

**BEFORE A HEARING PANEL
CONSTITUTED BY NELSON CITY COUNCIL**

IN THE MATTER

of an application by **CCKV Maitahi Development Co LP** and **Bayview Nelson Limited** for a change to the Nelson Resource Management Plan (Plan Change 28)

IN THE MATTER

of Part 5 and Schedule 1 of the Resource Management Act 1991

**STATEMENT OF REPLY EVIDENCE OF JOSHUA ANDREW
MARKHAM (FRESHWATER ECOLOGY)**

Applicants' Consultant:

Landmark Lile Limited
PO Box 343
Nelson 7040
Attention: Mark Lile
Email: mark@landmarklile.co.nz
Tel: 027 244 3388

Counsel acting:

John Maassen
— BARRISTER —

✉ john@johnmaassen.com
🌐 johnmaassen.com
☎ 04 914 1050
📠 04 473 3179

Name, qualifications and experience

- [1] My full name is Joshua Andrew Markham. I hold the position of Principal Ecologist at Tonkin and Taylor Ltd. My qualifications and experience are set out in my statement of evidence. I can confirm I continue to abide by the Code of Conduct for Expert Witnesses.

Reference documents

- [2] I prepared a Statement of Evidence with respect to freshwater ecology as part of the evidence for the hearing of the PPC28 application, dated 15 June 2022, and a Statement of Rebuttal Evidence, dated 07 July 2022.
- [3] I attended (online) the presentations of expert evidence by Mr Roger Young and Ms Tanya Blakely relating to freshwater ecology matters relating to the PPC28 application and heard their responses to the questions posed by the Panel of Commissioners.

Reply evidence

- [4] I note that issues relating to freshwater ecology raised by Mr Roger Young and Ms Tanya Blakely have been broadly referred to as gaps in information or the lack of detailed design. I believe the information supplied as part of the PPC28 application and subsequent evidence is of sufficient detail to understand any potential effects on freshwater environments from the proposed plan change. Then, the focus should be on capturing detailed principles of Water Sensitive Design and Integrated Catchment Management now encapsulated within Policy RE6.3 (V4) for the purpose of directing detailed design at subsequent resource phases of subdivision and development.
- [5] There has been general agreement between all ecological experts that that the lower Kākā Stream could be ecologically enhanced in situ or via the proposed realignment (see Ecological JWS). In oral evidence Mr Roger Young confirmed the presence of what could be relic / historic channels in the location of the proposed alignment which supports my opinion

captured in evidence and rebuttal evidence of where the stream alignment could have previously been.

- [6] In oral evidence Ms Tanya Blakely has reconfirmed her position of the lower Kākā Stream being ecologically enhanced in situ or by other mechanisms not part of the PPC28 plan change. As stated in my oral evidence, if the lower Kākā Stream remained in its current modified alignment significant instream work would need to be undertaken to achieve flood conveyance and hard engineered bank stabilisation. After these works, it would be highly unlikely that the lower Kākā Stream would be maintained in its exact cross section and alignment. It appears that Ms Tanya Blakely is viewing the lower Kākā Stream in isolation, whereas the PPC28 application and has taken a fully integrated approach between Water Sensitive Design (WSD) in an urban context while maximising the positive freshwater, ecological and biodiversity outcomes as evident based on the provisions in within Policy RE6.3 (V4).
- [7] In oral evidence Ms Tanya Blakely discussed potential impacts of the realignment of lower Kākā Stream being the load of organic material from deciduous trees (leaf fall during autumn) along the edge of Branford Park. I don't disagree that in some cases a high load organic can smother food resources (periphyton) or habitats (interstitial spaces) or water quality (available dissolved oxygen supply). In this circumstance, I believe that the area where this potential impact raised by Ms Tanya Blakely could occur is isolated and confined to small portion of the realignment of lower Kākā Stream. Any organic material from deciduous trees (leaf fall during autumn) along the edge of Branford Park is likely to be assimilated relatively quickly downstream after rainfall events with any potential impacts being negligible. I note that a similar baseline process is already happening in the upper Kākā Stream with no measurable effect on the instream macroinvertebrate community (as evident in macroinvertebrate data with the supporting ecological report).
- [8] I agree with Mr Roger Young and Ms Tanya Blakely regarding information within published literature on the effects of urbanisation on stream environments and design of riparian margins (as Ms Tanya Blakely puts it

“wider the better”). I believe that information supplied as part of the PPC28 application and subsequent evidence and rebuttal evidence from various experts satisfactorily explains how these effects will be mitigated through a Water Sensitive Design (WSD). As explained in my evidence, rebuttal evidence and in oral evidence the need for Rule X.7 to specify minimum riparian set back 20 m each side of Kākā Stream could drive unintentional design with poor ecological outcomes. As already done, it is more beneficial to focus on specific wording in Policy RE6.4 (V4) to set desired ecological outcomes for detailed design to achieve.

- [9] In oral evidence Ms Tanya Blakely made comment that the design and construction of online attenuation basins to provide ecological value is complicated but possible. I agree with this point. As discussed in my oral evidence and for clarification, the only structures within the Kākā Stream should be road crossings and attenuation basins both of which should be appropriately designed for fish passage and other ecological values within the riparian margin. All stormwater treatment devices should be designed in the outer portion of the riparian margin, now encapsulated in Policy RE6.3.N (V4), with a plant palette that reflects that of the riparian margin (albeit shallow rooted vegetation).
- [10] Ms Tanya Blakely identified a small catchment that may have been missed within the original ecological assessment report and has further requested that a comprehensive stream layer be added to the PPC28 Application as an Overlay Plan. This small catchment has now been included in the updated Stormwater Management Plan with detailed Ecological Impact Assessments required under X.15 (V4). It is my opinion that a stream layer isn't required to be added as an Overlay Plan as detailed stream mapping encapsulated under X.13.b (V4) and X.15.1 (V4).
- [11] Having reviewed the updated PPC28 Schedule X proposed provisions, it is my opinion that satisfactory management of freshwater ecological effects can be expected, and a restoration focus achieved.

Dated 29 July 2022

A handwritten signature in blue ink, appearing to read 'Joshua Andrew Markham', written in a cursive style.

Joshua Andrew Markham