Memo

TO	Gina Sweetman
COPIED TO	Kate Purton
FROM	David Wilson
DATE	24/05/2022
SUBJECT	PPC 28 Maitahi & Bayview – Technical Assessment - Water Sensitive Design

Scope of Review

1. This memo summarises the findings of my water sensitive design review of several documents prepared in support of Private Plan Change request 28 Maitahi & Bayview (PPC28) and a site visit conducted on 16 May 2022.
2. The scope of the review covered the following:
    a. A determination as to whether the water sensitive design aspects of PPC28 can be considered to be complete, correct, adequate, appropriate, technically robust and fit for purpose, that is they demonstrate the proposal will help promote sustainable management of the environment;
    b. The consistency of PPC28 with any relevant water sensitive design requirements and directions of, or relating to, any national policy statement, the Nelson Resource Management Plan (NRMP) and any relevant non-statutory policy or plan of Nelson City Council;
    c. Comment on proposed conditions relating to water sensitive design; and
    d. The appropriateness of PPC28 based on the above.

Basis of the review

3. The following documents were consulted in undertaking the review:
    - Documents prepared in support of PPC28
        - Private Plan Change Request to the Nelson Resource Management Plan, Request to: Nelson City Council by Landmark Lile Ltd Resource Management dated: 24 August 2021 (amended),
        - Private Plan Change Request - Geology and Geotechnical Hazards Report prepared by Tonkin and Taylor Ltd dated March 2021;

- Maitahi & Bayview Development - Preliminary Structure Plan Environmental Review prepared by Morphum Environmental Ltd dated 13 April 2021 (referred to here after as The Morphum Report);
- Private Plan Change Request - Ecological Opportunities and Constraints Assessment prepared by Tonkin and Taylor Ltd dated March 2021;
- Private Plan Change. Maitahi and Bayview, Nelson - Preliminary Landscape Design Document prepared by Rough and Milne Landscape Architects Ltd. Dated 1 April 2021.
- Maitahi & Bayview Private Plan Change Request Iwi Engagement Summary - Proof of Consultation with Te Tau Ihu o te Waka a Māui iwi on the Maitahi Bayview Development prepared by Te Aranga Environmental Consultancy dated December 2020
- Transportation Impact Report Private Plan Change Request Maitahi and Bay View prepared by Traffic Concepts Ltd dated January 2021

- Submission documents regarding PPC28
  - Summary of Decisions requested (by submitter number) dated 8 February 2022
  - Submission 367 from Save the Maitai Incorporated – included supporting memo from Tektus Consultants.
- Nelson City Council (NCC) documents:
  - NRMP
  - Nelson Tasman Land Development Manual; September 2020 Rev 1 (NTLDM)
  - Applying Low Impact (Water Sensitive) Design in Nelson Tasman 2016

4. I have also discussed PPC 28 with NCC's Planning, Ecology, Landscape and Stormwater S42A experts and the current implementation of the NRMP stormwater discharge rules in Coralie Barker, Principal Planner at NCC.
5. I participated in expert conferencing on stormwater and flood risk on Monday, 2 May 2022 and Friday, 6 May 2022. At the time of writing this, a final Joint Witness Statement had not been produced.

Structure of review

6. My review considers the following matters:
   a. Submissions
      i. Summary of key freshwater themes in submissions
      ii. Summary of iwi submission regarding freshwater
   b. Water Sensitive Design
   c. Review of documentation
      i. Site Assessment

ii. Site Analysis

iii. Concept Design

iv. Summary

d. Summary of findings

e. NRMP Rules and Provisions

f. Recommendations

Submissions

Key theme – Effects of PPC28 on stormwater quality and quantity.

7. The submissions indicate significant concern about the effects of PPC28 on stormwater quality and quantity.

> *Effects of runoff and stormwater from construction and future properties will affect water quality, biodiversity and recreation.*
>
> *With an increase in urban development there will be increased stormwater runoff containing contaminants (including from vehicles) and sediment*
>
> *Increased impervious surfaces and associated changes in hydrology and quality of stormwater;*

Key theme – Protecting all the receiving environments from the impacts of development.

8. The need to protect all the receiving environments from the impacts of development is a universal theme of all submissions regarding stormwater management. Example submissions include:

> *Stormwater runoff from the new suburb will cause long-term degradation of the Maitai River. This will adversely affect the many highly valued swimming holes nearby (including Dennes Hole, Black Hole and Girlies Hole) and Nelson Haven.*
>
> *Proposed stormwater discharges would result in an enormous increase in the volume of stormwater, much inevitably contaminated, flowing into Kaka stream, the Maitai River and to Nelson Haven*
>
> *The requirement to manage freshwater in an integrated "whole-of-catchment" way including with regard to effects on receiving environments*

Key theme – Lack of confidence that the proposed provisions would achieve the required outcomes.

9. Many submissions expressed a lack of confidence that the proposed provisions, particularly the relevant policies, rules and standards, would achieve the required outcomes

Has restrictions within the subdivision consent that no zincalum or bare corrugated material may be used for roofing. Also, heavy metal testing of stormwater and the soil in the settling ponds is required. These measures are to protect stream water quality. The Plan Change should include provisions to allow such conditions of consent.

Incorporate stormwater mitigation and treatment methods into the development, including rules requiring individual onsite detention and treatment of stormwater.

Set standards for water sensitive design with the highest possible standard of filtration to be applied to stormwater entering the river.

Summary of key freshwater themes in submissions

10. The submissions demonstrated the importance to the community of protecting the health and well-being of water bodies and freshwater ecosystems and concerns that PPC28 will not achieve this.

11. The submissions also demonstrate a desire that freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis.

Iwi submissions regarding freshwater

Ngāti Koata Trust Submission

12. In terms of freshwater Ngāti Koata Trust has supported PPC28, both in terms of freshwater outcomes and that the provisions will ensure ongoing consultation.

    Ngāti Koata Trust supports the inclusion of Objective RE6 (b), (d)& (f), Policies RE6.1 to RE6.3 and ScheduleX.7 toX.9. We consider that these provisions will provide good freshwater quality outcomes for both the Kākā and Maitahi Awa.

    Additionally, we are confident that the provisions ensure that adequate ongoing consultation will occur to ensure continued protection as development details are finalised and consents are applied for.

13. In their submission, Ngāti Koata Trust has highlighted the importance of freshwater to Ngāti Koata

    a. "*Freshwater is a taonga to Ngāti Koata, and expresses all dimensions of life: Taha wairua / the spiritual; Taha hinengaro / the intellectual; Taha tinana / the physical; and Taha whānau / the social. For this reason, and because the Maitahi Awa is the ancestral river of Ngāti Koata, protection and enhancement of freshwater quality is one of our main priorities*

Ngāti Koata Submission

14. Ngāti Koata also provides a separate submission in support PPC28. Regarding freshwater, they have supported the proposed Policy RE6.3 Sensitive Environmental Design.

Ngāti Toa Ki whakatū submission

15. Ngāti Toa Ki whakatū supported PPC28 and did not raise any particular freshwater concerns in their submission.

Ngāti Kuia submission

16. In their submission Ngāti Kuia state that they "*are generally supportive of the development*".

17. Regarding freshwater outcomes Ngāti Kuia consider that *"improved outcomes for the freshwater values of the Mahitahi. The proposed conservation zone along the riparian margins of the water courses and the use of a stormwater pond and swale drainage techniques will improve freshwater quality and ecosystem functions compared to the current use of sheep farming*."

Ngāti Rārua submission

18. Ngāti Rārua supports, in part, PPC28. In their submission, they have highlighted the importance of freshwater to Ngāti Rārua.

> *Awa (rivers) are taonga to Ngāti Rārua. The relationship Ngāti Rārua has with these taonga relates to the entire catchment.*

19. Regarding freshwater, in their submission, Ngāti Rārua has stated that *"Ngāti Rārua strongly supports proposed provisions which seek to protect, enhance or restore freshwater*." They have supported proposed Policy RE6.3 Sensitive Environmental Design and Schedule X.9 Ecological outcomes and freshwater

Te Ātiawa Trust Submission

20. Te Ātiawa Trust has stated in their submission that they would like the PPC28 amended.

> *Te Ātiawa would like to see this plan change proposal / subdivision / development proceed in a sensitive way, to benefit all those in the rohe; natural world included.*

21. Examples of outcomes that Te Ātiawa consider would be the best for Te Ātiawa and its rohe would include:

> *To see covenants for eco-housing, impervious surface limits, solar heating/power, roof water storage, limited car space on site, use of native planting species, etc.*

Engagement of ecologists - freshwater and plant to look at best way to enhance the life supporting capacity of Kaka Stream and ensure sufficient extent of zoning for the eco corridors for fish and bird.

Enhancement of riparian margins and eco corridors should extend to other waterways on the property (the 'drains')

Summary of iwi submission regarding freshwater

22. The iwi submissions align with the conclusion of the Proof of Consultation with Te Tau Ihu o te Waka a Māui iwi on the Maitahi Bayview Development document, that most iwi are supportive of the PCC28. The iwi submissions also reinforce the importance of freshwater to mana whenua.

Water Sensitive Design

23. Water Sensitive Design applies a set of principles to land development to reduce or minimise negative effects on the receiving environment.

24. It is my opinion that following a water sensitive design process is an appropriate method to demonstrate ki uta ki tai, as required by the Te Mana o te Wai, or an integrated management approach as required by the National Policy Statement for Freshwater Management 2020 (NPS-FM)

25. The emphasis is on the appropriate location, layout and design of the development, including the integration of stormwater design, with the natural landscape and urban elements. A Water Sensitive Design approach considers the multiple objectives influencing project outcomes, including urban design, landscape amenity, and community issues and aspirations. In my opinion, a water sensitive design review also assesses the appropriateness of the zoning and Structure Plan layout proposed in PPC28.

26. Water Sensitive Design has the following key principles:

    a. Promote inter-disciplinary planning and design

    b. Protect and enhance the values and functions of natural ecosystems

    c. Address stormwater effects as close to the source as possible

    d. Mimic natural systems and processes for stormwater management

27. Auckland Council's "Water Sensitive Design for Stormwater Guideline Document 2015/004 (GD04)" is recognised as national best practice by Stormwater Management experts and provides details on the design process to be completed to develop a concept design in support of a Plan Change.

28. I have adopted GD04 as the basis for my review as it is referred to as a Water Sensitive Design guidance document in both the NTLDM and Applying Low Impact (Water Sensitive) Design in Nelson Tasman 2016.

29. The following figure describes the different phases of a Water Sensitive Design process as outlined in GD04 and adopted for the PPC28 Water Sensitive Design review process.

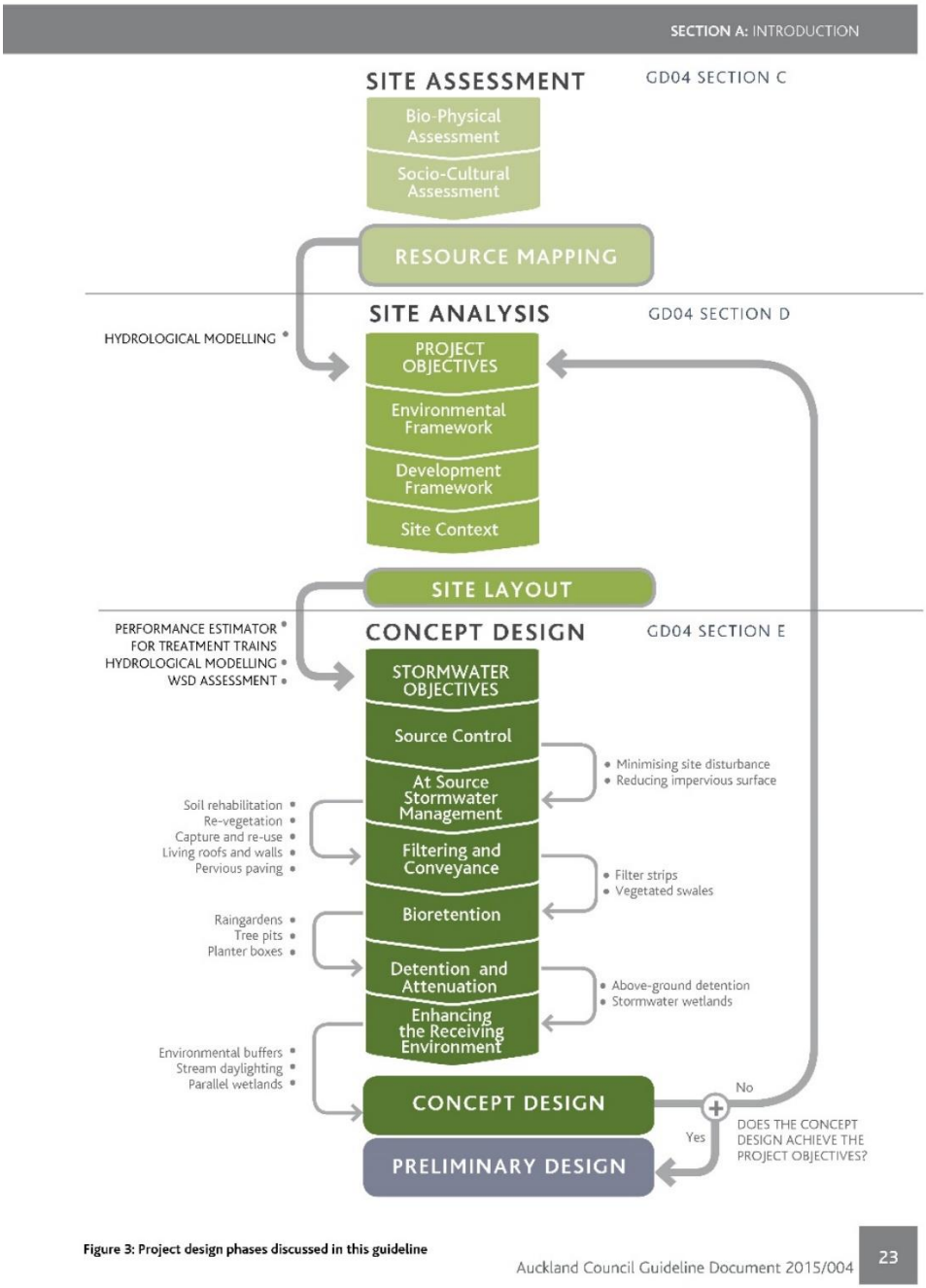


Figure 1: GD04 Project design phases

Review of documentation

Site Assessment

30. The PPC28 supporting documents demonstrate that the project team has undertaken the Site Assessment phase of a Water Sensitive Design process, including engagement with mana whenua. These assessments have been brought together in

the Preliminary Landscape Design Document. However, it is my opinion that the resource mapping task, as described in GD04 and quoted below, has not been completed.

> *"The attributes identified in the site assessment should be integrated into one or more analysis drawings, referred to as resource mapping …. . This analysis begins to draw out the logical land use patterns for a site, while taking into account its context and connectivity within the broader urban and ecological landscape." (G04 p74)*

31. The individual assessments were brought together in the Preliminary Landscape Design Document, but not all these assessments were integrated into analysis drawings as described in GD04. Examples of missing information include:
    a. there are no ecological maps in the document; and
    b. the hydrology map (Figure 31) does not represent the full extent of the site's hydrological network, for example, the extent of the Hill Tributary is not shown correctly, and the wetlands are not included.

Site Analysis

32. It is my opinion that the Site Analysis phase of the process has not been undertaken to a suitable level of detail. While project objectives are described in the Preliminary Landscape Design Document, the Environmental Framework and Development Framework tasks have not been completed.
33. This view is supported by the Morphum Report, which in section 6.2 provides examples of information that should be provided in the Environmental and Development Framework maps.
34. In my view, in addition to those matters set out in section 6.2 of the Morphum Report,
    a. an Environmental Framework needs to include:
        i. Existing freshwater network (wetlands, streams (permanent, intermittent, ephemeral) and seeps);
        ii. Existing terrestrial network, including existing indigenous vegetation and habitat;
        iii. Geotechnical (soils, topography and hazards);
        iv. Landscape/Visual;
        v. Cultural; and
        vi. Flooding (1%AEP).
    b. and a Development Framework needs to include:
        i. provisional road hierarchy;

ii. proposed environmental corridors/linkages (through any a restoration strategy or as a result of proposed mitigation of habitat loss);

iii. modelled post-development flood extents (both 10% AEP and 1% AEP);

iv. overland flowpaths; and

v. an indication that any centralised stormwater management devices (treatment devices (wetlands or bioretention devices) are able to be located out of the 10% AEP flood extents).

35. Once completed the Environmental Framework and the Development Framework can be used to demonstrate that the outcome required by the NRMP is achieved and to then assess the effectiveness of the existing NRMP provisions to:

    a. provide the protections required by the Environmental Framework;

    b. enable the development envisioned by the Development Framework; and

    c. ensure that the development envisioned by the Development Framework is the minimum acceptable standard.

36. Any gaps identified in this assessment should be addressed through site specific provisions.

37. Following this process ensures that the zoning sought through the request is appropriate.

Concept Design

38. As described in GD04, the Concept Design phase draws on the Site Analysis phase to develop a feasible concept design. This phase will also assess the requirements for stormwater detention, water quality treatment and flood mitigation for a site.

39. Importantly a concept design will indicate how all stormwater objectives are met through single responses or through a combination of approaches as part of a treatment train.

40. I have not been provided with any information that demonstrates that the Concept Design phase of the Water Sensitive Design process has been completed to date.

Summary

41. Based on the information provided to date and the water sensitive design process outlined in GD04, I consider that a water sensitive design process has not been completed to the level of detail required to be able to support PPC28.

42. The requirement for further work has been communicated to the applicant's team through the Expert Conferencing process.

43. Not completing the work to the required level of detail introduces uncertainty that the PPC28 will achieve the goals of water sensitive design, being *"to protect and*

enhance natural freshwater systems, sustainably manage water resources, and mimic natural processes to achieve enhanced outcomes for ecosystems and our communities". (G04 p12)

NRMP Rules and Provisions

44. In section 4 of the Morphum Report they make the statement that

    > *"the NRMP is limited with regards to clear and definitive requirements, it clearly outlines the intent to manage stormwater in a manner consistent with community values, the Resource Management Act and the NPS-Freshwater Management"*

45. I agree with this statement, particularly the lack of clear and definitive requirements.

46. There are multiply references to possible methods to achieve water sensitive design outcomes in the supporting documents. However, it is my opinion that the additional objectives and policies proposed in PPC28 are similar to the NRMP in that while they provide an appropriate intent, there are no clear and definitive minimum requirements to ensure that water sensitive design outcomes are achieved.

47. In section 5 of the Morphum Report 18 Principles are suggested "*as the basis for more quantitative Plan Provisions*". However, instead of using the principles as the basis for more quantitative provisions, PPC28 has adopted the principles as Schedule X.9 Ecological Outcomes and Freshwater.

48. Schedule X.9 sets out a number of "best practice principles" to be used "alongside the NTLDM … in the subdivision and development design process, with an assessment from a suitably qualified person demonstrating the application of these principles." It is not clear to me how and when it is intended that Schedule X.9 would be applied. Therefore, I am limited to general comments regarding its effectiveness when working "alongside the NTLDM".

49. The NTLDM has specific requirements regarding water sensitive design, which are aligned with GD04 and Auckland Council guideline document GD2017/001 Stormwater management devices in the Auckland region (GD01).

50. There are, however, the following relevant gaps in the NTLDM in terms of minimum requirements:

    a. Stormwater treatment is not required for runoff from local access roads and cul-de-sacs within residential developments with AADT less than 5000 at full development. The Transportation Impact Report states that "the expected traffic movements associated with the PPCR would be around 4,500 vehicles per day" therefore, there is no requirement to treat road runoff from any road within PPC28.

       Principle 5 would in theory, go some way in addressing this gap, but as discussed above, I am uncertain how X.9 is to be applied. Principle 5 could

be improved via the introduction of a purpose of the treatment, for example "to minimise concentrations of copper, zinc and sediment to the smallest amount practicable prior to discharge."

b. Regarding stream bank erosion and stream health there is no requirement for alternative retention measures outside of "recharge zones". Recharge zones are defined as areas:

   i. having low risk for slope stability issues;

   ii. with a permeability rate of at least 5mm/hr; and

   iii. with a seasonal high ground water table no less than one meter below the surface.

   For areas outside recharge zones, likely to be most of PPC28, the only stream bank erosion and stream health measure required would be extended detention. Urbanisation causes increases in peak flow rates, frequency of runoff and annual runoff volumes. Extended detention only mitigates increases in peak flow rates. It does not mitigate increases in the frequency of runoff and annual runoff volumes.

51. Without certainty on how Schedule X.9 is to be applied and the gaps in minimum requirements of the NTLDM, it is unclear whether the rezoning as sought through PPC28 and indicated on the Structure Plan is appropriate.

52. I note that NTLDM has an appropriate design "first flush" rainfall depth and intensity for stormwater management devices. Therefore, the second sentence of Principle 5 in Schedule X.9 is redundant and could be deleted.

53. It is my opinion that PPC28 does not address the limitations within the NRMP, regarding clear and definitive freshwater requirements and the NTLDM regarding appropriate minimum design requirements to ensure appropriate water sensitive design outcomes. The Ecological Constraints and Opportunities report and the Morphum Report state that Kaka Stream is sensitive to changes in hydrology. The Morphum Report states that "management of stormwater will be critical to providing appropriate protection for the existing Kaka Stream and downstream waterways".

54. As PPC28 does not address the limitations discussed above, there is uncertainty that any future resource consent or engineering approval process will require the water sensitive design outcomes to be achieved. These outcomes have been assessed as being necessary in the PPC28 supporting reports.

55. It is my opinion that as the site is sensitive to adverse effects of stormwater discharges that these gaps in the NRMP and NTLDM should be addressed with PPC28 specific provisions.

Summary of findings

56. Based on a review of PPC28 and various supporting documents, I consider that a water sensitive design process has not been completed to the level of detail required to be able to support PPC28.

57. It is my opinion that PPC28 does not address the limitations within the NRMP regarding clear and definitive freshwater requirements and the NTLDM regarding appropriate minimum design requirements to ensure appropriate water sensitive design outcomes assessed as being necessary in the PPC28 supporting documents, to protect the sensitive receiving environment.

Recommendations

58. I estimate that the Kaka catchment is 256 ha. PPC28 proposes to rezone over 90 ha (more than a third) of that catchment from rural to residential of varying densities. Therefore, I consider the extent of change proposed by PPC28 to this sensitive receiving environment and to the importance of the area to the Nelson community and mana whenua means that if Council accepts PPC28, the applicant should consider how its approach ensures that:

    a. a water sensitive design process is completed so that any future subdivision, use and development must achieve a water sensitive design that protects receiving waters.

    b. the outcomes from the Concept Design phase of the Water Sensitive Design are achieved,

    c. a “Stormwater Integrated Catchment Management Plan” is provided and complied with by any future subdivision, use and development.

59. The following requirements could be addressed as required outcomes of the Stormwater Integrated Catchment Management Plan or as provisions required to be achieved for any future subdivision, use and development.

    a. To increase the certainty that appropriate stream health outcomes are achieved requires that at the point where the fully developed area discharges to a stream, the pre-development mean annual exceedance frequency of the channel forming flow and mean annual volume of stormwater runoff are not exceeded post-development.

    b. To ensure that suitable water quality outcomes are achieved requires that all road runoff should be treated to minimise concentrations of copper, zinc and sediment to the smallest amount practicable prior to discharge; and

    c. To ensure that when stormwater treatment is provided via off-site treatment devices or systems that those are appropriately designed, so require that:

        i. Off-site systems must be designed, constructed and operated to receive and manage stormwater from the site; and

ii. That the operator of the systems confirmations that stormwater treatment requirements will be achieved for the additional stormwater from the site.