Boffa Miskell

Memorandum

☐ **Auckland**
PO Box 91250
Auckland 1142
+649 358 2526

☐ **Whangarei**
35 Walton Street
Whangarei 0110
+649 358 2526

☐ **Tauranga**
PO Box 13373
Tauranga 3141
+647 571 5511

☐ **Hamilton**
PO Box 1094
Hamilton 3240
+647 960 0006

☐ **Wellington**
PO Box 11340
Wellington 6142
+644 385 9315

☒ **Christchurch**
Level 1
141 Cambridge Terrace
Christchurch 8013
PO Box 110
Christchurch 8140
+643 366 8891

☐ **Dunedin**
49 Water Street
Dunedin 9016
+643 470 0460

☐ **Queenstown**
PO Box 1028
Queenstown 9348
+643 441 1670

Attention:	Gina Sweetman; cc Leigh Marshall, Paul Fisher, Jo Martin
Company:	c/- Nelson City Council
Date:	19 May 2022
From:	Tanya Blakely
Message Ref:	PPC28 Maitahi Bayview: Ecology Review
Project No:	BM200903

Private Plan Change 28: Maitahi Bayview – Ecology Review

1. This memorandum summarises the findings of my review of terrestrial and freshwater ecology related matters on Maitahi Bayview Private Plan Change 28 (PPC28) to the Nelson Resource Management Plan (NRMP), on behalf of the Nelson City Council (NCC). I also consider ecology related matters arising from the submissions and further submissions on PPC28.

2. In undertaking this technical peer review in relation to terrestrial and freshwater ecology matters on PCC28, I have reviewed the following (including but not limited to) information:

    - Private Plan Change Request to the Nelson Resource Management Plan to Nelson City Council from CCKV Maitai Dev Co LP and Bayview Nelson Limited, updated 24 August 2021 ("**PPC28 Request"**)
    - Attachment B1.1: Maitahi Bayview Structure Plan and Attachment B1.2: Landscape Overlays and associated provisions X.1 to X.9, updated 24 August 2021 ("**Structure Plan**")
    - Attachment C.5: Ecological Opportunities and Constraints Assessment Report March 2021 ("**Ecology Report**")
    - Attachment C.6: Morphum Environmental Review, April 2021 ("**Environmental Review**")
    - Private Plan Change 28 – Maitahi Bayview Supplementary Terrestrial Ecological Values Assessment, 13 May 2022 ("**Supplementary Report**")

Qualifications and experience

3. I am a Senior Principal Ecologist and Technical Leader-Sciences with Boffa Miskell Limited.

4. I hold a Bachelor of Science (First Class Honours) in Zoology and a Doctor of Philosophy in Ecology, both from the University of Canterbury. I am a Certified Environmental Practitioner, Ecology Specialist, with the Environment Institute of Australia and New Zealand (EIANZ). I am also a full member of the New Zealand Freshwater Sciences Society and the EIANZ.

5. I have 18 years' experience in ecological surveying, monitoring, applied scientific research and advising on ecological matters. I have worked for Boffa Miskell Limited for 10 years.

6. My core work area as an Ecologist at Boffa Miskell is in freshwater ecology, but I am an expert ecologist with a solid understanding of general principles and fundamentals of ecology. I am experienced in assessing ecological values and conducting ecological impact assessments, rehabilitation and restoration, and on-the-ground management of construction activities. I have worked on several major infrastructure projects, commercial and residential developments, and notices of requirement (NOR) throughout New Zealand.

Code of conduct

7. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014. This evidence has been prepared in accordance with it and I agree to comply with it. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Project involvement

8. I have been involved in PPC28 since April 2021 when I was engaged by NCC to undertake a technical review of ecology related matters. I have worked closely with NCC's Team Leader Science and Environment (Biodiversity, Biosecurity and Land Management), Leigh Marshall, particularly with respect to terrestrial ecology matters.

9. I attended a site familiarisation visit on 4 May 2021 with NCC's Ecologists and others from NCC, and experts representing the applicant. Following this, I provided input into the Council's s92 Further Information Request on ecology matters relating to the PPC28 Request submitted to Council on 16 April 2021.

10. I have read the submissions and further submissions on PPC28 that relate to my area of expertise as provided to me by Council.

11. I met with the applicants ecologists, Josh Markham and Ben Robertson, on 6 April 2022 to discuss the updated application. I also attended expert conferencing on 20 April, 10 May and 13 May 2022 with Josh Markham, Ben Robertson and Roger Young (freshwater ecologist engaged by Friends of the Maitai), as detailed in the Terrestrial and Freshwater Ecology Joint Witness Statement ("**Ecology JWS**") dated 13 May 2022.

12. NCC and Gina Sweetman, Council's consultant planner, also provided me with a copy of the public submissions, identifying submissions that I was to comment on, including proforma responses and bespoke submissions.

13. This memorandum has been prepared to assist the Section 42A report, which will support the hearings panel for PPC28.

The PPC28 Request

14. PPC28 seeks to rezone approximately 287-hectares of land located within Kaka Valley, along Botanical and Malvern hills, from Rural and Rural-Higher Density Small Holdings areas to:

    - Residential-Higher Density Area, 300 m^2
    - Residential-Standard, 400 m^2
    - Residential-Lower Density Areas, 800 m^2
    - Residential-Lower Density Area (Backdrop Area), 1500 m^2
    - Rural-Higher Density Small Holdings Area
    - Open Space Recreation
    - Suburban Commercial

15. The layout of the Proposed Structure Plan (Schedule X, dated 24 August 2021) is shown on Attachment B1.1 with the associated Landscape Overlay provided on Attachment B1.2, which includes Skyline and Backdrop Areas on Malvern, Botanical and Kaka Hills. Schedule X includes provisions X.1 to X.9 proposed to manage the effects of potential development within the PPC28 area.

16. The layout of the current Structure Plan includes a single indicative road, linking Bayview Road to Ralphine Way within the Kaka Valley, and ultimately to Maitai Valley Road. Indicative walkway / cycleway links are also shown, along with two indicative lookout locations. Also shown are two natural wetlands, two areas of kanuka vegetation and a kahikatea tree, Kaka Stream, and an existing Significant Natural Area (SNA) on Kaka Hill. An area of 'open space recreation zone' is shown encompassing Kaka Stream through Kaka Valley and along the north-eastern boundary of the PPC28 area onto Kaka Hill, as well as southern and south-western parts of the PPC28 area adjacent to Maitai River and Botanical Hill.

17. No other ecological information, such as (but not limited to) areas of high-value vegetation, is shown on the Structure Plan.

18. Proposed provisions within X.6, X.7 and X.9 are of particular relevance to ecology. Proposed X.6 prohibits buildings on Kaka Hill Backdrop and Skyline areas, and buildings within the SNA on Kaka Hill. Proposed X.7 provides for an esplanade reserve to be vested in stages as subdivision progresses, with an esplanade reserve with a "minimum total width of 40 m" and planting with indigenous species as listed in the schedule. Proposed X.9 includes provisions focused on ecological outcomes and freshwater.

Summary of technical peer review

19. The ecological values within the PPC28 area are described in the Ecology Report, Environmental Review and Supplementary Report. These ecology reports indicate that the PPC28 area includes "significant" and "high-value" indigenous vegetation and habitats for indigenous fauna. The vegetation types present

include kanuka forest and shrubland, matagouri scrubland, mahoe-exotic scrub, and pasture grasslands[1] all of which support indigenous species. Of the indigenous birds identified as present or likely to be present within the area, this includes two nationally Threatened and two At Risk species[2]. Similarly, the lizard fauna present likely includes one Threatened species (starred gecko, *Naultinus stellatus*), one At Risk species (forest gecko, *Mokopirirakau granulatus*), and two Not Threatened species (Raukawa gecko, *Woodworthia maculata;* and northern grass skink, *Oligosoma polychroma*). These species are protected by the Wildlife Act 1953. Kaka Stream supports a range of macroinvertebrate taxa including those more tolerant of slow-flowing conditions (e.g., waterboatmen, backswimmers, diving beetles), as well as freshwater crayfish, and 'clean-water' taxa such as caddisflies and mayflies. Migratory freshwater fish species, including shortfin eels and galaxiid species are also present in the stream. Further work is required to better understand the freshwater fish community of Kaka Stream.

20. The ecology reports assessed ecological values, constraints and opportunities within the PPC28 area, but did not undertake an ecological impact assessment. A significance assessment as required by Section 6c of the Resource Management Act has not been undertaken either. Identifying significant and / or high value species, communities and habitats is important to inform the Structure Plan of areas that warrant avoidance or enhancement.

Ecological and Biodiversity Values

21. The Ecology Report identifies four "ecological constraints" (loss of significant indigenous vegetation, loss of wetland habitat, loss of habitat for indigenous fauna, injury or mortality of indigenous fauna) within the structure plan area in terms of terrestrial biodiversity values. These ecological effects are primarily associated with the clearance of scrubland habitats identified by the ecology assessment. The report notes that these constraints will need to be managed appropriately and avoided, wherever possible.

22. The areas mapped in the Ecology Report as kanuka forest and matagouri scrubland have been identified as "high-quality indigenous vegetation" and stated to be avoided by inclusion in the Structure Plan as 'Rural' zones. The Backdrop Area on Kaka Hill (Attachment B1.2) may include these areas of indigenous vegetation, which would also prohibit buildings within this area (as determined by provisions in proposed X.6). However, without presenting these vegetation communities as layers on the Structure Plan maps, it is not possible to confirm the extent of overlap, and therefore protection to this indigenous vegetation and habitat for indigenous fauna. Moreover, the Backdrop and Skyline Areas consider landscape and visual constraints, rather than ecological values and constraints. Ecological values and constraints, such as existing vegetation, should be included on the Structure Plan to determine where it is and is not appropriate for development to occur.

23. Similarly, the Environmental Review discusses the importance of identifying and protecting overland flow paths (OLFP) and waterways. It is likely that OLFPs may include vegetated gullies and wetland habitats.

[1] I note that a northern North Island species of kowhai (*Sophora fulvida*) has been included in the species present. This may instead by *Sophora microphylla*, which is Not Threatened.
[2] The Supplementary Report submits the following species as recently observed within the adjacent area and potential inhabitants of the area: white heron (*Ardea modesta*) – Threatened, Nationally Critical; Southern falcon (*Falco novaeseelandiae*) – Threatened, Nationally Endangered; NZ pipit (*Anthus novaseelandiae*) – At Risk, Declining.

Section 3.2 of the Environmental Review suggests that artificial and modified watercourses, ephemeral, intermittent and perennial streams, and OLFPs were mapped and field validated in 2020. However, this information has not been presented in the Environmental Review or on the Structure Plan. I believe it is important to include this information on the Structure Plan.

24. Section 6.11 of the PPC28 Request states that the Ecology Report identified any significant terrestrial ecology values within the proposed Structure Plan area and that these terrestrial ecological values were mapped on the structure plan. I note that the findings of the Ecology Report were based on few or no ground surveys. The Ecology Report states that the Structure Plan has focussed development in areas of lower ecological values and has minimal development planned in areas of higher ecological value.

25. In response to a request during Expert Conferencing on 20 April 2022, additional desktop mapping with field validation was carried out by the applicant's terrestrial ecologist. This is presented in the Supplementary Report, which is attached to the Ecology JWS. Figure 4.2 in the Supplementary Report provides further detail of vegetation types within the proposed residential zones. This includes "regenerating kanuka shrubland" and "regenerating mixed mahoe-exotic scrub". Both vegetation types are assessed as of High ecological value (Table 5.1 in the Supplementary Report). Based on these findings, these areas of "regenerating kanuka shrubland" and "regenerating mixed mahoe-exotic scrub" warrant inclusion on the Structure Plan and should be excluded from residential development.

26. The Supplementary Report does not state whether tree heights were measured, however, the report does state trees were occasionally over 6 m in height. This is an important consideration and should be further considered, as tree height is one of the criteria required to determine if indigenous vegetation meets the "indigenous forest" or "indigenous vegetation" definitions of the NRMP. This also has important considerations for the vegetation clearance rules for both rural and residential areas.

27. It is my understanding that the PPC28, Zoning Plan and proposed provisions are being revised in light of expert conferencing on a variety of matters. I consider there should now be sufficiently detailed information in the Ecology Report, Environmental Review and Supplementary Report to input into a revised Structure Plan, including showing ecological values and their protection/enhancement, edge effect management, and landscape connectivity consideration by way of "zoning" such as "blue-green" corridors.

28. The Supplementary Report also identifies areas proposed for residential zoning are likely to support indigenous birds and lizards of Moderate to High ecological value. I note that the Supplementary Report assesses ecological value of terrestrial habitats and species following the ecological impact assessment guidelines of the Environment Institute of Australia and New Zealand (**EIANZ EcIA guideline**)[3]. This includes ecological values assigned to species according to current threat statuses. However, it is my opinion that the ecological values assigned to birds and lizards have been underestimated and do not adequately consider the Threatened (Nationally Critical Nationally Endangered and Nationally Vulnerable) status of three species likely to be present within the PPC28 area. Based on the species likely present in the PPC28 area, as provided in the Supplementary Report, I consider the bird and lizard ecological

[3] Roper-Lindsay et al. (2018). *Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems.* 2nd edition.

values to range from **Low** to **Very High**. These ecological values should also be considered in the Structure Plan.

29. Whilst future subdivision and development will be subject to resource consent applications, I recommend that the Structure Plan guide development through setting the framework (a spatial one) identifying the areas of ecological value and enhancement and connections. In addition, the Structure Plan should make provision for the requirement of vegetation and fauna management plans to be developed for each future subdivision in accordance with the overarching Structure Plan. At the time of preparing this s42A report, the applicant had yet to provide a revised Structure Plan and accompanying information.

Proforma submission 6

30. Several submitters raise concerns on matters relating to ecological and biodiversity values, including submissions prepared using Proforma 6. "*The development is contrary to the strategy of ecological restoration of the Maitai tributaries and taonga species. The value of the site as habitat (including for pekapeka/native bats) has not been adequately investigated and urbanisation of this habitat could have significant adverse impacts.*"

31. The overarching objective of Project Mahitahi[4] is to restore the ecosystem of the Maitai / Mahitahi Valley, to enhance water quality, reduce weeds, improve habitat, preserve indigenous tree and plant species, and develop ecological corridors, ultimately to protect and enhance biodiversity values within the valley. Project Mahitahi's vision statement is: *The Mauri (or life force) of the Mahitahi is restored- ki uta ki tai – so that native plants and wildlife can thrive within a functioning and connected eco-system and people and communities are inspired to nurture and value the Mahitahi as a taonga for past, present, and future generations.* This is proposed in the Structure Plan through riparian enhancement, pest plant and animal control, managing sediment discharge and sedimentation and stream bank erosion through planting, including water sensitive design to manage effects of future development.

32. The Proposed Objective RE6 of Maitahi Bayview Area (Schedule X) states, amongst other things, that the subdivision and development will enhance ecological and biodiversity values; and minimise effects of urban development on the freshwater values of Maitahi River and its tributaries. However, Project Mahitahi is broader than freshwater, extending beyond the immediate riparian corridor and rivers / streams. The proposed enhancement of freshwater ecological and biodiversity values of PPC28 is somewhat consistent with the overarching objective of Project Mahitahi. The rezoning from Rural to Residential may not, in itself, contradict the objective of Project Mahitahi. However, it is my opinion that further clarification and certainty on terrestrial ecological and biodiversity enhancement is required and has been sought as part of Expert Conferencing (Ecology JWS).

Pest control and restrictions on domestic pets

33. Submitters have also raised concerns regarding increased occurrence of animal pests, including predatory domestic animals (namely cats, dogs), as a result of the future residential development.

[4] Department of Conservation, Ministry for the Environment, Ngāti Koata, Ngāti Rarua, Te Ātiawa, Ngāti Kuia. Funded by DOC, MfE and MPI.

Submissions included seeking covenants to be established and that the PPC28 restricts future owners or occupiers of properties within the subdivision and development to have predatory domestic animals.

34. While feral predators are already present in the surrounding area, I consider that the future residential development may increase the occurrence of animal pests / predators. This could have an adverse effect on the existing ecological values, such as through predation on lizard and bird species. This matter was discussed in Expert Conferencing (Ecology JWS) and the ecologists agreed that an additional clause could be added to proposed X.9 to provide for an assessment of the significance of indigenous biodiversity values and the potential threat to those values from domestic pets at the time of subdivision or development resource consent applications.

Biodiversity corridors

35. The Ecology Report states that the Structure Plan has considered Policy DO5.1.2 – linkages and corridors. Biodiversity Corridors have four primary functions (NRMP):

- protection, enhancement or restoration of natural values and the capacity or natural functioning of ecosystems and their processes to support a range of life
- protection, enhancement or restoration of the capacity for natural ecosystem processes (such as the migration of animals or dispersal of plants) to function between different parts of the environment i.e., connectivity between ecological areas
- to increase the interaction between humans and the natural environment
- recognition and assistance with preservation of the cultural significance of water, native vegetation and native aquatic flora and fauna to Maori.

36. Biodiversity Corridors are often shown on structure plans to better coordinate habitat preservation and enhancement between properties and the wider landscape. The Structure Plan includes an “Open Space” corridor following Kaka Stream, and along the north-eastern boundary towards, but not connected to, the SNA. It is my opinion that the Structure Plan should ensure that that proposed Open Space Zone provides for the four primary functions of a Biodiversity Corridor and connects with the SNA.

37. As discussed in paragraph 23, areas assessed as of high ecological value should be included on the Structure Plan. It would also be appropriate to consider the addition of further biodiversity or ecological corridors (e.g., of indigenous vegetation either through retention and enhancement of existing vegetation, or through restoration) that are ecologically appropriate and functional, given the intention of the Nelson Resource Management Plan’s Policy DO5.1.2. That is, corridors connecting Kaka Hill, Kaka Stream, Atawhai / Maitahi ridgeline, and coastal slopes should be considered by the Structure Plan.

38. Several submitters raise concerns regarding the absence of ecological connectivity provided for / shown by the Structure Plan. Matters raised include reference to the SNA on Kaka Hill, and the importance of connectivity along Kaka Stream and between the stream corridor, wetlands, kanuka forest and the SNA and surrounding scrub. SNA166 identifies Kaka Valley as part of an 8 km long corridor for native forest birds and other wildlife between the Nelson City area and the Hira area. The Structure Plan (Attachment B1.2) shows a connection along the northern boundary of the site that links Kaka Stream to the Backdrop and Skyline Area within the Rural area on Kaka Hill, near (but not directly connected to) the SNA.

However, there is no ecological connection shown between the wetlands, the protected kanuka and kahikatea, and Kaka Stream, the valley or the hills on either side. It is my opinion that an ecological connection(s) should be included on the Structure Plan.

39. The location of ecological connectivity paths should be specified on the Structure Plan. It is appropriate to consider the addition of further corridors of indigenous vegetation (either through retention and enhancement of existing vegetation, or through restoration) given the intention of NRMP's Policy DO5.1.2. These should provide ecological connections between the SNA, Kaka Hill, Kaka Stream, Atawhai / Maitahi ridgeline, and coastal slopes.

Riparian width & esplanade reserve

40. The Structure Plan includes an "Open Space" corridor following Kaka Stream, and the Ecology Report notes that this "…will offer various opportunities for ecological enhancement to address any potential adverse ecological effects on aquatic values from any future developments."

41. The Environmental Review (Section 4) recommends Water Sensitive Design principles, including inclusion of a series of stormwater treatment wetlands / devices to treat stormwater from the development and avoid adverse effects on the receiving environment (Kaka Stream and Maitai River). A smaller number of larger devices is recommended. The Environmental Review suggests that these devices will be included within the 40 m Open Space corridor along Kaka Stream. However, it is uncertain if there is sufficient space within the Open Space corridor along Kaka Stream for these interventions, and what inclusion of these would mean for the ecological functioning of the riparian margins.

42. Submitters have also raised the concern about the width of riparian margin, or vegetated buffer, over Kaka Stream. The PPC28 proposes *a minimum total width of 40 m* esplanade reserve over Kaka Stream. However, this width appears to be impinged upon by the Suburban Commercial Zone and the Neighbourhood Reserve. It is also difficult to determine if a total width of 40 m would provide for a minimum width on each side of the stream, and I consider this should be included.

43. Having a minimum width of 20 m on each side of the stream, where natural topography and geological features allow, will be important for ecological function of the stream and to minimise effects of the surrounding land use on the ecology of Kaka Stream. These matters were discussed in Expert Conferencing and Roger Young agreed with my concerns about the absence of a minimum width on each side of the waterway, however, we both noted that there needs to be some flexibility to reflect natural topography and geological features (Ecology JWS).

44. Given that the proposed open space along Kaka Stream is to be vested in Council as esplanade reserve, the Structure Plan should ensure ecological protection and enhancement opportunities are well balanced with recreation / access needs. This may include provisions to ensure the use of paths, impervious surfaces and other structures immediately adjacent to Kaka Stream are avoided or minimised, ensuring functioning riparian buffers.

45. A buffer width of at least 20 m buffer on each side of the river, where the natural topography and geological features allow, should be provided for in addition to the "minimum total width of 40m" provided for in X.7(b). The Structure Plan should also provide for a minimum of 5-10 m (on each side) of riparian

margin planted with ecologically suitable indigenous vegetation along the length Kaka Stream. Further, in areas of high density residential and suburban commercial zones, a wider (than 40 m total) area may be justified to protect the waterway from increased effects of urbanisation.

Effects on Freshwater Ecology

46. The subdivision and development would result in an urbanised catchment. The effects of urbanisation on freshwaters is well understood (cf. Urban Stream Syndrome[5]), with potential effects including (but not limited to) discharge of stormwater, sediment discharge and sedimentation, increased impervious surfaces, flash flows, loss of flow permanence.

47. Section 4.1.2 of the Ecology Report identifies four ecological constraints (adverse change in the flow regime, loss and/or an adverse change in the aquatic habitat availability and condition, loss and/or change in aquatic habitat connection, and injury, mortality and/or changes to the indigenous fish community) within the structure plan area in terms of freshwater ecology values. The report notes that these constraints will need to be managed appropriately and avoided, wherever possible.

48. The Structure Plan shows Residential-Higher Density Area proposed within the floodplain of Kaka Stream, which could have significant adverse effects on the freshwater ecology of Kaka Stream. It is unclear what additional development work (e.g., earthworks, infilling) will be required to provide suitable ground conditions for residential housing, and how these works would impact on low flows and flow permanence and functioning of lower Kaka Stream.

49. Section 4.1.2.1 of the Ecology Report and Section 3.3.2 of the Environmental Review discuss the potential enhancement opportunity of realigning the lower reaches of Kaka Stream. The proposed Structure Plan provides for realignment of the lower reaches of Kaka Stream, indicating that this would result in ecological enhancement opportunities. I note that the potential realignment of Kaka Stream would require resource consent(s) and a full ecological impact assessment in accordance with the National Policy Statement for Freshwater Management 2020 (NPS-FM), to ensure the effects management hierarchy has been appropriately followed[6]. This was a matter discussed in Expert Conferencing and while all ecologists agreed that the lower reaches of Kaka Stream are highly modified, Roger Young and I agreed that ecological enhancement of Kaka Stream may be achieved without realigning the lower reaches of the waterway. This needs further consideration before inclusion of, and reliance on, realignment of Kaka Stream in the Structure Plan.

50. The future subdivision and development would require vegetation clearance and earthworks and could result in erosion, sediment discharge and sediment deposition into Kaka Stream and Maitai River, and the Nelson Haven. Several submitters have raised concerns about sediment discharge and sedimentation to these freshwater environs. The Environmental Review (Section 4) recommends Water Sensitive Design (WSD) principles, including stormwater treatment wetlands / devices to treat stormwater from the development and avoid adverse effects on the receiving environment (Kaka Stream and Maitai River). A

[5] Walsh et al. (2005). The urban stream syndrome: current knowledge and the search for a cure. *Journal of the North American Benthological Society* 24: 706-723.
[6] The effects management hierarchy is defined in 3.21 of the NPS-FM.

smaller number of larger devices is recommended. The location of these WSD elements have not been shown on the Structure Plan or in accompanying supporting information.

51. I understand that a draft Stormwater Management Plan is being prepared in response to Expert Conferencing (Stormwater and Flooding[7]). I agree that preparation of this draft management plan will provide some certainty on how potential effects will be appropriately managed, and I recommend that the Structure Plan includes a provision for the requirement of a Stormwater Management Plan for each future subdivision and development within the PPC28 area.

Provisions for ecological outcomes – X.9

52. Proposed X.9 provides ecological outcomes and freshwater principles, which include the intent to ensure the objectives of the NPS-FM and the NRMP are met, by following the principle of Te Mana o te Wai; as well as implementing WSD principles.

53. I consider that further information is needed, including additions to X.9 or additional / alternative provisions, to ensure effects on terrestrial and freshwater ecology are avoided or appropriately addressed through future consent processes in accordance with the effects management hierarchy to achieve "no net less" of biodiversity and ecology values. Upon reviewing the proposed provisions, I provided additional matters that I consider should be included in X.9 or an alternative provision with the Structure Plan, and Roger Young further added to these. X.9 should also:

    a) Apply to the entirety of the Structure Plan area
    b) Refer to the mandatory fish passage requirements of the NPS-FM and NES-F
    c) Avoid impervious surfaces and structures within 5 m of Kaka Stream
    d) Avoid or minimise adverse effects of urbanisation and stream loss
    e) Include ecological principles / provisions for terrestrial ecology to ensure areas that provide important connectivity or buffering functions, and significant indigenous vegetation and significant habitats for indigenous fauna
    f) Allow for an alternative to the realignment of Kaka Stream as an enhancement opportunity
    g) Include erosion and sediment control management and vegetation clearance
    h) Ensure there is a link to Stormwater Management Plans.

54. These were discussed and recorded in Expert Conferencing (Ecology JWS) and Roger Young, Ben Robertson and I agreed there was merit in inclusion of these additions to the Structure Plan.

[7]Nelson PPC28 – JWS Flooding (2) & Stormwater (2) – 6 May 2022.

Recommendations

55. The ecological values, including (but not limited to) areas of significant and / or high value vegetation and habitats, waterways, wetlands, OLFPs, should be included on the Structure Plan, Landscape Overlay, or an additional Ecology Overlay. These could represent “blue-green” corridors and would provide a framework to guide opportunities for ecologically appropriate biodiversity connections and areas to be avoided or enhanced.

56. This ecology information should include all of the zones within the Structure Plan area and not be limited to Residential Zones.

57. The location of ecological connectivity paths should be specified on the Structure Plan. These should provide ecological connections between the SNA, Kaka Hill, Kaka Stream, Atawhai / Maitahi ridgeline, and coastal slopes.

58. The Structure Plan provisions should include a requirement for vegetation and fauna management plans to be developed for each future subdivision and development within the PPC28 area.

59. The Structure Plan should provide for a buffer width of at least 20 m buffer on each side of the river, where the natural topography and geological features allow, in addition to the “minimum total width of 40m” provided for in X.7(b).

60. The Structure Plan should also provide for a minimum of 5-10 m (on each side) of riparian margin planted with ecologically suitable indigenous vegetation along the length Kaka Stream. The Structure Plan should also avoid impervious surfaces and other structures within 5 m of Kaka Stream.

61. Further, in areas of high density residential and suburban commercial zones, a wider (than 40 m total) area may be justified to protect the waterway from increased effects of urbanisation.

62. These recommendations may logically sit within X.7 or X.9.

63. The Structure Plan should acknowledge (within current X.9) that ecological enhancement of Kaka Stream may be achieved without realigning the lower reaches.

64. The Structure Plan should include additional provisions for ecology outcomes where X.9 should also:

    a. Apply to the entirety of the Structure Plan area
    b. Refer to the mandatory fish passage requirements of the NPS-FM and NES-F
    c. Avoid impervious surfaces and structures within 5 m of Kaka Stream
    d. Avoid or minimise adverse effects of urbanisation and stream loss
    e. Include ecological principles / provisions for terrestrial ecology to ensure areas that provide important connectivity or buffering functions, and significant indigenous vegetation and significant habitats for indigenous fauna
    f. Allow for an alternative to the realignment of Kaka Stream as an enhancement opportunity
    g. Include erosion and sediment control management and vegetation clearance
    h. Ensure there is a link to Stormwater Management Plans.

65. In addition to the above, a clause should be added to provide for an assessment of the significance of indigenous biodiversity values and the potential threat to those values from domestic pets at the time of subdivision or development resource consent applications.

Dr Tanya Blakely
Boffa Miskell Limited



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