Appendix A continued

Before the Fast-track Panel

Under:	The Fast-track Approvals Act 2024
In the matter of:	FTAA - Mahinerangi Wind Farm

Statement of advice Rebecca Teele

Technical Direction - Terrestrial Ecology

e3Scientific Ltd

27 March 2026

Introduction

My full name is Rebecca Judith Teele.

Instruction

I am providing expert advice on behalf of the Department of Conservation (DOC) on the Mahinerangi Wind Farm Fast-track application.

My advice relates to effects on avifauna, terrestrial vegetation and wetlands.

Qualification and Experience

1. I hold a BSc in Ecology with a minor in Statistics, and MSc in Ecology (Distinction), both from the University of Otago. I am a Certified Environmental Practitioner (CEnvP), a full member of the Environment Institute of Australia and New Zealand, the New Zealand Ecological Society, and Birds New Zealand. I am currently the Technical Director – Terrestrial Ecology at e3Scientific Ltd and have held this position since May 2025. Prior to this I was a Senior Ranger – Biodiversity at DOC for two and a half years, including Lead for the Mohua Recovery Group and Site Lead for landscape scale predator control operations. I was previously a Senior Ecologist at e3Scientific for over eight years, and prior to that an Ecological Technician at Golder Associates.

2. I have over twelve years of professional experience in ecological impact assessment, monitoring, restoration planning, and conservation management. I have worked across both public and private sectors, managing landscape-scale predator control programs, completing Ecological Impact Assessments for a range of land-use activities, and leading major restoration projects. I have provided technical review of land-use developments for local authorities and developers. I have experience in the misting netting and banding of native and exotic passerine birds, as well as locating nests and radio tracking eastern New Zealand falcon and assisting with the capture and attachment of transmitters. I have also managed wind farm bird strike monitoring, searcher efficiency trials, and scavenger trials.

Code of conduct

3. 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 advice 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.

Material Considered

4. In preparing this advice I have reviewed the following application documents:

    - Boffa Miskell – Mahinerangi Wind Farm Stage 2 – Puke Kapo Hao, **Avifauna** Assessment.

- SLR Consulting New Zealand – **Vegetation, Wetland**, and Terrestrial Invertebrate Assessment, Mahinerangi Wind Farm Stage 2.
- SLR Consulting New Zealand – **Ecological Monitoring and Management Plan.**
- Boffa Miskell – Puke Kapo Hao – Mahinerangi Wind Farm Stage 2 - **Avifauna Management Plan.**
- SLR Consulting New Zealand – **Rehabilitation Management Plan** – Mahinerangi Wind Farm Stage 2.
- SLR Consulting New Zealand – **Wetland Monitoring and Management Plan** – Mahinerangi Wind Farm Stage 2.
- SLR Consulting New Zealand – **Woody Weed Management Plan** – Mahinerangi Wind Farm Stage 2.
- SLR Consulting New Zealand – ***Carex tenuiculmis* and *Epilobium chionanthum* Management Plan** – Mahinerangi Wind Farm Stage 2.
- SLR Consulting New Zealand – **Wetland and Aquatic Compensation Plan** – Mahinerangi Wind Farm Stage 2.
- Boffa Miskell – Mahinerangi Wind Farm Stage 2 – Puke Kapo Hao – **Mammalian Pest Control Plan**.

Site visit

5. I visited the site on 23 July 2025.

Scope of Advice and Expert Opinion

6. My expert advice will address the following matters:
    i. Adequacy of the Applicant's assessment of values, noting any values not identified/assessed.
    ii. Adequacy of the Applicant's assessment of effects, noting any effects not adequately addressed.
    iii. Adequacy of Applicant's proposed mitigation measures.
    iv. Any alternative mitigation measures, and/or my preference for mitigation measures.

A Effects on Avifauna

A.1. **Brief Description of Values that Could be Affected**

7. Boffa Miskell completed an avifaunal assessment of the proposed site and characterised bird values through desktop research (e.g. records from Bird Atlas, eBird, and iNaturalist), existing reports and surveys from the Stage 1 development (2007 to 2013), and more recent field surveys. The fieldwork surveyed the proposed Stage 2 site and the wider area including Lake Mahinerangi and associated wetlands of the Waipori and Deep Stream Hydroelectric Power Scheme, and Dam C Reservoir. Field data was collected over ten

days late January to February 2025, and up to four weeks of bio-acoustic sampling (Jan-Feb 2025).

8. The field survey work included point counts, 5-Minute Bird Counts (5MBCs), incidental observations, and bioacoustics monitoring, all of which are standard bird survey techniques. Flight height data and a simplified Collision Risk Model (CRM) was used to quantify changes between the two turbine layouts for falcon.
9. The field results confirmed the continued presence of falcon across Stage 1 and 2 areas, including hunting and traversing the area and potentially a local breeding pair. Of the five species with a Threat status present within the Stage 2 site, falcon and South Island Pied Oystercatcher (SIPO) breeding are the two that were determined to require impact management. The results found that there were no habitats present within the MWF site for the cryptic Australasian bittern and fernbird, and confirmed minimal movement between bird populations present at the surrounding lakes and wetlands and the pastoral/tussock MWF site. Only one migratory species was determined to be within the MWF site, and that was SIPO.
10. The relative flight height of native species within the MWF site was recorded. Only pipit and falcon had more than 10 flight observations. Pipit were never observed within the Rotor Swept Area (RSA) and falcon were observed to have 7 % of flights within the RSA (Table 14). There was not enough flight height data collected from the MWF site to model site specific Collision Risk Models (CRM); the only CRM completed was for falcon but used fight heights from Harapaki Wind Farm (Hawkes Bay).
11. Boffa Miskell identified the key species at risk from construction or operation of the proposed Stage 2 MWF (Section 6.3.4). It was determined that falcon remained a species of concern, as well as SIPO during construction, and all other Threatened or At Risk avifauna species were not of concern.
12. The potential effects to avifauna values from windfarm construction and operation are disturbance while breeding during construction, and during operation displacement from habitat post construction, bird strike/collision risk, and electrocution and collision risk from new 100kV transmission line.

A.2. Concerns with the Assessment of Values, and the Assessment of Effects on Those Values

A.2.1 Methodological Concerns

13. Clarification is sought regarding the length and timing of the bioacoustic surveys.
    - Four weeks from the 7th of January is stated at the beginning of Section 3.4;
    - the 3rd of January to the 15th of February in the "Bioacoustic Recorders" section of Section 3.4; and,
    - 32 nights from the 7th January to 7th February in Section 6.2.3.
14. Clarification is sought on the number of Point Counts (i.e. 20-minute surveys) and 5MBCs completed at each vantage point.
15. The field and ARD survey provides limited current data as it was collected at only one time of year. In particular, the limited timeframe/seasonality for obtaining flight height data is not ideal. This is particularly relevant for SIPO as they arrive at MWF site late winter/early spring and begin returning north from late December onwards.
16. The Golder reports (2009, 2011, 2012, 2013 x2) that are relied on for the assessment, were requested at the Teams meeting regarding the Wildlife Authority with the Applicant (26/02/26); these are yet to be received. Of particular interest are the 2012 and 2013 Golder reports, which form a key part of the proposed variation to not continue bird strike monitoring.
17. Clarification regarding the meaning/interpretation of Condition 27 as it stands currently. Specifically regarding "record any bird strike" (pg.12) for falcon. This potentially appears to require bird strike monitoring, unless enough falcon are captured and transmitters attached, to meet the condition. If so, it would be reliant on confidence and evidence that all falcon within 3 km of the MWF were located and captured.
18. In Section 4.4, it is stated that the Golder report (2013) "*concluded that a low perceived risk remained for the fully constructed MWF and recommended that the construction and post construction monitoring of falcon breeding success and mortality be repeated when Stage II commenced*". It appears to have been interpreted as applying to Condition 26 and 27 in that bird strike monitoring is not required, only nest survey and falcon breeding and mortality monitoring via transmitters. However, the clarification requested in the above bullet point and viewing the Golder 2013 report is needed to fully understand the matter.
19. Overall, avifauna species and activity have been well characterized, however, there is limited seasonal and site-specific flight data, as well as clarifications needed. This may affect the assessment of the risk of construction and operation of the proposed windfarm to avifaunal values, and thus impact management.

A.2.2 Impact Assessment Concerns – Construction

20. The avifauna assessment focuses the review of effects on falcon and SIPO as these are the only species considered to be of concern from potential effects from the proposed

consent variation. This effect is addressed via the Avifauna Management Plan. However, two further points of clarification remain:

21. In Section 9.1.1 and 9.2.1 the high-level requirements and targets to be detailed in the Avifauna Management Plan should be stated, to allow for a full understanding of the impact assessment.
22. Information is needed regarding the potential impact to pipit breeding during construction activity, as pipits are At Risk – Declining and would be expected to nest in the tussock grassland in the Wind Farm area. Further any disturbance to native bird species would need addressing under the Wildlife Act 1953.

A.2.3 Impact Assessment Concerns – Operation

23. Required clarifications and concerns regarding the impact assessment of the wind farms operation are listed below:
    - Clarification if the 'SIPO nest sites" on Map 7 are falcon nest sites.
    - The bird strike risk for SIPO is considered by the applicant to be low (Section 6.4). However, only one SIPO was seen in flight at site during the survey (which meant a Collision Risk Model (CRM) was unable to be run), and there is evidence that flight heights of migrating and overwintering SIPO occur within the proposed RSA (DOC, 2024). Therefore, SIPO should be considered a species of concern during wind farm operation.
    - It is also noted that there was insufficient flight height data to fully understand falcon flight heights within the MWF site itself. At a minimum, having enough flight height data from this specific site to run the Collision Risk Model (CRM) for falcon would be expected.
    - Silvereye are classified as Regionally At Risk and one death was recorded during bird strike monitoring of Stage 1. Consequently, bird strike monitoring would help increase confidence that the larger turbines won't present a risk to this Regionally At Risk species.
    - Please clarify how the 46% reduction in risk to falcon was calculated, and what the percentage of falcons at risk is.
    - Please clarify if the original Condition 26 was to cover additional turbines (i.e. Stage 2), not just Stage 1.
    - For Table 20, can the number of turbines and area each wind farm covers please be included to allow for relative comparison to the proposed Stage 2 development.
    - For the other Wind Farms in New Zealand referred to in Table 20, please clarify what bird strike monitoring has been completed, if any, for subsequent stages (and the number of turbines in each stage).
24. Overall, while the two years of bird strike monitoring results for MWF Stage 1 are encouraging, it does not preclude bird strike monitoring for further expansion of the wind farm (including searcher efficiency and scavenger trials). Stage 1 only included 12 turbines

of a different design to those proposed. It is considered that two years of bird strike monitoring is needed for the proposed 44 additional turbines based on the above review and specifically:

25. The lack of flight height data across multiple seasons for species at site (in particular, falcon and SIPO);
    - Flight height data from other New Zealand sites show SIPO flight heights within the RSA (DOC, 2024);
    - The increased number of turbines relative to Stage 1 (266% increase/almost four times the number);
    - The change in turbine design including the RSA (while higher off the ground, also higher into the air); and,
    - Expansion across a larger area of land.

A.3. Consideration Of Proposal to Address Effects – Management Plans

A.3.1 Avifauna Management Plan

26. The following recommendations/clarifications are requested:
    - Clarification of whether the three conditions in Section 1.2 are proposed or already consented. Condition 26 had previously referred to bird strike/carcass monitoring, which does not appear now. Clarification/discussion on these potential variations to Condition 26 and 27 (pg. 2) and how they specifically relate to bird impact management is needed.
    - In Section 1.4, nest protection should remain in place until a Suitably Qualified and Experienced Professional (SQEP) determines it can be removed.
    - Confirmation is requested that the predator control in the Mammalian Pest Control Plan is considered sufficient for falcon, as stated in Section 7.2 for SIPO.
    - In Section 3.1.2, for the field survey effort, “up to” should be replaced with “at least” to ensure as many nests as possible are found. Clarification also needed on how many people will be searching during the proposed field survey days, to understand the full effort proposed.
    - In Section 3.1.3, how many times will the proposed maximum duration of 10 minutes for call-playback and nest flashing be allowed - once is assumed, but clarification sought.
    - In Section 3.1.4, it is recommended that physical barriers/markings are used where the SQEP deems appropriate and necessary.
    - In Section 3.2.2, the surveys (last paragraph) should include walking as well as driving, e.g. ‘*the Project Ecologist driving and walking across the Stage 2 Windfarm Development Area’*.

- Throughout the Management Plan, 3 km for surveys is used, rather than the consented 5 km. This is based on the Goler 2013 report. A copy of this report is requested, to understand this change.
- In Section 4.1.1, the identification of falcon nesting sites is within the Windfarm Development Area and public land within 3 km. Clarification is sought regarding what area will be surveyed based on this, and if it includes all the surrounding farmland.
- The last bullet point on pg. 11 should allow for monitoring of falcon activity within 3 km of the wind farm site (not just the wind farm site).
- On pg. 12, first bullet point, clarification is requested as to the full scope of when the 'record of any falcon turbine strike observed' is to be done (e.g. incidental and as part of nest surveys and monitoring).
- In Section 4.1.3, it is recommended that the following edits (underlined) are included "attempts will be made to capture and install leg bands and GPS transmitters on <u>all</u> falcon <u>associated with every nest identified</u> for two breeding seasons…". This will provide greater confidence that monitoring for falcon attempts to occur across as much of the potentially effected population as possible.
- Section "Trapping and Radio-Transmitting Methods" (in Section 4.1.3) must be updated to reflect the conditions of the authorised Wildlife Act Authority (WAA). The WAA will override any information in this Management Plan where there is a discrepancy between the two documents.
- In Section 4.1.3 – Monitoring Radio-Transmitted Falcon and Detection of Dead Falcon:
    - Clarification is sought as to how long "twice daily" download and review of falcon movements will occur for.
    - The second to last paragraph of this section should include that all falcon carcasses will be sent for necropsy for cause of death and information provided to DOC within one week of receipt.
- In Section 4.1.5, addition of text requested that the falcon monitoring report will be provide to DOC as soon as complete.
- In the Reporting section (4.1.5), an 8th point should be added that the report (provide to DOC) will include 'Mapping of all movements recorded via all transmitters'.
- In Section 5, it needs to include that all falcon carcasses will be sent for necropsy for cause of death and information provided to DOC within one week of receipt.
- In Section 6, all native bird species found deceased will be sent to Wildbase for necropsy and the report provided to DOC within one week of receipt.
- In Section 7, the mitigation programme, actioned if breeding failure of falcon is identified due to the Wind Farm operations, needs to be determined in consultation and partnership with DOC rather than set prior to knowing the specifics of how the breeding failure is occurring.

A.3.2 Mammalian Pest Control Plan

27. The following recommendations/clarifications are required:

- The lack of rodent control is a concern. Rats can predate native bird nests, and rodent populations can increase when control targeting higher predator guilds occurs. Monitoring of rodent numbers is recommended if they are not going to be targeted with control, and contingency for rodent control included in the MPCP if monitoring shows rodent tracking to be higher than 10% in any monitoring round (Nov, Feb, May).
- Possums can predate native bird nests and possum control methods are being used in the Stage 1 predator control. It is recommended that these are expanded throughout Stage 2. Particularly given the presence of plantation forests, and forests within gullies.
- Possums and rats are noted as being of concern for falcon in the AviMP (pg. 5).
- The proposed trap and bait station locations are not spatially laid out based on best practice control (e.g. a gridded layout), they are proposed to be deployed based on easiest access and the turbine layout (i.e. Stage 2 Earthworks Boundary) rather than the Windfarm site as a whole. It is recommended that the control effort is across the site boundary in a grid layout to gain better ecological outcomes (refer to Figure 2, which defines these areas).
- In Section 4.1, it states “If C100TN exceeds 10 captures per 100 trap nights for two consecutive service-periods, toxic control will be initiated to reduce predator abundance (Section 3.3).” It is recommended that the protocols include that more traps (for example 50 traps every three months) are deployed across a larger area (and incorporated into the ongoing Plan) if the C100TN is still exceeded after toxic control, continuing until C100TN is no longer exceeded. Further, protocols area needed if the C100TN is exceeded more than three times non-consecutively within a year.
- Clarification is sought that the monitoring of hares and rabbits will occur (i.e. the ‘analysis of number of target pests observed’ in Table 1) on different occasions to night shooting to prevent activities biasing the results.

A.3.3 Ecological Monitoring and Management Plan

28. The following recommendations/clarifications are required:

29. Hedgehogs need to be included in this plan under Section 11 (as per the Mammalian Pest Control Plan).

A.4 Any Comments on Proposed Conditions/ Changes Requested To Improve These

30. Given the above requests for clarification and recommended adjustments, the proposed Conditions will not be fit for purpose, nor reduce the impact sufficiently for avifauna, until these matters are resolved.

B Effects on Vegetation & Wetlands

B.1 Brief Description of Values that Could be Affected

31. SLR Consulting New Zealand (SLR) completed a 'Vegetation, Wetland, and Terrestrial Invertebrate Assessment" for the Stage 2 Mahinerangi Wind Farm (MWF). The site is described as a "*network of waterways/gullies separate by low ridges*" that contain indigenous vegetation communities including modified remnants of snow tussock grasslands, native shrublands, and wetlands. The variation to the current Stage 2 MWF consent anticipates there to be a lower impact on indigenous vegetation communities and wetlands. This is due to changes to the layout and a decrease in the number of turbines and roads. However, the Transmission line, substation, and BESS are new to the consent and variation.

32. The works for Stage 2 MWF, which could have ecological impact include:

- Construction and operation of an internal roading network.
- 44 proposed turbines with hardstand areas including associated Contingency Zones (CZs).
- Electrical reticulation (underground cabling).
- Substation (0.39 ha).
- Battery Energy Storage System (BESS - 0.42 ha).
- Transmission line and access tracks, including 25 poles up to 45 m high, withing an 100m wide transmission corridor.
- Operations and Maintenance facility (2,200m^2).
- Surplus Fill Disposal locations (SFD).

33. The ecological values that could be, or are, affected include:

34. The 476 m^2 loss of wetlands and works within 10 m of another nine (or 11) wetlands (six within the Turbine area, and three or five within the Transmission Corridor). There will also be further wetlands where work occurs within 100 m.

    - In the Executive Summary, please clarify how many wetlands will have works occur within 100 m for all areas.
    - In the Executive Summary, please clarify how many wetlands in the Transmission corridor will have works within 10 m.
    - Clarification is sought on how long the transmission corridor will be.
    - The Executive Summary states "*some wetlands within 100 m of works sites will be monitored using the Wetland Monitoring and Management Plan*". It would be expected that all wetlands within 100 m of any works would be monitored and managed.

35. There will be clearance of at least 11.9 hectares of snow tussock grassland (Table 2), however, the confirmed amount depends on clarification of points raised below regarding all new locations of disturbance relative to already consented areas.

36. The Transmission Corridor will clear 614 m^2 of rough pasture with scattered snow tussocks for construction of access tracks and transmission pole structures.

37. The two At Risk species, *Carex tenuiculmis* and *Epilobium chionanthum,* were both identified in wetlands on site. These wetlands will be avoided, although a Management Plan for these two species has been provided, to help ensure if present in other locations, that these species are protected.

B.2 Concerns with the Assessment of Values, and the Assessment of Effects on Those Values

B.2.1 Methodological Concerns

38. Further detail is requested to fully understand the survey approach, specifically:

39. The site visits have the stated purpose of being for '*identifying any ecological constraints that would help inform the wind farm layout*' rather than an ecological survey of the site/areas of disturbance (Section 2.1). The subsequent 'Mapping' subsection, together with Figure B, appears to counter the above quote and show mapping of terrestrial vegetation was undertaken across the proposed Windfarm Farm Development Area (WFDA). However, mapping appears to have been utilised based on sub-sample survey and further clarification is required:

    - Please clarify the method for the botanical survey (e.g. were sub-samples within each community used; what number of quadrats within each vegetation community). It is noted that plant species and their relative abundance are recorded in Appendix C, however, no sampling methodology is provided (e.g. location of quadrats). Further on, in Section 6.0, it is noted that "*representative sites*" within the Wind Farm were surveyed, however, the number and location remain unclear.
    - Where hard copy field survey plans were used with photographs and aerial imagery to map vegetation and habitats, please clarify the accuracy that the ground-truthing provided e.g. what percentage of locations/areas were correctly mapped via imagery vs not, i.e. how accurate was the mapping (acknowledging that it is not expected to be 100%).
    - There is a 'Natural Wetland Assessment' methodology section; the same would be expected for terrestrial vegetation in locations different to that already consented, which would include the survey methods and significance criteria used. There is subsequently Section 2.3 (Assessment of Effects), however, this doesn't clarify the above, only indicating that an assessment of effects has occurred for the Transmission line, BESS, and works in or near wetlands.

40. Rock outcrops are mentioned as being present with plant species not found elsewhere on site, along with Indigenous Shrublands (Section 4.1), clarification is ought on where these are located, as the locations are not shown/obvious on subsequent Figures D-F.

41. It is noted that within the Windfarm Farm Development Area (WFDA) is a recently planted Douglas Fir plantation. This species is listed in the Otago Pest Management Plan 2019-

2029 as a species under ‘progressive containment’. It is unclear what the landownership arrangement is for the WFDA, and what consents might be held for the Douglas fir plantations. Depending on these two points, the plantation may contravene the ORC Pest Management Plan on the MWF proposed development site.

42. In Table 2 (pg. 20), the area of each vegetation type within different disturbance areas is provided. However, it isn’t provided for the internal road system, which would increase the wetland hectares. The roads are being re-routed, so they are understood to potentially, for a certain area, be in new locations (i.e. not covered by current consent).
43. The Regional threat status document referenced is now out of date. Jarvie *et al.,* (2024) has been used for the ‘Regional Threat Classifications (see Table 3), however, there have been updated versions in 2025 and 2026. This information needs to be updated, and any changes carried through the remainder of the impact assessment.
44. With regards to the wetland assessment/delineation in Table 6, it was initially raised that for Sites 2, 68B, and 68C, which have uncertain vegetation, and no hydrological indicators present, why weren’t soils looked at. In response, TWP have stated that these sites meet the pasture exclusion test, and no further assessment is required. However, further clarity is requested in terms of the reasoning for the use of the pasture exclusion test (i.e. showing/confirming that grazing is continuing across all these areas, no land use change is occurring, and does not provide habitat for any threatened species).
45. It was also initially raised as to why Sites B, B2, E2B, 71 failed vegetation tests and deemed to be in pasture, however, hydrological indicators were present, and soils were not assessed. In comparison, Sites L, 10, and 47 had the same criteria met, with soils also being checked and were assessed to be wetlands. The TWP response, stated that “*soils at sites L, 10, and 47 had a high peat content, and were therefore hydric soils, as indicated in the assessment*”. However, this does not clarify why soils were not looked at for Sites B, B2, E2B, 71 given they meet the same criteria as Sites L, 10, and 47. Further clarity is requested.

<u>B.2.2 Impact Assessment Concerns</u>

46. A more detailed Ecological Impact Assessment (Section 7.0 onwards) is needed. Specifically, a detailed and linear description and assessment of: the impacted ecological values (in areas not already consented), the direct and indirect effects, associated magnitude of effects, the impact management, and finally any residual effects. Specific aspects to be addressed as part of this include:
47. The indirect/direct effects are directed almost straight to the Management Plans. It would be expected that based on the value and magnitude of effect, the key requirements to manage these impacts would be stated to show how an overall Low effect is achieved (and then used as the basis for the Management Plans). For example:
    - For the effect of weed introduction and spread, what target controls levels must be maintained.

- The detail on the area of snow tussock grassland to be cleared and the area that will be rehabilitated.

48. For indigenous vegetation clearance, the area of each vegetation community that is proposed to be cleared in locations not already consented is hard to determine. For example, Table 5 does not make this distinction, nor is the information in this table used or detailed in text.
49. Clarification is needed on what specific areas are being considered for this impact assessment (i.e. those outside the existing consent) and detail provided on the exact locations and area of each vegetation community to be cleared within these, along with a full impact assessment. While it is understood that there is to be a decrease in snow tussock grassland that is consented to be cleared compared to that being proposed in the Fast Track variation, it is not clear what (if any) changes to the location of clearances has occurred. Wherever the location of clearance has changed from what is consented (regardless of vegetation community) a full impact assessment would be expected. This information is not easily discernible in the current assessment. Areas that appear to be in new locations (i.e. not consented and to be assessed) are listed below:
    - The Transmission line/corridor, substation, and BESS locations (see Table 1).
    - The extension of CZs into what were previously consented Windfarm Buffer Areas (pg. 33).
    - The re-routing of internal roads (pg. 33).
    - Potentially the SFDs. It is currently unclear if the SFDs only cover consented vegetation clearance areas or not (pg. 33).
50. A full impact assessment is needed for all locations that are proposed to be developed/disturbed, which are not currently consented. In TWP's initial response they have stated that this is what the impact assessment is addressing, however, as stated above, greater clarity is needed on what specific area(s) are being considered for this impact assessment and detail provided on the exact locations and area of each vegetation community to be cleared.
51. In the impact assessment, each vegetation community needs to be individually assessed against the appropriate significance criteria. While TWP have stated that "*significance assessments are generally undertaken at the level of the site rather than at the community level*", it is not often that every vegetation community present on a site is assessed against significance criteria as a whole, in one single table, using one significance criteria document. It is also unclear why streams are included in the terrestrial assessment. It is recommended that the significance criteria and definitions in the proposed Otago Regional Policy Statement and the Clutha District Council District Plan are used and applied against each vegetation community individually, with the location and area of each community clearly identified.
52. The full potential impact to wetlands from the proposed development is difficult to determine from the assessment, as there are no hydrological figures/maps showing flow

paths and catchment boundaries etc., relevant to the proposed direct and indirect impacts (e.g. Sections 9.2 and 9.3). Such mapping would show that the hydrological function of wetlands will be maintained (or not), where earthworks are proposed within a wetland, or within 10 m/100m. The initial response from TWP, stated that proposed culvert mapping is in the Riley Civil Assessment. However, proposed culvert mapping does not necessarily provide the needed information (e.g. hydrological flow paths and catchment boundaries) and this information should be incorporated into the wetland assessment document, as it is necessary to determine the ecological level of impact, as it is a direct impact management measure that provides evidence wetland hydrological function will be maintained.

53. For the wetland assessment in Section 9.2 and 9.3, the direct and indirect effects are directed promptly to the Management Plan. It would be expected that key details would be included in the assessment to understand the impact management and thus fully understand the concluded level of effect. For example, the mapping/figures recommended in above paragraph showing how the hydrology is to be maintained, especially for the two wetlands that will have parts completely cleared.
54. Overall, clarification is needed on what specific areas apply to this impact assessment (i.e. those outside the existing consent – where the location of clearance has changed from what is consented). For these areas, the detail on the exact locations and area of each vegetation community to be cleared is also needed, along with a more detailed impact assessment.

B.3 Consideration Of Proposals to Address Effects – Management Plans

B.3.1 Proposed Management – Within Assessment Document

55. The proposed management of effects includes:
56. The loss of 476 m^2 of wetlands is proposed to be compensated for by rehabilitation of a nearby wetland, guided by the Wetland and Aquatic Compensation Plan. This will include fencing, legal protection, and monitoring of compensation works.
57. Works proposed to occur within 100 m of wetlands will be management via a Wetland Monitoring and Management Plan.
58. A *Carex tenuiculmis* and *Epilobium chionanthum* Management Plan will manage potential effects on these species.
59. The loss of snow tussock grassland will be managed via tussock rehabilitation via a Rehabilitation Management Plan. The area of snow tussock rehabilitation is small at 1.5 ha relative to the area to be cleared (potential >11 ha). Noting that this point may be updated once clarification is received regarding matters in the Vegetation assessment above.
60. The Wetland Compensation (Section 11) proposes protection of another wetland (1.4 ha) as compensation for the loss of 476 m^2 of wetland within the proposed development.

- To ensure the proposed compensation is in perpetuity, please clarify what legal protection the wetland will have (e.g. Conservation Covenant, Clutha District Council Land Use Covenant, or QEII Covenant).
- The area of wetland proposed for compensation is possibly already protected under the NPS-FW and stock exclusion is required (if Threatened species present).
- The planned growth of exotic grassland into dense thatch on the gully walls will likely outcompete any potential natural regeneration. Native planting would be more beneficial.
- There are not enough photos or survey data of the current state of the wetland proposed for compensation to be able to compare what state the wetland is currently in. At the time of the site visit, another wetland compensation site was put forward and visited, however, the compensation wetland site was subsequently changed by the Applicant.
- There is no high-level detail with regards to the indigenous plantings proposed (number, species, etc). Again, at least high-level information is needed within the impact assessment to determine if impact management is appropriate.

61. Overall, the SLR assessment concludes that given the proposed compensation and management plans put forward that the potential ecological effects to vegetation and wetlands "will be minimal" (pg. 51). However, until the above requests for clarification and recommended adjustments are made it cannot be determined if the ecological impact will be minimal.

B.3.2 Management Plans

Wetland and Aquatic Compensation Plan

62. The following recommendations/clarifications are required:
63. Clarification is sought regarding the wording of 'net positive gain'. Given no new wetland area is being created it is not clear how a net gain and not net loss is being achieved.
64. Woody weed control is to be managed by the Woody Weed Management Plan which is not in perpetuity. Therefore the 'net positive gain' is not realised past the life of the consent (Section 8.0).
65. There is no full description of the existing wetland values in the proposed site for compensation (e.g. a plant species list and associated cover percentages). Further, only one photograph of one section of the compensation site is provided (Figure B), which limits the understanding of the existing characteristics of the compensation site.
66. The fencing specific needs to be changed from wire strands to woven/mesh netting (square grid pattern) to exclude sheep and lambs from entering the site (Section 7.0).
67. In Section 10.0:
    - There are 550 native plants proposed to be planted in a 1.4 ha area, which equates to one plant per 25 m^2. Without context of the existing native cover present, this

appears low (planting densities are generally at 1 to 2 m^2 spacings in areas to be restored.

- Inclusion of a map showing the area of *Carex tenuiculmis* would help ensure management activities do not disturb or damage the population in the Compensation area.
- Plantings need to have shelters to allow for successful weed control and survival monitoring (so can be re-found). This may need to be plastic rather than cardboard to prevent deterioration. After five years (or earlier if plant growth allows) the shelters should be removed.
- Maintenance of planting is recommended to be five, not two, years to ensure establishment of plants. Further, weeding within shelters by hand and around shelters by hand where spray is not appropriate. Further, plants will be replaced for up to five years (not only the first year) to retain a 90% survival at Year 5.

68. In Section 11.0, to ensure the proposed compensation is in perpetuity to achieve net positive outcome, please clarify what legal protection the wetland will have (e.g. Conservation Covenant, Clutha District Council Land Use Covenant, or QEII Covenant).
69. In Section 12.0, it would be expected:
    - Plant counts of each planted plant occurs to determine survival rates, not only 'walk-through assessments'.
    - Fences would be monitoring quarterly for breaches.
    - The proposed photographs would be taken every year for five years and include native plantings to visually show growth and survival.
70. In Section 13.0, for clarity, it is recommended that "until they are met" is included at the end of the last paragraph, to ensure criteria are met prior to Closure.
71. In Section 15.0, it is recommended that the review is submitted to DOC and CDC, as well as ORC, for final review.
72. Overall, the compensation provided may be overstated given the legal protections already in place for wetlands (via the NPS-FM) and the proposed compensation measures put forward.

Woody Weed Management Plan

73. The following recommendations/clarifications are required:
74. For woody weed management, Condition 29 in Section 1.0 refers to a 4-year timeframe, or a cease in colonisation. However, statements further on in the Management Plan have for the "operation" of the Wind Farm (Section 4), and the Compensation area should be in perpetuity. Clarity is sought, and the latter is recommended.
75. In Section 1.0, condition 29A, the 'i.e.' should be 'e.g.' so as not to suggest only those weed species will be controlled. Further the removal of the statements "*in excess of the status quo*" is needed to reflect appropriate weed control.

76. The Management Plan does not state the methods of control, e.g. chemical names, method detail (e.g. cut and paste with Vigilant; ensure wilding pines are cut below any green vegetation). It is noted that flexibility is needed, however, best practise for these weeds in this environment is known and should be stated for clarity and confidence in meeting the Plan's criteria and objectives.
77. In Section 2.0, it is recommended that the Objective is reworded (underlined words) to: "*The Plan's objective is to set out the procedures and methods to control and prevent establishment and spread of all woody weeds within Stage 2 of Puke Kapo Hau and describe the monitoring methods and targets to demonstrate how the conditions of consent will be met…..".*
78. Clarity is sough if only the woody weed species on the Otago Pest Management Plan are to be controlled or all woody weeds on site. The latter is recommended.
79. Figure 1 needs to show the area within which woody weeds will be controlled, as well as the woody weeds within the Compensation site.
80. Section 5.2.2 is the first specific mention that this Plan includes the Transmission Corridor, clarifying earlier the areas this Plan covers would be helpful.
81. In Section 5.2.2, please clarify the meaning of 'Register' in the second bullet point. Is there a specific register/database that is to be maintained.
82. In Section 5.3, all references to control should be adjusted eradication, given this is the Compensation Area.
83. In Section 6.0, the control criteria are stated to maintain all woody weed species to zero density – this is not consistent through the Plan in terms of all woody weeds will be managed to zero density (versus control, and in excess of status quo). Throughout the document, the fact that all woody weeds are to be eradicated to zero density needs to be clearer, along with the area(s) defined on Figure 1 to which this applies.
84. In Section 7.0, the reporting needs to include the monitoring results and the report provided to DOC.

Carex tenuiculmis and Epilobium chionanthum Management Plan

85. The following recommendations/clarifications are required:
86. In Section 1.0, the Conditions of consent need to clearly state that the Management Plan must be adhered to and not limited by accordance with the listed sub-conditions.
87. Condition 30A needs to include DOC as one of the recipients of the reports, and that these reports will include the survival rates at Year 5.
88. In Section 6.1, an updated Figure 1 is requested to fully understand the proposed monitoring for the wetland alongside the Transmission corridor, as perhaps one long and narrow strip would better monitor works relative to wetland; currently hard to determine.
89. In Section 6.1, the post works survey must occur for several times over 12 months (once 6 months past construction) to ensure any potential effects have been observed (allowing time for hydrological effects over all seasons to be observed).

90. In Section 6.2, the translocation sites should already be determined. What contingency is in place if there are none suitable.

91. In Section 8.0, the closure criteria being set at two years is a minimum, normally closer to five would be expected.

92. In Section 8.0, for the second bullet point, monitoring of plants must occur for several times over 12 months (once 6 months past construction) to ensure any potential effects have been observed (allowing time for hydrological effects over all seasons).

93. In Section 9.0, DOC needs to be added as a recipient of the report, and photos need to be included as part of the monitoring and thus reports.

Rehabilitation Management Plan

94. The following recommendations/clarifications are required:

95. In Section 3.0, the rehabilitation work needs to be carried out by personnel/contractors' experienced in native planting. Further, the level of involvement the Project Ecologist will have requires greater detail to increase confidence in successful rehabilitation.

96. Please clarify what "rehabilitated as appropriate" means in relation to decommissioning of the sediment control measure areas (Section 4.1).

97. In Section 4.2, have the areas for stockpiling of topsoil already been identified by an Ecologist (to ensure native values protected), and if so, where are these areas located.

98. The area of snow tussock rehabilitation is small at 1.5 ha relative to the area to be cleared (potentially >11 ha). Noting that this point may be updated once clarification is received regarding matters in the Vegetation assessment (as per Section 3.2.2 of this review above).

99. In Section 5.3.5, it is recommended to include that tussock must not be stored on top of each other and if any tussock die they must each be replaced by eco-sourced tussock from a native nursery.

100. In Section 5.3.6, planting of the tussock must use hands (not feet) to firm them into place.

101. Clarification is sought if any planting is occurring in the Section 6.0 Stream/Wetland Rehabilitation, and what monitoring is occurring for the two wetlands that have works occurring within them (to ensure the wetland loss does not expand further than the current expected sections of these wetlands). There is concern that hydrological function may not be retained based on the current measures stated.

102. In Section 7.1.1, the use of survival within select quadrats appears to contradict with 'measuring the survival of all transplanted tussocks". Clarification is sought. The latter is recommended.

103. In Section 8.2, >85 % native vegetation cover should be required as well as the 90% survival rate.

Wetland Monitoring and Management Plan

104. The following recommendations/clarifications are required:

105. In Section 1.0, it is assumed that this Management Plan includes wetlands within 10 m (as part of the 100 m), but confirmation is requested (as often within 10 m and 100 m is referred to separately).

106. It is recommended that the monitoring include a full inspection by foot of each wetland within 100 m and associated notes and photos recorded, as well as the proposed photo monitoring work.

107. In Section 3.2, following completion of construction, photos ever 3-4 months for a year should be completed to cover all seasons.

108. Photo monitoring points are normally staked (existing or new fence post/waratah) to ensure a similar shot is taken each time. It is recommended that this is considered early on if there are issues in matching photos from different monitoring rounds.

109. In Section 3.4 and 4.0, DOC should be added as a recipient of the report.

110. In Section 3.4, it is recommended that the reporting also includes photo series for each monitoring point, to be able to easily see any changes over time (or lack thereof).

B.4 Any Comments on Proposed Conditions/ Changes Requested to Improve These

111. Given the above requests for clarification and recommended adjustments, the proposed Conditions will not be fit for purpose, nor reduce the impact to vegetation and wetlands sufficiently, until these matters are resolved.

C. Summary

112. Overall, there are outstanding matters that need to be addressed and/or clarified in both assessments, and in Management Plans, before the project should proceed from an ecological perspective. However, these matters are not considered insurmountable. The main matters to be addressed are summarised below.

<u>Avifauna</u>

113. The lack of bird strike monitoring (and associated conditions) for two years once all additional 44 turbines are operational.

<u>Vegetation and Wetland</u>

114. Hydrological information and figures are needed for the wetlands impacted (actual and potential).

115. An updated terrestrial impact assessment is needed -

- Clarification on the specific areas being considered for this impact assessment (i.e. those outside the existing consent) and the exact locations and area of each vegetation community to be cleared within these, along with a full impact assessment.

116. Greater detail regarding the values present in the Wetland Compensation Area, and details/improvements to the protection and enhancement measures.

Management Plans

117. The matters raised with regards to the Management Plans need to be addressed, i.e. the recommendations and clarifications as detailed in Sections 2.3 and 3.3.2 above.