## Appendix F – Joshua Thoresen – Terrestrial ecosystems

# Before the Fast-track Panel

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| Under: | The Fast-track Approvals Act 2024 |
| In the matter of: | Beachland South Development, Auckland |

**Statement of Advice**

Dr Joshua Thoresen

Terrestrial and Wetland Ecology

Private Consultant

15 October 2026

Department of Conservation
Te Papa Atawhai

Te Kāwanatanga o Aotearoa
New Zealand Government

## Introduction

1. My full name is Dr Joshua Jeffrey Thoresen. I am a Senior Ecologist at Wildland Consultants Ltd.

## Instruction

2. I am providing expert advice on behalf of the Department of Conservation (DOC) on the Beachlands South Fast-track project in relation to terrestrial and wetland ecology.

## Qualifications and Experience

3. I am a Senior Ecologist with Wildland Consultants Limited (Wildlands). I have been working for Wildlands since mid-2021. My qualifications include:

    i. PhD in Conservation Biology, Auckland University of Technology (2017).

    ii. Master of Science in Conservation Biology, Massey University, Auckland (2012).

    iii. Bachelor of Applied Science in Biodiversity Management, Unitec, Auckland (2009).

4. Prior to working at Wildlands, I had undertaken terrestrial ecology work throughout northern New Zealand and in South Africa, including surveys and monitoring of vegetation and fauna, including the monitoring of Threatened and At Risk species. Previous roles of relevance include:

5. Post-doctoral researcher – University of Cape Town, South Africa (2019).

6. Lecturer in Ecology and Conservation – Auckland University of Technology (2020).

7. I have considerable experience assessing ecological effects for many proposed developments.

    i. Recently, I developed a large Ecological Impact Assessment and Ecological Mitigation Plan and oversaw the development of the Coastal Ecological Impact Assessment for a 20-kilometre length of proposed rail corridor in Northland. This included assessments of multiple wetlands, streams, farm drains, indigenous and exotic forest blocks, coastal marine areas, and saltmarsh. I also managed all initial fauna monitoring including for fish, threatened avifauna, bats, and lizards.

    ii. I have also developed, managed, implemented and reviewed wetland monitoring plans, including hydrological monitoring for a range of development types, including large and small subdivisions, wastewater treatment plants, and bore ground water extractions across Auckland and Northland.

## Code of Conduct

8. Whilst it is acknowledged this is not an Environment Court proceeding, I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. I have complied with the Code of Conduct in the preparation of this advice. Unless I state otherwise, this assessment is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

## Scope of Advice and Expert Opinion

9. My expert advice will address the following matters:

    i. Methodology used for data collection.
    ii. Results from field surveys and desktop assessments.
    iii. Assessment of effects for terrestrial and wetland habitats.
    iv. Management measures proposed.
    v. Proposed consent conditions.

## Sources

10. In preparing this advice I have reviewed:

    i. Attachment 0B: Planning Assessment, Beachlands South Fast-track Approval Substantive Application: Assessment of Environmental Effects and Statutory Analysis (Barker & Associates Limited, 2026).
    ii. Attachment 0C: Draft Proposed Conditions: Beachland South Fast Track Application.
    iii. Attachment 12: Beachlands South Fast Track Ecological Impact Assessment (Viridis, 2026a).
    iv. Attachment 12a: Appendices A, B and C.
    v. Attachment 12b: Appendices D – N including Beachlands South Fast Track Biodiversity Management Plan (Viridis, 2026b).

## Executive Summary

11. Overall, there has not been sufficient information provided to properly review the effects of the proposed project on the ecology of the area, especially in regard to wetlands, - many of which, in my view, may have been mis-classified - and so additional offsetting or compensation may be required for these unaddressed losses.

12. The EcIA broadly describes terrestrial vegetation types and categorises wetlands based on rapid assessments and historical imagery but does not contain detailed delineation data, hydrology, or soil assessments. It is noted that there are no species lists provided for either the terrestrial or wetland vegetation. The EcIA follows the EIANZ guidelines, however, it is considered that there is inconsistent and, in some cases, incorrect application of these guidelines. The wetland categorisations are, in my view, insufficiently justified. I consider that, in many instances, these are likely to

be incorrect. It is further noted that the definition for ‘incidental wetland’ used in the EcIA is inconsistent with the definition of ‘Natural Inland Wetland’ in the NPS-FM.

13. I consider that the valuations of the terrestrial and wetland habitats have been carried out inconsistently. All exotic terrestrial vegetation was assessed as low despite being of varying ecological complexity. All wetlands were also assessed as low despite some including indigenous species and others being large areas with significant filtering capacity.

14. The Applicant has also not provided enough information to review the valuations of several key terrestrial and wetland habitats effectively, including the proposed compensation wetland area. In addition, no vegetation descriptions are provided for the proposed wastewater dispersal field area and therefore there has not been an appropriate assessment of effects completed for this area. Finally, no assessment of effects on wetland hydrology has been completed for the proposed ground water take.

15. It is my view that the compensation model approach using the Biodiversity Compensation Model (BCM) is inappropriate for trading stream losses for wetland restoration as this is not like-for-like. In addition, the calculations in the BCM are strongly influenced by the area of losses and gains and so trading a narrow stream corridor for a wide wetland area will come out as a positive trade in the BCM as the compensation area is by default much larger than the loss. Finally, there are no reasons provided for why stream compensation (trading stream-for-stream) could not effectively be completed elsewhere. Instead of a BCM, a separate Stream Ecological Valuation and Wetland Ecological Valuation together with Environmental Compensation Ratio calculations should be applied to determine the appropriate separate like-for-like stream and wetland compensation for the losses.

16. The compensation model approach and Wetland Ecological Valuation (WEV) has not been completed correctly for the wetland compensation as many metrics used in the WEV are inconsistent or applied incorrectly. I consider that the WEV is a better approach to calculate the quantum of compensation required for the wetland losses and compensation as this will provide sufficient, transparent data which can be effectively reviewed. In addition, the proposed compensation wetland is likely to be predominantly of saline influence and will become more saline in the future as seas levels rise so its use as compensation for the losses of freshwater wetlands is not like-for-like. Furthermore, wetland hydrological monitoring should be explicitly included in the Biodiversity Management Plan (BMP).

17. I have provided high level feedback on conditions in this evidence, including comments on conditions relating to wetland monitoring, demarcation of protected vegetation, vegetation removal, the inclusion of a Wetland Hydrology and Biodiversity Monitoring Plan and hydrological monitoring. The WMP will help to ensure there is no further loss of wetland area than predicted, and that the compensation is appropriate and effective.

## Key Issues

**Data collection methodology (Section 2, Appendix D)**

18. In reviewing the data collection methodology, I have identified areas of limited or missing information.

19. It is noted that a significantly sized area to the South of the development at 620 Whitford-Maraetai Road was not assessed in the field and appears to contain multiple terrestrial and freshwater vegetation types that have not been assessed in the EcIA. A wastewater disposal field is proposed within this area (Section 7.4.6) for which a high-level assessment of effects has been completed. However, as there are no habitat descriptions or valuations for the area it is unclear whether this assessment is appropriate. In addition, the location of the wastewater discharge is not clearly indicated in the EcIA. While Appendices A and D show a "non-field verified" area at 758 and 770 Whitford-Maraetai Road, this is not the area within which the WWDF is proposed. The WWDF area has been excluded from the maps in the EcIA, and the associated Appendices, although it is shown in the Environmental Impact Assessment (EIA).

20. The wetland areas have been broadly defined as either 'natural inland wetland', 'constructed wetland', or 'incidental wetland' with no vegetation types included on the maps provided with the application. No species were listed for each area, and no data included for species coverage, hydrology, or soils for the delineation of the wetland areas. As such, it is considered that there is not enough information given to review the appropriateness of the assessed values of the wetlands or the accuracy of the mapped extent of the wetlands.

21. The methods used to categorise the wetlands as 'constructed' are unclear and appear to be inconsistent. Some 'constructed wetlands' appear to have been induced by a culvert installed within a natural stream area (for example W20) and wetlands have formed naturally along what would have previously been a stream. It is considered that these areas are not intentionally constructed, neither have they developed around an intentionally constructed water body, and, as such, it is my view that they would still classify as 'Natural Inland Wetlands' according to the definitions in the National Policy Statement for Freshwater Management (NPS-FM). Other 'constructed wetlands' were clearly intentionally constructed as ponds for the golf course (for example W39 and W40).

22. Additionally, the methods used to categorise the wetlands as 'incidental' are unclear and not consistently applied. It is my view that some of these areas should be considered 'induced' in that they have likely naturally formed due to hydrological changes in the area (for example W6, W10, W46). While Wetlands 6 and 10 may have formed as a result of a deliberately constructed water body altering the hydrology of the area, they did not form '*in or around* the deliberately constructed water body' as stated in the NPS-FM, Wetland 10 for example extends several hundred meters up the watershed from where the old farm pond is located. As such,

in my view, some of the 'incidental' wetland areas should also be classified as 'Natural Inland Wetlands'.

**Results (Sections 4 to 6)**

23. In Section 4.1 (Appendix A), the native planting, exotic forest and treeland, exotic dominated scrub, and exotic grassland have all been classified as having 'low' ecological values, despite significant differences between them in their ecological structure and function. For example, golf course grass is of negligible valuable as it provides virtually no ecological functions and provides no fauna habitat while exotic forest is low-moderate as despite it being exotic it still provides fauna values and effective buffers for riparian areas and wetlands.

24. In Appendix H (Section 5.3), all Natural Inland Wetland areas were assigned a value of 'low' other than the large coastal fringe wetland area which was assigned a 'moderate' value. Section 5.3 states that there is a variety of wetland vegetation types including indigenous fragments and some areas that are significantly larger than others. Larger wetland areas (for example, Wetland 10 in contrast to Wetland 33), possess greater habitat values for fauna and ecosystem functions than smaller wetland areas and so should be valued higher. Wetlands characterised by indigenous species are generally of higher value than those characterised by exotic species, however, there is not enough information provided in the EcIA to review this.

25. Wetland 14, the area proposed for freshwater compensation, is not well described in the EcIA, with only Figure 22b briefly mentioning the species composition, and only addressing one species. In addition, Appendix D shows Wetland 14 to be a very large contiguous wetland area consisting of multiple different vegetation types including grassland, sedges, oioi, mangrove, and harakeke, however, Figure 27 shows only a small section of the broader wetland is proposed for compensation. Finally, an assessment in the field by the reviewing Freshwater Ecologist concluded that much of this wetland area was of saline influence. As such, there is insufficient information provided to review the valuation, extent, and appropriateness of this key freshwater compensation area.

26. It appears that the proposed freshwater compensation area (Wetland 14) has been undervalued. If assessed as one large feature as shown in Appendix D, it is a very large, well connected, contiguous wetland in a transitional ecotone area that provides important buffering to the neighbouring estuary and coastal marine area and likely provides key habitat to Threatened and rare avifauna. As such, it is considered that it should be of at least 'high' ecological value. If the wetland is of high ecological value, then the area of this wetland required for restoration in order to compensate for the wetland losses may need to be higher.

27. Sections 5.3.1 and 2.3.4 state that WEVs were carried out to quantify the ecological value and conditions within the site; however, only Wetlands 48 and 14 were assessed, with Wetland 48 assessed as a stand-in for all impacted wetlands and Wetland 14 assessed as the compensation site. Section 5.3.1 states that Wetland 48 was chosen as it represents the highest value wetland proposed for reclamation. The

resulting score was 0.612, which on a linear scale of 0 to 1 would indicate moderate ecological value, however, all Natural Inland Wetlands were assigned a value of low.

28. Section 5.3.1 also states that Wetland 14 achieved a score of 0.64, which is only very slightly higher than Wetland 48, despite being a substantially larger, well connected, ecotone wetland area. As I have addressed above, the character of Wetland 14 suggests the ecological value of this wetland would likely be at least high.

29. The WEV table in Appendix G of the EcIA provides brief explanations for the Potential WEV scores (i.e. the potential ecological value the wetland could achieve) but has provided very little or no explanation for the current scores (i.e. the actual ecological value). Many of the WEV scores in that table appear to contain inconsistencies between the Impact (Wetland 48) and Compensation (Wetland 14) areas, for example:

    i. Both Wetland 48 and Wetland 14 are scored very similarly for 'land use affecting catchment hydrology' (1.7 and 1.85 respectively) despite the fact that Wetland 48 is very small and surrounded on all sides by a golf course with high density suburban housing nearby, while Wetland 14 is large and at the bottom of a catchment. The hydrology of Wetland 14 is also presumably influenced by the neighbouring coastal marine area, which would suggest a higher score would be appropriate for wetland 14.
    ii. Both wetlands are scored as a 3 for 'water quality in catchment' despite the fact that Wetland 48 is surrounded on all sides by the golf course and high-density suburban areas and so likely receives many pollutants from these areas, while Wetland 14 is at the bottom of its largely vegetated catchment and influenced by the coastal marine area. As such, the score for Wetland 48 should be lower (as the golf course and housing will introduce numerous contaminants), while the score for Wetland 14 should be higher (as contaminants will be diluted by the nearby coastal marine area).
    iii. Wetland 14 is scored lower than Wetland 48 for "% impervious surfaces in catchment" and "% catchment in vegetation of any sort". Wetland 48 is directly adjacent to a built-up suburban area and two roads with significant impervious surfaces and little vegetation, while the catchment for Wetland 14 is almost entirely vegetated, although predominantly in exotic grassland which suggests the score for Wetland 14 should be higher.
    iv. The 'degree of runoff control' for both Wetlands 48 and 14 were scored as a zero despite there being little to no need for run-off control for Wetland 14 as much of the catchment is vegetated and Wetland 48 presumably receives run-off from the neighbouring roads.
    v. The size and shape of Wetland 14 have been scored as 3.5 despite being a section of a very large contiguous wetland area. Large, unfragmented habitats with more internal area than edge as is evident for Wetland 14 are of higher ecological value and so this score should be higher.
    vi. Wetland 14 has been assigned a score of 0 for the change of dominance in native plants. There are no adequate descriptions of Wetland 14 in the EcIA to

provide evidence for this extremely low score. In addition, the BMP mentions (Appendix J, Page 5) that there are indigenous plants present within the area and so the score should be higher.

vii. Ultimately there are many inconsistencies in the assessment that mean that, in my view, Wetland 14 should overall score higher than 0.64, while wetland 48 should score lower than 0.61. This means that the area of wetland required to be restored as compensation should be higher than currently calculated in the Biodiversity Compensation Model.

30. Section 5.4 states that 'incidental wetlands' that have formed ***in association*** with deliberately constructed water bodies are not classified as Natural Inland Wetlands according to the NPS-FM; however, the exact wording in the NPS-FM is ***in or around*** a deliberately constructed water body. This is an important difference that means that, for example Wetland 10, which extends several hundred meters linearly up the watershed from the historically constructed pond should be classified as a Natural Inland Wetland. While the hydrology of this wetland may have been associated with the historical construction of a pond, as it extends so far up the watershed it cannot be said to have formed 'in or around' the pond.

31. Similarly to the Natural Inland Wetlands, the 'incidental wetlands' have been assigned an ecological value of 'low' across all areas despite being of varied vegetation types. Figure 25 appears to show one wetland with short exotic Mercer grass and another with indigenous raupo or *Bolboschoenus* (although the species are not mentioned in the caption), but both have been valued as 'low'. As previously mentioned, indigenous habitats typically are of higher value than exotic habitats, however there is not enough information provided to assess this.

32. It is considered that there is not adequate or detailed justification provided for why every area classified as 'incidental' or 'constructed' should not be classified as 'Natural Inland Wetlands'. Section 5.5. states that "Historical aerial imagery and site observations indicate that these (incidental) wetlands have developed in association with constructed freshwater features and altered hydrological conditions rather than representing remnant natural wetland systems". However, wetlands that have developed naturally as a result of altered hydrology are still classified as 'Natural Inland Wetlands' under the NPS-FM. Additionally, remnant natural wetlands are not the same as 'Natural inland wetlands' as defined in the NPS-FM and so excluding wetlands that are not considered natural remnants is a misclassification.

**Assessment of effects (Section 7)**

33. Section 7 of the EcIA provides an assessment of effects from the proposed development. The following section of this memo sets out key observations and identifies areas where information is absent, or where there is a professional difference in the extent and significance of the effects identified.

34. It is noted that there are no maps or figures that clearly show the different areas of terrestrial vegetation to be lost as a result of the development. Appendix I shows vegetation associated with the EPAN, however, this image is unclear.

35. There is no assessment of effects of the proposed additional groundwater take bore for the development on wetland hydrology. There may be a hydrological connection between the water take and multiple wetlands and if so, it is likely that the water take will result in a change in the water level range or hydrological function of the affected wetlands. As such an assessment is required under the National Environmental Standards for Freshwater (NES-F) as a Restricted Discretionary Activity.

36. The overall magnitude of effect for the loss of all terrestrial vegetation is considered to be low prior to mitigation planting; however, this is based on assessing all vegetation types as of similarly low ecological value which is likely inappropriate as previously described. If some areas are of moderate ecological value while others are of negligible value then the magnitude of effect will be different for each area.

37. The EPAN is stated to be approximately 74.75 hectares, with only 1.23 hectares planned for permanent loss. However, Table 4 shows that only 33.41 hectares of EPAN will be retained and protected. It is not clear what is proposed for the remaining 41ha of EPAN. It is recommended that this be clarified in the EcIA.

38. In considering hydrological effects and resulting losses of wetlands, the report states that a conservative approach has been taken to assessing potential hydrological effects on retained wetlands. It states that where a wetland's surface water catchment is predicted to reduce by 95%, it has been conservatively assumed that 95% of that wetland's retained extent may be lost through partial drainage (Page 55). It is arguable that this is not a conservative approach - a 95% loss of a catchment is likely to result in the complete drainage of a wetland. The section states that groundwater recharge and pervious surface areas within each catchment will contribute to the wetland hydrology. However, if 95% of a catchment is lost, the development may result in enough impervious surfaces to prevent rain from recharging groundwater within the catchment. Additionally, the new bore proposed for the development will reduce groundwater and no assessment of the effects of this bore has been included in the EcIA. It is my view that a conservative assessment would assume complete wetland loss, and it is probable that many of the retained wetlands will be lost entirely. Accordingly, the assessment of potential wetland losses from reduced surface water catchments in Table 7 is likely to be a significant underestimate.

39. The conservative assessment of 2,906.84 $m^2$ of wetland loss is likely a significant underestimate as there is likely to be greater losses resulting from hydrological changes. As previously mentioned, there are several areas classified as 'incidental' or 'constructed' wetlands that are likely to be 'Natural Inland Wetlands' and therefore have not been included in these calculations.

40. The effects of the wastewater discharge to land and the resulting effects on the receiving catchment and any streams and wetlands and the coastal marine area have not been assessed appropriately as there have been no value assessments of the potential receiving catchment (i.e. to the south of the development at 620 Whitford-Maraetai Road). While the area proposed for the wastewater dispersion field appears to be predominantly pasture, such a large wastewater field may result in contamination of the adjacent areas that have not been assessed. It is noted that

there are multiple streams, with indigenous riparian vegetation in these adjacent areas which have been undescribed and which have been excluded from the assessment of effects.

**Proposed management measures (Section 7.4.3)**

41. I have reviewed the proposed management measures, including compensation, as outlined in Section 7.4.3 of the report, and make the following comments.

42. The proposed compensation wetland is likely to be indirectly impacted by the development due to changes in the hydrology of the catchment. This fact is reflected in the Potential Scores valuation given in the WEV for the 'land use affecting catchment hydrology', the '% impervious surfaces in catchment', and the '% of catchment in vegetation of any sort'. However, there has been no assessment of effects for this wetland and no other mention of the potential effects of the development on this proposed compensation wetland area. Additionally, future sea level rise may transition the freshwater areas of this wetland to a saltmarsh, or it may be inundated entirely. It is therefore unclear if the use of this wetland as compensation for the losses of wetlands due to the development is appropriate.

43. It is my view that the Biodiversity Compensation Model (BCM) is inappropriate for trading stream losses for wetland restoration as the calculations in the BCM are strongly influenced by the area of losses and gains and so trading a narrow stream corridor for a wide wetland area will easily come out as a positive trade in the BCM as the compensation area is by default much larger than the loss. This means the mathematics of the model will demonstrate a strong net gain obscuring any true ecological losses.

44. There are no reasons provided for why stream compensation (i.e. trading stream loss for stream enhancement) could not effectively be completed elsewhere. A Stream Ecological Valuation together with an Environmental Compensation Ratio calculation should be applied to determine the appropriate like-for-like stream compensation for the losses.

45. Both a WEV and a Biodiversity Compensation Model (BCM) were used to calculate appropriate compensation for the wetland losses for the development. However, as both the current and potential value scores for both the impact and compensation wetlands are already assessed (notwithstanding the issues already identified with these scores as outlined in this memo), the WEV could be readily amended to calculate the required compensation for this development. A BCM was used instead as it incorporates stream losses into the calculation for the compensation, however, as mentioned above this is inappropriate. As such best practisce would be to calculate the stream and wetland compensation separately using the existing WEV to calculate the like-for-like wetland compensation removing the need for a BCM entirely.

46. The report states that the highest value wetland was used to represent all wetlands to be reclaimed, that this approach is conservative and that this wetland was still valued as low. As previously stated, the low value is inconsistent with the moderate

WEV score (both the 0.69 WEV condition score and the average 3.45 score are both moderate values on a linear scale of 0 to 1 or 1 to 5).

47. I note for completeness that Table 9 in Appendix N appears to be incorrect. The scores used in the BCM are the average WEV and SEV scores out of 5, not the WEV/SEV scores. The model has, however, used the correct values.

48. In Appendix N, Table 9 the Potential Score from the WEV as opposed to the actual Current Value Score was used to value the loss of impact wetland in the BCM as a conservative approach. However, many of the Potential Scores in the WEV are lower than the Current Score due to the predicted impact of the development. This conflates the potential value of the wetland with the effect of the development. To take a conservative approach, the potential value of the wetland should be independent of the development impact.

49. In addition, as described above the Potential Score for the impact wetland has already taken into account some of the future impacts of the development. As such, the loss in value from 3.455 to 0.001 (i.e. 3.454 loss) is underestimated or, at minimum, not conservative as stated in the report. The same table shows the wetland impact area to be 0.29 hectares but in text above the table it mentions 0.322 hectares of wetland loss so it is unclear what the true area of loss is which means it is unclear if the area of compensation required as calculated in the BCM is appropriate or not.

50. In Table 12, it is unclear if the long-term outcomes principal will be met as, in my view, the hydrology of the compensation wetland is likely to be impacted by the development (for which an assessment of effects has not been completed) and may be impacted by sea-level rise.

51. Table 13 is inconsistent with the EIANZ criteria and table for assessing levels of effects. For example, for the effect on botanical and habitat values a ‘low-moderate’ ecological value + ‘low’ magnitude after mitigation/compensation does not create a positive ‘net gain’ outcome it creates a low residual level of effect. The magnitude following mitigation must be positive, not low, to show a net gain.

52. It is considered that a Wetland Monitoring Plan (WMP) that adopts an adaptive management approach, and explicitly includes hydrological monitoring, should be included in the BMP. The WMP should apply to both the compensation wetland and all wetlands that may be indirectly lost as a result of the hydrological changes due to the development. The WMP will help to ensure there is no further loss of wetland area than predicted, and that the compensation is appropriate and effective.

## Overall assessment, next steps and further information sought from the applicant

53. Overall, there are several important gaps in the information supplied for the EcIA that mean that the areas of ecological losses, especially in regard to wetlands, may have been incorrectly calculated and underestimated. This then has flow on effects for the compensation required to account for these losses. Additionally, the Compensation approach has been incorrectly applied and calculated.

54. Further information should be provided including:

    a. Descriptions of the ecological characteristics of all of the wetland areas throughout the development (including the compensation wetland – Wetland 14) including species assemblages and cover. Dominant species cover for each wetland area should be mapped as for the terrestrial vegetation.

    b. A detailed reassessment of the categorisation of wetlands as to whether they qualify for 'Natural Inland Wetland' status, as per the definitions in the NPS-FM.

    c. A value assessment and descriptions of the potential receiving habitats for the wastewater dispersal field, including habitats adjacent to the area.

    d. An assessment of effects for all potential wetland areas, including the compensation wetland (i.e. Wetland 14), likely to be affected by the proposed water take.

    e. An assessment of effects for the proposed development for the changes to the watershed of the compensation wetland (i.e. Wetland 14).

    f. An assessment of the appropriateness of using Wetland 14 as a compensation site taking into account the extent of saline influence in the area and the likely increase in saline influence in the future.

    g. An updated Stream Ecological Valuation trading the stream losses for stream restoration elsewhere as compensation.

    h. An updated Wetland Ecological Valuation trading the wetland losses for the restoration of the compensation wetland area.

    i. It is considered that direct engagement is needed between DOC's ecologists and the applicants' ecologists to work through the matters identified in this report. This will allow for a full assessment of the effects of the proposal, and narrow any potential issues or areas of disagreement.

## Comments on draft consent conditions

55. I have reviewed the relevant draft consent conditions and provide the following high level comments and feedback. These comments have been included in Appendix A of the main s53 report.

    a. Condition 38 (a): the Freshwater Baseline Report should also include wetland monitoring of both vegetation and hydrology.

    b. Conditions 67-68: there should be a condition stating that prior to earthworks commencing all protected vegetation within the EPAN should be clearly demarcated on the ground.

    c. Condition 80: A Wetland Hydrology and Biodiversity Monitoring Plan should also be included as a consent requirement either as a stand-alone document or explicitly as a requirement to be added to the BMP.

d. Conditions 228 - 278: at a minimum, wetland hydrological monitoring for the compensation wetland should be included as a consent condition for the bore water permits.