan="2">Sediment</td><td><u>Sediment cover</u>
SAM-2 Run habitat deposited fine sediment. Compare downstream site to upstream</td><td>n/a</td><td>Annual (Spring)
✓</td><td>n/a</td></tr>
<tr><td><u>Sediment sampling</u>
If an increase of >10% deposited sediment cover is observed at the downstream site in comparison to the upstream site.</td><td>n/a</td><td>Annual (Spring)
if > 10% observed at Downstream site)
✓</td><td>n/a</td></tr>
</table>

n/a = not applicable or required.

7 References

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Appendix C: Draft Standard Operating Procedure (**SOP**)

Ref: 26044A v2
19th August 2026

Southern Link Property
270-292 Dukes Road North,
Mosgiel,
Dunedin

Standard Operating Procedures - Water Quality Sampling at Southern Link's Inland Port

1 Introduction

This document is to provide a standard operating procedure (SOP) for the collection of 'baseline water quality' and 'first flush stormwater' samples and sediment samples to support the construction and operation of Southern Link's proposed Inland Port in Mosgiel, Dunedin. The purpose of baseline sampling is to characterise water quality in the upstream (reference) site and downstream (impact) site under a range of stream flow conditions prior to construction works commencing. These samples will be used to set trigger levels for the downstream site to guide assessment of the future discharge of stormwater from the inland point. First flush stormwater samples will be taken during the construction and operation of the inland port to ensure stormwater treatment across the site is sufficient to protect the water quality and aquatic ecology of Silver Stream. Streambed sediment samples shall be collected when observed, for analysis during the construction and operation of the inland port to provide an assessment of the potential impacts to ecological receptors from sediment bound contaminants from the stormwater discharge.

This document provides the following:

- Baseline water quality sampling requirements
- First flush stormwater sampling requirements
- Ongoing sediment sampling requirements
- Water and sediment sampling methodology
- A bottle order request form for Hills Laboratories
- Metadata collection template

The water quality parameters listed in Table 1 have been recommended in the Stormwater Monitoring Plan (SMP) (e3Scientific Ltd, 2026). Parameters are divided into those monitored in the field by a handheld water quality meter and those analysed in the laboratory. A Hill Laboratory bottle order request form, for the laboratory parameters listed below, is included in Attachment A. Recording the location (e.g. Upstream), date, and time on each sample bottle is critical.

Water quality meters must be maintained to ensure the sensory accuracy listed in NEMS (2019) and any rental agency should provide the calibration certificate to demonstrate this. The laboratory analysing the samples shall hold IANZ accreditation for the test methods for each parameter.

Table 1 lists the water quality parameters for baseline sampling alongside collection protocols. Bolded parameters/analytes represent subset for analysis of 'baseflow' baseline samples.

The sampling locations recommended in e3scientific (2026) are shown in Figure 1.

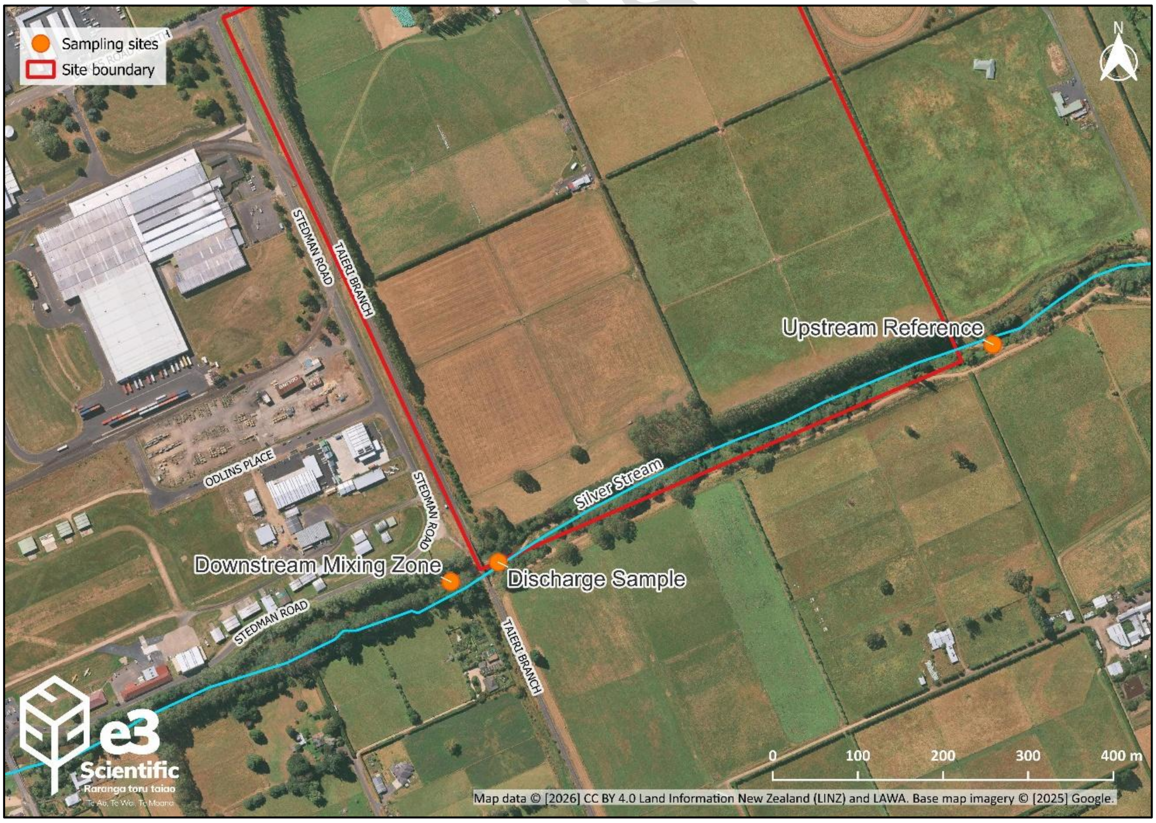

Figure 1: Sample locations

Table 1: Water sampling parameters and protocols

Parameter/Analytes	Protocols	Baseline: Baseflow	Baseline: Storm Flow	First Flush Stormwater
In field parameters				
pH	Meter deployed to stream current, measurements recorded once stable.	✓	✓	✓
Dissolved Oxygen (%)		✓	✓	✓
Turbidity (NTU)		✓	✓	✓
Conductivity (µS/cm)		✓	✓	✓
Water temperature		✓	✓	✓
Analysed by certified laboratory				
Total Suspended Solids (mg/L) or Suspended Sediment Concentration (mg/L)	Fill to top, no air gap.	✓	✓	✓
Arsenic (mg/L) – Dissolved & Total	• Dissolved metals: unpreserved bottle fill to top, no air gap. • Total metals: preserved bottle, fill to shoulder from an unpreserved bottle, do not fill directly from stream. • Specify trace analysis for analytes where the standard limit of reporting exceeds the published guideline values	✓	✓	✓
Cadmium (mg/L) – Dissolved & Total		✓	✓	✓
Chromium (mg/L) – Dissolved & Total		✓	✓	✓
Copper (mg/L) – Dissolved & Total		✓	✓	✓
Lead (mg/L) – Dissolved & Total		✓	✓	✓
Mercury (mg/L) – Dissolved & Total		✓	✓	✓
Nickel (mg/L) – Dissolved & Total		✓	✓	✓
Zinc (mg/L) – Dissolved & Total		✓	✓	✓
Dissolved non-purgeable organic carbon (DNPOC)	Fill to top, no air gap	X	✓	✓
Dissolved magnesium (mg/L)		X	✓	✓
Dissolved calcium (mg/L)		X	✓	✓
Total Kjeldahl Nitrogen (mg/L)		✓	✓	✓
Total Nitrogen (mg/L)		✓	✓	✓
Total Ammoniacal-N (mg/L)		✓	✓	✓
Nitrite-N (mg/L)		✓	✓	✓
Nitrate-N (mg/L)		✓	✓	✓
Dissolved Reactive Phosphorus (mg/L)		✓	✓	✓
Total Phosphorus		✓	✓	✓
Total Coliforms (MPN/100mL)	Fill to shoulder from an unpreserved bottle not directly from stream.	✓	✓	✓
***Escherichia coli* (MPN/100mL)**		✓	✓	✓
Total Petroleum Hydrocarbons (TPH)	Fill to top, no air gap	X	✓	✓

2 Baseline Sampling Conditions and Locations

Two types of baseline samples are to be collected from the **Upstream** and **Downstream** sites in Figure 1.

The two types of baseline samples are described below:

- **BASE FLOW:** seasonal (or as frequently as possible) samples under base flow conditions <1 m^3/s and when the hydrograph is flat (as measured at the ORC site Silver Stream at Gordon Road).
- **STORM FLOW:** Minimum of two samples from four storm flow sampling events targeting a range of flow conditions (rising limb, peak flow, falling limb) but which must be a minimum of >1 m^3/s (as measured at the ORC site Silver Stream at Gordon Road). The preferred sampling window opens once the rising limb of the event exceeds 1m^3/s and closes whenever the flow returns below 1 m^3/s. at least two samples should be collected however three is preferable, one each for rising limb, peak flow, falling limb.

See Figure 2 for an example of preferred sample window opportunities for June and July 2026.

Recording the date and time of the sampling is critical. A suggested sample name for baseflow would include the **-SF** signifier for stormflow event and **-BF** for baseflow event. (e.g. **DS - SF**, for downstream at stormflow; **US – BF** for upstream at baseflow).

Table 2: Sampling details

Baseline sampling	Frequency	Flow conditions[1]		Locations	Parameters
Baseflow Conditions (BF)	Seasonally	<1 m^3/s	Hydrograph is flat	Upstream, downstream	Bolded parameters, Table 1
Storm Flow Conditions (SF)	Minimum of 2 samples from 4 sampling events	>3 m^3/s	Hydrograph peak or rising limb preferred, falling limb acceptable	Upstream, downstream	All parameters, Table 1

[1]Flow available from ORC Environmental Data Portal Silverstream at Gordon Road.

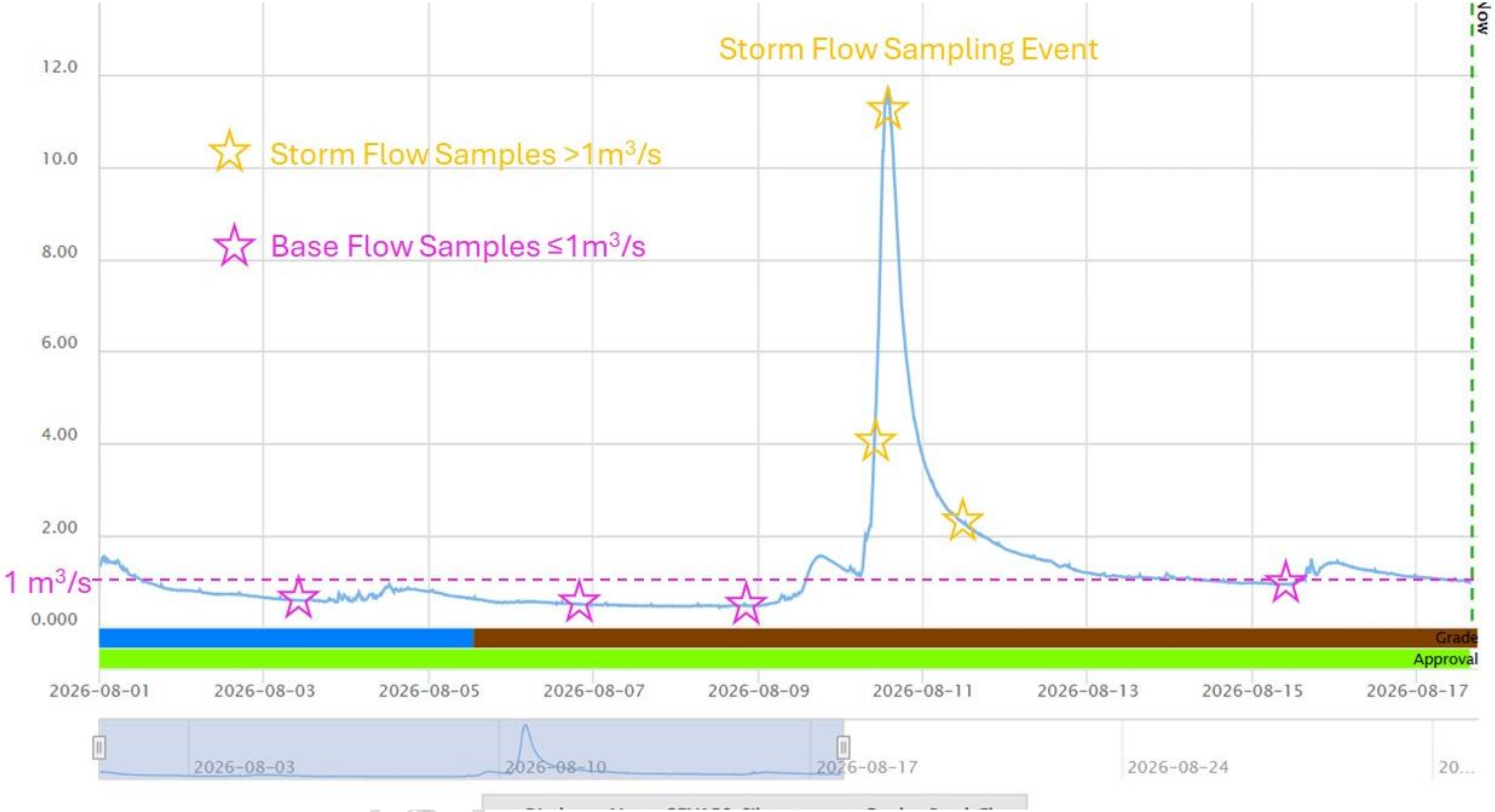

Figure 2. Example of baseflow and storm flow sampling window opportunities for August 2026

3 Stormwater First Flush Sampling Conditions & Locations

Stormwater quality will be managed through in-line treatment devices as well as settlement of remaining sediment in the attenuation pond prior to discharge (Stantec, 2026). To test the ongoing efficacy of the stormwater treatment system, quarterly water quality samples shall be collected at the following locations along Silverstream:

- Upstream (10m upstream of the site boundary)
  - Reference / control site
- Stormwater discharge outlet
  - Treated discharge quality prior to mixing with Silver Stream
- Downstream (50 m mixing zone below outlet)
  - Compliance point

ORC has provided guidance on the mixing zone to be 10 times the wetted width (ORC, 2023). At this location the wetted width was measured to be 5 m wide and therefore, the mixing zone is considered to be 50 m for this site.

First flush stormwater samples are collected following a rainfall event with a total of more than 5 mm in 24 hours (as recorded at Mosgiel airport), after a period of 5 dry days, provided water discharges to Silver Stream. The first flush sample should be taken as soon as practicable after commencement of a discharge to Silver Stream from the stormwater treatment system. Sampling parameters are those listed in Table 1.

Detailed first flush sampling methodology and sampling parameters are to be revised once the detailed design of the treatment system has been completed and baseline samples have been collected.

4 Sediment Sampling Parameters and Locations

Sediment monitoring will be completed during construction monitoring when either:

- Deposited sediment is observed at the discharge or downstream mixing zone site during the annual ecological survey.
- Fine sediment is observed deposited in the stream at the discharge or downstream site during quarterly stormwater monitoring.

Table 3 lists the sediment quality parameters to be tested.

Table 3: Sediment sampling parameters

Parameters / Analytes
Particle size
pH
Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)
SVOCs
Nutrients (Total Nitrogen, Olsen P)

5 Sampling Methodology

5.1 Water Quality Sampling Methodology

1. Record site metadata as listed on the form, Section 6.
2. Take photos of site from established photo monitoring point, Section 7.
3. Water quality meter should be placed in the current not touching the stream bed and readings should be obtained when the measurement parameters have stabilised.
4. Record reading on device or on Metadata form
5. A fresh pair of nitrile gloves should be worn at each site.
6. If it is safe to do so, water samples should be collected by wading into the stream to the centre of the current. If unsafe, samples should be collected a safe location using a pole grabber or by hand.
    a. If wading is safe, wade on an angle facing upstream to ensure any bed disturbance does not contaminate samples.
7. Sample bottles should be handled as follows and following the protocols in Table 2:
    a. Unpreserved sample bottles should be rinsed with the water to be sampled.
    b. Preserved bottles (i.e. total metals and *E. coli*) should not be rinsed and should be filled from an unpreserved bottle.
8. When collecting the sample, the unpreserved bottle should be uncapped, inverted and submerged 20 cm below the surface of the water before turning it to face into the current. Once filled, samples should be capped underwater.
    a. If it is unsafe to enter the stream a pole grabber should be used. The process of sampling using the grabber arm is the same with the sampler standing on the bank.

9. Samples should be promptly placed in a chilli bin containing ice packs to ensure laboratory sample preservation requirements are met.
10. The Chain of Custody (COC) form posted with the sample bottles should be completed and returned to the laboratory
11. Any microbial samples must be received by the laboratory within 24 hours of sampling to ensure they are processed within the 36-hour sample holding time requirement. **This means sampling must be timed so that samples are collected by the local courier prior to the courier leaving for the depot in the afternoon, or sample will have to be delivered directly to the depot.**

6 Recording Metadata

Metadata are the sampling event details such as site name, location, time of sampling, sampling personnel, site conditions ie flow, rainfall etc. A metadata collection form is included in Attachment B.

7 Photo monitoring locations

Photo monitoring locations are recommended for all sites. Locations should be distinguishable by a landmark or marker placed on site that allows the photographer to take photos of the same frame on repeat visits. The photo location should provide a good view of the stream and stream bed. We recommend taking photos at this point at each site visit and filing with a clear labelling format such as: Date_Site_Event.

7.1 Sediment Sampling Methodology

Sediment samples are to be taken when sediment is observed at the discharge or downstream sampling locations. Sediment samples from a depth of approximately 20-40 cm make sample collection the easiest. The following equipment is required:

- 1 PVC tube (approximately 32mm diameter and <50mm long) with a depth of 20mm marked on it
- 1 plastic trowel
- Rubber bung/ sink plug to fit the diameter of the PVC tube
- Rubber (Latex/nitrile) gloves

Figure 3: Sediment sampling equipment

The following methodology is recommended:

1. Ensure sample containers are marked clearly for identification at the laboratory
2. A fresh pair of nitrile gloves should be worn at each site.
3. Rinse PVC Tube and Trowel in stream water prior to collecting the sample.
4. PVC tube is pushed 20mm into deposited sediment.
5. The bung is then placed in the top of the tube to help with suction. Ideally the length of PVC tube should ensure there is minimal headspace above the bung to reduce water that enters the sample.
6. The plastic trowel is pushed underneath the tube to stop sediment from escaping.
7. Transfer the 20mm sediment core to the sample jar. Remove the bung once over the jar to release the suction and allow the sample to fall into the jar.
8. Repeat this process three times at each spot before moving onto another location at the same site to give a composite sample of each location.
9. Try to make sure each core doesn't contain too much water otherwise you will end up with a large amount of water in your sample jar. You want to avoid having to pour this water off as you will likely loose sediment fines in

this process. If it is necessary to pour water off wait till the sample is settled and water on the surface is clear prior to pouring.

10. All samples are to be placed in a chilli bin with ice packs immediately and are couriered to the Laboratory within 12 hours.

Version	Notes	Author
1	April 2026 for commencement of baseline	**Nicole Freeman** *Environmental Scientist*
2	July 2026 update for change to flow conditions	**Simon Bloomberg** Senior Environmental Scientist
3	August 2026 updates for FTA	

Attachment A – Hills bottle order forms

Baseline baseflow bottle order

QUOTATION

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB 44 555 22
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Client Name: E3 Scientific Limited
Primary Contact: Nicole Freeman
Charge To: E3 Scientific Limited
Quote Date: 08-Jun-2026
Expiry Date:
Priority: High

Quote Number: 145793
Client Ref:
Additional Client Ref:
Client Order Number:

Sample Type	Details	Qty	Quote Price	Line Total
Surface Water	Activities expanded below (NO3N, SSchch, TN, TPchH, MWHMt, TOSDrgnOTchch, HgTt, TKN, NO2NchH, NOxNchH, DRPchH) — Nitrate-N ($0.00) — Total Suspended Solids [CHC] ($17.85) — Total Nitrogen ($0.00) — Total Phosphorus ($11.22) — Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn ($55.50) — Total Coliforms and E.coli ($39.44) — Total Mercury ($11.64) — Total Kjeldahl Nitrogen (TKN) ($13.34) — Nitrite-N ($11.22) — Nitrate-N + Nitrite-N ($12.16) — Dissolved Reactive Phosphorus ($11.22) — Total Phosphorus Digestion ($11.22) — Total Digestion ($12.84) — Total Digestion with HCl ($12.84) — Total Kjeldahl Digestion ($12.84) — Filtration, Unpreserved ($11.22) The following Containers are required for the above analysis: 1 x UP1L (Unpreserved, Polyethylene, Container Size: 1 L) 1 x N100 (Nitric Acid, Polyethylene, Container Size: 100 mL) 1 x S100 (Sulphuric Acid, Polyethylene, Container Size: 100 mL) 1 x SterThio (Sterile, Sodium Thiosulfate, Polyethylene terephthalate, Container Size: 400 mL)	1	$244.55	$244.55
	Grand Total			$244.55

Notes

Quoted prices are in New Zealand Dollars (NZD) and do not include GST.

This quote is subject to our Customer Terms of Trade, a copy of which is available on our website www.hill-labs.co.nz.

Individual dates of testing are not routinely included in the Certificate of Analysis. Please inform the laboratory if you would like this information reported.

To protect the Health & Safety of our staff - please indicate if any samples submitted may be potentially hazardous. Let us know what hazardous substances may be present and the suspected levels, if known.

NOTE: The estimated turnaround time for the types and number of samples and anlayses specified on this high priority quote is by 4:30 pm, 5 working days following the day of receipt of the samples at the laboratory. This turnaround time is based on the samples being received at an appropriate laboratory location.

RELIABLE SUPPORTIVE RESPONSIVE LOCAL TRUSTED

Baseline elevated flow bottle order

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB 44 555 22
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

QUOTATION

Client Name: E3 Scientific Limited
Primary Contact: Nicole Freeman
Charge To: E3 Scientific Limited
Quote Date: 08-Jun-2026
Expiry Date: 31-Mar-2027
Priority: High

Quote Number: 145792
Client Ref:
Additional Client Ref:
Client Order Number:

Sample Type	Details	Qty	Quote Price	Line Total
Surface Water	Activities expanded below (NO3N, SSchch, TN, TPchH, CaDt, MgDt, MWHMt, TOCDnpnOTchch, TPHOt, DNPOC, HgTt, TKN, NO2NchH, NOxNchH, DRPchH) — Nitrate-N ($0.00) — Total Suspended Solids [CHC] ($17.85) — Total Nitrogen ($0.00) — Total Phosphorus ($11.22) — Dissolved Calcium ($11.64) — Dissolved Magnesium ($11.64) — Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn ($55.50) — Total Coliforms and E.coli ($39.44) — Total Petroleum Hydrocarbons in Water ($55.20) — Dissolved Non-Purgeable Organic Carbon (DNPOC) ($40.20) — Total Mercury ($11.64) — Total Kjeldahl Nitrogen (TKN) ($13.34) — Nitrite-N ($11.22) — Nitrate-N + Nitrite-N ($12.16) — Dissolved Reactive Phosphorus ($11.22) — Total Phosphorus Digestion ($11.22) — Filtration for dissolved metals analysis ($11.22) — Total Digestion ($12.84) — 0.45um membrane filtration for DNPOC ($13.52) — Total Digestion with HCl ($12.84) — Total Kjeldahl Digestion ($12.84) — Filtration, Unpreserved ($11.22) The following Containers are required for the above analysis: 1 x UP1L (Unpreserved, Polyethylene, Container Size: 1 L) 1 x UPte100 (Unpreserved, Polyethylene, Lab to Filter, Container Size: 100 mL) 1 x N100 (Nitric Acid, Polyethylene, Container Size: 100 mL) 1 x S100 (Sulphuric Acid, Polyethylene, Container Size: 100 mL) 1 x TOC125 (Unpreserved, Amber Glass, Teflon lined lid, Container Size: 125 mL) 1 x SterThio (Sterile, Sodium Thiosulfate, Polyethylene terephthalate, Container Size: 400 mL) 1 x TPH250 (Sulphuric Acid, Amber Glass, Teflon lined lid, Container Size: 250 mL)	1	$387.97	$387.97
	Grand Total			$387.97

Notes

Quoted prices are in New Zealand Dollars (NZD) and do not include GST.

This quote is subject to our Customer Terms of Trade, a copy of which is available on our website www.hill-labs.co.nz.

Individual dates of testing are not routinely included in the Certificate of Analysis. Please inform the laboratory if you would like this information reported.

To protect the Health & Safety of our staff - please indicate if any samples submitted may be potentially hazardous. Let us know what hazardous substances may be present and the suspected levels, if known.

NOTE: The estimated turnaround time for the types and number of samples and anlayses specified on this high priority quote is by 4:30 pm, 5 working days following the day of receipt of the samples at the laboratory. This turnaround time is based on the samples being received at an appropriate laboratory location.

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Attachment B – Metadata collection template

Date:	**Weather:**	**Sampling Personnel:**
Location:	**Flow (m^3/s) (Silverstream @Gordon Road):**	**Rainfall mm (of the event):**

Water Sampling

*Water Quality Meters Calibrated? Yes/No

Site	**Time**	**Water colour** *Clear, turbid, black, reddy/orange, tannin*	**Water odour**	**Temp °C**	**DO** %	**DO** (mg/L)	**SPC/EC** □µS/cm □mS/cm	**pH**	**ORP (mV)**	**Turbidity (NTU)**	**Photo (#) from camera**

Submerge unpreserved sample bottle 10-20cm below the water surface in the direction of flow upstream of the sample collector, & cap underwater. If direct filling of bottles unsafe, sample bottle is placed face up in the pole's 'gripper', uncapped sample bottle is gently plunged straight down into the water 0.2 m below the water surface and then turned into the direction of the current to allow air to escape and the bottle to fill.