

**IN THE ENVIRONMENT COURT
WELLINGTON REGISTRY**

**I TE KŌTI TAIAO O AOTEAROA
TE WHANGANUI-A-TARA ROHE**

ENV-2023-WLG-000005

UNDER the Resource Management Act 1991

IN THE MATTER the direct referral of applications for resource consents and notices of requirement under sections 87G and 198E of the Act for the Ōtaki to North of Levin Project


BY **WAKA KOTAHI NEW ZEALAND TRANSPORT AGENCY**

Applicant

**STATEMENT OF EVIDENCE OF LOGAN ARTHUR BROWN ON BEHALF OF THE
MANAWATŪ-WHANGANUI REGIONAL COUNCIL AND GREATER WELLINGTON
REGIONAL COUNCIL**

WATER QUALITY AND AQUATIC ECOLOGY

Dated: 26 September 2023


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STATEMENT OF EVIDENCE OF LOGAN ARTHUR BROWN

A. INTRODUCTION

- [1] My name is Logan Arthur Brown. I am the Freshwater and Partnerships Manager at Manawatū-Whanganui Regional Council (**Horizons**). I have been in that position since July 2016.
- [2] I prepared a report on the application required by section 87F of the Resource Management Act 1991 on behalf of Horizons and Greater Wellington Regional Council (**GWRC**) (the **Regional Councils**), dated 28 April 2023 (**s87F Report**).
- [3] In my s87F Report, I reviewed the application from Waka Kotahi for resource consent applications lodged with Horizons and the GWRC relating to the Ōtaki to North of Levin Highway Project (the **Ō2NL Project** or **Project**). My s87F Report provided recommendations to improve or further clarify aspects of the resource consent application addressing water quality and aquatic ecology.
- [4] I confirm I have the qualifications and experience set out at paragraphs 7-12 of my s87F Report.
- [5] On 26 July, 7 August and 8 August 2023, I participated in expert conferencing on the following topics:
- (a) Water takes and abstraction, resulting in a joint witness statement dated 26 July 2023 (the **Water Abstraction JWS**);
 - (b) Freshwater ecology, resulting in a joint witness statement dated 7 August 2023 (the **Freshwater Ecology JWS**);
 - (c) Erosion and sediment control, and water quality, resulting in a joint witness statement dated 8 August 2023 (the **ESC/Water Quality JWS**); and
 - (d) Stormwater, resulting in a joint witness statement dated 8 August 2023 (the **Stormwater JWS**).

[6] I confirm the contents of the Water Abstraction JWS, Freshwater Ecology JWS, ESC/Water Quality JWS and Stormwater JWS.

[7] I discuss any remaining issues and/or related conditions below.

B. CODE OF CONDUCT

[8] I repeat the confirmation provided in my s87F Report that I have read and agree to comply with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. This evidence has been prepared in accordance with that Code. Statements expressed in this evidence are within my area of expertise, except where I state I am relying on the opinion or evidence of other witnesses.

C. SCOPE OF EVIDENCE

[9] My report will cover the following:

- (a) The extent to which issues identified in my s87F Report have been resolved through Waka Kotahi evidence, expert conferencing and mediation;
- (b) A response to section 274 party evidence; and
- (c) Conditions.

[10] In addition to the reports I reviewed for my original s87F Report, I have also reviewed the following:

- (a) Evidence of Mr Gregor McClean on behalf of Waka Kotahi dated 4 July 2023;
- (b) Evidence of Mr Keith Hamill on behalf of Waka Kotahi dated 4 July 2023;
- (c) Evidence of Mr Nick Keenan on behalf of Waka Kotahi dated 4 July 2023;
- (d) Evidence of Dr Alexander James on behalf of Waka Kotahi dated 4 July 2023;

- (e) Evidence of Dr John (Jack) Allen McConchie on behalf of Waka Kotahi dated 4 July 2023;
- (f) The conditions filed by Waka Kotahi on 4 September 2023 (**Waka Kotahi conditions**); and
- (g) The s87F Reports by Stu Farrant, Michaela Stout, Mike Thompson and Kerry Pearce for the Regional Councils.

D. OUTSTANDING ISSUES

[11] On review of the issues in dispute arising from my s87F Report, the Water Abstraction, Freshwater Ecology, ESC/Water Quality, and Stormwater JWSs, and the Waka Kotahi conditions, I consider that the following issues are outstanding for water quality and freshwater ecology:

- (a) Waikawa Stream: Minimum flow measurement at abstraction site;
- (b) Review of construction designs for fish passage;
- (c) Conditions for escalating responses to visual clarity exceedances;
- (d) Operational stormwater management plan; and
- (e) Maintenance of offset locations.

[12] I address these issues in turn below.

Waikawa Stream: Minimum flow measurement at abstraction site

[13] Waka Kotahi proposes to cease the take of water from the Waikawa Stream when the minimum flow reaches 0.220 m³/s as recorded at the Waikawa at North Manakau flow recording site. See condition RWT1(f) Table RWT1.5.¹

[14] I remain of the view that this cease take condition does not sufficiently address the ecological effects of the abstraction from the Waikawa Stream.

¹ Page 66 of Waka Kotahi Conditions (Tracked Changes Version).

This issue was identified in my s87F Report,² and subsequently the discussion between the freshwater ecologists in conferencing on 7 August 2023.

- [15] The Ōhau River and Waikawa Stream are unique within the Horizons region in that during low flows there are reaches of the waterways where sections no longer have connecting flows between them i.e. there is no water flowing along the river. This creates issues for species that are found within the mainstem in which these flows are lost.
- [16] At the time minimum flows were introduced into the One Plan, the loss of surface water to groundwater within the Ōhau River was well established. It was one of the factors considered when setting the minimum flow for the Ōhau River – through the maintenance of a connecting flow in the reach of the Ōhau River that had been known to dry up due to loss of surface water to groundwater.³ However, this same level of information did not exist for the Waikawa Stream when setting the minimum flow. Since then, however, further work has been undertaken to understand the flows (surface and groundwater, and their interaction) and contaminant movement within the Waikawa catchment (with further work also in the Ōhau catchment).
- [17] The Waikawa catchment has high freshwater biodiversity values (as also recognised in the reports supporting the consent application). In addition, the One Plan recognises the entire mainstem of the Waikawa catchment (from the Tararua Ranges down to the coast at Waikawa beach) as a Site of Significance – Aquatic for the high native fish biodiversity that it holds.
- [18] The Water Abstraction JWS records that “*Ecological effects of the takes will be dealt with at the freshwater ecology expert conference*”.⁴
- [19] At the freshwater ecology conference, Dr James and I discussed the abstraction at Waikawa Stream. The Freshwater Ecology JWS recorded that:⁵

² Section 87F Report - Logan Brown, dated 28 April 2023, paragraphs [86] and [89] – [102].

³ Water Allocation project: Ōhau River. Water Resource Assessment Allocation Limits and minimum Flows. Technical report to support policy development. ISBN: 1-877310-37-9. Report No: 2003/EXT/575.

⁴ Joint Witness Statement – Water Abstraction dated 26 July 2023, at paragraph [8].

⁵ Joint Witness Statement – Freshwater Ecology dated 7 July 2023, at Annexure A.

All agree that takes from the Waikawa Stream should cease when the flow at the abstraction site is at the minimum flow set in the One Plan for the protection of instream values below the abstraction site.

[20] A condition implementing this recommendation has not been carried through to the Waka Kotahi conditions.

[21] In my opinion, a condition requiring the take to cease when flow at the abstraction site is at the minimum flow set in the One Plan is necessary. It will ensure protection of instream values below the abstraction site.

[22] As identified in the evidence of Mr St Clair, the rule framework⁶ provides for a range of matters of control, including the management of adverse effects on freshwater values and measures to avoid, remedy or mitigate them.

[23] In my view, Waka Kotahi is able to achieve compliance with the proposed condition, via two main avenues:

- (a) Install a flow measuring site at the proposed abstraction point and use this new flow site to switch off the take when the minimum flow in the Waikawa Stream is reached; or
- (b) Establish a flow relationship between the proposed take location and the flow monitoring site. This relationship is then used to establish what the minimum flow is at the flow recording site to ensure that Waka Kotahi's activities (abstraction) do not result in the Waikawa Stream dropping below the minimum.

[24] These options are consistent with the core principles developed for the Ō2NL Project as contained in the statement of evidence of Jack McConchie:⁷

- (a) Take water from streams and rivers as a last resort and on the following basis:

⁶ Rule 16-5 of the One Plan.

⁷ Statement of Evidence of Dr John (Jack) McConchie, 4 July 2023, at paragraph [266].

- (i) Low rates of abstraction to storage facilities to meet residual;
- (ii) Project requirements (rangātiratanga and kaitiakitanga);
- (iii) Store water for use during the dry periods so as to be able to continue working during the summer (prime construction season) (rangātiratanga and kaitiakitanga);
- (iv) This approach allows water to be only taken when there is available resource, i.e., no abstraction below minimum flow so that there is enough water remaining to not adversely affect mauri of the waterways (kaitiakitanga);
- (v) Take water using methods that avoids effects on fish (including risk of pollutants entering watercourses) (kaitiakitanga);
- (vi) Use water in the catchment derived (as far as practicable) (Whakaora – Restore to whenua where resource derived).

[25] The above approach does not increase the minimum flow in the Waikawa Stream. Rather it seeks to ensure that the minimum flow established for the Waikawa Stream is maintained at the take location to protect the high freshwater biodiversity values within the Waikawa catchment.

[26] The One Plan minimum flow as contained in Schedule C (220 l/s or 0.220 m³/s) was calculated on the basis of 95% of the 1-day Mean Annual Low Flow (**MALF**) (230 l/s) with a limited data set. The updated 1-day MALF is 281 l/s, so the current minimum flow is equivalent to ~80% of the 1-day MALF. Therefore, if we were to maintain the 95% of the 1-day MALF then a minimum flow of 267 l/s would be more appropriate.

[27] I have experience with minimum flows being set to maintain habitat requirements in the Manawatū-Whanganui region. In 2017 I was involved as

an expert witness in *New Zealand Energy vs Manawatū Wanganui Regional Council*.⁸ This decision resulted in the minimum flow being raised from 45 l/s as contained in Schedule C of the One Plan to 77 l/s in the Makara Stream in the consent. This was to maintain the 70% habitat requirements on which the initial minimum flows had been set. This ensured that the values in the Makara Stream that were identified in the One Plan were protected.

- [28] There is an argument that a higher minimum flow should be applied in the instant case – with the Waikawa Stream having greater native freshwater biodiversity values when compared to the Makara Stream in the Whangaehu catchment. This would ensure the effects are maintained as per the One Plan approach/method. However, as has been suggested, Waka Kotahi could alternatively ensure that its abstractions do not result in the Waikawa Stream dropping below the minimum flow set for the Waikawa Stream. This would ensure the effects of the minimum flow being reached at the flow recording site would be the same as those experienced at the take point.

Review of construction designs for fish passage

- [29] The Freshwater Ecology JWS recorded that:⁹

All agree to amend RFE3 to include “explicitly require that information gathered under NES requirement is assessed against construction plans of each individual fish passage structure and provided through to regional regulatory authorities”. This should be done by a suitably qualified expert.

- [30] The Waka Kotahi conditions propose that only the information required to be collected under clauses 62, 63, and 68 of the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (**NES-F**) is provided to the Regional Councils. I understand that Waka Kotahi considers this condition to meet the requirements of the ecologists in the Freshwater Ecology JWS.

⁸ *New Zealand Energy Ltd v Manawatū Wanganui Regional Council* [2017] NZEnvC 141.

⁹ Joint Witness Statement – Freshwater Ecology, dated 7 July 2023, at Annexure A.

- [31] However, the collection of this information does not require an assessment to be made against the design parameters for the culvert. I remain of the view that an assessment against the design is necessary, and appropriate.
- [32] Waka Kotahi has proposed to enable fish passage through these structures using the stream simulation method.¹⁰ The NES-F require a subjective assessment onsite as to whether the structure enables fish passage i.e. clause 62(3)(h) assesses the likelihood that the structure will impede the passage of fish. This is a very different assessment as to whether the culvert fulfils the stream simulation method for culverts. The NES-F does not require the assessment against the stream simulation method.
- [33] The measure of success for the culvert construction should be enabling fish passage through and past the instream structure using the stream simulation method. This assessment can be completed with the information collected as part of the NES-F, however, it goes beyond the provision of information to the Regional Council, and requires additional analysis to be undertaken.
- [34] Without confirmation that the culvert construction will meet the stream simulation methodology, the application will lack certainty as to ensuring fish passage through many of the high value waterways within the Project, and of ensuring on-going access to habitat upstream of the proposed road.

Erosion and Sediment Control – Water Quality

- [35] The ESC/Water Quality JWS recorded that:¹¹
- Erosion Sediment Control Monitoring Plan – all agree that Schedule 8d) provisions should include requirements for escalating the response if there is poor performance of a device as indicated by repeated exceedances.
- [36] This recommendation was made to ensure that measures are put in place to address the cause (issue) of visual clarity being lower than the standard i.e. the source of the sediment is dealt with rather than simply treating the issue

¹⁰ As set out in the design principles contained in the “New Zealand Fish Passage Guidelines: For structures up to 4 metres, 2018”.

¹¹ Joint Witness Statement - ESC/Water Quality, dated 8 August 2023, at Annexure A.

such as alum dosing a treatment pond. Solving the issue reduces the risk that on-going sediment discharges above the trigger level will occur. This ensures that the effects of sediment discharges on the receiving environments are what was anticipated by the consent application i.e. discharges from devices will have a clarity that is 100mm or greater.

- [37] In order to ensure that the source of the issue is addressed (the cause of visual clarity being below 100mm), I am of the view that there should be an escalating approach to repeated exceedances of the visual clarity standard.
- [38] Repeated exceedances would be when a device exceeds the trigger requirements in two or more consecutive rounds of monitoring or if three or more exceedances from a device occur within six months. I have suggested two consecutive exceedances as with one event it may be appropriate to simply remove suspended sediment from the discharge (via such measures as alum dosing) due to a one-off event in the contributing catchment. However, a second or more consecutive exceedance is likely to be reflective of issues upstream of the treatment device and therefore Waka Kotahi should adopt a more stringent (escalating) response and look at measures that may involve work higher up in the contributing catchment. The other circumstance is where there are three or more exceedances from a device within six months. In that case a device is showing a regular pattern of exceedances which would be indicative of on-going management issues within the catchment which warrant greater scrutiny than a one-off event.
- [39] Excess sediment introduced in waterways can have significant adverse effects on the aquatic life within particularly those streams that have higher aquatic biodiversity values.¹² To ensure that actual effects of the activity are appropriately managed, the escalation approach I have set out above, is, in my opinion, appropriate. The trigger requiring a 'escalating response' should be within a condition (not just left to the Erosion and Sediment Control Management Plan) to ensure enforcement of the requirement. I am

¹² Section 87F Report, Logan Brown, dated 28 April 2023, paragraphs [42] – [76].

comfortable with the methods (how it will be achieved) sitting within the management plan, as is currently proposed in the Waka Kotahi conditions.¹³

[40] Having reviewed Mr Pearce's evidence, I note he supports this approach.

Operational Stormwater Management Plan

[41] The Stormwater JWS recorded that:¹⁴

All agree that an Operations & Maintenance Plan condition in the discharge consent is required to provide certainty that the devices will continue to operate and perform as designed.

[42] An Operations and Maintenance Plan has not been included in the Waka Kotahi conditions. The absence of these conditions is also addressed in the evidence of Mr Farrant for the Regional Councils.

[43] Technical Assessment 4.2 notes that the concept design for the Ō2NL Project highway stormwater management system is designed to:¹⁵

- (a) Provide stormwater runoff treatment over more than 90% of road surface area in the Ō2NL Project; and
- (b) Provide a treatment train approach that can capture and treat 75-90% of total suspended solids (**TSS**), oils, and soluble metals (copper and zinc) from road runoff for 90% of storms. The treatment train includes vegetated batter slopes, treatment swales and constructed wetlands before discharge into the receiving environment.

[44] In my s87F Report, I had recommended monitoring of some of these devices to ensure that the design resulted in the intended outcome for the receiving environment.¹⁶ This is important particularly in those catchments that had been identified as higher risk as a result of the stormwater discharges.¹⁷

¹³ Schedule 8, Page 94 of Waka Kotahi Conditions (Tracked Changes Version).

¹⁴ Joint Witness Statement – Stormwater, dated 8 August 2023, at Annexure A.

¹⁵ Technical Assessment 4.2: Stormwater Management Design paragraph 5(a) and (b).

¹⁶ Section 87F Report, Logan Brown, dated 28 April 2023, paragraphs [109]-[117].

¹⁷ Technical Assessment H: Water Quality Table H.26 Tributaries in Catchments P, M and I for hydrology risk. At paragraph [164] catchment B, L and P may have an increase in

- [45] Monitoring of stormwater devices is more complex due to the nature of the treatment train approach and capturing the water (and the associated treatment) as it makes its way through the treatment train. For this reason, there is an increased reliance on the operation and on-going maintenance of the treatment devices as the main mechanism to ensure the effects of the Project are consistent with those identified in the consent application.
- [46] In the Waka Kotahi conditions, RSW1(a)(ii) states that operational stormwater run-off from the Project must be treated in general accordance with “*the Waka Kotahi NZ Transport Agency ‘P46 Stormwater Specification’ dated 2016, including the requirements for operation and maintenance*” (P46).¹⁸ I have reviewed P46, and note the specifications for operation and maintenance are all targeted at ensuring access to the devices so maintenance can be undertaken.
- [47] The specific requirements in P46 as to what an Operations and Maintenance Plan contain are within clause 11.2. That clause provides:¹⁹

11.2 Operation and maintenance documentation

A ‘Stormwater Operational and Maintenance Plan’ shall be prepared and submitted for the constructed stormwater system during the detailed design phase for review and approval by NZTA and the network operator [*specifier to add local Council if this is a requirement*]. As a minimum, this document is to set out the monitoring and maintenance procedures for the stormwater infrastructure as required by the [*relevant network maintenance organisations*] and any Resource Consent conditions. This is to include as a minimum:

- Location map and access arrangements;
- Inspection and maintenance requirements and frequency;

contaminant loads of TPH. See also Section 87F Report - Logan Brown dated 28 April 2023, Section K paragraphs [77] - [80] and [114].

¹⁸ Page 71 of Waka Kotahi Conditions (Tracked Changes Version).

¹⁹ Waka Kotahi NZ Transport Agency ‘P46 Stormwater Specification’ dated 2016, page 17.

- Safety requirements;
- Project risk items where they continue to be relevant for the operation phase;
- Traffic Management (TM) requirements;
- Monitoring and reporting requirements of consent conditions (resource consents should be appended);
- Contingency plan;
- Routine and emergency contacts; and
- As-built drawings and stormwater system information (refer Section 10).

[48] There is no requirement within P46 to ensure the treatment train remains efficient in terms of water quality treatment. Instead, it refers to “*monitoring and maintenance procedures for the stormwater infrastructure as required by the [relevant network maintenance organisations] and **any Resource Consent conditions***” [emphasis added].

[49] On this basis, I am of the opinion that a condition requiring a certain level of treatment should be added. The Stormwater Operation and Maintenance Plan would then set out how this standard would be complied with.

[50] As Waka Kotahi has designed the devices to meet a 75% reduction in TSS, I consider this to be an appropriate standard for the on-going operation and maintenance of the devices to meet. Alternatively, Waka Kotahi could undertake monitoring as outlined in my s87F Report to ensure compliance with the design parameters.²⁰ Those recommendations have not been taken up to date by Waka Kotahi.

²⁰ Section 87F Report, Logan Brown, dated 28 April 2023, paragraphs [109]-[117].

Maintenance of offset locations

- [51] The Freshwater Ecology JWS recorded that all experts “agree to amend REM13(b) to insert reference to “on-going maintenance requirements”.²¹ This recommendation is not carried over into the Waka Kotahi conditions.
- [52] The principles of offsetting require permanence of the offset activity to ensure that the effect envisaged at the time of the application follows through into actuality. The majority of the offset for stream loss for the Project is the enhancement of existing streams within the Waikawa and Ōhau catchments, with a riparian buffer being created of between 3 and 20 metres for those selected areas of streams.
- [53] Riparian margins create a large edge effect and therefore are regularly invaded by pest plant species. This invasion is from both the stream and seeds carried in the flowing water or invasion from the paddock side of the planting. Species such as old man’s beard and banana passionfruit are able to smother these plants. Therefore, to ensure that the offsetting remains in perpetuity, there will need to be on-going weed control at these sites. This is no different to the requirement that a fence is maintained to exclude stock from the plantings (and stream).
- [54] Waka Kotahi is hesitant to impose weed control requirements on third party landowners. This is not my suggestion. Waka Kotahi is approaching landowners who will be willing to have these activities undertaken on their properties. In my view, one of the criteria for Waka Kotahi negotiating with these parties needs to be that they are willing to undertake pest plant control to ensure the on-going survival of the plants, exactly the same requirement as for the fencing arrangements. Waka Kotahi would be responsible for ensuring they have this requirement in their arrangement with the landowner. In my view, this requirement is within its control.
- [55] If the landowner is not willing to undertake the on-going pest plant maintenance, Waka Kotahi cannot show the permanence of the offset and the offsetting principles are not complied with. If the offsetting principles

²¹ Joint Witness Statement – Freshwater Ecology, dated 7 July 2023, at Annexure A.

cannot be complied with, I am not comfortable that there is sufficient certainty that the effects of stream loss can be offset.

E. RESPONSE TO SECTION 274 PARTY EVIDENCE

[56] My s87F Report commented on submissions received on the application. Having reviewed the evidence filed by section 274 parties, there are no new issues that need to be addressed in relation to water quality and freshwater ecology.

F. CONDITIONS

[57] I have reviewed the Waka Kotahi conditions. I am generally comfortable with the conditions, subject to the comments set out in my evidence.

Table RWT-1.5 Circumstances when Abstraction of Surface Water Must Cease

[58] See discussion above at paragraphs [14] – [29]. In order to ensure that the Waikawa Stream take does not result in abstraction when it is below the minimum flow, Waka Kotahi needs to adopt one of the approaches set out in paragraph [24] above. This would result in a minimum flow of 245 l/s (0.245 m³/s) as recorded at the Waikawa at North Manakau flow recording site.

RFE3 Information about culverts and fish passage

[59] See discussion above at paragraphs [30] – [35]. The proposed wording of the condition does not reflect the agreement in the Freshwater Ecology JWS that the information collected under the NES-F should then be compared to the basis on which the culverts was designed and built. I do not consider it the responsibility of the Regional Councils to undertake that assessment.

Schedule 7: Freshwater Ecology Management Plan (EMP)

[60] At (g) in the EMP, there is a specific reference to monitoring of the streams that feed into Lake Waitawa and Lake Kopureherehere. Although the requirement meets the intent of the clause *“All agree that the Schedule 7(g) provisions should include specific monitoring within the streams feeding the*

lakes (catchment C and D)”, the reference to Lakes Waitawa and Kopureherehere is incorrect. The wording should instead refer to O-te-pua wetland and Lagoon.

Escalating response

- [61] I am of the view that there should be a defined trigger for an escalating response to exceedances of the water clarity trigger from discharges from the sediment treatment devices. The trigger should be in a condition to ensure enforceability. In my opinion the escalation response should commence when two consecutive exceedances of the 100mm trigger value have occurred or if three or more exceedances from a device occur within six months. See discussion at paragraphs [36]-[41].

Stormwater management

- [62] See discussion above at paragraphs [42] – [51]. In my opinion, a condition requiring treatment of stormwater devices to achieve a 75% reduction in TSS should be included. Ongoing operation maintenance should be managed through a management plan approach under the conditions.

REM13

- [63] See discussion above at paragraphs [52] – [56]. Condition REM13(b) should be amended with the insertion to the reference to *“on-going maintenance requirements”*.

G. CONCLUSION

- [64] Subject to the above matters, which in my view, need to be addressed to manage adverse effects associated with the Project, I am comfortable that matters raised in my s87F Report and subsequently, have been resolved.

26 September 2023

Logan Arthur Brown