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6.0 ECOLOGY

Ecology Peer Review Panel

- 6.1 As soon as practicable following commencement of these consents an Ecology Peer Review Panel shall be established to exercise the functions specified in these consents. The Waikato District Council (in consultation with the Franklin District Council) shall facilitate the role and function of the Ecology Peer Review Panel by providing organisational and administrative support, the reasonable costs of which shall be borne by the consent holder.

Advisory Note:

It is intended that there will be one Ecology Peer Review Panel for the project providing advice to both Waikato District Council under these consents and to Franklin District Council under FDC resource consents L08052, L08053, L08054 and L08055. As the consent area covers two adjoining Districts, the formation of and functioning of the Ecology Peer Review Panel is to be jointly coordinated by Franklin District Council and Waikato District Council and the associated conditions are consistent as between the respective sets of District Council resource consent conditions for the project.

- 6.2 The Ecology Peer Review Panel shall consist of three independent technical experts, ~~appointed by the Chief Executive of the Waikato District Council (in consultation with the Chief Executive of the Franklin District Council),~~ with recognised ecology qualifications and experience covering bio-statistical analysis, avian and bat behaviour, and general terrestrial/vegetation ecology. The Department of Conservation shall be given the opportunity to nominate one independent technical expert for membership of the panel. The Chief Executive of the Waikato District Council (in consultation with the Chief Executive of the Franklin District Council) will consider the nomination received and appoint all three members of the Ecology Peer Review Panel. Prior to appointing any member of the panel the Waikato District Council (in consultation with the Franklin District Council) shall seek comment from the consent holder and the Department of Conservation, Waikato Regional Conservator on whether the panel as a whole will have the appropriate range of skills to undertake its functions.
- 6.3 The Ecology Peer Review Panel shall determine its own processes and procedures for conducting its meetings as it sees fit. During the first two years of the exercise of these consents the Ecology Peer Review Panel shall meet not less than once every six months, thereafter at 12 month intervals until the completion of the functions specified in condition 6.5 below. The Ecology Peer Review Panel may also meet at any time as may be specifically requested by the Waikato District Council (in consultation with the Franklin District Council).
- 6.4 The Ecology Peer Review Panel may recommend to Council that other specialists be seconded from time to time to provide appropriate input to assist in the proper execution of the panel's functions. Membership of the Ecology Peer Review Panel shall be reviewed by the Waikato District Council (in consultation with the Franklin District Council) on an as required basis. The Chief Executive of the Waikato District Council (in consultation with the Chief Executive of the Franklin District Council) may, at his or her discretion, terminate the membership of all or any of the Ecology Peer Review Panel at any time. If any member of the Ecology Peer Review Panel nominated by the Department of Conservation is unable to continue in their

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[role as member the Department of Conservation shall be given the opportunity to nominate a replacement independent expert.](#)

- 6.5 The role of the Ecology Peer Review Panel shall be to advise and assist Waikato District Council (in consultation with the Franklin District Council) in the supervision and monitoring of the exercise of ecology conditions of these consents. The specific functions of the Ecology Peer Review Panel shall include advising the Waikato District Council (and Franklin District Council as appropriate under the land use consents issued for the project in their District) on:
- a) The Construction Effects Ecology Management Plans required under condition 6.6 and 6.7 of these consents;
 - b) The Additional Pre-Construction Background Population Surveys required under conditions 6.8 of these consents;
 - c) The ~~Resident~~ [Post Commissioning](#) Bird and Bat Collision Mortality Monitoring Programme required under conditions 6.9 and 6.10 of these consents.
 - d) The [Pre Commissioning](#) Migratory Shorebird Monitoring, Risk Assessment and Conditions Review process under conditions 6.11, 6.13, 6.14 and 6.15 of these consents.
 - e) Offset mitigation proposals under condition 6.17 of these consents.

The Ecology Peer Review Panel shall also have the role in [reviewing and advising on the content of draft monitoring plans and reports as specified Conditions 6.8, 6.9 and 6.14](#) ~~population monitoring survey design as set out in Condition 6.8.~~

Ecology Management During Project Construction

- 6.6 In tandem with the Earthworks Design and Management Plans required under condition 4.2 of these consents the consent holder shall prepare and implement separate **Construction Effects Ecology Management Plans** for:

- Each wind farm cluster area (Blocks E to J);
- Improvements to Local Roads within Waikato District Council;

and shall submit the Construction Effects Ecology Management Plans to the Waikato District Council Environmental Services Group Manager, for approval no later than 3 months prior to the commencement of construction of these works. No works shall commence in the relevant wind farm cluster area or local road as applicable, until written approval has been obtained from the Council (after referral of the plan by the Council to the Ecology Peer Review Panel for review and comment) and all works within the scope of the approved plan shall be undertaken in accordance with its provisions.

- 6.7 The plans shall include, but not be limited to, details of the following matters associated with the design and implementation of construction activities:
- a) Identification of areas of indigenous habitats outside the areas approved for construction in the Earthworks Design and Management Plans required under condition 4.2 and provision for them to be taped off to clearly delineate the maximum extent of the clearance zones.

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- b) Provision that, wherever practical, indigenous flora and fauna species directly affected should be relocated to an appropriate location of suitable habitat before works begin.
- c) Provision that following clearance of indigenous vegetation within the C and H clusters planting and vegetation management is undertaken to create a dense vegetation seal at exposed edges of indigenous vegetation as soon as practicable after the completion of construction.
- d) Provision that construction work within 200 metres of a known New Zealand Falcon nest only proceeds while the nest is active, if a suitably qualified ornithologist determines the nest will not be disturbed.
- e) Provision for stock piling and rapid relocation and spreading of topsoil from each site within indigenous vegetation areas before construction to facilitate rapid re-colonisation of seeds, leaf litter, humus and soil invertebrate populations to new sites.
- f) If any nationally significant populations or protected species are discovered during invertebrate and herpetofauna surveys undertaken pursuant to Condition 6.8 a) and b) below, in the area covered by the particular plan, a relocation programme shall be included that:
 - i) provides where practicable that any trapping for relocation is carried out not less than four weeks prior to any vegetation removal and at the time of year most likely to be successful for species;
 - ii) reflects consultation with the Director General of the Department of Conservation under the provisions of the Wildlife Act on appropriate areas for release of any nationally significant populations or protected species proposed for relocation;
 - iii) includes provision for monitoring the success of any relocation and submission of a monitoring report to the Waikato District Council (with a copy to the Department of Conservation) within 1 month of monitoring being completed.
- g) Where practical, how shielding of navigation warning lights on turbines sites within or adjacent to forest areas is to be used.

Advisory Note

This may prevent insect aggradations and strike as well as reduce the potential risk of morepork strike caused by aerial hawking for insects within the rotor sweep zone.

- h) The details of a weed control strategy which shall include as a minimum:
 - i) an inventory of the baseline of weed infestation at construction areas;
 - ii) assessment of identified weeds of local, regional or national importance in accordance with Environment Waikato's Regional Pest Management Strategy 2007 -2012;

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- iii) detail of methods to be used for weed removal and/or control; and contingency plans for high level infestations resulting from the construction operation.
- i) Measures to minimise the effects and introduction of weeds that shall include, but not be limited to:
 - i) undertaking annual monitoring of site works to ensure new weed infestations are detected and removed before they have an opportunity to establish and spread: and
 - ii) post-construction weed control (e.g. targeted herbicide spraying).
- j) A description by a qualified ecologist of the ecological issues raised by the location of farm storage dams and the means by which these will be addressed.
- k) If a statistically significant number of bats are identified by any survey undertaken under Condition 6.8 b) further surveys shall be undertaken of both indigenous and exotic trees in the relevant construction area to identify bat roosts and no potential bat roosting trees identified within 100 metres of a construction site shall be felled as part of the construction works between the calendar months of September and April.

Additional Pre-Construction Background Population Surveys

- 6.8 Prior to the submission of any Construction Effects Ecology Management Plan for approval under Condition 6.6 above, the following additional background monitoring shall be undertaken by the consent holder. The consent holder shall consult the Ecology Peer Review Panel when designing these surveys and shall incorporate any requirements of the Ecology Peer Review Panel in the final survey design:

Invertebrates and herpetofauna

- a) Where earthworks are to be carried out in or within 100 metres of any areas comprising indigenous vegetation, the consent holder shall have a suitably qualified entomologist design and implement one invertebrate and one herpetofauna population survey. In designing and implementing these surveys the consent holder shall take into consideration the time of year when herpetofauna and invertebrates are most likely to be encountered, if present;

Long-tailed bats

- b) Where earthworks are to be carried out in or within 100 metres of any areas comprising indigenous vegetation, the consent holder shall have a suitably qualified person design and implement one further long-tailed bat survey. In designing and implementing this survey the consent holder shall take into consideration the time of year when bats are most likely to be encountered, if present;

Tui and Kereru

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- c) Where earthworks are to be carried out in or within 100 metres of any areas comprising indigenous vegetation, the consent holder shall have a suitably qualified person design and implement one further tui and kereru population survey. In designing and implementing this survey the consent holder shall take into consideration the time of year when kereru are most likely to be encountered, if present;

New Zealand Falcon

- d) A further New Zealand Falcon population survey shall be undertaken by a suitably qualified expert as follows:
- (i) An initial assessment of an area encompassing a 2km buffer around the wind farm footprint within the District for suitable breeding habitat. This assessment shall be extended to include the whole of the Te Tehe bush subject to landowner access being secured;
 - (ii) If suitable breeding habitat is identified, surveys for breeding falcons should be undertaken at these sites;
 - (iii) If breeding falcons are located the following actions should be undertaken:
 - The nest success of each nest located shall be monitored over a one year period utilising selected use of radio tagging if necessary regulatory approvals can be obtained;
 - The habitat-use and proportion of time each adult pair spend within the wind farm footprint area within the District shall be monitored over that same time period;
 - A report shall be prepared predicting the number of New Zealand Falcon that may strike wind turbines within the wind farm area within the District and assessing the impact at the population level and identifying ways in which any significant identified risk might be avoided, remedied or mitigated, including any specific measures proposed to be implemented by the consent holder.
 - (iv) The report prepared under condition 6.8 d) (iii) above, shall be submitted to the Waikato District Council Environmental Services Group Manager for approval acting on the advice of the Ecology Peer Review Panel.

New Zealand Dotterel

- e) A population survey of locally resident New Zealand Dotterel shall be undertaken by a suitably qualified expert over a one year period utilising radio tagging if necessary regulatory approvals can be obtained.

The surveys outlined by this condition shall be completed not later than two years from the date upon which these consents commence.

Resident-Post Commissioning Bird and Bat Collision Mortality Monitoring Programme

- 6.9 ~~For each turbine consent area, p~~Prior to commencement of operation of any turbines in any block, the consent holder shall commission a suitably qualified ecological expert who, having obtained the advice and input of the Ecology Peer

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Review Panel, shall design and supervise implementation of a resident-post commissioning bird and bat collision mortality monitoring programme as follows:

~~The collision mortality monitoring programme shall be designed, and its implementation supervised by a suitably qualified ecological expert to include the following:~~

~~a) containing P~~procedures for determining the frequency and cause of fatalities for:

▪ Non-Resident Migratory Shorebirds

- Resident Birds
- Long-Tailed Bats

The post commissioning bird and bat collision mortality monitoring programme shall comprise:

- i) A “collision carcass retrieval team” established to undertake grid searches of a statistically robust and representative sample of turbines within each turbine ~~consent area~~block for a period of two years post-commissioning of each turbine ~~cluster~~block, for 5 days a week during the morning in the months of January, August, and November.
- ii) For a period of an additional two years from the date on which the last turbine commences operation, ~~a resident~~bird and bat collision mortality monitoring is to be undertaken by the “collision carcass retrieval team” to assess any cumulative effects, using grid searches of a statistically robust and representative sample of turbines across the wind farm for 5 days a week during the morning in the months of January, August, and November.
- iii) Bird and bat carcasses found will also be retrieved during routine maintenance at each turbine, with increased surveillance by ground staff during the breeding season (spring and early summer) for the entire consent period.
- iv) Bird carcasses will be identified, aged, and where possible, cause of death determined by a professional autopsy service. Antecedent weather conditions will also be recorded.
- v) A report will be produced by a qualified expert at the end of each monitoring period under condition 6.9a)i) above, a draft of which shall be discussed with the Ecology Peer Review Panel, detailing:
 - the monitoring tasks completed
 - a record of all bird and bat fatalities, known or likely cause of death and any species, seasonal or spatial patterns, including statistical adjustment for scavenger removal rates and search efficiency.
 - the specific outcomes of the monitoring completed.
 - any proposed amendments to the post commissioning bird and bat collision mortality monitoring programme for more effective ongoing monitoring of other blocks.
- vi) A report will be produced by a qualified expert at the completion of the cumulative effects ~~resident~~bird and bat collision mortality monitoring period specified under condition 6.9a)ii) above, a draft of which shall be discussed with the Ecology Peer Review Panel, detailing:

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- a summary of all monitoring tasks completed throughout the monitoring programme undertaken under conditions 6.9~~a~~) i) and ii) as a whole
- a summary of all bird (including non-resident migratory birds) and bat fatalities, known or likely cause of death and any species, seasonal or spatial patterns, including statistical adjustment for scavenger removal rates and search efficiency
- the results of collision risk modelling assessing the risk to both resident and non-resident migratory birds of turbine strike. In the case of non resident migratory birds such modelling shall be undertaken as a check / verification of the pre commissioning risk assessment undertaken under Condition 6.14 below.
- ways in which any significant identified collision strike risks might be avoided, remedied or mitigated, including any specific measures proposed to be implemented by the consent holder.

~~b)~~ Prior to implementation, the bird and bat collision mortality monitoring programme (and any amendments proposed under condition 6.9 v)) shall be approved by Waikato District Council (in consultation with the Franklin District Council for wind turbine clusters E and F), after referral of the programme by the Council to the Ecology Peer Review Panel for review and comment.

6.10 Following and within two months of receipt of the cumulative effects resident bird and bat collision mortality monitoring report submitted under Condition 6.9~~a~~)vi) above, and after considering ~~ultation~~ the advice of ~~with~~ the Ecology Peer Review Panel as to any other recommendations it may have, the Waikato District Council may either:

a) approve any specific measures proposed by the consent holder to be implemented under Condition 6.9 vi), in which case the consent holder shall implement the approved measures accordingly; or

b) commence a review of conditions under section 128 (1) of the Resource Management Act 1991, for the following purposes:

- To require additional cumulative bird and bat collision mortality monitoring to be undertaken if considered necessary by the Ecology Peer Review Panel.

- To put in place any additional measures recommended by the Ecology Peer Review Panel (i.e. in addition to the offset mitigation already provided under Condition 6.17 c)) to ensure that any significant adverse effects of the exercise of the consents on ~~resident~~ bird and ~~long-tailed~~ bat populations are appropriately avoided, remedied or mitigated.

Advisory Note:

The Council will use its best endeavours to facilitate resolution of any review commenced under this condition in accordance with its obligations under Section 21 of the Resource Management Act 1991.

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Pre Commissioning Migratory Shorebird Monitoring Risk Assessment and Conditions Review

6.11 The consent holder shall engage a qualified ornithologist to coordinate and complete a baseline avifauna monitoring study of migration routes and flight rates adjacent to and through the wind farm of migratory shorebirds, including specifically but not limited to South Island pied oyster catchers and wrybill, covering four migration seasons (two north-south and two south-north) prior to commencement of any electricity production. The baseline survey shall be conducted generally in accordance with the Kessels and Associates document entitled "Contact Wind Limited Hauauru ma raki – Waikato Wind Farm; Methodology Report for the Pre-Production Monitoring of Migratory Shorebirds – Stage 2 December [2008](#). The data collected shall include, but not be limited to:

- a) The number of flocks of a given species observed flying through and adjacent to the wind farm site for a migratory period reflecting both day and night time activity;
- b) An estimation of the number of individuals contained within each flock;
- c) Estimated flock height above the ground.

6.12 For the avoidance of doubt the south-north survey undertaken in January and February 2009 shall count as the first of the four migration season surveys required under condition 6.11 above.

6.13 As soon as practicable after its appointment, the Ecology Peer Review Panel shall review the Kessels and Associates document entitled "Contact Wind Limited Hauauru ma raki – Waikato Wind Farm; Methodology Report for the Pre-Production Monitoring of Migratory Shorebirds – Stage 2, December 2008, and all survey reports and results produced up to the date of the review and may, after consultation with the consent holder and Department of Conservation, recommend to the Waikato District Council any amendments to the monitoring methodology for the remaining survey periods. [In the event that amendments are recommended by the Ecology Peer Review Panel to the monitoring methodology, the consent holder shall either:](#)

- a) [as soon possible but no more than four \(4\) weeks from the Ecology Peer Review Panel making that recommendation submit a revised Methodology Report including the recommended alterations for approval by the Waikato District Council Environmental Services Group Manager. Once approved the revised Methodology Report shall have effect immediately; or](#)
- b) [within that same four \(4\) week period provide to the Waikato District Council Environmental Services Group Manager its written reasons for declining to follow the recommendations of the Ecology Peer Review Panel.](#)

[Following and within two months of receipt of a notice from the consent holder under Condition 6.13 b\) the Waikato District Council may commence a review of condition 6.11 under section 128 \(1\) of the Resource Management Act 1991 with the purpose of requiring a change to the monitoring methodology outlined in the Kessels and Associates document entitled "Contact Wind Limited Hauauru ma raki – Waikato Wind Farm; Methodology Report for the Pre-Production Monitoring of Migratory Shorebirds – Stage 2 December 2008.](#)

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6.14 Following completion of the baseline avifauna monitoring survey prepared under condition 6.11 above and prior to any electricity production, the consent holder shall submit a report, [a draft of which shall be discussed with the Ecology Peer Review Panel](#), prepared by a qualified ornithologist:

- a) predicting the number of migratory shorebirds that may strike wind turbines within the wind farm area and assessing the impact at the species population level [utilising recognised modelling and assessment methodologies](#).
- b) reporting to Waikato District Council on ways in which any significant identified risk might be avoided, remedied or mitigated, including any specific measures proposed to be implemented by the consent holder.

6.15 Following and within two months of receipt of the risk assessment report prepared under condition 6.14 above, and after ~~consultation with~~ [siders the advice of](#) the Ecology Peer Review Panel [as to any other recommendations it may have](#), the Waikato District Council may [either](#):

a) [approve any measures proposed by the consent holder to be implemented under Condition 6.14 b\), in which case the consent holder shall implement the approved measures accordingly; or](#)

b) [commence a review of conditions under section 128 \(1\) of the Resource Management Act 1991, for the following purpose:](#)

- [To require additional monitoring of migration routes and flight rates adjacent to and through the wind farm of migratory shorebirds if considered necessary by the Ecology Peer Review Panel.](#)
- To put in place [any additional measures not covered in the report prepared under Condition 6.14 \(i.e. in addition to the offset mitigation already provided under Condition 6.17 c\)\)](#) to ensure that any significant adverse effects of the exercise of the consents on migratory shorebird species are appropriately avoided, remedied or mitigated.

Advisory Note:

The Council will use its best endeavours to facilitate resolution of any review commenced under this condition in accordance with its obligations under Section 21 of the Resource Management Act 1991.

6.16 No electricity production generated from the turbine block areas potentially affected by a review of conditions under condition 6.15 above shall commence until completion of that review.

Offset Mitigation for Ecological Effects

6.17 Prior to construction commencing on any stage of the wind farm the consent holder shall develop and submit to the Waikato District Council Environmental Services Group Manager for approval (after Council obtaining advice from the Ecology Peer Review Panel) an **Ecology Offset Mitigation Plan**. The purpose of the plan shall be to document the steps and timeframes the consent holder will take to implement

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and monitor the effectiveness of appropriate offset mitigation in recognition of the adverse effects the project will have within Waikato District as a result of :

- Indigenous bush clearance and associated habitat loss;
- Works potentially affecting wetland habitats;
- Potential resident and migratory bird effects.

The appropriate level of offset ecological mitigation shall take into account adverse effects within both the Waikato and the Franklin District of those parts of the wind farm and the transmission facilities connecting the wind farm to the national grid located in either District and shall include a minimum of:

- a) Retirement, restoration and ongoing legal protection by covenant or like mechanism of a minimum of 56.4 hectares of currently degraded (e.g. stock-grazed) re-emergent native forest. The area(s) chosen for retirement and restoration shall be assessed by a suitably qualified ecologist as having the potential to revert to bush of similar type and quality as that cleared for the HMR project. As far as practicable the offset mitigation area(s) shall aim to comprise land contiguous to other existing native forest rather than separate small lots. To the extent that the reversion of the offset mitigation area to native forest requires active management, the following additional costs and other commitments shall be borne by the consent holder:
 - i) Fencing off the offset mitigation area(s);
 - ii) Not less than \$20,000 on an additional pest control programme and up to \$5,000 per annum thereafter on an as-required basis until the native vegetation has been established;
 - iii) Up to \$200,000 for the planting of native species in the offset mitigation area(s).
- b) Facilitation of a protective covenant and implementation of a weed and pest control programme in a minimum of 5 hectares of Pungapunga wetland (or wetland area of similar value for Australasian bittern).
- c) \$17,000 per annum toward native species conservation programmes focused on the protection of resident and migratory birds with the intent that separate programmes are provided for each.

For the avoidance of doubt:

- offset mitigation shall be generally undertaken in either the Raglan or Meremere Ecological District (with the exception of assistance to migratory wader conservation programmes) and may be located outside Waikato District;
- the native species programmes may be undertaken through direct funding to the Department of Conservation, or through the provision of funding to a recognised conservation body, approved by the Council on advice of the Ecology Peer Review Panel.

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The **Ecology Offset Mitigation Plan** is designed to be a single plan covering the offset mitigation approach to the project works relating to matters within the jurisdiction of Waikato District Council, Franklin District Council and Waikato District Council. However, only the specific District Council matters have been identified in these consent conditions. Those components of the **Ecology Offset Mitigation Plan** specific to the Waikato Regional Council jurisdiction are included in WRC consents.

It is intended that the provision of funds under condition 6.17 c) represents a base level of offset mitigation funding which may be increased following completion of the reporting under conditions 6.9 vi and 6.14 b) and any Section 128 review under condition 6.10, and 6.15 above.

In carrying out any activities under these resource consents, the consent holder shall be aware that where applicable, approval from the Department of Conservation under the Wildlife Act 1953 will be required.