

Before the Hearings Commissioners

Under the Resource Management Act 1991 (the **RMA**)

In the matter of a submission by NZ Transport Agency Waka Kotahi
(Submitter S275 and Further Submission FS28) on Plan
Change 1

and in the matter of Wellington Natural Resources Plan

**Joint statement of evidence of Nigel William Bosworth and Charlotte Amy Lockyer for
NZ Transport Agency Waka Kotahi regarding Plan Change 1**

Hearing Stream 2 - Objectives and Ecosystem health policies

on the Wellington Natural Resources Plan

Dated 14 March 2025

1. INTRODUCTION, QUALIFICATIONS AND EXPERIENCE

Ms Lockyer

1.1 My full name is Charlotte Amy Lockyer. I am a principal consultant for SLR Consulting. My role involves providing technical advice to clients in the matters of hydrology, water resources, stormwater management and stormwater quality.

1.2 I hold a Bachelor of Science degree with Honours in Physical Geography and a Bachelor of Commerce and Administration, from Victoria University of Wellington in 2004. I am a full member of the New Zealand Hydrological Society and Water New Zealand. I have more than 15 years' experience in a range of water resource fields mostly working in the role of technical lead or technical reviewer, working for private industry, local and regional government.

1.3 I have extensive experience working in the stormwater management and flooding fields. Recent project experience includes providing evidence on behalf of Wellington Water Limited (**WWL**) on Greater Wellington Regional Council's (**GWRC**) Regional Policy Statement concerning hydrological matters; the development of a council's stormwater management framework; technical expert to various councils regarding resource consent applications for water abstraction or discharge to water; evaluation of the effectiveness of hydraulic neutrality policy; stormwater water quality monitoring and reporting for New Zealand Transport Agency Waka Kotahi (**NZTA**); and a Stage 2 stormwater discharge consent application for a client in the Wellington Region, including the development of a stormwater management strategy to improve and enhance the quality of stormwater discharges.

Mr Bosworth

1.4 My full name is Nigel William Bosworth. I am a Technical Director in Stormwater, Hydrology and Flooding for SLR Consulting based in Australia.

1.5 I hold a Bachelor Degree in Environmental Engineering obtained from the University of Newcastle in 1999, a Graduate Certificate in Water Engineering (2012) and Masters in Engineering Studies (Water Engineering. 2013) both from the University of Technology, Sydney. I am a Chartered Professional Engineer and full member of The Institution of Engineers Australia. I am registered on the National Engineering Register (NER) of Australia, and am a Practicing Engineer on the Registered Professional Engineer of

Queensland (RPEQ). I am a member, and have previously sat on the Committee of, the industry advocacy body Stormwater NSW. I have more than 25 years' experience within the stormwater management field which has included work for local authorities, government agencies and private companies.

1.6 I have extensive experience with the management of stormwater quality and stormwater quality improvement measures, from high-level planning and policy, to modelling, design, assessment and ongoing maintenance and operational effectiveness. I am currently preparing several stormwater management technical reports as part of environmental impact statements.

1.7 We have prepared this statement of evidence on behalf of (**NZTA**) in respect of stormwater related matters arising out of NZTA's submissions relevant to Hearing Stream 2.

2. CODE OF CONDUCT

2.1 We have read the Environment Court's Code of Conduct for Expert Witnesses (2023) and agree to comply with it. Our qualifications as experts are set out above. We confirm that the issues addressed in this brief of evidence are within our areas of expertise. We have not omitted to consider material facts known to us that might alter or detract from the opinions expressed.

3. SCOPE OF EVIDENCE

3.1 Our evidence will address the following:

- a. NZTA's stormwater discharges and existing monitoring programme;
- b. difficulties comparing monitoring results to the Target Attribute States (TAS) framework; and
- c. a suggested alternative approach for reducing the contaminant load from state highways to support maintaining or improving the water quality of receiving water bodies.

3.2 Our evidence should be read in conjunction with the evidence of Ms Catherine Heppelthwaite. We appreciate that our evidence touches on matters within Hearing

Stream 4 but consider this is helpful (and necessary) to provide an explanation of our opinions.

3.3 In preparing our evidence, we have considered the:

- a. Section 42A Hearing Report's prepared by Ms O'Callahan on *Objectives and Ecosystem Health and Water Quality policies* for Hearing Stream 2¹; and
- b. Statement of Evidence of Mr James Blyth on behalf of GWRC².

4. NZTA SUBMISSIONS

4.1 Ms Heppelthwaite³ has summarised NZTA submissions and further submissions. Our focus is on submissions relating to:

- a. Table 8.1 (coastal water objectives);
- b. Table 8.4 (target attribute states for rivers);
- c. Table 8.5 (fresh water visual clarity target attribute states for rivers);
- d. Table 9.1 (coastal water objectives);
- e. Table 9.2 (target attribute states for rivers); and
- f. Table 9.4 (freshwater sediment load reduction target attribute state).

5. NZTA NETWORK

5.1 NZTA has roading network that discharges stormwater into areas located within the Freshwater Management Unit's (FMU) in the Te-Awarua-o-Porirua whaitua (TAP). Within whaitua Te-Whanganui-a-Tara (TWT), NZTA has roading network that discharges stormwater into areas located within the FMUs excluding Parangarahu catchment streams and south-west coast rural streams; Wainuiomata rural and urban streams; and Waiwhetu stream.

5.2 NZTA's network also discharges to all coastal water management units excluding Mākara estuary, Wainuiomata estuary and Wai Tai. Therefore, NZTA's network is affected by all TAS tables and coastal water objectives (CWO).

¹ Both dated 28 February 2025.

² Technical Evidence – Overview of Water Quality Modelling Hearing Stream 2 – Objectives and Ecosystem Health and Water Quality Policies 28 February 2025.

³ Evidence of Ms Heppelthwaite, 14 March 2025, Section 5.

5.3 NZTA currently holds a Stage 1 stormwater discharge consent issued under Rule R52 of the Natural Resources Plan (NRP). This 5-year consent involves monitoring and reporting stormwater discharges from its network. The consent expires in 2027.

5.4 NZTA have contracted SLR Consulting to undertake this work on their behalf. Ms Lockyer is currently leading this project. SLR Consulting is currently part way through Year 2 monitoring. As agreed through the Stormwater Management Plan approved by GWRC, monitoring involves the collection of four rounds of stormwater samples (wet weather monitoring) from representative high-risk outlets. At most locations this involves sampling in the receiving environment upstream of the outlet, at the state highway discharge outlet, and downstream of the outlet in the receiving environment. The purpose is to improve understanding of the concentration of contaminants discharged from NZTA's roading network, and the effect this may be having on the water quality of the receiving environment.

5.5 Results from Year 1 monitoring from across the Wellington City, Hutt Valley and Wairarapa sites are summarised below:

- a. Elevated concentration of some contaminants measured at the stormwater outlet, though in general, these were diluted by flow in the receiving environment to levels similar to the upstream environment.
- b. Dissolved zinc, dissolved copper concentrations and total suspended solids in the outlet samples were elevated. This is typical of stormwater discharges in New Zealand.
- c. The contaminant load appears to be strongly associated with the total (sediment associated) phase, as contaminants are sorbed⁴ to sediment particles. ie. more sediment results in higher contaminant load.

5.6 In some instances, the measured concentration of contaminants exceed both the ANZG⁵ default guideline values (DGV) and TAS numeric threshold values (within the Ms O'Callahan's S42A recommendations) in the receiving environment. This is expected as threshold values (DVG and TAS) are developed for chronic exposure (exposure over a sustained period of time) not 'end of pipe' measures. This measure, represented as the median and 95% percentile default guideline value, is to support stream ecosystem

⁴ **Sorbed:** encompasses both absorption and adsorption. Adsorption refers to the process where molecules adhere to the surface of a material rather than being taken into its volume.

⁵ Australia and New Zealand Guidelines for Fresh and Marine Water Quality (2018).

health. Stormwater discharges are intermittent (temporary in nature). Values can vary significantly depending on factors such as the intensity of rainfall, the duration of dry weather prior to collection and the duration of time since rainfall began and the sample was collected. There are no guidelines values available for stormwater runoff which forms the discharges from NZTA assets (end-of-pipe discharges).

6. APPLICATION OF TABLES

6.1 We provide our comments based on the recommendations of Ms O’Callahan’s Appendix 4 Objectives and Appendix 4 Ecosystem Health and Water Quality. Unless specifically identified, our assessment applies to all Tables on which NZTA has submissions⁶.

6.2 In the following sections, we explain why we consider the Tables need to be carefully considered and not set up to be ‘hard limits’ in the consent process for pollutant export directly from infrastructure. We also raise concerns with how each discharge will be assessed for its ‘contribution’ to catchment wide contaminant load. In summary we conclude:

- a. ‘end-of-pipe’ monitoring data (such as that being undertaken under NZTA’s Stage 1 consent) does not correlate to the Tables TAS and CWO attributes; and
- b. more direction is needed on how the contribution of (individual or network) discharges will be assessed (and consequential improvements required) in achieving TAS and CWO.

Use of Monitoring Data

6.3 Stormwater monitoring (such as NZTA’s Stage 1 consent) is useful to inform understanding of which contaminants may be of concern and to prioritise improvement projects. The use of (outfall and downstream receiving environment) monitoring for stormwater discharges to compare with the numerical concentrations (particularly copper and zinc) in the TAS/CWO Tables is not however feasible for NZTA.

6.4 This is because the monitoring regime is currently being undertaken as part of the NZTA Stage 1 stormwater discharge consent is an event-based (not continuous) sampling

⁶ Being Tables 8.1 and 9.1 Coastal water objectives, Tables 8.4 and Table 9.2: Freshwater target attribute states, Tables 8.5 and 9.4 Freshwater sediment load reduction to achieve TAS visual clarity.

process that is not of adequate resolution to provide the statistically representative data set required. Further, due to the nature of wet weather sampling and the inherent variability, results cannot be reliably used to inform modelling, or comparison to, numerical concentrations stipulated in the TAS/CWO. In addition, many of the contaminants require laboratory analysis, which reduces the feasibility of collecting continuous or event-based samples to provide a representative dataset, reflecting of the variation in discharge contaminant concentrations.

6.5 In summary, stormwater outfall and downstream receiving environment monitoring results should not be compared to TAS/CWO in Table 8.4, 8.4, 8.5, 9.1, 9.2 and Table 9.4 as the monitoring is not reflective of chronic exposure.

Attribution of discharges relative to TAS/CWO

6.6 Within Plan Change 1, the mechanism for apportioning contaminants to land uses, and the subsequent obligation on the consent holders to contribute to improvement to the part FMU, (to met TAS), is not clearly outlined.

6.7 The measure for how the quality of stormwater discharges should demonstrate *maintain or improve where deteriorated* (as set out in, for example, WH.03), and their proportionate contribution to TAS should be determined, or a new measure proposed to reflect the intermittent nature of stormwater discharges.

6.8 We expect to address these matters further in Hearing Stream 4.

7. RECOMMENDATION

7.1 We recommend the TAS tables are only used on a catchment basis and not applied at the individual outlet scale.

7.2 A more appropriate methodology for stormwater discharges may be to identify pollutant generation hot spots through a detailed analysis of individual catchments and receiving environments, in order to provide guidance on long-term pollutant removal measures. This can include existing and design pollutant export loads based on published loadings from roads, supplemented by water quality sampling data. An analysis of “neutral or

beneficial effects” of proposed changes to pollutant exports is an appropriate, standardised system for this assessment of improvement.

8. CONCLUSION

8.1 The Tables serve a purpose as a catchment wide goal, however there is no mechanism as to how the target attribute concentrations will be applied to discharge consents, as there is no modelling or monitoring that will provide appropriate linkages between outfall monitoring data and region-wide TAS/CWO outcomes. We recommend the following Tables are only used on a catchment wide scale.

- a. Table 8.1 (coastal water objectives);
- b. Table 8.4 (target attribute states for rivers);
- c. Table 8.5 (fresh water visual clarity target attribute states for rivers);
- d. Table 9.1 (coastal water objectives);
- e. Table 9.2 (target attribute states for rivers); and
- f. Table 9.4 (freshwater sediment load reduction target attribute state).

Charlotte Lockyer and Nigel Bosworth

14 March 2025