

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER OF a review of resource consent conditions under
128 of the Resource Management Act 1991

BY PALMERSTON NORTH CITY COUNCIL

DECISION OF HEARING COMMISSIONERS

Mr Paul Rogers (Chair) and Ms Gina Sweetman and Dr Kym Burgemeister

**ON A REVIEW OF RESOURCE CONSENT CONDITIONS RELATING TO THE TE RERE HAU
WIND FARM OPERATED BY NEW ZEALAND WINDFARMS LIMITED**

27 NOVEMBER 2017

INTRODUCTION

- 1 This is the report and decision of Independent Hearing Commissioners Mr Paul Rogers (Chair), Ms Gina Sweetman and Dr Kym Burgemeister. We were appointed by the Palmerston North City Council (PNCC) to hear and decide a review of resource consent conditions relating to the Te Rere Hau wind farm operated by New Zealand Windfarms New Zealand (NZWF).
- 2 PNCC has the power under section 34A of the Resource Management Act 1991 (the RMA) to delegate its powers and functions under the RMA to a hearings commissioner, including giving authority to a person or groups of persons to conduct a hearing on a review of a resource consent. In delegating this power, PNCC is required to ensure that all persons in the group are accredited unless there are exceptional circumstances that do not provide for the time or opportunity to ensure all persons in the group are accredited¹.
- 3 Dr Kym Burgemeister is not accredited for the purpose of the RMA. Dr Kym Burgemeister was appointed by PNCC pursuant to section 39B(3)(b) of the RMA on the basis that exceptional circumstances applied. Those exceptional circumstances are that there were no suitably qualified accredited hearing commissioners in New Zealand that were not in some way already connected to the Te Rere Hau Windfarm, and therefore subject to a potential conflict of interest.

CONDITIONS SUBJECT TO REVIEW

- 4 This section 128 RMA review specifically considers the noise management conditions imposed by way of the Environment Court consent order dated 30 May 2005. To assist those reading this decision, the following table sets out the conditions of that consent order that are subject to this review, and the conditions as amended by our decision. A full copy of the conditions is included as Appendix A.

2005 Condition	Purpose	2017 Condition	Purpose
4	WTG sound levels	4	Noise limits applying to rural residential overlay, including

¹ Section 39B(3)(b) RMA

			time limit
5	<p>How sound levels are to be measured; includes reference to:</p> <ul style="list-style-type: none"> • Background sound levels • NZS6808:1999 • Notional boundary of residences • Wind speed and directions • Post installation compliance testing • Tonal corrections • Testing parameters • Process for non-compliance 	5	WTG noise levels
		5A	Operational requirements for T103, T104 and T088
		5B	Compliance and curtailment report for T103, T104 and T088
		5C	Specific curtailment requirements for T103, T104 and T088 (dates and times)
		6	Background noise testing not to be influenced by noise from Te Rere Hau Extension or any other wind farm.
		Windfarm noise assessment and measurement	
		7 (incl. 7.1 to 7.5)	<p>How noise is to be measured and assessed, including:</p> <ul style="list-style-type: none"> • Reference to NZS68086:2010 • Speeds and heights • Assessment time period • Wind sectors • Data points and windfarm operation • Number of data points
		8 (incl. 8.1 – 8.4)	<p>Procedure for assessing wind direction sector, including:</p> <ul style="list-style-type: none"> • How penalties are applied • Total penalty • Amplitude modulation penalties • Separate assessments when penalties apply at residences

		9	All noise data to referenced to specific wind speed and directions, as measured at meteorological mast
6	Post-installation testing requirements – timeframe, operating	Post amendment noise compliance assessment	
		10 (incl. 10.1 – 10.7)	<p>Compliance report for existing turbines within 12 months, including:</p> <ul style="list-style-type: none"> • Locations for testing • Alternative locations • Objective tonality and amplitude modulation assessments • Near field tonality assessments • Conclusion as to compliance • Identification of mitigation measures and their implementation <p>Includes advice note that no existing wind farm has to be turned off when background sound measurement required.</p>
		11 (incl. 11.1 – 11.6)	<p>Independent review of compliance report, including:</p> <ul style="list-style-type: none"> • Correct noise levels used • Evidence background noise not influenced by windfarms • Has sufficient data • Includes objective assessment of SACs • Includes wind/time conditions of any SACs • Provide details of

			curtailment, as required
		Unconstructed turbine sites	
		12 (incl. 12.1 - 12.8)	Includes: <ul style="list-style-type: none"> • Must have provided compliance report for existing turbines • Report demonstrating predicted noise levels will comply • Acoustic assessment including predicted noise levels, assumed power levels, why new turbines would not produce SACs • Sound power levels must not exceed what stated in acoustic assessment • Pre-commissioning compliance report • Compliance monitoring once installed • Post commissioning compliance monitoring report (independent peer review required) • Staging
		Continuous noise monitoring	
		13.1 and	Installation of noise

		13.2	monitoring terminal (NMT), to operate for at least 5 years, storage of data
		General management and reporting	
		14 and 15	Maintain turbines in good condition; advise Council if any material change to noise emissions as a result of wear and tear.
		Contact and compliance procedure	
		16 and 16A	Information website with contact details and noise reports Publicise website
		16AA	Complaint management plan (CMP) to be maintained and implemented, including: <ul style="list-style-type: none"> • Contact details for windfarm and council • Complaints register including procedures for recording and responding and refining and improving CMP • To be submitted to council within 3 months, to be certified and provided to Council when updated
		17 and 18	Complaints register to be maintained and provided to Council upon request
		19 (incl. 19.1 - 19.5)	Community liaison group (CLG), including: <ul style="list-style-type: none"> • Membership • When to be set up • Frequency and duration

			<ul style="list-style-type: none"> • Purpose • Provision of reports • Administration support
		Annual noise monitoring report	
		20 (incl. 20.1 – 20.1)	Submit report annually, including: <ul style="list-style-type: none"> • Data to demonstrate compliance with conditions 4, 5 and 5A – 5C • All alterations made, confirmed by acoustic consultant • Annual summary of complaints register • Minutes of any CLG meeting • Analysis of noise monitoring undertaken during the year • Feedback from CLG on draft report • Independent review • Collection of raw data from NMT and provision to Council
		Review	
		21	Council may review conditions under s128 and s129
		Costs	
		44	Consent holder to pay actual and reasonable costs

5 There are a number of other important issues relating to the review conditions raised by submitters. We address them within this decision.

PARTIES

Consent Holder

New Zealand Windfarms Limited

Consent Authority

Palmerston North City Council

Submitters in support:

Mr Callum Wilson & Ms Jena Ivamy

Ms Lorraine Tremain

Dr Lee Huffman & Mr Graham Devey *

Dr Clel Wallace and Ms Nicky Banks-Wallace *

Mr Jeffrey & Mrs Toni Irvin

Submitters in opposition:

Mr Maurice Alley

Mr Malcolm Alley

Ms Dorothy Alley

Mr Joseph Poff *

Mr Lawrence Hill *

Neutral Submitters:

Mr Bill Harding *

Tararua Wind Power Limited *

(Those submitters with an asterix beside their name indicated their wish to be heard, although we note that Tararua Wind Power Limited Dr Clel Wallace & Ms Nicky Banks-Wallace ultimately did not present at the hearing).

Section 42A reporting officers

Mr Craig Auckram

Mr Nigel Lloyd, Acoustical Consultant (Acousafe Consulting & Engineering Limited)

Mr John Maassen, Barrister and Solicitor (CR Law)

Mr Tom Evans, Acoustical Consultant (Resonate Consulting Pty Limited trading as Resonate Acoustics)

ABBREVIATIONS

AM – amplitude modulation

HA – high amenity

NPSREG – The National Policy Statement on Renewable Electricity Generation 2011

NZWF – New Zealand Windfarms Limited

One Plan – The Manawatu-Wanganui Regional Council One Plan

ODP – Operative Palmerston North City District Plan

PC15 – Operative Palmerston North City District Plan as amended by the Decisions
Version of Plan Change 15A-G

PNCC – Palmerston North City Council

RMA – Resource Management Act 1991

SACs – special audible characteristics

TRH – Te Rere Hau

TWPL – Tararua Wind Power Limited

WTGs - wind turbine generators

BACKGROUND AND PROCEDURAL MATTERS

- 6 On 2 May 2017, PNCC issued a Notice of Review (“**NoR**”) of the conditions of consent for the Te Rere Hau wind farm (“**Windfarm**”) pursuant to section 128(1)(c) RMA.
- 7 PNCC issued the NoR because it considered there were material inaccuracies in the statement of acoustic performance of the WTGs for the Windfarm in the Assessment of Environmental Effects and that the acoustic effects are far greater on the surrounding residential area than was predicted. PNCC proposed modifications to the existing conditions of consent issued by the Environment Court by its consent order dated 30 May 2005.
- 8 In preparation for the hearing, in addition to the section 42A reports, we received from PNCC an extensive bundle of documents made up of 10 parts. In summary those 10 parts included Court decisions concerning the operation of the Windfarm, technical reports, copies of original consent hearing evidence, copies of resident affidavits utilised in the Court proceedings, maps, evidence utilised in court proceedings concerning SACs, the planning instruments and neighbouring consent conditions.
- 9 We do need to record, so as to help understand our decision, a good deal of dialogue both informal and formal has taken place between the hearing participants. Caucusing between experts occurred before, during and after the hearing. Given the nature of the application before us, that dialogue and caucusing focused on conditions, and constructive progress was made.
- 10 At conclusion of the formal hearing both PNCC and NZWF signalled to us the intention to continue with dialogue between themselves and submitters in an endeavour to reach either agreement on appropriate conditions or at least clearly identify areas of contention. We issued various minutes facilitating further exchanges between the participants. These post-hearing steps resulted in the Panel receiving a joint memorandum dated 31 October 2017 from PNCC and NZWF. We detail these steps later in this decision.
- 11 All of these conversations held before, during and after the hearing were of significant assistance to us because we could better understand the competing positions on conditions and the reasons behind those positions. It has also

resulted in a set of conditions largely agreed between PNCC and NZWF and has reduced the number of outstanding issues.

- 12 The structure of this decision is chronological following the sequence of events as they occurred. We considered this preferable to structuring our decision around the joint memorandum dated 31 October 2017. This is because we thought it important for readers of the decision to be able to follow the sequence of events as they occurred. Adopting this approach enables us to identify the issues and then track parties' responses to those issues as they evolved.

Scope

- 13 Our decision is focused on the current resource consent conditions subject to review under the NoR. Those conditions are, in particular:
- (a) Amended condition 1 to clarify the general condition does not apply to noise emissions to WTGs and does not apply to noise emissions and effects identified in the Noise Impact Assessment report of Malcolm Hunt & Associates attached to the Assessment of Environmental Effects;
 - (b) Delete conditions 4, 5 and 6 and replace them with a new suite of conditions numbered 4-21;
 - (c) Amend the heading before condition 30; and
 - (d) Add condition 31;
 - (e) Add condition 45; and
 - (f) Consequential renumbering.

Key issues arising from NoR

- 14 The key issues arising from the NoR were:
- (a) The application for resource consent, in particular, the statement of acoustic performances forming part of that application, contained material inaccuracies; and
 - (b) The acoustic effects of the Windfarm are far greater on the surrounding residential environment than was predicted within the original application for resource consent; and

- (c) An amended set of conditions was required to ensure:
 - (i) Noise limits and penalties for SACs can be imposed so that noise emissions from the Windfarm do not unreasonably detract from the amenities of the neighbouring properties; and
 - (ii) Subject to 14(c)(i) above, the most appropriate New Zealand noise standards relating to wind farm noise measurement and monitoring is applied/imposed.

Hearing process

- 15 The hearing commenced on Tuesday 12 September 2017 and evidence was heard over the course of three days.
- 16 We undertook a site visit on Monday 11 September 2017, before the hearing commenced, viewing the consent site and the surrounding area. On our site visit we were driven around the Windfarm site and spent time in the site operations building. We used maps and plans to assist us in identifying numbered wind turbines and the location of residences near the Windfarm. At the time of our site visit, wind levels were relatively low and the WTGs across the site were generally not operating.
- 17 During the hearing we re-visited the northern end of Ridgeview Road to view and listen to WTGs taking into account as best we could the prevailing wind direction and speed. We were advised by NZWF that the prevailing wind at the time of our second site visit was a west-north-westerly, with wind speeds ranging from 8.9–12.2 m/s with the 10-minute average speed ranging from 10.3–10.9 m/s.
- 18 Prior to the hearing, separate reports were produced pursuant to section 42A RMA by PNCC reporting officers, Mr John Maassen, Solicitor (CR Law), Mr Craig Auckram, Senior Planner (PNCC), Mr Tom Evans, Acoustical Consultant (Resonate Acoustics), and Mr Nigel Lloyd, Acoustical Engineer (Acousafe Consulting & Engineering Limited). Collectively we refer to these reports as the "Section 42A Reports".
- 19 The Section 42A Reports provided an analysis of the matters that required consideration and recommended appropriate conditions of consent to address these matters. The Section 42A Reports are discussed further at paragraph 79 of this decision.

- 20 We adjourned the hearing on Thursday 14 September 2017 to enable the parties to collaborate on the outstanding issues and propose suitable conditions to address those issues. We detail these actions a little later in this decision.
- 21 We would like to take this opportunity to acknowledge and thank NZWF, PNCC, the submitters and all experts for their constructive and collaborative approach prior to, during and post hearing. The ongoing caucusing between the parties has enabled us to significantly narrow the outstanding issues and has resulted in a set of conditions largely being agreed between PNCC and NZWF. This has assisted us in writing our decision. We appreciate that at the close of the hearing not all parties were in support of the set of conditions agreed between PNCC and NZWF, including disagreement between PNCC and NZWF themselves over three of the conditions.
- 22 After receiving and considering the joint memorandum of counsel for NZWF and PNCC dated 31 October 2017, we concluded that we have received all necessary information for us to proceed with our deliberations and issue a decision. Accordingly, we closed the hearing effective as from 6 November 2017.

THE SITE AND SURROUNDS

- 23 To provide some context for this decision we provide a short description of the site and its surrounds.
- 24 The Windfarm site is located at North Range Road, Palmerston North in a section of the Tararua Ranges. The site encompasses approximately 1.3 km of the Tararua Ranges which extend for roughly 12.5 km and is bordered by the Manawatu Gorge in the north-east and Pahiatua Aokautere Road (the Pahiatua Track) in the south-west. Not all consented WTGs have been constructed as the consent provides for a staged construction of WTGs. We return to this fact later as this is an important issue for conditions. The Windfarm is approximately 11 km from the centre of Palmerston North City in a south-easterly direction.
- 25 The topography of the site consists of many undulations in the form of gullies, ridges and terraces that are typical of this area and the foothills of the Tararua Ranges.
- 26 Despite the strong wind run in this area, there is limited residential development near or in the locality of the Windfarm. The Windfarm is located slightly further than one kilometre from the nearest residences which are mainly located to the

west and south-west of the site. These residences are generally located in a rural or rural-residential zone.

SHORT REVIEW HISTORY

- 27 The Windfarm has had an active and drawn-out resource consent history. The process has involved proceedings in both the Environment Court and Court of Appeal, input from numerous technical experts, extensive collaboration between PNCC and NZWF, and consultation with submitters. Many of these matters were covered in the documents included in the PNCC bundle.
- 28 Resource consent for the Windfarm was granted to NZWF in 2005. By 2010, stages 1-3 of the Windfarm had been constructed with Stage 4 yet to be completed. Also by 2010, PNCC had begun to receive complaints from nearby residences in relation to the operation of the Windfarm.
- 29 A preliminary assessment indicated that the Windfarm was not operating in accordance with the required standards and that the consent conditions for the Windfarm were not fit for purpose. PNCC and NZWF entered into a Memorandum of Understanding dated 17 August 2016 (**MOU**) which enabled collaboration between the parties in relation to the basis and purpose of a review.
- 30 PNCC initiated an application, on or about 11 October 2010 for a declaration pursuant to Part 12 RMA seeking a determination that:
- (a) Information contained in the NZWF application for resource consent for the Windfarm was materially inaccurate; and
 - (b) Condition one of the resource consent was breached by reason of sound power levels well in excess of those certified in the Noise Impact Assessment Report.
- 31 The Environment Court granted the declaration on the 4 July 2012 and held that:
- (a) The information supplied by NZWF within its application for resource consent was materially inaccurate – in particular, the information supplied in the Noise Impact Assessment Report, forming part of the Assessment of Environmental Effects; and
 - (b) As a result a revised set of conditions were required in order for NZWF to continue operation of the Windfarm.

- 32 NZWF appealed the declaration to the Court of Appeal. That Court, by way of decision dated 9 December 2014, did not uphold the second declaration of the Environment Court (refer 31(b) above). However, PNCC considered it had sufficient power to review the conditions of consent under section 128(1)(c) RMA to address noise effects.
- 33 Another issue that arose was the uncertainty in relation to SACs, in particular, the extent to which SACs were present and whether the resource consent conditions were appropriate to address this. On the 21 April 2015, the Environment Court issued a second set of declarations holding that the WTGs routinely emit SACs, including tonality and the relevant condition within the consent dealing with the assessment of that noise was unenforceable because it did not have reasonable and certain meaning.
- 34 Despite the Court of Appeal's findings in respect of the first declaration, the second declarations granted by the Environment Court provided PNCC with the confirmation that the consent conditions for the Windfarm were not appropriate and a revised set of conditions were necessary.
- 35 On that basis, PNCC issued a notice of review on 2 May 2017 pursuant to section 129 RMA which was duly notified on 4 May 2017 and attracted submissions culminating in this hearing.

Original Submissions

- 36 Overall, 12 submissions were received. Six submissions were in support of the review, four were in opposition and two neither opposed nor supported.
- 37 Commonly identified reasons for supporting the review include (in no particular order):
- (a) There is insufficient background noise at many of the surrounding residences to mask the noise emitted from the WTGs;
 - (b) The noise emitted from the WTGs is unnatural and intrusive and impacts on recreation and amenity;
 - (c) There were inconsistencies with the actual and predicted noise results within the initial application for resource consent;
 - (d) The conditions within the resource consent are not fit for purpose.

- 38 Commonly identified reasons for opposing the review (in no particular order):
- (a) The noise effects caused by the WTGs are minimal;
 - (b) The review is a waste of tax-payer money;
 - (c) Wind farms are a form of renewable energy and renewable energy technology is required to avoid the consequences of climate change.

39 Summaries of each of the submissions are provided below.

Mr Bill Harding

40 Mr Harding resides in Taupo and identifies in his submission that he is not directly affected by the effects of the subject matter of the review. We note that Mr Harding submitted twice - the first submission on 18 May 2017, and the second submission on 9 June 2017 after the 2 June 2017 closing date. PNCC approved the receipt of second late submission under delegated authority on 17 August 2017. We therefore consider the first and second submissions accordingly.

41 The key matters raised in Mr Harding's submissions are as follows:

- (a) this new application is part of a non-conforming noise level review;
- (b) the Windfarm has had non-conforming energy outputs since 2004;
- (c) the Windfarm cannot provide 275 GW/year from the 76.5 MW name plated rated motors and has never provided any useful electricity;
- (d) the original consents were given under a false flag, with the Environment Court and PNCC not applying due diligence to question the output statuses;
- (e) the Windfarm is selling a form of energy that appliances are not designed to operate legally within;
- (f) the energy/electricity supplied to date has solely consisted of harmonic power; the New Zealand system operates its network at a frequency at 50Hz and New Zealand electrical machinery and appliances are designed to operate using sinusoidal wave-shaped energy ("**Sine Wave**");

- (g) the Windfarm produces dirty energy, operating in an asynchronous mode, not the normal synchronous mode, precluding them being called electricity generators;
- (h) Seeks that NZWF assure PNCC and confirm that all their revenue smart meters are fitted with the sensing circuit a 50Hz only bandpass width active filter – this should apply to every newly replaced revenue smart meter in the region and the world;
- (i) that NZWF and the New Zealand Wind Energy Association have falsely used graphs to imply that they supply a certain percentage of New Zealand’s total generation;
- (j) synchronous generation is legal; asynchronous harmonics are illegal;
- (k) it is technically and totally impossible for any consumer in the world to be supplied with legal useable 50/60 Hz power from any wind farm, because they use asynchronous generators and not the synchronous frequency supplied by the National Grid;
- (l) that NZWF has not and never will supply Palmerston North consumers with the legal 50 Hz frequency energy that they were consented for in 2004; and
- (m) that NZWF’s license to operate should be revoked.

42 In his submission, Mr Harding also noted the following:

- (a) he would not like to see Palmerston North ratepayers shouldering the burden of decommissioning of the Windfarm;
- (b) he questions whether NZWF has an authorisation from the Department of Conservation for bird strike and potential fatalities;
- (c) if any of the turbine motor connections were connected to a house switchboard on the Windfarm, one could not boil a jug of water as there is no form of voltage excitation; and
- (d) none of the 530,000 WTGs in the world have ever produced useable legal electricity.

Tararua Wind Power Limited

43 TWPL submitted a neutral submission on the application. The Tararua Wind Farm is located to the north-east of the Windfarm.

44 The key matter raised in the TWPL submission is the potential impact of the review on the existing operations of the Tararua Wind Farm, in particular the review documentation suggests that further background testing may affect the operation of the Tararua Wind Farm.

Mr Maurice Alley

45 Mr Alley opposed the review in its entirety. His property is at 514 Pahiatua Track, Palmerston North.

46 Mr Alley seeks that the review be cancelled, on the grounds that:

- (a) he cannot hear any noise from the Windfarm 1.5 kilometres away;
- (b) there is much scientific data showing perceived effects are nocebic;
- (c) the review is a complete waste of time; and
- (d) PNCC is a victim of hysterical turbo-phobics.

Mr Malcolm Alley

47 Mr Alley opposed the review in its entirety. His property is at 45 Atawhai Road, Palmerston North, approximately 11 km south-west of the Windfarm.

48 Mr Alley seeks that the review be cancelled, on the grounds that:

- (a) the era for renewable energy is on;
- (b) the development is important for climate change mitigation and should not be demoted;
- (c) there are serious consequences from climate change if not mitigated by actions such as the Windfarm; and
- (d) the money be better spent educating the public on climate change.

Ms Dorothy Alley

- 49 Ms Alley opposed the review. She lives at 45 Atawhai Road, Fitzherbert, Palmerston North, which is approximately 7.5 kilometres from the Windfarm. She states that she cannot hear any wind turbine noise at one kilometre from the WTGs, and does not suffer from any health issues related to Windfarm noise. She therefore felt that the review was unnecessary.
- 50 Ms Alley also noted in her submission that she wears hearing aids, and so would not be expected to be particularly sensitive to noise.

Mr Jeffrey & Mrs Toni Irvin

- 51 The Irvins support the review and ultimately sought that the current resource consent be revoked. They live at 38 Ridgeview Road, Palmerston North, which is to the north-west of the Windfarm. The Irvins were concerned that:
- (a) too much emphasis was being placed on wind directions, rather than wind speeds at the Windfarm site and at the residence; and
 - (b) there was reliance on background noise at their property to cover the noise from the Windfarm.
- 52 As well as seeking that the consent be revoked, the Irvins also sought:
- (a) for NZWF to apply for a new consent using NZS6808:2010; and
 - (b) that the current 'Dynamic Curtailment Regime' be written into the consent, actioned in real time and include a known level of conditions where shut down commences and that it is quantifiable.

Mr Joseph Poff

- 53 Mr Poff opposed the review and sought that the review process stop immediately. He lives at 658 Pahiatua Track approximately 1.3 kilometres to the south-west of the Windfarm. Mr Poff's position was that sound measurements at complaint locations demonstrate compliance with the existing consent conditions, and that noise at his property is 'minimal'.
- 54 He also stated his support of renewable energy to mitigate climate change, and the investment and local jobs that the local wind farm industry supports. He also stated that he knows many people who live happily with far worse noise effects.

He was also concerned that PNCC was actively driving away wind farm investment.

Mr Callum Wilson & Ms Jena Ivamy

- 55 Mr Wilson and Ms Ivamy both support the review and the proposed amended conditions in principle. They live at 23 Ridgeview Road, to the north-west of the Windfarm. They state in their submission that while they have not previously submitted a complaint in respect of the Windfarm noise, they do find the noise emissions from the Windfarm disrupts their amenity on their property 'at times'.
- 56 They noted that the disturbing Windfarm noise occurs in specific wind conditions—particularly in low ground-level wind speeds (i.e. high shear). They also noted that the Windfarm sound has characteristics that they find unacceptably intrusive, which they describe as an 'approaching mechanical sound'.
- 57 They appreciated the improved consultation efforts undertaken recently by NZWF, but remain in favour of strict consent conditions. They also outlined their support of residents who oppose the unabated operation of the Windfarm.

Mr Lawrence Hill

- 58 Mr Lawrence Hill is a submitter based in Gebbies Pass, Christchurch. Although Mr Hill is not directly affected by the Windfarm, he faces similar noise issues with a turbine located close to his home (**Gebbies Pass turbine**), to those raised in relation to the Windfarm.
- 59 Mr Hill contended that the Gebbies Pass turbine is the same type as those operating at the Windfarm. Within his submission, Mr Hill explained that the information obtained for the Gebbies Pass turbine was later used for the original application of resource consent for the Windfarm. Mr Hill advised that much of this information has been discredited by the courts.
- 60 Mr Hill highlighted a number of issues with the Gebbies Pass turbine, in particular:
- (a) the noise emitted from the turbine is very intrusive;
 - (b) the gearbox and blades have not always withstood rapid changes in wind, resulting in a shutdown algorithm change which in turn caused further noise issues;

- (c) the wind turbine noise data can be deliberately manipulated to show compliance; and
- (d) SACs exist and these must be penalised, in particular, the full penalties under NZS6808:2010 should be applied, that is a 6 dB penalty should be included within consent conditions.

61 Mr Hill contends that the noise emitted from turbines can be detrimental to public health, specifically effecting sleep hygiene which has a myriad of consequential health effects. It is Mr Hill's view that AM noise from turbines in particular should not be permitted to enter homes and cause disruption to sleep or health.

62 Mr Hill considers that PNCC has a duty of care to put in place noise conditions addressing and responding to complaints by neighbouring residents in relation to past and future noise events.

63 Additionally, Mr Hill stated that such conditions must be certain and be able to be verified by an independent agency and appropriately qualified persons.

64 Finally, Mr Hill was of the view that PNCC should establish a complaints management system alongside automated 'breach software'. Mr Hill considered this should be available 24/7 and should require NZWF to take immediate remedial action on a complaint to mitigate the effects of noise pollution.

Ms Lorraine Tremain

65 Ms Lorraine Tremain lives approximately two kilometres from the Windfarm at 406 Pahiatua Track, Palmerston North and supported the review and the 'Particulars' put forward by PNCC in the NoR.

66 Ms Tremain explained within her submission that she has experienced adverse noise effects from the Windfarm since commencement of its operation. Ms Tremain was particularly concerned about the adverse noise effects she experiences at her property when there is little, to no wind at her home, yet there is sufficient wind to activate the WTGs.

67 Ms Tremain contended that distance from the Windfarm is not a reliable predictor of declining noise and in fact, the noise emitted from the WTGs can be significantly louder at a further distance.

68 Ms Tremain notes that measurements taken at her property indicate there are very low background noise levels. The lack of background noise at her property affects the masking of any noise emitted from the WTGs.

Dr Lee Huffman and Mr Graham Devey

69 Dr Huffman and Mr Devey supported the review and the particulars put forward by PNCC in the NoR.

70 Dr Huffman and Mr Devey live at 428 Pahiatua Track, Palmerston North, within two kilometres of the Windfarm. Dr Huffman and Mr Devey's home is considered to fall within the HA Overlay under PC15.

71 Dr Huffman explained within the submission that she has reviewed the initial Windfarm consent together with supporting reports on noise predictions. She explained, as a result of that review, she shares the same concerns as PNCC in respect of inconsistencies in the actual and predicted noise results. In her view, the prediction data within the application for consent was clearly flawed.

72 Dr Huffman has, since 2009, prepared various documents describing the tonality of the WTGs and the impact on the residences neighbouring the Windfarm.

73 Dr Huffman used these documents to support her submission. Since 2009, she undertook ongoing analysis on the noise data at the neighbouring properties and assessed the information against the compiled Marshall Day Acoustics records.

Dr Clel Wallace and Ms Nicky Banks-Wallace

74 Dr Wallace and Ms Banks-Wallace (the Wallaces) supported the review. They provided an extensive 30 page submission which included wind speed and direction histograms of the Windfarm.

75 The Wallaces live at 48 Ridgeview Road, Palmerston North, which is approximately 1.6 kilometres from the nearest WTG (T104). The reasons the Wallaces supported the review were:

- (a) NZWF has installed WTGs which are much more powerful than was specified/allowed under the original consent;
- (b) the Windfarm is much noisier than was indicated in the initial monitoring process regime; and

- (c) the noise from the Windfarm significantly impacts on their recreation/amenity.

76 The relief sought by the Wallaces was, in summary:

- (a) some form of immediate response whereby part of the Windfarm can be turned off to mitigate noise (i.e. curtailment);
- (b) some form of process can be developed whereby tonality of the Windfarm can be reliably/properly measured at residential locations; and
- (c) infrasound can be measured to provide a reference background level for the future.

77 The Wallaces also usefully provide a summary of suggested changes to the proposed conditions:

- (a) *That the direction of wind flow, and the speed of wind flow at a residential measuring location, is probably quite different from that of the TRRH windfarm mast;*
- (b) *New owners, or owners of new residences, should not be excluded from the process;*
- (c) *All the residences on Ridgeview Road are noise sensitive areas (HA Areas) and so qualify for the 35dBA upper noise limit, at least when the wind is in the SE;*
- (d) *The specified wind sectors should be checked so that they match the natural distribution of the wind;*
- (e) *At least 95% of the WTGs must be generating, and 9 of the nearest 10 WTGs actually generating for a data point to be included in any assessment;*
- (f) *350 valid data points are to be collected cumulatively across the SSE and ESE wind direction sectors and at least 150 data points must come from each of these sectors;*

- (g) *It is not clear whether the separation of peaks and background has occurred at TRRH so this needs to be verified and the integrity of the process demonstrated;*
- (h) *On/Off testing is practical at TRRH, and when undertaken each On/Off cycle must be for at least 6, 10 -minute bins, so that statistically meaningful trends might be established;*
- (i) *The operating conditions should apply for all 24 hours. What is evening time? If it remains then it needs to be defined;*
- (j) *There is a need to develop a remedy that will provide an operational framework for the windfarm and yet also meet the residences' expectations of a quiet environment;*
- (k) *A mechanism that allows for on-going community involvement has to be inserted in the consent documents;*
- (l) *Add a clause that requires the measurement of infrasound at about 4 localities within the windfarm and at the 6 localities named in Clause 10.1.*

78 In terms of infrasound, the Wallaces were of the opinion that the impact of infrasound from wind farms is becoming a significant issue, and they quoted two sources and stated an opinion that issues related to buildings within the Te Apiti wind farm may have been related to infrasound. They considered that the level of infrasound should be established so as to provide a baseline for the future.

Section 42A Reports

79 Section 42A Reports were completed by:

- (a) Mr Craig Auckram;
- (b) Mr Tom Evans;
- (c) Mr Nigel Lloyd; and
- (d) Mr John Maassen.

80 We summarise their reports below.

Mr Craig Auckram

- 81 Mr Auckram is a senior planner in PNCC's compliance and resolutions team. He holds a Bachelor of Regional Planning and has over 20 years planning experience. He has been involved with addressing issues that arise in respect of the maintenance and operation of the Windfarm since 2011. This has included providing affidavits and evidence to the Environment Court.
- 82 Mr Auckram usefully set out a summary of the background to the NoR and informed us the review arose due to inaccuracies in the original application for consent for the Windfarm that materially influenced the decision made on that application.²
- 83 From the bundle of background papers he referenced for us that part of the first Environment Court declaration decision³ that confirmed these inaccuracies that enabled PNCC to exercise the power of review under section 128(1)(c) RMA. He detailed other background matters which included PNCC and NZWF entering into the MOU on the following matters:
- (a) the appointment of an independent, well qualified, non-resident acoustic expert;
 - (b) the scope of the review;
 - (c) the provision of information;
 - (d) the content of the review reports, including recommended conditions; and
 - (e) the appointment of a hearings panel.
- 84 Mr Auckram also provided other useful background material including:
- (a) a summary of the review provisions contained in the RMA, which we address separately in this decision;
 - (b) information on the nature and frequency of complaints;
 - (c) an overview of the Windfarm noise emissions;
 - (d) how noise is managed at other nearby wind farms;

² Auckram S42A report Paragraph 11 page 4

³ NZEnvC [2012] page 133 paragraph [132].

- (e) PC15, and in particular those aspects relating to the Rural Zone and subdivision and wind farms and landscapes. Of note is the advice that land located within the Rural Residential Overlay is recognised as being of HA for the purpose of NZS6808:2010;
- (f) an overview of the recommended revised conditions, as notified, which he summarised as being:
 - (i) specified noise limits including a secondary noise limit;
 - (ii) special provisions relating to the calculation of SACs;
 - (iii) specification of NZS6808:2010 unless a more specific condition applies;
 - (iv) specific control before Stage 4 is constructed, if at all;
 - (v) the power to review; and
 - (vi) special reporting procedures including recording how compliance is achieved.

85 The key issues that Mr Auckram identified in his report were:

- (a) uncertainty as to the extent to which the proposed conditions may affect the operation of the Windfarm;
- (b) the characteristics of the Windfarm need to be factored into the overall consent framework so that the outcome is levels of noise that do not cause undue annoyance to neighbours;
- (c) the shift of reliance on NZS6808:1998 to NZS6808:2010 in the planning and consenting frameworks;
- (d) the need for special reporting procedures including annual reporting, given that the Windflow 500 is a 'relatively new technology' with well-publicised problems in terms of acoustic performance and economic life and that NZWF has been changing its operating protocols;
- (e) the risk that the conditions may not be sufficient to avoid undue annoyance and there is a need for a risk management tool;

- (f) avoiding the possibility that the conditions would not be achieved for Stage 4, if constructed;
- (g) the need for an objective and quantitative standard to measure SACs against;
- (h) that the combination of low background sound conditions at residences and higher wind speeds at the Windfarm can lead to annoying noise for residents, justifying a secondary noise limit be imposed; and
- (i) the ongoing viability of the Windfarm with the conditions.

86 Mr Auckram also provided a revised updated set of recommended reviewed conditions which responded to the submissions made and input from NZWF and Mr Evans.

Mr Tom Evans

87 Mr Evans was appointed to act as an independent consultant to assist PNCC. He is an acoustic consultant for Resonate Consulting Pty Limited (trading as Resonate Acoustics) with experience in prediction, measurement and assessment of wind farm noise. Mr Evans was the author of the key PNCC reports (27 October 2016 and 15 March 2017) relating to the revised conditions for the Windfarm.

88 Mr Evans prepared the draft conditions that are being considered by the panel during the review. He noted that he was asked by PNCC to consider the site as a 'new proposal', and therefore subject to the ODP and the current (2010) New Zealand Standard for wind farm noise assessment (NZS6808:2010), rather than the 1998 version of the standard used for the initial assessments.

89 As part of his work, he undertook a review of the complaints history for the Windfarm and noted that a large number of complaints had been received in the preceding seven years (May 2009-August 2016), but that these did 'not necessarily relate to downwind conditions'. Rather, many of the complaints referred to the particular character of noise.

90 The key change in conditions identified by Mr Evans is the adoption of the 2010 New Zealand Standard rather than 1998 version used for original approval conditions. Key differences include the definition of the background noise (measured in the absence of noise from wind farms) and consideration of HA

areas as defined in the ODP (related to PC15), which would require a lower base noise limit (35 dB(A)).

- 91 In relation to the adoption of the HA limit, Mr Evans recommended adopting a wind speed threshold for the HA limit of 8 m/s on the basis that:
- (a) measured background noise levels at properties within the HA area are low at (hub-height) wind speeds up to 8 m/s;
 - (b) the WTGs at the Windfarm produce SACs (in the near-field) which may manifest at the receivers;
 - (c) because the particular local topography and location of the residential receivers relative to the Windfarm location would shield properties in particular wind conditions – resulting in low ground-level wind speeds relative to hub-height, and the corresponding lack of masking noise; and
 - (d) that Windfarm cut-in of 5.5 m/s would make a 6 m/s threshold ineffectual.
- 92 Mr Evans noted that the conditions originally proposed by PNCC impose some specific requirements which were agreed with NZWF to address specific issues at the Windfarm, which included:
- (a) assessment of operational and background noise during the night-time period only;
 - (b) assessment of four defined wind directions;
 - (c) restrictions on Windfarm operational conditions; and
 - (d) the number of valid data points required.
- 93 In relation to the assessment of SACs of the Windfarm, Mr Evans suggested the adoption of Annex C of ISO 1996-2:2007 for tonality, and the United Kingdom Institute of Acoustics 2016 Hybrid Method, rather than the 'interim method' documented in NZS6808:2010 for AM.
- 94 For tonality, Mr Evans suggested that the tonality should be assessed for two-minute periods, rather than 10-minute periods adopted in NZS6808:2010, with the highest penalty from any 2-minute sample applied to the whole 10-minute data period, since that would be 'suitably representative' of the level of

annoyance that could occur within that time. This was agreed during expert conferencing prior to the hearing.

95 To apply any SAC penalties and calculate the assessment noise level, Mr Evans recommended summing the tonal and AM penalties (where they applied), up to a maximum penalty of 6 dB, and then either:

(a) undertaking a regression analysis including the penalised and non-penalised data points in accordance with NZS6808:2010 where there are less than 10% of data points penalised; or

(b) applying the arithmetic average penalty to the whole wind-speed bin where there are 10% or more data points in a particular wind speed and direction that attract a penalty.

96 Mr Evans considered that a 10% threshold was appropriate as a measure of the regularity and extent of SACs which would be considered to be an issue, and noted that this approach has been adopted in recent wind farm noise guidelines in Australia.

97 Mr Evans also recommended a condition to require a compliance noise monitoring report to be submitted to PNCC, and included specific conditions that were considered necessary to ensure a robust assessment of the Windfarm noise. These included the recommendation for an independent peer review of the compliance noise monitoring report.

98 Mr Evans also recommended several conditions to ensure that the existing WTGs were operating in compliance with the consent prior to constructing Stage 4 of the Windfarm in future.

99 Mr Evans' report provided a response to comments made by Mr Halstead (acting for NZWF) on his original (27 October, 2016) report, and outlined his reasons for disagreement with Mr Halstead's comments regarding the wind speed threshold at which HA conditions should apply, and the process for the application of the penalties for SACs.

100 In particular, Mr Evans considered that the HA limit should be applied in areas with low-background noise levels – and that these conditions were demonstrated to occur up to 8 m/s in this case. In regard to a procedure for assessing any data points penalised for SACs, Mr Evans agreed that applying the penalty only to

individual 10-minute data pairs was in strict accordance with NZS6808:2010 (as suggested by Mr Halstead), but that he did not consider that this adequately addresses the situation where the Windfarm produces intermittent SACs. He therefore preferred his proposed penalty scheme, adopting a threshold of 10% of data points as the basis to penalise the entire data bin.

101 Mr Evans noted that in his experience, SACs are 'highly dependent' on wind speed and direction, and that this would allow practical mitigation options to be targeted to meteorological conditions in which the SACs occur.

102 Mr Evans' report also provided a response to comments by the submitters. These responses highlighted the need to:

- (a) have objective noise levels targets and SACs, rather than rely on subjective judgments of annoyance or audibility;
- (b) ensure that periods with very low ground-level wind speeds (particularly at night-time) were assessed;
- (c) undertake an independent peer review of the compliance measurements to ensure they are undertaken appropriately;
- (d) have an appropriate and agreed way to test for SACs – particularly AM;
- (e) consider specific wind directions and meteorological conditions; and
- (f) have specific timeframes to achieve compliance conditions;

103 Mr Evans also rejected the suggestion to evaluate infrasound in the Wallace's submission.

Mr Nigel Lloyd

104 Mr Lloyd is an acoustic engineer for Acousafe Consulting and Engineering Limited with experience in wind farm noise, particularly for projects in the lower North Island of New Zealand. He has previously acted as an expert witness in relation to the Windfarm.

105 Mr Lloyd's report provided an historical context for the management of Windfarm noise, and the recent changes to the ODP through PC15B. He described the Windfarm as a 'regrettable example of poor impact assessment' due to the failure

of the Assessment of Environmental Effects to predict the actual adverse impacts of the Windfarm.

106 His report provided a helpful overview of the key issues that contributed to the inaccuracies in the original assessments.

107 The use of NZ6808:1998 and the more recent 2010 version were discussed – but while Mr Lloyd stated that he supported the application of NZS6808:2010, he did not specifically recommend its use for this review.

108 His Section 42A Report also provided an overview of the key consent conditions adopted for the Turitea Wind Farm which included;

- (a) the adoption of the 2010 version of NZS6808;
- (b) adoption of a 'secondary' (i.e. HA) noise limit at wind speeds less than 6 m/s; and
- (c) specific 'near field' conditions relating to the sound-power output of the wind turbines.

109 Again, while these are discussed in general, Mr Lloyd's evidence stopped short of making specific recommendations in relation to the Windfarm.

110 Finally, the Section 42A Report provided an overview of the implications of PC15B, which relates to the requirement for the HA limit at some locations. However, Mr Lloyd notes that in order to manage reverse sensitivity effects, some existing allotments are not subject to the HA limit – where they are within a 1.5 kilometres of an existing wind farm.

111 Nevertheless, Mr Lloyd suggested that some properties on the northern side of Ridgeview Road that are outside of the Rural Residential Overlay (because they are within the 1.5 kilometres setback from the Windfarm) should also qualify as HA areas because they are subject to the same background sound conditions as nearby properties which are within the Rural Residential Overlay. Mr Maassen addressed this point in his evidence and at the hearing.

Mr John Maassen

112 Mr John Maassen is a barrister and solicitor at CR Law in the Manawatu, with 30 years' experience in resource management law. Mr Maassen has extensive

experience with wind farms, both in relation to processing resource consents and development of law governing wind farm development.

113 Mr Maassen was involved as counsel in relation to the provision of the One Plan and PC15B. Mr Maassen was also counsel for PNCC in all proceedings related to compliance by NZWF with the consent conditions.

114 Within his report, Mr Maassen concisely set out the law governing the PNCC review. We agree with the legal framework set out by Mr Maassen within his report and adopt that framework for the purpose of this decision. We do not propose to deal with the legal framework at this point, rather we discuss this later in the decision.

115 Mr Maassen also summarised the planning framework relevant to this review. Again, we do not propose to delve into this here as it is discussed later within this decision.

116 In summarising the planning framework Mr Maassen noted that both the ODP and PC15 refer to the application of NZS6808:1998 and NZS6808:2010 to predict, measure and control wind farm noise. He further observed the usual or normal interpretation approach should apply to standards. Accordingly, words as they appear in the standard are firstly to be given their plain meaning.

117 If issues of interpretation remain then the text in the standard should be considered in the light of the purpose of the standard as expressed in the standard as a whole. Finally he considered context is relevant to purpose including who the standard is aimed at, and what the standard is trying to achieve.

118 Applying this interpretative approach, including referring to international standards (IEC-614000) referenced in NZS6808:2010, he developed the following points:

- (a) the standard is aimed at manufacturers, operators and regulators;
- (b) both New Zealand Standards assume in the prediction process that the WTGs do not have known SACs; and
- (c) due to (b) above, the penalty system applies following operation and after the SACs manifest themselves.

- 119 Against these interpretive outcomes Mr Maassen noted that in this case the WTGs have a known characteristic of emitting SACs, further observing that based on expert evidence the tonality values identified in MDA2014 are, according to Mr Reutersward's evidence, higher than any in his experience.
- 120 Mr Maassen considered that there is credible evidence that WTGs are an outlier class and do not meet international recognised standards for noise emissions. Importantly NZS6808:2010 is intended to apply in circumstances where the WTGs meet those international standards.
- 121 The above supports Mr Maassen's primary conclusion on NZS6808:2010 which was that it should be seen as persuasive but not determinative. In further support he noted that NZS6808:2010 is referenced in the proposed ODP as an assessment criteria only. He considered that this recognised the acoustic understanding that wind farm noise is on-going. Because the status of consent for a wind farm is discretionary, a decision maker is free to depart from the standard. Finally, because the Windfarm's WTGs do not meet international standards some core assumptions upon which the NZS6808:2010 rests may not be valid for these WTGs.
- 122 Mr Maassen highlighted two issues in contention between PNCC and NZWF. The first issue relates to the secondary HA noise limit, which has two parts to it, in particular:
- (a) the spatial extent of properties where the secondary HA noise limit applies; and
 - (b) the threshold wind speed at which the secondary HA noise limit ceases to apply.
- 123 Mr Maassen explained that currently the secondary HA noise limit only applies to properties within the Rural-Residential Overlay (as notified in PC15), although it does not include the northern side of Ridgeview Road and the top end of Forest Hill Road.
- 124 Mr Maassen, Mr Auckram and Mr Evans discussed whether proposed review condition 4 should be expanded so that the secondary noise limit applied to a wider area than the HA Overlay notified in PC15. Specifically, they considered whether the HA Overlay should apply to the northern side of Ridgeview Road and the residential cluster on Forest Hill Road. Mr Maassen reported that in both

circumstances, Mr Evans was satisfied no further extension was warranted. Mr Maassen appeared to accept this conclusion.

125 Next, Mr Maassen discussed the appropriate wind speed threshold in relation to the secondary noise limit. He explained that two thresholds have been advanced. PNCC, based on the advice of Mr Tom Evans, advanced a threshold of 8 m/s. Conflictingly, Mr Halstead, proposed a threshold of 6 m/s.

126 NZS6808:2010 recommends the cut off for wind speed threshold to be 6 m/s however it states that "an alternative wind speed threshold may be applied where justified on meteorological, topographical, and acoustical grounds".⁴ Mr Maassen pointed out the lack of analysis within NZS6808:2010 that led to the recommended wind speed limit of 6 m/s or lower.

127 Mr Maassen did not go into depth as to Mr Evans' reasons for the 8 m/s threshold, rather he referred us to Mr Evans' Section 42A Report. We have summarised Mr Evans' report above and do not propose to repeat those reasons here.

128 Mr Maassen opined that the 6 m/s limit is only a recommendation and it is based on a broad assumption. He went on to state "*the main objective is to ensure that the secondary noise limit applies to circumstances where low background noise levels apply at a receiving location and are markedly lower than the windfarm noise*"⁵.

129 Mr Maassen considered that, despite PNCC's preferred threshold of 8 m/s, a higher threshold may be justified in light of the compliance and shutdown data obtained in accordance with the conditions of consent.

130 Mr Maassen submitted NZS6808:2010 places an onus on a wind farm developer to justify the wind speed threshold as appropriate as the commentary to cl 5.3.2 states the wind farm developer will collect, analyse and provide data to justify their proposed wind farm speed.

131 Mr Maassen pointed out NZS6808:2010 contemplates this data collection and analysis occurring post compliance. So PNCC considered an 8 m/s threshold is prudent. He observed that a higher threshold may be justified in the light of data collected subsequently in accordance with the consent conditions. The capacity to

⁴ Cl 5.3.2 NZS6808:2010

⁵ Section 42A Report by John Maassen, page 029, paragraph 104(b)

review conditions under the RMA provides, he said, the legal mechanism that NZS6808:2010 contemplates.

- 132 The second issue in contention relates to the application of a penalty for SACs and which compliance method or approach to use.
- 133 Mr Maassen noted that NZS6808:2010 contains an assumption that the presence of SACs will be constant and therefore easily applied to the measured noise level. Mr Evans discussed penalties for SACs within his Section 42A Report. We do not propose to repeat those discussions here. However we do note that Mr Evans indicates the NZS6808:2010 assumption that SACs will be constant is not accurate, rather the presence of SACs will be borne out by the extent of tonality or AM assessment at the receiver location. The point is if SACs were constant then they could be easily applied to the measured noise level.
- 134 Mr Maassen concluded that determining the most appropriate assessment method is a matter of judgement. He considered that if the NZS6808:2010 standard *"makes an assumption that is not borne out in reality for a particular wind farm, then it is appropriate to apply the most reasonable standard to achieve the objective of minimizing unreasonable interference with the amenity of noise sensitive locations"*.⁶
- 135 As to viability - in this context Mr Maassen submitted viability should be understood as being reasonably practicable for a consent holder to meet the conditions and the conditions are not so onerous as to effectively deprive the consent holder of the benefit of the consent. He submitted this meaning of viability is the sense intended by Parliament. He contrasted this meaning of viability with an alternative meaning based on the concept of economic viability. He detailed the complexity of factors and the interpretative challenges that economic consideration present for decision makers. For these reasons he submitted economic viability is not the touchstone rather practical viability is.
- 136 In support of this submission point he noted that operational curtailment and de-rating are available practical options considered achievable within the wind farm industry. In addition, in this case, based on the MDA data set for 2014, the extent to which conditions will bite and restrict operations was not considered significant.

⁶ Ibid, page 032, paragraph 112

137 Mr Maassen pointed out that section 131(1)(b) RMA, which allows regard to the manner in which the consent has been used, may be relevant to the management and monitoring conditions that should be imposed on the consent. This was especially so he said given that NZWF has not implemented, after a decade, a comprehensive mitigation operating protocol based on published data.

LEGAL FRAMEWORK

The Section 128 Review

138 A consent authority has the ability under section 128 RMA, to review conditions of consent in certain circumstances. The Environment Court declared, pursuant to an application by PNCC under Part 12 RMA, that a review was available to PNCC under section 128(1)(c).

139 On the basis that information made available to PNCC by NZWF for the purpose of this resource consent contained inaccuracies which materially influenced the decision made on the application and the effects of the exercise on consent were such that it is necessary to apply more appropriate conditions.

140 Earlier in this decision we described the NoR issued and the particular conditions which were under review.

141 Section 129(1) RMA provides the mandatory matters to be included within a notice of review. No issue was taken with the content or accuracy of the notice by any participant.

142 The statutory provisions 130-132 RMA are also applicable to this review. Section 130 RMA outlines how a review is to be processed, in particular, this section specifies the process in respect of notification, submissions and the hearing.

143 The review was publicly notified and served on all affected parties on 4 May 2017. Mr Auckram provided information as to notification within his notification report⁷. Submissions as earlier described were received and as we record later a hearing held.

144 Section 131 RMA set out the matters to be considered in a review. They are the matters in section 104 RMA and whether the activity allowed by the consent will continue to be viable after change.

⁷ CB Part 1, No 1.8p384

145 The relevant part of Section 104 reads:

104 - Consideration of applications

- (1) *When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to—*
- (a) *any actual and potential effects on the environment of allowing the activity; and*
 - (ab) *any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and*
 - (b) *any relevant provisions of—*
 - (i) *a national environmental standard;*
 - (ii) *other regulations;*
 - (iii) *a national policy statement;*
 - (iv) *a New Zealand coastal policy statement;*
 - (v) *a regional policy statement or proposed regional policy statement;*
 - (vi) *a plan or proposed plan; and*
 - (c) *any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

146 Given recent and evolving case law⁸ on Part 2 RMA, we do need to consider our ability to refer to Part 2. Of relevance we note that the NPSREG and the One Plan both post-date the ODP, but do predate PC15. We consider the role of Part 2 when discussing the planning framework. However, in short we will use Part 2 as a “useful check”.

147 In considering effects under section 104 RMA and in the context of this review the effects adverse or otherwise that are of particular relevance for us are those effects that are occurring now but are beyond or outside of the assessment of environmental effects relating to the original application. In particular we are concerned with noise effects which are above and beyond those contemplated by the assessment of environmental effects.

⁸ *R J Davidson Family Trust v Marlborough District Council* [2017] NZHC 52, at para [77] and *Appealing Wanaka Inc v Queenstown Lakes District Council* [2015] NZEnvC 139, at paragraph [47].

148 All other effects both adverse and otherwise were considered and deliberated upon when the grant of consent was issued. Those effects do not feature as material adverse effects before us in this review process. This is a review process and it is not an opportunity nor is it appropriate to re-litigate the entire consent. In the main, it seemed to us that submitters understood the scope of our jurisdiction. However, some did not, which we discuss below.

149 Under section 131 RMA we can also have regard to the manner in which the consent has been used. This is a discretionary statutory regard.

150 Section 132 RMA sets out the scope of the power to make decisions on review of conditions of consent. The key provisions are sections 132(2)-(3) which provide:

132 - Decisions on review of consent conditions

- (2) *Sections 106 to 116 (which relate to conditions, decisions, and notification) and sections 120 and 121 (which relate to appeals) apply, with all necessary modifications, to a review under section 128 as if—*
- (a) *the review were an application for a resource consent; and*
 - (b) *the consent holder were an applicant for a resource consent.*
- (3) *A consent authority may cancel a resource consent if—*
- (a) *it reviews the consent under section 128(1)(c); and*
 - (b) *the application for the consent contained inaccuracies that the consent authority considers materially influenced the decision made on the application; and*
 - (c) *there are significant adverse effects on the environment resulting from the exercise of the consent.*

151 There is an extraordinary power to cancel consent after a review under section 128(1)(c) RMA as addressed in section 132(3) RMA. However, cancellation was not seriously advanced by any participant. We do acknowledge the Irvins wished to see the consent revoked and NZWF to apply for a new consent. We also acknowledge that this was the likely outcome Mr Harding wished to see, but his submissions were not for noise reasons. However, in our view, even taking into account the limited matters they raised, there is no basis for cancellation, so we will not consider that matter further.

Key issues arising from Legal framework

- 152 We need to determine, after considering all evidence received, including but not restricted by the NoR, what are the noise effects of concern other or further than those contemplated by the Assessment of Environmental Effects which accompanied the original application.
- 153 Should we treat compliance with NZS6808:2010 as being determinative of the issue or should we treat it as a guide in determining the appropriateness of conditions?
- 154 In terms of section 131(1)(b) RMA, in what manner has the consent been used and does that in any way inform or influence our consideration of conditions?
- 155 Which conditions are most appropriate to avoid, remedy or mitigate the effects of concern as identified above, arising from operation of the Windfarm and its future expansion and to enable effective monitoring and review?
- 156 What are the most relevant planning documents and are the proposed review conditions consistent with the relevant objectives and policies of the planning framework?
- 157 Will the activity allowed by the consent continue to be viable after the conditions of consent change?
- 158 We need to apply Part 2 as an overall check.

PLANNING FRAMEWORK

- 159 We have previously set out the relevant statutory planning documents earlier in the decision. In summary, we agree with Mr Auckram and Mr Low from their planning conferencing statement⁹ that these are:
- (a) The National Policy Statement on Renewable Electricity Generation 2011 (the "NPSREG");
 - (b) The Manawatu-Wanganui Regional Council One Plan (the "One Plan");
 - (c) The Operative Palmerston North City District Plan ("ODP"); and

⁹ Page 2 of the Joint Witness Statement of Craig Auckram and Adrian Low dated 11 September 2017.

(d) The Operative Palmerston North City District Plan as amended by the Decisions Version of Plan Change 15A-G ("PC15A-G").

160 The relevant statutory planning framework and relevant provisions within that framework have been thoroughly identified and explored within the evidence and material provided to us by the NZWF. We have also referred to relevant planning provisions when we had been identified and evaluating the effects.

161 While we have undertaken a careful review of those documents we will keep our reference to the relevant document brief. We also note there was a very high level of agreement between Mr Auckram and Mr Low in relation to relevant planning provisions and their evaluation.

162 Mr Maassen also provided an analysis in his Section 42A Report¹⁰. His advice was that much of the policy relating to wind farms is at a high level, in the NPSREG and the One Plan. His view was that these higher level documents address the general approach that at a national or regional level wind farm development should be encouraged, but that should happen in a way that avoids inappropriate effects on adjoining sensitive activities. That is, that the enabling high level policies do not give unqualified license to generate adverse effects beyond a wind farm boundary. He also advised that the specific and relevant provisions about managing effects on adjoining properties is found in the ODP.

163 Ms Morrison-Shaw also set out the relevant statutory planning documents, confirming the same documents as Mr Low, Mr Auckram and Mr Maassen. However, she did not provide any analysis, rather focusing on the status and weight to be given to PC15B and the interpretation of NZS6808:2010¹¹.

164 None of the submitters specifically addressed the statutory planning documents.

165 We do not repeat all the analysis we have received on these documents, rather we have set what we consider are the most relevant matters to guide our consideration. We then consider the overall evaluation presented by Mr Low and Mr Auckram in their joint witness statement and set out our view on what we think are the most relevant matters.

166 We note that the only matter that there was disagreement between Mr Auckram and Mr Low was the applicability of the ODP objectives and policies in Chapter 9

¹⁰ Paragraphs 47 to 75 of Mr Maassen's Section 42A Report dated 17 August 2017.

¹¹ Page 16 of Ms Morrison-Shaw's opening legal submissions dated 12 September 2017

addressing airport noise which Mr Low had listed in error in his Attachment 2 of his statement of evidence¹². Both agreed that these were not relevant to this review.

NPSREG

- 167 Mr Auckram and Mr Low agreed that the Objective and Policies B and C1 of the NPSREG are the most relevant. The sole objective of this national policy statement seeks to provide for the development and operation of new and existing renewable electricity generation activities such that the proportion of New Zealand's electricity generated from renewable energy sources increases to levels that meets or exceeds the government's national target for renewable electricity generation.
- 168 Policy B, titled "acknowledging the practical implications of achieving New Zealand's target for electricity generation from renewable sources", sets out the matters that decision makers shall have particular regard to in doing so. Policy C1, titled "Acknowledging the practical constraints associated with the development, operation, maintenance and upgrading of new and existing renewable electricity generation activities", sets out the matters that decision makers shall have particular regard to in doing so.
- 169 Given that we are considering a section 128 RMA review of conditions of an approved consent, clauses (d) and (e) are of particular relevance. These are "designing measures which allow operational requirements to complement and provide for mitigation opportunities" and "adaptive management measures". We note that Mr Auckram did not include these clauses in his Section 42A Report¹³ but Mr Low did¹⁴.
- 170 In his statement of evidence, Mr Low also brought policies C2 and D to our attention. Policy C2 requires that "When considering any residual environmental effects of renewable electricity generation activities that cannot be avoided, remedied or mitigated, decision-makers shall have regard to offsetting measures or environmental compensation including measures or compensation which benefit the local environment and community affected."

¹² Page 2 of the Joint Witness Statement of Craig Auckram and Adrian Low dated 11 September 2017.

¹³ Page 031 of the Council bundle.

¹⁴ Attachment 2, Schedule of Relevant Provisions, appended to Mr Low's statement of evidence dated 2 August 2017.

171 Policy D, titled “Managing reverse sensitivity effects on renewable electricity generation activities” requires that “decision-makers shall, to the extent reasonably possible, manage activities to avoid reverse sensitivity effects on consented and on existing renewable electricity generation activities”.

One Plan

172 The One Plan was made operative in 2014 and is a combined Regional Policy Statement, Regional Plan and Regional Coastal Plan. It provides a strategic direction that the Regional Council and territorial authorities will take to achieve the purpose of the RMA. The One Plan was prepared during the time the NPSREG came into force and gives effect to it at a regional level.

173 Mr Low and Mr Auckram agree that the relevant One Plan provisions are Objective 3-1 and Policies 3-1, 3-3 and 3-6. We have set the relevant part of the provisions out below:

Objective 3-1: Infrastructure and other physical resources of regional or national importance

Have regard to the benefits of infrastructure^ and other physical resources of regional or national importance by recognising and providing for their establishment, operation, maintenance* and upgrading*.*

Policy 3-1: Benefits of infrastructure and other physical resources of regional or national importance

(a) The Regional Council and Territorial Authorities must recognise the following infrastructure as being physical resources of regional or national importance:

(i) facilities for the generation of more than 1 MW of electricity and its supporting infrastructure^ where the electricity generated is supplied to the electricity distribution and transmission networks

(ii) ...

(b) ...

(c) The Regional Council and Territorial Authorities must, in relation to the establishment, operation, maintenance*, or upgrading* of infrastructure*

and other physical resources of regional or national importance, listed in (a) and (b), have regard to the benefits derived from those activities.

- (d) The Regional Council and Territorial Authorities must achieve as much consistency across local authority boundaries as is reasonably possible with respect to policy and plan provisions and decision-making for existing and future infrastructure.*

Policy 3-2: Adverse effects[^] of other activities on infrastructure[^] and other physical resources of regional or national importance

The Regional Council and Territorial Authorities must ensure that adverse effects on infrastructure[^] and other physical resources of regional or national importance from other activities are avoided as far as reasonably practicable, including by using the following mechanisms:

- (a) ensuring that current infrastructure, infrastructure corridors and other physical resources of regional or national importance, are identified and had regard to in all resource management decision-making, and any development that would adversely affect the operation*, maintenance* or upgrading* of those activities is avoided as far as reasonably practicable,*
- (b) ensuring that any new activities that would adversely affect the operation*, maintenance* or upgrading* of infrastructure and other physical resources of regional or national importance are not located near existing such resources or such resources allowed by unimplemented resource consents[^] or other RMA authorisations,*
- (c) ensuring that there is no change to existing activities that increases their incompatibility with existing infrastructure and other physical resources of regional or national importance, or such resources allowed by unimplemented resource consents or other RMA authorisations,*
- (d) notifying the owners or managers of infrastructure and other physical resources of regional or national importance of consent applications that may adversely affect the resources that they own or manage,*
- (e) ...*

Policy 3-3: Adverse effects of infrastructure and other physical resources of regional or national importance on the environment

In managing any adverse environmental effects arising from the establishment, operation, maintenance* and upgrading* of infrastructure or other physical resources of regional or national importance, the Regional Council and Territorial Authorities must:*

- (a) recognise and provide for the operation*, maintenance* and upgrading* of all such activities once they have been established,*
- (b) allow minor adverse effects arising from the establishment of new infrastructure and physical resources of regional or national importance, and*
- (c) avoid, remedy or mitigate more than minor adverse effects arising from the establishment of new infrastructure and other physical resources of regional or national importance, taking into account:*
 - (i) the need for the infrastructure or other physical resources of regional or national importance,*
 - (ii) any functional, operational or technical constraints that require infrastructure or other physical resources of regional or national importance to be located or designed in the manner proposed,*
 - (iii) whether there are any reasonably practicable alternative locations or designs, and*
 - (iv) whether any more than minor adverse effects that cannot be adequately avoided, remedied or mitigated by services or works can be appropriately offset, including through the use of financial contributions.*

ODP

- 174 The ODP was made operative in 2000. PNCC has subsequently been undertaking a sectional (or “rolling”) review of the ODP.
- 175 Mr Low found that the following city-wide objectives were relevant to this matter, noting that the Windfarm meets the ODP definition of infrastructure:

Subdivisions, buildings and infrastructure are designed and constructed to promote a coordinated, healthy and safe environment.

The benefits of renewable electricity generation are recognised, and barriers to the provision of small and community-scale renewable electricity generation are reduced, while adequately managing the potential effects of such activities.

Appropriate noise standards are in place to protect noise sensitive activities.

Infrastructure operates in a safe and efficient manner, and the effects of activities which could impact on the safe and efficient operation of this infrastructure are avoided, remedied or mitigated.

Infrastructure and physical resources of regional or national importance are recognised and provided for by enabling their establishment, operation, maintenance, upgrading and protection from the effects of other activities.

- 176 Mr Low also brought Objectives 1–4 from the Rural Zone and their associated policies to our attention. None of these had specific mention of infrastructure or windfarms. The only location where wind farms were identified was in Rule 9.9.2, which provides for sawmills, rural industries and wind farms as a discretionary activity. The assessment criteria include the requirement to assess an application in terms of this policy *"to avoid, remedy or mitigate the effects of noise and other environmental disturbance, on the amenity of the surrounding area.*
- 177 Mr Auckram's position was that Chapter 9, Rural Zone, contains the relevant objectives, noting that there are no specific objectives relating to the management of wind farms. He opined that the general direction to avoid, remedy or mitigate effects was as helpful as the Zone objectives got, with the city-wide objectives being at a high level.
- 178 Mr Low identified that Rule 6.2.6.2 of the ODP uses NZS6808:1998 in respect to noise from wind farms¹⁵.
- 179 We agree with Mr Auckram that the Chapter 9 provisions were not particularly helpful when considering a wind farm specifically. However, we concur with Mr Low that they do provide the context of the plan seeking to maintain the amenities of the area while ensuring that there is efficient and effective use and

¹⁵ Paragraphs 58 and 59 of Mr Low's Statement of Evidence dated 25 August 2017.

development¹⁶. We did find the city-wide objectives more helpful, as identified by Mr Low.

Plan Change 15A-H

180 Plan Changes 15A-H were notified on 28 January 2015, with decisions released on 1 September 2016. Mr Auckram, Mr Maassen and Ms Morrison-Shaw all brought PC15B, Wind Farms and Landscapes, to our attention as being the relevant part of this wider plan change.¹⁷ Mr Low also addressed the wider PC15.

181 We were advised that PC15 did not amend any of the city-wide objectives in the ODP.

182 While he focused on new objectives 8 and 9 and their associated policies and rule, Mr Auckram agreed that Mr Low's Appendix Two included the relevant provisions in respect of PC15¹⁸. These are set out below showing the decisions made on submissions by PNCC to what was notified:

- *Policy 1.5*

To provide for rural residential subdivision and development in identified areas.

- *Objective 3*

To maintain and enhance the quality and natural character of the rural environment.

- *Policy 3.5*

To avoid ~~significant~~ adverse ~~visual~~ effects of activities, including renewable energy electricity generation activities, on the values and characteristics of regionally Outstanding Natural Features and Landscapes in accordance with Policy 7.1 and 7.2.

- *Policy 3.5A*

and To control adverse visual effects of renewable electricity generation activities on the remainder of the Skyline of the Tararua Ranges and on

¹⁶ Pages 19, 20 and 22 of Mr Low's Statement of Evidence dated 25 August 2017

¹⁷ Paragraph 50 of Ms Morrison-Shaw's opening legal submissions.

¹⁸ Paragraph 3.2 of the Joint Witness Statement on Planning Matters dated 11 September 2017

the significant amenity landscapes in the Tararua Ranges and its foothills, which include in particular and the landmark features of Te Mata Peak and Te Mata-Kaihinu Ridgeline above the 400m contour.

- *Objective 8*

To recognise the benefits of renewable energy electricity development and the importance of the City's renewable energy resources to long term sustainability.

- *Policy 8.1*

To provide for the investigation, development, operation, maintenance and upgrade of appropriate new and existing renewable energy electricity generation activities.

- *Policy 8.2*

To protect existing and consented renewable electricity generation activities from reverse sensitivity effects arising from the establishment of noise sensitive activities in close proximity.

- *Policy 8.3*

To provide for domestic wind turbines.

- *Policy 8.4*

To recognise the locational, logistical and technical constraints associated with the development, operation, maintenance and upgrade of renewable electricity generation activities.

- *Objective 9*

To avoid, remedy or mitigate the adverse effects of renewable energy electricity generation activities on the natural and physical resources of the rural environment.

- Policy 9.1

To facilitate appropriate and well-designed upgrades of existing and consented renewable electricity generation activities recognising their existing effects on the existing environment.

- Policy 9.2

To ensure that new renewable electricity generation activities are located, designed, constructed and operated to avoid, remedy or mitigate adverse effects and where this is not possible to take into account proposed offsetting measures or environmental compensation that are more than minor on the rural environment and natural features and landscapes.

- Rule 9.8.6 Wind Farms

Wind Farms are Discretionary Activities.

Wind Farms under Rule 9.8.6 must comply with the following Performance Standards:

Performance Standards

(i) The Wind Farm site must not be inside the Tararua Ranges Landscape Protection Area (Map 9.1).

(ii) No wind turbine may be located within 700 m of the boundary of the Wind Farm site with an adjacent property, unless the application is lodged with a consent form signed by the owner of and occupier.

- Determination Clause

In determining whether to grant consent and what conditions to impose, if any, Council will in addition to the City View objectives in section 2 and the Rural Zone objectives and policies, assess any application in terms of the following assessment criteria:

Assessment Criteria

- (a) The contribution of the Wind Farm to achieving renewable energy electricity targets.
- (b) The locational requirements of the Wind Farm and any logistical or technical practicalities associated with Wind Farm development, upgrade, operation or maintenance.
- (c) The availability of offsetting measures or environmental compensation to address adverse effects of the Wind Farm that cannot be avoided, remedied or mitigated.
- (d) The assessment, measurement and control of noise in accordance with New Zealand Wind Farm Noise Standard (NZS 6808:2010 Acoustics – Wind Farm Noise).
- (e) The management and control of construction noise using the provisions of NZS 6803: 1999 Acoustics – Construction Noise.
- (f) The ability to control noise resulting from any on-site manufacture of concrete and any quarrying, by reference to the noise limits in Rule 9.11.1.
- (g) The provisions for safeguards and contingencies, particularly concerning:
- (i) The model and proposed location of the wind turbine;
- (ii) Specifying compliance with turbine manufacturer’s noise emission levels stated in the application;
- (iii) The early identification and remediation of any special audible characteristics that arise during operation of the Wind Farm;
- (iv) Effective noise monitoring programmes to demonstrate compliance beyond the commissioning stage;

- (v) Procedures for addressing turbine malfunctions;
- (vi) Community liaison and methods for dealing with complaints;
- (vii) Reporting these matters to Council.
- (h) The appropriate management of landscape and visual impacts, including the location, design, appearance and concentration of structures on the values and characteristics of the Tararua Ranges Landscape Protection Area and views of the Tararua Skyline, significant amenity landscapes in the Tararua foothills, rural character and visibility from neighbouring residences and public places.
- (i) The cumulative visual effects of the proposal and consented Wind Farms (including a consideration of the relationship between the various Wind Farms), with particular regard to the effects of additional turbines on views of the Tararua Skyline along its entire length and potential for visual saturation of the skyline landscape with Wind Farm turbines extending across the full extent of the Tararua Ranges.
- (j) The visual effects of the proposal on significant amenity landscapes and landmark features, in particular Te Mata Peak and Te Mata-Kaihinu Ridgeline.
- (k) Ecological impacts, particularly impacts on the Turitea Reserve and Arapuke Forest Park, water bodies, and impacts on indigenous flora and fauna, avifauna and their habitats.
- (l) Impacts of earthworks and modifications of natural landforms, including impacts on water quality and proposed remedial and mitigation measures.
- (m) Impacts on archaeological or heritage sites, features and items, or any sites of special significance to tangata whenua.

- (n) Impacts on the amenity values of the surrounding environment, including a consideration of any environmental disturbances, aviation navigation lighting, and turbine shadow glare or flicker.
- (o) Impacts on aviation, navigation and existing network utilities, including the City's Water Supply Infrastructure.
- (p) Traffic impacts (including construction and post-construction traffic) and impacts on the road network, including the nature and extent of vehicle movements, access, management and mitigation measures, safety and levels of service.
- (q) The extent to which geotechnical hazards or other physical environmental factors are addressed in the application, the measures employed to avoid, remedy or mitigate geotechnical matters and land stability impacts of the proposal, and the extent of compliance with best engineering and design practice and codes
- (r) The management of decommissioning and removal of structures when the wind farm is no longer in operation.

NOTES TO PLAN USERS:

1. When lodging an application for resource consent, the applicant will be required to provide a full assessment of environmental effects taking into account all of the resource management assessment matters listed in Rule 9.8.6 (a)-(p r) above.
2. The 700 m setback performance standard (ii) does not require the agreement of an adjacent property owner where the adjacent property is not within the boundaries of the Palmerston North City Council.

Explanation

Wind Farms will be examined on a case-by-case basis due to the complexity of the assessments involved and because of the discretions provided in the New Zealand Wind Farm Noise Standard (NZS 6808:2010) ~~over when the 35 dB LA90 limit applies.~~

The tension between protecting the rural character and amenity values of residents who live, work and farm in the Rural Zone and realising the potential of the Tararua Ranges as a wind energy resource, requires careful management to achieve the sustainable management of the natural and physical resources of the Rural Zone.

The 700 m setback for wind turbines is a recognised buffer zone for Wind Farms which interface an adjoining non-Wind Farm property and is based on expert advice. Within this area there is the significant potential for turbines to generate adverse effects on the use and enjoyment of an adjoining property and hence an application for a Wind Farm, seeking to establish wind turbines within the 700 m setback area, where written approval has not been given by the affected neighbour will be assessed as a Non-Complying Activity.

The potential adverse effects associated with noise, may not be able to be avoided, remedied or mitigated at a distance of less than 700 m from the closest wind turbine to an adjoining site boundary. The degree to which adverse noise effects will be generated will depend on a range of technical and site specific factors, including the design and configuration of turbines, whether there is a direct line of sight to turbine locations, topography and the background noise levels.

Wind Farm development has the potential to trigger rural road upgrades to allow for construction. Specific approvals will be required from the Council, as the Road Controlling Authority, in relation to the use of roads for oversize vehicles, determining safe access points to the site, and funding the upgrade and maintenance of roads. Specific traffic management plans are required to ensure safety and amenity risks associated with construction traffic are managed, for example, oversized vehicles transporting blades and nacelles to the site.

The Discretionary Activity status provides Council with the opportunity to take full account of these matters in its assessment and ensure that any adverse effects are avoided, remedied or mitigated. In respect of this activity, it should be noted that Manawatu-Wanganui Regional Council may have separate consent requirements.

183 We were advised that PC15B also:

- (a) deleted Rule 6.2.6.2(e) relating to the measurement of wind farm noise from the ODP¹⁹.
- (b) introduced a new definition "high amenity area", which is defined as:
"means for the purposes of NZS 6808:2010, any area identified in the District Plan as a Rural Residential Area or within the Rural Residential Overlay (as shown on the Planning Maps)".

184 We were advised that the above provisions are from the decisions version of PC15. In terms of the weighting to be afforded to PC15B, Ms Morrison-Shaw advised us that a number of the provisions of PC15B are still subject to appeals. Her submission, drawing on *Bayley v Manukau City Council* [1999] NZLR568, was that while they must be considered, the weight given to them should be less than those which are operative or subject to consent orders.²⁰ Mr Low advised that the specific renewable electricity provisions contained in Objective 8 and 9 and their associated policies are all subject to appeal, including by NZWF.

185 The appeals are predominantly focused on how the provisions give effect to the One Plan and the NPSREG, including the detailed wording of provisions, how they address repowering and "so on"²¹. Mr Low considered that it was reasonable to assume that the general thrust of the new provisions would remain. However, when considering their detailed wording, it is appropriate to look back to the One Plan and NPSREG provisions. We were also advised that assessment criteria (g)(ii) is also subject to appeal, including by NZWF, and this should be acknowledged in making a decision on this matter²².

186 In respect of consent orders, we were also advised that one had been agreed in respect of Clause ii of Rule 9.8.6²³, and now reads: *"Noise from the operation of wind turbines shall not cause the noise from the wind farm, or from the wind farm in combination with noise from other wind farms, to exceed the greater of 40 dBA or the background plus 5 dBA at the notional boundary of any noise sensitive activity that is in existence or authorised by a resource consent or a building consent at the time the application for a wind farm is lodged unless the*

¹⁹ Summary statement by Mr Low dated 12 September 2017

²⁰ Paragraph 55 of Ms Morrison-Shaw's opening legal submissions.

²¹ Paragraph 68 of Mr Low's statement of evidence dated 25 August 2017

²² Paragraph 76 of Mr Low's statement of evidence dated 25 August 2017

²³ Paragraph 53 of Ms Morrison-Shaw's opening legal submissions

application is lodged with a consent form signed by the owner and occupier of the property containing that noise sensitive activity.”²⁴

187 We were informed that NZWF have accepted that applying a HA limit at night is a way to provide additional noise relief to its near neighbours²⁵. Therefore, whether or not there are any appeals in relation to the new definition of HA area applying to the new Rural Residential Zone is irrelevant.

188 For these purposes, noise shall be predicted in accordance with NZS6808:2010 Acoustics - Wind Farm Noise. A noise report prepared by a qualified and suitably experienced acoustic technician shall be submitted with the application demonstrating the predicted noise levels in accordance with NZS6808:2010 Acoustics - Wind Farm Noise.

Overall evaluation of statutory planning documents

189 Mr Auckram and Mr Low agreed the following in respect of their analysis of the provisions of the relevant statutory planning documents:

- (a) *The planning documents attribute TRH and the renewable electricity it generates regional and national significance.*
- (b) *The planning documents direct that the continuous operation of TRH be provided for, and that regard is to be had to the benefits of enabling its increased generation capacity and efficiency.*
- (c) *The planning documents contemplate the type of infrastructure activity location in PNCC’s rural environment.*
- (d) *The planning documents do not seek artificial noise in the rural environment be inaudible beyond the boundary, and that principle applies to wind farm noise. But the planning documents do seek the adverse effects of activities in the rural environment be avoided, remedied or mitigated such that the amenities of the area are maintained.*
- (e) *The planning documents do not identify the receiving environment for TRH noise as having any particularly special or unique amenity values or characteristics relative to other rural areas in Palmerston North City. The*

²⁴ Consent order between New Zealand Wind Farms Ltd et al and Palmerston North City Council dated 31 May 2017.

²⁵ Paragraph 71 of Ms Morrison-Shaw’s opening legal submissions

only exception being where PC15 identifies the area within nearby rural residential overlay as a High Amenity Area for the purposes of NZS68089:2010. [sic]

- (f) *The planning documents direct that the noise from windfarms in rural areas in the District be assessed, controlled and measured in accordance with the relevant New Zealand Standard.*
- (g) *At this site, and in the planning context that applies to it, using NZS6808:2010 would be an appropriate means of managing TRH noise effects, noting that application of the Standard "will provide reasonable protection of health and amenity at noise sensitive locations".²⁶*

190 Mr Maassen was concerned about the overarching planning principle of PNCC planning instruments when balancing between enabling wind farm development and the aural amenity of existing noise sensitive activities, which he found to be to ensure that aural amenity is reasonably protected²⁷.

191 His opinion was that:

- (a) wind farms are not required to be inaudible, rather they should not be annoying to the majority of individuals;
- (b) that when a wind farm is clearly audible, this reaches a threshold of inappropriateness; and
- (c) when a significant proportion of people would notice noise, and because of special characteristics, be annoyed by that noise, that is inappropriate.

Part 2 RMA

192 As outlined above, PC15 was promulgated following the gazettal of the NPSREG and after the One Plan was made operative. The One Plan itself gives effect to the NPSREG. Along with addressing renewable electricity generation, PC15 also addresses the rural environment in which the site is located. However, some aspects of PC15 are still under appeal, and therefore there remains some uncertainty about whether we can rely on it to its full effect as reflecting Part 2

²⁶ Page 3 of the Joint Witness Statement of Craig Auckram and Adrian Low dated 11 September 2017.

²⁷ Paragraph 69 of Mr Maassen's Section 42A Report dated 17 August 2017.

RMA at a district plan level. We were not advised of any issues of illegality or incompleteness.

193 Ms Morrison-Shaw drew our attention to *RJ Davidson Trust*²⁸, *Appealing Wanaka Inc v Queenstown Lakes District Council*²⁹, *Turners & Growers Horticulture Ltd v Far North District Council*³⁰ and *Hokio Trusts v Manawatu-Whanganui Regional Council*,³¹ as well as *King Salmon*³². Having considered this relevant case law, Ms Morrison-Shaw's submission was that:

- (a) *As both the NPS REG and the One Plan came into force after the PNCC District Plan became operative, then the Panel is entitled to, and in NZ Windfarms Submission should consider both – it is noted that this is the approach that both Mr Auckram and Mr Low took in their respective reports / evidence; and*
- (b) *Part 2, while not a mandatory consideration (unless there is uncertainty, invalidity, or incompleteness in the higher order planning documents) remains a useful check.*³³

194 We note that Mr Low, Mr Auckram and Mr Maassen did not specifically address Part 2 RMA.

195 Given that there remains uncertainty in respect of PC15, we consider it is appropriate to consider the higher level documents, including Part 2 RMA.

Key issues arising from Planning Framework

196 As outlined above, Mr Auckram and Mr Low were in general agreement regarding the planning framework. At the conclusion of the hearing, the key issue of contention between them centred on the level of which NZS6808:2010 can be relied upon for managing the Windfarm's noise effects, most specifically, in terms of the measurement of and penalties imposed for SACs. We discuss this matter further in this decision.

²⁸ *RJ Davidson Family Trust v Marlborough District Council* [2017] NZHC 52

²⁹ *Appealing Wanaka Inc v Queenstown Lakes District Council* [2015] NZEnvC 139

³⁰ *Turners & Growers Horticulture Ltd v Far North District Council* [2017] NZHC 764

³¹ *Hokio Trusts v Manawatu-Whanganui Regional Council* [2017] NZHC 1355

³² *Environmental Defence Society Incorporated v The New Zealand King Salmon Company Limited & Ors* [201] NZSC 38

³³ Paragraph 32 of Ms Morrison-Shaw's opening legal submissions.

197 The key issue raised through submissions in respect of the planning framework, and in particular were:

- (a) whether the revised conditions as recommended would be sufficient to manage the amenity effects on nearby residents; and
- (b) whether the revised conditions as recommended should apply to all dwellings that existed at the time of granting consent or to all subsequent constructed dwellings.

THE HEARING

198 Usefully at the hearing both PNCC and NZWF presented evidence in the form of summaries presented as PowerPoints in both hard copy and displayed on screen.

PNCC

Mr John Maassen

199 Mr Maassen presented a summary of parts of his earlier circulated Section 42A Report. He informed us that further conferencing had occurred between the acousticians and the planners that had further limited the areas of difference.

200 Two areas of contention remained. They related to the wind speed threshold for the secondary noise limit for the identified HA area linked to then the proposed condition 4, and the method for determining and applying SACs for proposed condition 8.

201 Before conditions could be finalised, Mr Maassen, on behalf of PNCC stressed the need to hear from submitters first. He noted that within the Windfarm host population individuals such as Dr Huffman-Devey and Dr Wallace had provided leadership by using the scientific skills on behalf of the community in understanding the circumstances, monitoring and mechanisms of population noise effects. He further made the point many submitters had remained involved through this very long process and in his view could be reliably treated as community representatives.

202 In response to NZWF evidence notably that of Mr Worth, while welcoming changes to the operating protocols, which he considered to be largely in response to economic imperatives, with some side benefits to residents, he emphasised

PNCC was focusing on definite and enforceable noise limits and controls rather than voluntary operating controls.

- 203 Mr Maassen strongly challenged the position advanced by NZWF noise experts that NZS6808:2010 is authoritative and both necessary and a sufficient code to manage wind farm noise. The PNCC position that he advanced within his Section 42A Report and at the hearing is that NZS6808:2010 is a guideline with a persuasive but not determinative role in the decision making process.
- 204 Rather in his view the goal is to achieve section 16 RMA and avoid unreasonable annoyance at noise sensitive locations and NZS6808:2010 must demonstrably achieve this and should not be taken on faith.
- 205 He explained that there are many examples of when and how NZS6808:2010 has not been solely relied on and additional controls imposed on we have considered necessary. Examples are the setting of HA area limits despite the absence of recognition in a district plan as contemplated by the New Zealand Standard. He also referred to the imposition of supplementary conditions beyond NZS6808:2010 and relied upon Mr Halstead's notes from an Australian proceeding of Acoustics 2016. He also queried the rejection by the NZWF's experts of robust and detailed work on an AM assessment methodology by the United Kingdom Department of Energy and Climate Change and the stated preference for the untested and interim method in NZS6808:2010.
- 206 In further support he drew on the *Pickering*³⁴ decision where the Christchurch City Council accepted the review of its expert Dr Chiles that NZS6808:2010 was necessary and sufficient despite the experience of the host population. Such an approach was criticised by the Environment Court leading somewhat unusually to an award of costs being made against that Council. Mr Maassen referred us to several quotes from *Pickering* which he considered were instructive of the Court's resistance to an uncritical belief in NZS6808:2010 in the face of real people's experiences.
- 207 He concluded by noting that the additional restrictions on noise that are proposed by PNCC were small, in the sense they will 'bite' during infrequent wind directions and for limited periods. He referred us in that regard to the evidence of Mr Evans. He considered PNCC was able to be precise on the recommendations of conditions to address noise annoyance.

³⁴ *Pickering v Christchurch City Council* [2016] NZEnvC 237

208 Mr Maassen confirmed that while it was the view of Mr Lloyd that the area covered by the HA should be extended beyond the Rural-Residential Overlay (as notified with PC15) to include properties closer to the Windfarm, it was his view, as well as the view of Mr Auckram and Mr Evans that this was not necessary. We accept Mr Maassen's view, and the conditions attached to this decision do not seek to apply the secondary HA limit to properties outside the Overlay.

Mr Nigel Lloyd

209 Mr Lloyd presented a summary of his Section 42A Report, and again emphasised that his evidence was limited to providing some historical context regarding the matters related to the review and the PC15A rezoning.

210 He reiterated that he believes that the original Windfarm assessment was a 'regrettable example of poor environmental impact assessment' because the original information provided was not accurate. In particular, the original work stated that there would be no SACs, and he believes the selection of the receiver locations used in the assessment was not relevant because they were not the closest dwellings.

211 Mr Lloyd set out the wind farm consent conditions adopted for the Turitea project and outlined his opinions regarding the application of the HA limit to properties within the 1.5 kilometres setback which we have documented earlier.

Mr Tom Evans

212 Mr Evans' presentation to the Panel largely summarised his Section 42A Report.

213 He noted that he had been asked by PNCC to prepare draft consent conditions, which were documented in his report to PNCC dated 27 October 2016, and outlined the key considerations which underpin proposed conditions.

214 Following submission of his report, the conditions were subject to several rounds of amendments based on recommendations by NZWF and their experts, public submissions, discussions with PNCC and joint conferencing. This consultation process, undertaken prior to the hearing, had resulted in significant agreement and compromise between the parties on issues such as:

(a) where the HA limit should be applied;

- (b) the exclusion of existing Windfarm noise from background measurements used to set limits;
- (c) modification of times used to assess the noise, rather than standard evening/night-time definitions to minimise the influence of extraneous noise which might contaminate the analysis;
- (d) the adoption of 2-minute blocks to assess tonality;
- (e) allowance of data already collected to demonstrate compliance, and the use of on-off testing if necessary; and
- (f) inclusion of a nearfield sound power test requirement for any new WTGs on the site as part of potential Stage 4 expansion.

215 However, four key areas of disagreement remained, as follows;

- (a) HA wind speed threshold;
- (b) AM assessment methodology;
- (c) application of penalties for SACs; and
- (d) regulation of any future WTGs as part of Stage 4.

216 As discussed in his Section 42A Report, Mr Evans remained of the view that an 8 m/s threshold for the secondary HA limit was justified to prevent large differences between Windfarm sound and background noise levels. He considers the local topography creates the potential for periods of steady wind at the Windfarm with little-or-no-wind at the residences. Further, that there was a potential for Windfarm sound with penalisable SACs to potentially be deemed compliant without a HA criteria (i.e. because the Windfarm sound plus the SACs penalty may not exceed the base limit of 40 dB(A)).

217 Mr Evans showed several examples of measured background and operational noise levels at residential receiver locations taken from the compliance report prepared by Marshall Day Acoustics. The particular measurements shown indicated that the largest difference between the background noise level and Windfarm sound sometimes occurred at a wind speed of 7-8 m/s. Therefore, Mr Evans suggested there was sufficient justification to increase the HA threshold to 8 m/s.

- 218 In terms of measuring AM, Mr Evans indicated that the 2010 Standard is clearly cautious about the interim method and envisages future improvements which would provide more robust methods. He therefore suggested that the 2016 United Kingdom Institute of Acoustics ("IoA") methodology for quantifying AM should be adopted, with the penalty determined based on the United Kingdom DECC phase 2 report (WSP).
- 219 He favoured this method because he believed it was sufficiently well supported by laboratory studies into annoyance from AM, and because it results in a 'sliding penalty scale' for AM, similar to the tonal penalty determined with the Joint Nordic Method.
- 220 He also favoured the United Kingdom IoA method because the test code is publicly available from the IoA, which will help to provide consistency in its application to test data.
- 221 Mr Evans has recommended that a threshold of 10% of penalised data should result in penalisation of an entire data set as an approach to regulating annoying characteristics that do not occur at all times.
- 222 In order to demonstrate why he did not think that using the individually penalised data points in the regression analysis (or bin analysis) is an appropriate method, Mr. Evans created a fictional dataset which had 20% of its data points which were assumed to have a tonal penalty. He then showed that if a 5 dB penalty was applied to all of the 'assumed tonal' data points then only a small change in the regression line (and therefore the assessed Windfarm sound level) would result.
- 223 He was therefore concerned that the method does not adequately reflect the potential annoyance of SACs that occur periodically, and would not result in a lot of 'regulatory encouragement' for the operator to mitigate the SACs. He compared his proposed '10% threshold' approach to that used for industrial noise, where a tonal penalty occurring some of the time would be applied to whole assessment timeframe.
- 224 He believed his approach is appropriate because it would not overly penalise very infrequent SACs, but would apply an appropriate penalty to 'encourage mitigation' where SACs occur with 'reasonable regularity'. He showed us that a similar '10% threshold' approach to applying the SACs penalty has been adopted in New South Wales and Queensland in Australia, and in the United Kingdom.

- 225 Under questioning from the Panel, he agreed that the on/off nature of applying the penalty in this way could create a 'discontinuity' in compliance assessment.
- 226 In regard to regulation of additional turbines, Mr. Evans has recommended in the conditions to include a sound power compliance measurement (condition 13). He noted that in most situations he would not consider this to be an appropriate condition. However, in this case he thinks there are three factors that suggest it is warranted:
- (a) the ODP asks for 'safeguards' regarding compliance;
 - (b) the sound power level for existing turbines were markedly higher than originally stated in the Assessment of Environmental Effects; and
 - (c) the compliance measurement period is lengthy.
- 227 When questioned about the selection of an AM method, he stated that there was a lack of research into the subjective response of AM identified by the NZS6808:2010 interim method. He was also concerned about the 'on-off nature' of the penalty. He prefers the United Kingdom IoA method, which was subject to development and testing for approximately 2-3 years prior to release, because it provides a penalty that starts at lower level and increases as annoyance increases. However, he has not had an opportunity to assess it himself on long-term data. His initial testing indicated that it seemed 'reasonable', and did not give a penalty where there was no excessive modulation. However, he had not had the opportunity to undertake any direct comparison with the NZS6808:2010 interim method.
- 228 When questioned by the Panel about whether the sample datasets that he generated to support his criticisms of the NZS6808:2010 method were representative of typical datasets measured at real wind farms, he agreed that they were not. He also agreed with Commissioner Burgemeister's suggestion that the data with tonal penalties was unlikely to be spread evenly across wind speeds as he had assumed, but rather concentrated at particular wind speeds. He also agreed that bin analysis of the data is allowed under the standard.
- 229 He therefore agreed that for real data, the application of the SACs penalties to individual data points, as envisaged by the NZS6808:2010 is likely to result in a greater effect on a 'bin analysis' of the dataset than he had indicated in the simplistic analysis he had presented to us.

- 230 Furthermore, when considering when SACs such as tonality might occur, Mr Evans suggested that it could occur for 70-80% at particular time periods during night-time, but was perhaps unlikely to occur over a whole night-time period. While he believed that NZS6808:2010 would not allow the measurement data to be split by time, he did agree with the Panel's assertion that S7.4.1 of the Standard allows for 'different groups' to be analysed separately – and subsequently agreed that provision could be applied, and would be a suitable method for dealing with the same issue.
- 231 We asked whether the proposed peer-review mechanism would help to allay his concerns about how, in practice, the data might be split to ensure that penalised data had the appropriate impact on the assessment results, Mr Evans agreed that a peer review requirement would act as a safeguard to protect from disagreements about data splitting – and recommended that the framework for peer review should include considerations regarding conditions for assessing SACs.
- 232 When asked about his thoughts regarding requirements for long-term permanent monitoring, he indicated that it was PNCC's position not to press for such a condition to be included. Mr Evans noted that there are many practical issues related to installing fixed long-term noise monitors at residences where the signal to noise ratio is low. When asked whether a noise monitoring terminal could be used for the assessment of SACs rather than absolute compliance with the noise limit, he indicated that was more practical but that some analysis would still be required. Nevertheless, he conceded that some type of noise recording system could be helpful in preventing the current time lag between complaints and measurement, and could be cost-effective in this case compared to ad-hoc attended measurements.
- 233 His preference was that such a system, if required, should not be required to provide any 'automated response', but be used to continuously record data which could be used for post-analysis at some later date.
- 234 He conceded that his company, Resonate Acoustics, is actively developing remote monitoring systems, but does not believe suitable systems are readily available at this time.

Mr Craig Auckram

- 235 Mr Auckram firstly confirmed the contents of his Section 42A Report. He then focused on the outcome of the planner witness conferencing which occurred with Mr Low on 11 September 2017, and in particular on the points of disagreement. He explained that the joint witness statement had an attachment with conditions identifying areas of agreement and disagreement. He outlined that at that point in time, the key areas of remaining disagreement between him and Mr Low centred on proposed review conditions 4, 5, 8 and 12.4.
- 236 In respect of condition 4, Mr Auckram advised that both he and Mr Low agreed that the wind speed threshold was a technical matter and that he felt Mr Evans had taken a balanced approach by limiting the threshold to 8 m/s. He agreed with the revised wording proposed by Mr Low to include "*this condition does not apply to...*"
- 237 In respect to condition 5, the area of disagreement was the date that this condition should apply from. Mr Auckram explained that Mr Low considered this should be from the date of grant of consent on 30 May 2005, however, it was the evidence of Dr Huffman-Levy that the Windfarm was constructed in 2009. He therefore was of the opinion that it was likely that houses built since 2005 but before 2009 were constructed in locations where the anticipated effect was nil. He saw no reason as to why those properties should not receive the benefit of the 40 dBA noise level set by NZS6808:2010. Mr Auckram was comfortable with the wording proposed by Mr Low to include "*this condition does not apply to...*"
- 238 In respect of condition 8, Mr Auckram advised that this was again a technical matter, but that he was of the opinion that the most appropriate method is one that is objective and well justified. He advised that both he and Mr Low agreed that Mr Halstead's recommended condition lacked clarity and enforceability and would require amendment.
- 239 In respect of condition 12.4, Mr Auckram advised of his concerns with the potential for Stage 4 to result in non-compliances and the potential cumulative effect on residents. He was satisfied with the condition approach suggested by Mr Low.
- 240 Mr Auckram was unable to advise if any complaints had been made from residents of new dwellings between 2005-2009. Mr Auckram was not able at the

hearing to advise of how many new dwellings had been constructed since consent was granted in 2005. Mr Auckram wanted an open ended condition that the noise limit should apply to any new dwellings constructed since 2005, regardless of its location. On questioning, Mr Auckram advised he was of the opinion that it may be more appropriate that the date in condition five applied to any dwellings constructed prior to 2009 date, when the Windfarm became operative.

241 Mr Auckram confirmed for the Panel that PNCC and NZWF had agreed that the Rural Residential Zone be deemed a HA area in accordance with NZS6808:2010.

Applicant:

Ms Vicki Morrison-Shaw

242 Ms Morrison-Shaw presented legal submissions on behalf of NZWF. She detailed the national and regional significance of the Windfarm. She acknowledged noise has been a longstanding issue for the Windfarm acknowledging NZWF's original noise assessment had not been met.

243 Ms Morrison-Shaw explained how NZWF is now operating differently in that with management change has come operational change. Operating in all conditions is no longer the objective. A much more considered approach to operations including a curtailment regime now applies. Curtailment would importantly reduce noise.

244 She explained how a change in management has altered how NZWF interfaces with PNCC and submitters. She explained a more consultative and cooperative approach with PNCC is the norm. With submitters a more inclusive approach is the norm with site visits and information distribution occurring. Refinement of complaint procedures and establishment of a community liaison group are examples of change in approach she said.

245 As to background matters she agreed with Mr Maassen's account. She did stress that NZWF, as early as December 2010 and frequently thereafter, offered to work with PNCC to resolve conditions via a section 127 or section 128 RMA process.

246 Ms Morrison-Shaw detailed the legal framework for reviews. Since she is in agreement with Mr Maassen on that framework that is all we need record.

247 As to effects, she emphasised that the RMA is not a nil effects statute. She noted that the actual and potential environmental effects relevant to the review relate

to noise and the effects of that noise on amenity. She noted that in assessing the scale of the noise effects the nature of the existing environment needs consideration. The existing environment includes she said all lawfully established activities as well as consents for new activities likely to be given effect to.³⁵

- 248 Contrasting the section 127 and section 128 RMA processes she observed that in a review the purpose is to better manage the relevant baseline effects. Those baseline effects are, she said, the relevant indicator of the degree of change rather than an acceptability indicator.
- 249 Turning to assessing effects she acknowledged that noise effects, in particular the presence of SACs have on amenity, is a key issue for PNCC and submitters. However, as a first step the quality or characteristics of the subject amenity has to be understood. In that regard she noted from Mr Halstead's report that relatively high background sound levels ranging from 22–35 decibels³⁶ can be generated by permitted activities in the Rural Zone include farming, horticulture, production forestry, and military training. She also set out the ODP noise limits for permitted activities.
- 250 Acknowledging *Pickering v Christchurch City Council*³⁷ and noting in that case the Court imposed specific conditions in order to minimise effects on amenity values (including a ban on operation between 7pm and 10pm at wind speeds less than 10 m/s; and a requirement to cease operation between 5pm and 5am if penalisable tonality is found), she considered that because the circumstances in *Pickering* differed to the present, it should not apply.
- 251 The positive benefits of the existing Windfarm were detailed, including that it supplied power to around 18,000 households, had an operational expenditure of \$2.5 million per year and employment of 12 people.
- 252 Ms Morrison-Shaw then detailed the planning framework. Her approach as we earlier noted was consistent with that of PNCC so we do not need to record that.
- 253 As to the weighting to be given to PC15B she noted some provisions are still subject to appeal so the weight to be given to them should be much less than those that are operative or the subject of consent orders. She did advise that NZWF has agreed to settle its appeal issues including the HA definition.

³⁵ *Royal Forest and Bird v Buller DC* [2013] NZCA 496

³⁶ Statement of Evidence Halstead 25/8/17 at paragraph 15

³⁷ *Pickering v Christchurch City Council* [2017] NZEnvC 68.

- 254 On NZS6806:2010 she agrees with Mr Maassen's interpretative approach but disagrees with his position that Dr Chiles, being a contributing author of NZS6806:2010, cannot now interpret it. Ms Morrison-Shaw considers that is part of Dr Chiles' role being Chair of the Standards Committee.
- 255 Turning to other matters under section 104 RMA, she referred us to regulatory constraints in particular the electricity industry rules that have financial implications and constraints for NZWF.
- 256 As to the permitted baseline she submitted it should be applied because there are a range of permitted activities that are known to have noise effects particularly during the day and evening and those activities do not need to internalise noise effects which are at level higher than that proposed by NZWF.
- 257 When considering section 131 RMA, being the manner in which the consent has been used, she identified Mr Maassen's view in his Section 42A Report³⁸ which was, in summary, that NZWF had not, in over a decade, implemented a comprehensive mitigation operating protocol, but submitted that:
- (a) NZWF sought to have issues resolved at an early stage through a section 127 or section 128 RMA review process – however it was forced to spend several years in litigation with PNCC defending its consent;
 - (b) NZWF has committed to and has undertaken extensive monitoring over a number of years to investigate noise issues and compliance;
 - (c) the monitoring has demonstrated that NZWF has operated in compliance with the noise limits set in its current consent; and
 - (d) NZWF has recently changed its operational approach to include curtailment following confirmation that curtailment was possible under the electricity industry rules and following the termination of contractual commitments with the turbine supplier.
- 258 Turning to conditions, she noted a high degree of agreement between PNCC and NZWF as to appropriate conditions. She identified only four remaining areas of disagreement between PNCC and NZWF. These are:
- (a) the cut in speed for the amenity condition;

³⁸ Section 42A Report of John Maassen at paragraph [13].

- (b) the AM methodology;
- (c) the averaging of tonality penalties; and
- (d) the restriction on turbine sound power levels.

259 She acknowledged there remained issues with the submitter group.

260 Referring us to the opinions of both Mr Halstead and Dr Chiles, that confirmed a HA limit is not necessary at the Windfarm, she advised NZWF has accepted that applying a HA limit at 6 m/s at night is a way to provide additional relief to its near neighbours. She noted acceptance of this limit comes at a cost to NZWF in terms of lost generation and revenue. She made it clear NZWF does not accept a more stringent HA threshold of 8 m/s is appropriate. She referred to the evidence of Mr Halstead and Dr Chiles to explain that position.

261 As to AM she noted the experts disagree as to whether the method for assessing AM should be that set out in the current New Zealand Standard or an alternative method recently developed in the United Kingdom and published by the Institute of Acoustics (IoA).

262 Ms Morrison-Shaw accepted that the New Zealand Standard anticipates new methods may emerge. However, based upon the opinions of Mr Halstead and Dr Chiles, she advised they did not consider that the United Kingdom methodology had been sufficiently tested in the field situations, particularly in New Zealand or Australia, therefore the application of the method described NZS6808:2010 was more prudent.

263 Turning to the averaging of tonality penalties, she noted that the then recommended PNCC condition would impose a tonal penalty on an entire wind speed/direction sector if any 10% or more of the data points within that bin are penalised. She said the condition could result in penalising up to 90% of data points that had no analysable tonality. She pointed out that both Mr Halstead and Dr Chiles disagreed with the condition because it is not based on actual effects nor is there any valid basis to support its imposition. We address this issue in our findings.

264 As to sound power levels, she noted that PNCC had recommended via a condition a requirement for any new turbines to comply with specified sound power levels. Referring to the opinions of Mr Halstead and Dr Chiles, she submitted that such a

condition could form part of an agreement between a turbine supplier and a wind farm operator. However, it should not be imposed as a condition of consent as it does not necessarily relate to noise effects.

265 Notwithstanding this advice, NZWF would support a condition of the sort suggested by Mr Low in the joint planning statement which requires representative testing of a minimum of two turbines post construction to ensure the power level does not exceed that stated in the stage four acoustic assessment.

266 Turning to submitters, Ms Morrison-Shaw noted that while all changes sought by submitters could not be adopted by NZWF, she submitted that a number of changes to proposed conditions agreed with PNCC during the expert conferencing would likely meet submitter concerns.

267 Finally, she submitted that NZWF recognises that underlying its new approach it is necessary for there to be a comprehensive, clear, and unambiguous set of conditions which provide certainty to all parties as to the constraints and limits on the Windfarm's operation. NZWF also considers it is important that the conditions are consistent with relevant industry standards, are effects based, and do not go further than is reasonable, given the importance of the facility. Where there are differences in the proposed conditions she submitted that the NZWF position is to be preferred.

Mr Richard Worth

268 Mr Worth, CEO of NZWF, presented a summary of his evidence. After outlining an overview of the wind resource, and the built cost of and operational details for the Windfarm, he discussed the new board and senior management structure for NZWF. The key point Mr Worth made was that NZWF had changed its management and operation approach from operating the Windfarm in all wind conditions to a significantly more intelligent use of the wind resource and WTGs. The other key change Mr Worth described was a much more effective engagement with neighbours, regulators and the wider community.

269 He detailed the impact of the Electricity Industry Participation Code 2010 on the operation of the Windfarm - particularly the requirement to generate at all possible times. This means that when the market price for electricity is depressed, when other operating costs are allowed for, wind farms often run at a

loss. However, because the Electricity Authority had recently agreed with NZWF, curtailment on price can now occur. Mr Worth described this as a very significant regulatory change which would assist with profitability and sustainability of wind generation.

270 He detailed the new operating approach which involved curtailment in wind conditions likely to cause damage. In addition, he described the current curtailment approach as having two-axis curtailment only, wind speed and turbulence intensity. In the future he described a five-axis curtailment approach detailing that these regimes would result in a significant reduction in turbine runs hours therefore reducing noise emissions. He did advise these curtailment options would be voluntary and not included in conditions.

271 Mr Worth described in detail maintenance processes and procedures, informing us that NZWF had recently taken control of ongoing maintenance of the WTGs. He said that this had enabled the successful implementation of a range of mechanical improvements, including the successful trial of gearbox modifications aimed at reducing gearbox mechanical noise and tonality.

272 Mr Worth responded to Mr Maassen and Mr Auckram on the point of viability. His core point was in his view each of the PNCC proposed conditions imposes a constraint on NZWF operations and those constraints have financial consequences. In particular he commented that while NZWF accepts that some constraints are necessary, imposing a condition such as the 8 m/s threshold would significantly affect NZWF ability to generate when prices are generally higher. He said that this means the financial consequences of such a restriction are much greater. Given the current marginal or negative profitability of wind farms, he told us the financial consequence of such a restriction may in his opinion affect viability long term.

Dr Stephen Chiles

273 Dr Chiles is an acoustic engineer with considerable experience in the measurement and assessment of wind turbine sound. He is the Chairman of the Standards Committee responsible for NZS6808:2010. He noted that while he did not represent Standards New Zealand, he understood that it was within his remit as a committee member to provide comment on the intent and application of the Standard.

- 274 Dr Chiles noted that in preparing his evidence, he was provided with a very specific brief; being asked to address specific points relating to the New Zealand Standard.
- 275 In relation to the application of SAC penalties to measured data, Dr Chiles was clear that there is an existing mechanism in NZS6808:2010 to make adjustment for particular character – that is, the penalty is to apply explicitly to individual 10-minute samples where SAC occurs, which are then subject to the regression or bin analysis.
- 276 Dr Chiles expressed concern that Mr Evans’ proposed alternative, where all data points in the analysis would be penalised if 10% or more were subject to the penalty, would unnecessarily penalise the remaining data points, which could be up to 90% of the samples. Dr Chiles considered that that the NZS6808:2010 approach is ‘graduated’ and provides a more reasonable response that is proportional to the extent of the adverse effects. He noted that this approach is somewhat similar to that adopted for industrial noise sources.
- 277 Dr Chiles also agreed that the analysis could be split to allow conditions under which SACs to be isolated, and agreed that NZS6808:2010 S7 allows subsets of the data to be analysed. He indicated that he believes it is proper to do so to isolate specific conditions that relate to particular operational characteristics. However, he emphasised that to get a ‘sensible result that gives good correlation’ would still require a ‘strong element of professional judgement’.
- 278 As noted earlier, Dr Chiles was critical of Mr Evans’ alternative suggestion for applying the penalty in the draft conditions, because he believed that if 10% or more of the data points attracted a SAC penalty, then it would unnecessarily penalise ‘up to 90% of the data that did not attract a penalty’. He reiterated his belief that the existing NZS6808:2010 approach is graduated, and provides a response proportional to the extent of the adverse effects. He noted that this approach is broadly similar to that adopted in the assessment of industrial noise sources in general.
- 279 Dr Chiles agreed with the Panel that the example penalised dataset presented within Mr Evan’s evidence was not a realistic representation of the real distribution of wind farm sound and wind speed data pairs, or the distribution of tonality that could occur within such a dataset. He agreed that the method

proposed in the standard would influence the regression or bin-values to a greater extent than that shown by Mr Evans if it was a more realistic distribution.

280 In relation to HA noise limits, Dr Chiles highlighted that the NZS6808:2010 sets out two steps for determining whether it is justified:

(a) firstly, is a secondary HA limit justified?

(b) secondly, what are the mechanics of its application?

281 With regards to the justification for a HA limit, the objective test outlined in C5.3.1 of the Standard suggests that where the average difference between the wind farm sound and the background is ≥ 8 dB then a HA noise limit is likely to be justified. Dr Chiles noted that his interpretation of this clause is that it applies to long-term data. He was therefore critical of Mr Evans' evidence, where he selected particular times and particular wind speeds to demonstrate differences in wind farm sound and background noise greater than 8 m/s, because he didn't believe it was applying the test as it was intended.

282 With regard to the 'mechanics' of applying the HA penalty, it was agreed by the parties that it would apply during the evening and night time only, however, Dr Chiles believed it should apply only at wind speeds of 6 m/s or lower.

283 In particular, Dr Chiles was concerned that each of Mr Evans' reasons for justifying an 8 m/s wind speed threshold are subjective. For example, Mr Evans had suggested in his evidence that the topography in the local area can result in large differences in wind speed between the Windfarm and the ground level receiver locations, and that the background noise levels are low. However, in Dr Chiles' opinion, the local topography and source/receiver arrangements are typical of local wind farms, and the measured background noise levels are within an 'ordinary range'.

284 In particular, he was worried that Mr Evans' suggestion that the HA limit be applied at wind speeds up to 8 m/s on the basis that the background noise level remained below 30 dB(A) was 'heading towards trying to achieve inaudibility'. He noted that it is accepted by the RMA that there can be some changes to the environment, and therefore the notion of having an increase in noise level is not unreasonable – so long as the change is not too big or the resulting level unreasonable.

- 285 Dr Chiles therefore does not believe conditions at the Windfarm justify a different approach to that envisaged in NZS6808:2010, and therefore that a 6 m/s wind speed threshold should apply to the HA limit.
- 286 In regard to objectively measuring AM, Dr Chiles agreed that the New Zealand Standard allows and encourages the latest technology, so in that respect it would be appropriate to consider the United Kingdom IoA method as an alternative to the interim method published in the 2010 Standard.
- 287 However, he suggested the difficulty in determining an appropriate approach is that there is little test data, because AM and other SACs do not occur often in practice in New Zealand. He went so far as to say that 'we don't have a wind farm in New Zealand with Amplitude Modulation or Tonality', and therefore that testing alternative objective measurement methods is difficult. He accepted that the recent United Kingdom study of the proposed IoA method did include some synthesis of the subjective response of people to AM. However, he remained cautious about applying AM penalty because of lack of evidence. Dr Chiles has previously applied the interim AM test outlined in NZS6808:2010, and stated that it seemed to correlate with his subjective response.
- 288 In considering the proposed United Kingdom IoA method, he stated that 'on the face of it looks fine', and he had 'no objection to the UK method', but he remained concerned because it has not been subject to extensive testing and had some nervousness about a new untried method, and would rather wait for an evidence base to build up. Dr Chiles noted that Mr Evans' company, Resonate Acoustics, has previously published papers about applying the NZS6808:2010 interim method.
- 289 When questioned by the panel about the possibility of testing under *both* methods, Dr Chiles considered that would be inefficient, and suggested that if we were minded to recommend the United Kingdom IoA method, then we should recommend it alone.
- 290 In regard to the proposed condition requiring confirmation of nearfield turbine sound power levels, Dr Chiles noted that the noise limits in the New Zealand Standard apply at houses/residences, post-construction, and do not apply to nearfield sound power levels. He also noted that imposing a condition limiting the sound power of the turbine was awkward, because the key time for consideration of turbine sound power levels is during the initial wind farm sound level

predictions, but the time between predictions being undertaken and construction of the wind farm may be several years. Since turbine development has been so rapid, during that intervening time, it is increasingly likely that a different turbine would be installed to that considered at the time of consent, and therefore a condition limiting the nearfield sound power level would be unnecessarily restrictive and impractical.

291 However he did agree that it would be important to undertake a 'proactive check' on the turbine sound power level, and confirm that the 'envelope of effects' matched that provided in the approvals.

292 In relation to a near-field measurement being used to provide certainty regarding the installed turbine sound emissions, he stated that there was 'no reason not to', but remained concerned that it is a relatively complicated and expensive test process, and that to impose another test which does not address any issues is not worthwhile.

293 In response to questions from the Panel about whether the Windflow 500 turbine used at the Windfarm was comparable to other turbines, Dr Chiles noted that larger turbines are more acoustically efficient, in that they produce less noise per kilowatt generated. However, he cautioned the Panel about judging the acoustic properties of the Windflow turbine purely from listening tests undertaken in the nearfield because the turbines relatively low height and small size means that it is substantially closer to nearfield listeners than more conventional, larger turbines.

294 He conceded that he can hear tonality from the Windflow turbines to a greater extent than other turbines, but believed that this was principally due to the closeness. He therefore believes that the Windflow turbines sound 'much the same as any other wind farm'.

Mr Adam Radich

295 Mr Radich is the site manager for the Windfarm. He has been employed by NZWF for six years, the first two as an electrician and the last four as site manager. He is a registered electrician and a level four qualified electrical engineer with a Diploma in Frontline Management. He has qualifications in hydraulics and pneumatics, Programmable Logic Controller (PLC) programming, diagnostics and health and safety.

296 Mr Radich provided a useful description of the normal day to day operation and activities on the Windfarm site. Particular matters of interest included:

- (a) that NZWF employs its own maintenance staff;
- (b) the Windfarm is controlled by way of a Supervisory Control and Data Acquisition ("**SCADA**") system;
- (c) the site is able to be monitored remotely;
- (d) they have more recently, since the expiry of their warranty agreement with Windflow Technology Limited, undertaken some marked improvements; and
- (e) they have been reviewing their operating strategy.

297 We note that we observed the SCADA in operation on our site visit, and noted that it provides real life data in terms of the Windfarm operation.

298 In terms of the operating strategy, Mr Radich advised that the strategy prior to 2017 had been to keep the WTGs available and able to generate wherever possible. He stated that this meant that while the availability key performance indicator was met, this was at the expense of high labour costs and component failures.

299 Mr Radich went into some detail about the review NZWF has made this year on its operating strategy, which includes:

- (a) software improvements involving T1 curtailment (curtains WTGs in specific conditions), start-up parameters (to reduce start up failures which cause a nuisance) and noise curtailment (in respect of wind speeds and directions at individual turbines);
- (b) mechanical improvements involving module 7 gear modification, gearbox housing changes and blade repairs (which should together assist in reducing noise and tonal characteristics);
- (c) curtailment constraints and opportunities involving price, T1 and 3 and 5 axis curtailment (aiming to curtail when prices are low, which tends to be evenings, weekends and hours of darkness);

- (d) monitoring of WTG performance, involving the monitoring of the outcomes from (a) to (c) above; and
- (e) engagement with neighbours.

300 The key things that Mr Radich reported on the engagement with neighbours was the themes that arose in terms of concerns with the Windfarm operation. These themes were:

- (a) Wind direction and strength - Residents report issues when wind is from the south east direction and there is little to no wind at their residence, but enough wind on site for turbines to start up;
- (b) Topography - Residents report different levels of noise depending on where they are on their property;
- (c) Mechanical noise - Strong feedback regarding tonal noise from gearboxes was reported; and
- (d) Seasonal dependence - Residents view noise over summer as of greater annoyance as warmer conditions increase time spent outdoors.³⁹

301 Mr Radich then advised that NZWF took that feedback and the PNCC complaints data to design a software curtailment program, which at the time of the hearing they were looking to develop a second revision of. He advised that to date, they had achieved a 1.5 to 3% reduction in run hours.

302 Mr Radich was also able to advise us that there is a 240 ha farming operation occurring on site.

Dr Jamie Wallace

303 Dr Wallace has been employed by TRH Services Limited, a wholly owned subsidiary of NZWF, since 2013 as a development engineer. He holds a Bachelor of Engineering and PhD in Mechanical Engineering. He is a member of the Institute of Professional Engineers of New Zealand and is a chartered professional engineer. He has worked in the wind engineering industry for approximately eight years.

³⁹ Evidence of Dr Huffman

- 304 Dr Wallace's role centres on turbine performance analysis and turbine mechanical and control software improvements, as well as operational and maintenance improvements. He provides engineering and fault finding support to on-site staff and undertakes development and improvement projects.⁴⁰
- 305 His evidence to us complimented that of Mr Radich, and centred on how the WTGs were previously operated (under the previous operating strategy discussed by Mr Radich), the work done by NZWF to look at different modes of operation, the changes made to date, and further proposed changes.
- 306 Most importantly, Dr Wallace provided technical information on the changes that have been made to date in respect to low wind start up, Inflow Turbulence ("T1") curtailment and noise curtailment. In respect to the noise curtailment, he advised that the factors informing this were wind speed, wind direction, the acoustic model and neighbour feedback. He explained that the SCADA was implementing the curtailment, and allowed a bespoke application per turbine. He advised that the first trial of the noise curtailment occurred in July 2017, with feedback sought in July/August. He said that there had been delays with the analysis and doing more testing due to weather conditions. NZWF is still undertaking the curtailment.
- 307 Dr Wallace explained that the next steps NZWF plan to undertake are three axis curtailment (wind speed, T1 and power price) and five axis curtailment (wind speed, T1, power price, wind shear and inflow angle).
- 308 Dr Wallace advised us that wind comes from the south-east quarter approximately 25 to 30% of the time, and is the second most common wind direction. In terms of curtailment, Dr Wallace advised that it is currently being applied to 28 turbines, which includes T103 and T104, and that it can apply to each turbine individually, using the SCADA. He advised us that it may take a few months to finalise the curtailment approach.
- 309 Dr Wallace also responded to Mr Harding, and in particular Mr Harding's concerns in respect of asynchronous generators, power electronics, modulation and harmonic distortion. It was Dr Wallace's position that:

⁴⁰ Mr Radich's statement of evidence dated 22 August 2017 at [28].

- (a) the WTGs use a synchronous, synchronized generator;
- (b) there is synchronous generation and the Windfarm is connected to the National Grid at the Grid frequency;
- (c) there are no power electronics or modulation;
- (d) the Windfarm is identical to 'usual' hydro and other traditional forms of generation; and
- (e) that it complies with the Electricity Industry Participation Code 2010.

310 Dr Wallace also responded to Mr Hill's submission, and in particular the profitability of operating at lower wind speeds. Dr Wallace said the Windfarm can still generate profit at lower wind speeds. Given Dr Wallace's expertise compared to that of Mr Hill on this particular point, we prefer the evidence of Dr Wallace.

311 Dr Wallace advised that analysis that has been undertaken has demonstrated that compared to other sites, the site has tough topography, with high shear and turbulence. He had no personal experience as to whether the NZWF WTGs generated more AM than other types of turbines.

Mr Miklin Halstead

312 Mr Halstead's evidence noted that the pre-hearing conferencing had allowed the acoustic experts to come to agreement on many technical issues, including, in relation to;

- (a) the assessment of construction and non-turbine related noise;
- (b) support for the adoption of the 2010 version of the New Zealand Standard 6808;
- (c) noise and wind measurement locations and methodologies;
- (d) the operating state of turbines during the compliance testing;
- (e) the methodology for analysing tonality;
- (f) admissibility of existing data, reporting requirements and peer review; and

(g) procedures for proposing additional turbines, and assessing cumulative effects.

313 This left the areas of disagreement between the experts as:

(a) the wind speed threshold for the adoption of the HA limit;

(b) the objective method for determination of AM;

(c) the procedure for assessment of SAC-penalised data in determining the 'assessment' sound level; and

(d) whether a nearfield turbine sound power level limit is necessary – such a condition would require a near-field turbine sound power compliance measurement.

314 In relation to the HA limit, Mr Halsted argued that the wind speed threshold should be 6 m/s, since this is the 'default' threshold adopted in Section 5.3.2 of NZS6808:2010, and there appeared to be no compelling evidence that it should be increased to 8 m/s.

315 Similarly, in relation to an objective measure of AM, Mr Halsted advocated for the adoption of the interim test method described in Appendix B, section B3.2 of NZS6808:2010. Mr Halstead was of the view that this methodology was technically sufficient to identify AM, and reasonably well tested and understood.

316 In relation to the alternative United Kingdom Institute of Acoustics AM objective test methodology proposed by Mr Evans, Mr Halstead considered it a 'worthy method' that could be considered in future revisions of NZS6808:2010, but ultimately that, because it is quite recent, it has not been subject to extensive testing with real sound level recordings from wind farms, and therefore that it was too unproven in practical situations to be adopted in current consent conditions.

317 In relation to the processing of SAC penalties in the sound-level/wind speed data pairs, Mr Halstead also rejected Mr Evans' suggestion that the average penalty be applied to an entire 1 m/s data bin where 10% or more of data points were subject to a penalty, on the basis that this approach is not consistent with the data analysis approach in NZS6808:2010, and would not result in a 'sliding scale' of influence of penalised data points on the assessed noise level.

318 Where new turbines might be considered for the Windfarm, Mr Halstead did not agree with the suggestion to include a condition to limit the turbine sound power levels (which would therefore require a sound power level measurement in the nearfield of new turbines). He believed that this approach is not consistent with the approach of NZS6808:2010, which requires compliance measurements at the noise sensitive receivers.

319 Mr Halstead also addressed some of the matters raised by submitters. In respect to infrasound raised by the Wallaces, Mr Halstead noted that there have been no complaints received that relate to infrasound. He also noted that NZS6808:2010 refers to a large body of work undertaken that shows the infrasound levels are well below the levels produced by wind farms, and that no controls are either necessary or desirable. Finally, he noted that the Wallaces remedy sought was limited to baseline levels to be monitored. He considered this would incur a cost that would not offer any benefit to residents.

320 The Wallaces also raised Windfarm shutdowns. It was Mr Halstead's view that what the Wallaces sought stepped outside the objective of the RMA and NZS6808:2010 and should not be included in conditions. In respect to mandatory dynamic curtailment, as raised by the Irvin submission, Mr Halstead was of the opinion that the controls recommended in NZS6808:2010 already deliver the appropriate balance between noise amenity and wind resource productivity. However, we note here that this matter had moved on by the conclusion of the hearing.

321 Mr Halstead also addressed the criteria for inclusion of data points raised by Dr Huffman and Mr Devey and wind sectors raised by the Wallaces. We note there, that these matters had moved on by the conclusion of the hearing.

Mr Adrian Low

322 We heard from Mr Low slightly out of order, after we had heard from the submitters. Mr Low holds a Bachelor and Masters of Science and a Post Graduate Diploma in Planning. He is a consultant with Mitchell Daysh Limited, having previously worked at the Otago Regional Council, and has somewhere over nine years' experience. He is a member of the Resource Management Law Association and an Associate Member of the New Zealand Planning Institute.

- 323 Given that matters had progressed since the lodgement of his statement of evidence dated 25 August 2017, Mr Low focused more on the matters in contention, being the difference positions in respect to the recommended review conditions, and matters raised in submissions. However, he did spend some time on the overall planning framework, which we have set out and discussed earlier.
- 324 Mr Low neatly summarised what the matter is before us, that the noise effects are greater than initially predicted, that some nearby residences are experiencing periodic adverse effects because of noise emissions from the windfarm, with the key being whether those effects are being avoided, remedied or mitigated to an acceptable level.
- 325 Mr Low discussed some of the key elements of the planning framework, which included that:
- (a) PC15 does not intend to provide for renewable electricity generation at all cost - there needs to be determination of what is appropriate;
 - (b) the non-complying activity status for new sensitive activities in close proximity;
 - (c) that effects from renewable electricity generation activities need to be avoided, remedied or mitigated, or otherwise offset or compensated;
 - (d) that inclusion of NZS6808:2010 in the assessment criteria for wind farms means that weight should be given to the New Zealand Standard; and
 - (e) the proposed deletion of reference to New Zealand Standard in 6.2.6.2 (that noise from wind farms be assessed, predicted etc. by reference to NZS) has been appealed.
- 326 His opinion was that the Rural Zone ODP provisions sought that amenity in the rural environment be maintained, rather than protected. He considered that 'maintained' meant made no worse. He also discussed that the objectives and policies for the rural environment in respect of noise focused on providing for the health and safety of rural dwellers. In respect of the Rural Residential Overlay, his advice was that this afforded rural residential dwellers additional protection from Windfarm noise.

- 327 Mr Low reminded us that section 1.2 of NZS6808:2010 states that “the noise limits recommended in this standard provide a reasonable rather than an absolute level of protection of health and amenity”. He considered that using NZS6808:2010 is an appropriate means of managing the Windfarm noise effects, noting that if acoustic circumstances meant conditions which complement the requirements of the New Zealand Standard and would provide reasonable protection of health and amenity for nearby residences, that that would be appropriate. In his opinion, the ODP does not intend a more protective approach be taken in this area.
- 328 At the point that he gave his evidence, the three outstanding matters in contention related to the wind speed below which the HA noise limit in condition 4 would apply; the conditions addressing SACs; and the requirement for Stage 4 turbines to comply with sound power levels stated in the application.
- 329 In respect of condition 4, at that point Mr Low remained of the view that 6 m/s was appropriate, and recommended amendments to make it clearer that this condition would only come into effect one year after any section 128 RMA review conditions were approved.
- 330 In respect of condition 5, Mr Low remained of the view that it should apply only to residential dwellings that had been in existence at the time of the granting of the consent in 2005. This was because there had been a legitimate resource consent in place since that time, with conditions to manage. His advice was that there was no guarantee that PNCC would not grant consent to a non-complying activity consent for a new dwelling, and to leave it open as suggested by Mr Auckram would be unfair/unreasonable.
- 331 In respect of condition 8, he had concerns about the clarity and enforceability of the condition, and accepted the PNCC version of condition 8.2 using the United Kingdom model. His reservations remained in terms of condition 8.4 and the amendments to condition 11.
- 332 In terms of sound power levels, he advised he had reviewed other recent decisions, and offered a revised condition that would require a compliance report be submitted that confirmed that overall compliance with conditions 4 to 8 would be achieved.

- 333 Mr Low also discussed new additional conditions 5A-5C that had been developed as a result of discussions between NZWF, PNCC and Dr Huffman. These new conditions had been introduced by Mr Worth and Ms Morrison-Shaw immediately prior to hearing from Mr Low.
- 334 Mr Low then went on to discuss some of the matters raised in submissions, and the additional conditions recommended to improve communication between the consent holder and neighbours. These included conditions 16 and 16A requiring a new website be established which provided information to the public on contact details, how to make complaints, and compliance reports, and making the nearby residents aware of this new website. New recommended condition 16B would require NZWF to establish a community liaison group, as another means of communication and engagement with the nearby residents. Mr Low agreed that it may be appropriate to have a representative of PNCC on the group.
- 335 Mr Low's overall conclusion was that the proposed conditions adequately avoid, remedy or mitigate any adverse effects, and that there is no planning reason why the Windfarm should not continue to operate.

Submitters

Mr Joseph Poff

- 336 Mr Poff firstly advised us of his background, that he is a refrigeration electrician with a New Zealand Certificate of Engineering, and a sheep and beef farmer. Mr Poff is a nearby resident to the Windfarm, advising that he is located on the threshold of NZS6808:2010, and that he has no issues with the Windfarm. He advised he is a stakeholder in the Turitea Wind Farm, that he is pro renewable energy and has an electric car. He advised he can see 11 or 12 WTGs from his property.
- 337 His primary concerns were focused on the opposition to the Windfarm by particular parties. He rejected the use of the term "community" adopted by some of the submitters in opposition to the review. He considered that there had been ongoing harassment of NZWF through the Courts, and that they have been operating within their consent. He noted that the complaints made were only from a few households, and did not represent the whole community.
- 338 Mr Poff also discussed the issue of the non-compliance, highlighting that it was the sound power in the nacelle that was non-complying. In his opinion, it was the

sound at the receiver that was important. Mr Poff also advised that whenever a complaint had been made, that Mr Halstead had undertaken noise measurements.

339 Mr Poff outlined that of the submissions made, five were in opposition, five in support, and two were 'ring-ins'. He also noted that of the 20 affidavits prepared for various Court actions, two of those who provided affidavits had sold subsequently, and others were from the same household. His opinion was that there was a high degree of commonality between them, with the commonality being money. He also advised that those that had sold their properties had done so above the market value.

340 Mr Poff also advised us of his previous involvement with the Turitea Wind Farm. His opinion, having been involved in Turitea and observed what has been happening with NZWF is that PNCC has a mind-set to oppose wind farms.

341 He referred us to a Massey University Survey report and a report that reviewed that survey report 23 regarding perceived annoyance noise levels, which we were subsequently provided. He explained how the report had identified flaws in the survey and the survey results could not be relied upon.

342 His opinion was that noise is not a black magic and should not depart from the New Zealand Standard just because people complain. Mr Poff then also discussed the NPSREG and PC15B, expressing concern that PC15B had locked up the Tararua Reserve by preventing new turbines in the reserve.

343 In respect of noise, Mr Poff advised that he has heard AM, but only very occasionally for a couple of minutes' duration. It is most noticeable when there is no wind at the house and a cold night, and usually in the night time or evening.

344 His final position was that PNCC is funding harassment of NZWF, and that PNCC is not dealing with the public or community, but rather a self-selecting group of individuals. He requested that PNCC stops pandering to the lowest common denominator.

Dr Lee Huffman and Mr Graham Devey

345 Dr Huffam appeared on behalf of herself and Mr Devey. Dr Huffman spoke to a PowerPoint presentation and provided us with a copy of her speaking notes. Her

spoken submission expanded on points in the original submission and responded to matters raised in the Section 42A Reports and in the hearing to date.

346 By way of background, Dr Huffman has a PhD. in Food Science and Nutrition and has had responsibilities for integrating analytical measurements to sensory evaluation. She advised her expertise is in experimental design and data analyses.

347 Dr Huffman usefully framed up her submission into three parts:

- (a) the background to why they became involved in the NZWF matter;
- (b) why they have a different perspective on noise to some of their neighbours; and
- (c) the outcome they sought from the hearing.

348 In respect of how they became involved, Dr Huffman explained it was through contact by Mighty River Power in respect to the proposed Turitea Wind Farm, who had advised that they would be impacted by the turbines. In contrast, the Te Rere Hau models had shown that they would be outside the noise contour.

349 Dr Huffman stated that they always expected to hear the Windfarm, but when the countryside is calm the WTG noises are intrusive if going outside or having windows open. She explained she started to look into the Windfarm predictive models, given that the noise was audible.

350 She further explained the long involvement she has had with NZWF, keeping logs and providing feedback, and sharing results and analysis that she has undertaken with PNCC and NZWF. She raised concerns about some omissions of data she had collected in analysis undertaken by NZWF and how and where measurements were made. Dr Huffman confirmed that there were many irritating noises from the Windfarm when it was calm at their house but enough wind to keep the turbines running.

351 In respect of the differences in experience between neighbours, Dr Huffman discussed the differences in topography, location in proximity to the Pahiatua Track, and screening between properties.

352 Dr Huffman advised that she and Mr Devey are not 'nimbies' or anti-green energy, having installed passive solar into their home, and orientating the house to the sun.

353 In terms of the outcome sought, Dr Huffman expressed that they wanted to be able to be outside their house when it is calm and enjoy the peaceful surroundings, to open their windows at night and during the day, and for the high rural amenity to be protected. Dr Huffman advised that they strongly supported PNCC's recommended amendments to conditions, and discussed some amendments sought as well. For ease, the following table sets out the Huffman-Devey position on proposed review conditions:

Condition	Position
4	Strongly support. Considers that there are meteorological, topographical and acoustical grounds to support 8 m/s
8	Support
10	Should another post amendment noise assessment be completed, willing to be included as a noise monitoring location
7.4.3	That Pahiatua Track be included as the data already indicated that T103 and T104 has an impact on it. T103 and T104 be included as a requirement for monitoring as they are included in the majority of their complaints and are in clear line of sight
7.3	The operational wind directions are too limited and should include 60 to 90 degrees and 180 to 270 degrees
7.4	That it be amended to specify which turbines should be running and what data points require (more than 95% WTGs online and operating; and that at least 9 or nearest 10 WTG to a measurement location be online and operating)

354 They also sought that the revised consent conditions offered the homes on the northern side of Ridgeview Road and the Harrison Hill Road with the same level of protection as for the HA area.

355 Dr Huffman and Mr Devey would like the ongoing saga to stop and their contributions heard and respected. They would like that there is an immediate

response that under agreed conditions where there is very low wind at their homes with higher wind on the ranges that the WTGs be curtailed.

356 We spend some time questioning Dr Huffman, given the extensive time her and Mr Devey had put into noise measurement and data analysis. Dr Huffman explained that they only made complaints when the noise was prolonged or very loud, and not every time they heard something. Their main point of contention is the restriction the noise makes in terms of their use of their outdoor space and being able to open doors and windows, at times when they would enjoy it most.

357 She saw value in having a noise recorder at residences even with the constraints involved. She also saw value in having a more specific curtailed condition regime for the turbines which would have a more targeted approach to managing noise at times when residents would want to use outdoor space. She advised that she had been away over the last month or so since NZWF had been curtailing the WTGs, so was not able to advise if that had been effective. She also advised of her ongoing willingness to work with PNCC and NZWF to revise and finalise the conditions.

358 After reviewing her data, Dr Huffman was able to advise us that 90% of the time it is calm at home in south-easterly winds and 68% of the time it is calm at home in north-westerly winds. She also advised that 82% of the time in calm conditions the Windfarm meets the annoyance threshold, but when it is not calm, there is no annoyance. She also advised that T103 and T104 are turned off half the time that it is calm.

Mr Bill Harding

359 Mr Harding has experience as an electrical engineer, and is primarily concerned about the electrical generation provided by wind farms.

360 In his presentation he reiterated his concerns from his written submission, which included the difference between synchronous and asynchronous generation.

361 His assertion that 'all wind farms are asynchronous, and produce high levels of 'harmonic power' and therefore that since 'smart meters measure fundamental plus harmonics, and not 50Hz alone' that wind farm electricity generation is a fraud, as 'nobody can use' the harmonics with their equipment. In his presentation he also stated that he believes that WTGs produce 'deadly currents to earth that decimate lifeforms below the ground' that have resulted in

environmental effects such as the death of cockles at Liverpool, and that when coupled with synchronous generation from hydro and geothermal generators in Taupo, have resulted in the death of cows, or the 'blowing up' of the post office.

362 Mr Harding stated that wind farm electricity generation had caused 'four complete shutdowns' of the electricity supply network in South Australia during the three weeks prior to the hearing, and the whole of the United States of America power network was shut down for a 7-8 minute period because lightning hit wind farms, four weeks prior to the hearing.

363 When asked by the Panel if he had any proof of these rather extraordinary claims, he conceded that they were anecdotal, based on 'history you can find out', or based on information he had found 'through the net'.

364 In response to a question from Commissioner Sweetman, he indicated that he had no personal interest or association with the Palmerston North area.

Mr Lawrence Hill

365 Mr Hill appeared by way of video link. He challenged Mr Worth's contention that a correlation exists between the market price for electricity and low wind speed. However, he was more concerned that NZWF intended to change the type of turbine from a Windflow 500-33 to a three-bladed turbine on the basis that three-bladed turbines emitted less noise. If this was to occur, he signalled a fresh consent would be required and he sought to amend condition 12 expressly include provision for identification and reference to Windflow 500-33 turbines so as to limit NZWF to the use of those turbines for the Windfarm.

366 In his own words he described the Windflow 500-33 turbine as a chimera, meaning that it operates differently in his view to nearly all of the turbines marketed today.

367 It was his view that at low wind speeds blades on the turbines are pitched to obtain maximum lift from air. This he said, is when wind turbines are at their noisiest. It was his opinion that it was justifiable to increase the cut-in wind speed to 8 m/s.

368 He discussed Gebbie's Pass and the *Pickering* decision in detail pointing out that both Marshall Day Acoustic and Dr Chiles, in his view, have both been found to be

wrong in the application of NZS6808:2010 and their interpretation of the SACs at noise sensitive receiver locations.

369 He impressed upon us his view that PNCC and by extension ourselves have a duty to ensure that all people have their health protected and that people are protected from any harm from wind turbine noise as the Environment Court in *Pickering* determined.

370 He confirmed to us that he is not himself affected by noise from the Windfarm. Finally he presented us with his marked up version of the review conditions identifying deletions and additions that he supported.

Dr Clel Wallace and Ms Nicky Banks-Wallace

371 Unfortunately due to timing, the Wallaces were unable to attend the hearing. Instead, Dr Huffman read from a statement prepared by the Wallaces, which was an update to their earlier submission.

372 As a background, Ms Banks-Wallace has a M.Sc. in Botany from Massey University and Dr Wallace has a Ph.D. in Earth Sciences from Massey University and a PGDiploma in Datametrics from the University of South Africa. Both have significant experience in research and teaching experience and in handling, interpreting and appraising data.

373 Particular points that the Wallaces wished to bring to our attention, beyond those raised in their submission, included that:

- (a) 140 Harrison Hill Road and 21 Ridgeview Road need to be added to condition 10.1;
- (b) in conditions 4 and 7 the times need to be adjusted to take cognisance of the residents' natural rhythms;
- (c) condition 7.1 needs to be modified to accommodate the pre-5.5 m/s cut-in of many of the WTGs and the wind speed range should start at 3 m/s;
- (d) in respect to a remedy, there should be either a phone contact that will generate an immediate turning-down of the Windfarm, or a higher cut-in wind speed (10 m/s) for problematic wind sectors, and that in the meantime, there might be an immediate response when the Windfarm is noisy;

- (e) a new condition requiring that AM/impulsiveness be assessed, notwithstanding that these might be difficult to objectively quantify with the current technology; and
- (f) the acoustic experts required under for example proposed review conditions 11 and 13.2 need to be independent, not previously involved with the Windfarm and must be chosen by PNCC.

374 The Wallaces final reflection was that too much of the material and approaches used in the compliance monitoring and reviews, has been done from the point of view that the Windfarm has an automatic right to operate. They consider that very little relates to the premise, that the residents have rights to live in a relatively quiet, urban/rural setting without an industrial complex intruding.

Tararua Wind Power Limited

375 We received a letter from Ms Lara Burkhardt from Holland Beckett Law on 12 September 2017, sent on behalf of TWPL. Ms Burkhardt reiterated that TWPL was neither in support or opposition to the review, but rather had raised a concern that the review conditions may require TWPL to turn off its wind farm to allow noise monitoring to occur.

376 Ms Burkhardt set out that TWPL supports the proposed advice note to proposed review condition 10.1, which reads as follows:

For the purposes of condition 10 above, where further background sound measurement is required, this consent does not require that any other existing windfarms has to be turned off. Clause C5.6.3 in NZS6808:2010 provides an accepted method for calculating the background sound level excluding noise from other existing windfarms.

377 On the basis of this advice note, TWPL chose not to attend the hearing, and sought that we considered their letter. We have done so accordingly. We note that the advice note is incorporated in the recommended condition 10.1.

Replies

378 Because this is a section 128 RMA review, it was appropriate for both NZWF and PNCC to have the opportunity to provide a closing statement after we had heard from all parties.

PNCC

- 379 Mr Maassen presented the PNCC reply, prepared by himself, Mr Evans and Mr Auckram. The reply traversed matters raised through the hearing to date, and included discussion on what PNCC considered the outstanding matters at that point.
- 380 In respect of condition 4, and the circumstances when it applies, Mr Maassen talked through the PNCC version of the condition, and amendments that were recommended to improve the certainty and workability of the condition. This included the retention of the 8 m/s wind speed limit.
- 381 PNCC remained of the view that 8 m/s was the appropriate threshold, and that there were acoustical, topographical and meteorological grounds for why it should apply. Mr Maassen was also of the view that the characteristic of a HA area adjacent to a wind farm where reasonably high density rural living is contemplated, and encouraged through PC15, is not usual for wind farms in the Manawatu. He discussed that PC15 enables rural-residential development down to 1ha in the rural-residential overlay, while making residential dwellings within 1.5 kilometres of wind farms are actively discouraged through a non-complying activity status. Further, Mr Maassen opined that NZS6808:2010 recognises the role of district plans to set amenity expectations which include the noise environment.
- 382 Mr Maassen acknowledged the turnaround in culture led by Mr Worth, and the process has been a learning exercise. In terms of the voluntary curtailment regime that NZWF had discussed, he advised that while he liked reporting on it as a method, it may require a blunter condition in the review process. He also thought it appropriate for the review to respond to the curtailment regime as a replacement for condition 4, led by a peer review process.
- 383 In respect of the impact of the revised conditions on the operations of NZWF, Mr Maassen's position was that all we had been provided was oral evidence, and that there was a lack of quantitative data of economic and energy production impacts.
- 384 In respect of condition 5, and which residences should it should apply to, Mr Maassen advised that the PNCC position was 30 May 2009 was the appropriate date, as that was when Stage 2 was constructed and noise complaints were

heard. They also identified that 8 Ridgeview Road and 140 Harrison Hill Road were constructed during the period 2005-2009.

- 385 Mr Maassen also advised us that from the PNCC point of view, there is no evidence that the Windfarm complies with its existing consent. PNCC consider that the MDA2014 report did not check compliance with representative sites. Accordingly, Mr Maassen feels that PNCC has been very generous in a situation entirely attributable to NZWF.
- 386 To refute Ms Morrison-Shaw's position in respect of the complaints received⁴¹, Mr Maassen identified that the Irvins, Wilson and Ivamy are good examples of new residents to the area who came with the expectation of noise, and have found it more annoying than expected.
- 387 In respect of condition 8.2, Mr Maassen noted the experts had agreed that the United Kingdom Institute of Acoustics approach was robust. He proposed a minor rewording.
- 388 In respect of conditions 8.4 and 8.5, Mr Maassen advised that they were comfortable with the new concept proposed, but advised that Mr Evans would prepare a new condition 8.4 to replace PNCC's earlier proposed 8.4 and 8.5.
- 389 Mr Maassen also discussed the issue of a robust peer review process, and suggested that Mr Evans prepare an amended condition 11 to provide clear expectations.
- 390 In respect of the commissioning of Stage 4 of the Windfarm, should it occur, Mr Maassen advised that PNCC saw merit in Mr Low's recommended amendment to condition 12.4. He said PNCC maintained that some control of noise at the source was warranted and the new conditions should address any assumptions made, any deviations that occur, and state any uncertainties.
- 391 Mr Maassen agreed with NZWF that modifications to turbines of a similar size and better performance should not be prevented; however, the reality was that any significant change in design and dimensions would require a new consent. We observe here that we prefer the response from Mr Maassen to turbine modification to that advanced by Mr Hill because allowing better performing turbines is preferred over restricting NZWF to existing turbines.

⁴¹ Opening Legal Submissions para 19

392 In response to the Panel querying which turbines were included in Stage 4 and not yet built, Mr Maassen set out PNCC's understanding of which turbines these were and where they were intended to be located.

393 Mr Maassen also spent time on PNCC's position in respect to the application of the *Pickering* decision to how NZS6808:2010 is interpreted and applied. Mr Maassen remained of the view that there is a principle of inquiry and that the decision maker needs to be satisfied that the standard meets the overarching and appropriate planning goal in the specific factual circumstances. In this circumstance, he considered that there is an inescapability from sound. He also considered that each case needs special inquiry. He also advised us that the HA area threshold in condition 4 and the United Kingdom DECC in condition 8.2 are within what the Standard contemplates.

394 Lastly, Mr Maassen discussed the need for ongoing complaint management and continuous monitoring. This was because PNCC was not convinced that when NZWF does achieve compliance that this will continue.

NZWF

395 In closing for NZWF, Ms Morrison-Shaw reminded us that the RMA is not a nil effects statute and does not require all noise associated with an activity be completely internalised or inaudible beyond the site boundary. Rather, the RMA requires any noise to be reasonable.

396 Ms Morrison-Shaw also reminded us that NZWF has been proactive in seeking process-based solutions, has undertaken significant monitoring and has worked on conditions, all with the aim of addressing noise concerns. She also refuted the portrait that had been painted that NZWF had placed too much weight on expert advice and not enough on its own judgement. Her position was that while NZWF had sought extensive advice, it had also exercised its own judgement, as demonstrated by proposing and accepting more stringent measures than that contained in NZS6808:2010.

397 She advised that NZWF is committed to being a better neighbour, but that it can only do so if it has a viable wind farm to run. In particular, she raised the remaining concerns around the 8 m/s and tonality penalties that remained in contention. She queried, given the regional and national significance of wind

farms as to the appropriateness of such measures that would impact on the viability of the Windfarm.

398 The NZWF position is that they comply with its current consent, and monitoring has demonstrated this. Ms Morrison-Shaw noted that NZWF has spent a substantial amount of money in defending its consent, and is keen to move forward by implementing and spending money on solutions, rather than litigation.

399 In respect of the 8 m/s matter, she discussed revised conditions that were tabled to us on the 14 September 2017, which proposed a more refined approach which responded to the days and times where residents would be provided more meaningful relief.

400 Ms Morrison-Shaw then went through what NZWF saw as key matters requiring a response in reply. She discussed section 16 RMA noting that the requirement to adopt the best practicable option (“**BPO**”) only arises if the noise is unreasonable. She added the starting point for determining what is reasonable is the relevant New Zealand noise standard. Going beyond that standard she said is only warranted in limited circumstances.

401 It was her contention based on NZWF’s evidence that the Windfarm’s noise is at a similar level to that which is commonly experienced in the area, that the planning framework is not significantly more stringent, and finally the Windfarm’s operations meet the requirements of the noise standard.

402 Ms Morrison-Shaw acknowledged noise can be found to be unreasonable even if there is compliance with the ODP, the New Zealand standard and the noise consent conditions.

403 Ms Morrison-Shaw then addressed the issue around what the threshold should be to determine that noise is unreasonable. After commenting on the guidance proffered by Mr Maassen and Mr Evans she observed that notwithstanding the review was fully publicly notified only seven submissions in opposition were received and of the approximately 30 households directly served with the review only two of those households provided submissions or attended the hearing.

404 She acknowledged these factors are not determinative but considered they were relevant factors to consider.

- 405 Finally on this issue of reasonableness she noted that even if the noise was considered to be unreasonable the section 16 RMA BPO requires consideration of the technical and financial implications of remedying that noise. She submitted the NZWF evidence demonstrated why the imposition of a blanket 8 m/s high amenity threshold is not the BPO. She further submitted such a condition would impose a significant constraint which is out of all proportion to the effect seeking to be mitigated. She contended the solutions advanced by NZWF in its condition set are the preferred BPO if we found that the present noise is unreasonable.
- 406 Turning to the issue of viability she submitted no other party has provided any credible evidence that has seriously challenged Mr Worth's evidence nor have they considered in any detailed way the economic and financial implications of the restrictions they propose.
- 407 Ms Morrison-Shaw then addressed a range of relevant Court decisions explaining how they could be distinguished from the current circumstance. Primarily it was her view that the factual context in those cases was different than the case here.
- 408 Next she addressed Mr Hill's submissions relating to both the Health Act and Building regulations. Relying upon Mr Halstead's evidence she contended that the New Zealand standard is sufficient to protect health and that there is nothing in the noise standard that requires windows to be closed. So in her view there is no breach of the Building regulations.
- 409 Within her reply she set out in detailed form what she described as NZWF's significant progress in operational and noise curtailment development since the new management regime was installed in March 2017. She acknowledged voluntary curtailment is not a matter we can capture in a condition but her point was such matters remain relevant when we are determining what the appropriate conditions are.
- 410 Turning to conditions she reminded us our power to impose conditions is not unlimited. Conditions she said can only be imposed for a resource management purpose, they must severely and reasonably relate to the activity authorised by the consent, they must not be so unreasonable that no reasonable consent authority would impose them, and finally there must be a logical connection with the activity.

- 411 In her view the conditions proposed and accepted by NZWF go beyond what is strictly required to manage the noise effects of the Windfarm. She informed us such conditions can be considered to be proffered on an *Augier*⁴² basis. Further restrictions which go even further beyond what is necessary to manage noise in her submission could only be imposed with NZWF's consent.
- 412 Finally she referred to NZWF's commitment to a curtailment regime to protect its Windfarm asset which will result she said in the Windfarm running less than ever before. She asked us to note that this regime is not needed to comply with current consent conditions, or those conditions which it proposes through this review process. The curtailment regime she said is purely to provide an additional measurable benefit to neighbours as part of being a good neighbour.
- 413 Turning to the HA issue she acknowledged NZWF had accepted that a HA limit should apply so that the key issue between PNCC and NZWF remains whether that the threshold should be set at 6 m/s or 8 m/s for the entire Windfarm.
- 414 In submitting such an approach was not appropriate she noted instead that rather than use a blanket 8 m/s threshold as a blunt tool NZWF had through its approach to conditions listened to the near neighbours' concerns and developed specific alternative conditions that it considers will provide greater benefit for near neighbours.
- 415 In her view these specific conditions in addition to the HA 6 m/s threshold being applicable to the entire Windfarm including WTG 103 and 104 are to be preferred. She observed the cost imposed on NZWF as a result was not insignificant but NZWF accepted that cost.
- 416 In respect of AM she confirmed NZWF, while not being entirely comfortable, is willing to accept the United Kingdom method so as to reduce areas of difference between it and PNCC and to avoid the time cost and potential complexity associated with a condition requiring analysis under both methods. We note that Commissioner Burgemeister had suggested analysis under both methods.
- 417 As to tonality she observed that as a consequence of discussions between acoustic experts an alternative and more fine-grained approach to the issue has been developed. She explained instead of averaging a penalty across an entire wind speed bin, the new method proposed would require investigation of a

⁴² *Augier v Secretary of State for the Environment* (1978) 38 P & CR 219 (QBD).

particular tonality occurrence to determine whether a specific set of factors causing the SACs can be identified. If they can, then tonality penalties would apply to times when those factors occur. If they cannot, then the regime set out in the New Zealand standard would apply. The findings in this regard would be reviewed by PNCC's acoustic adviser.

418 Turning to sound power level she observed that this issue had evolved during the course of the hearing. In particular she noted PNCC originally proposed a limit on sound power level, however discussion has moved to testing of WTG to ensure that the WTGs do not exceed the sound power level specified in the stage for acoustic assessment. In her view at the close of the hearing there was little between the wording proposed by PNCC and NZWF however she noted NZWF's was to be preferred because it provides a greater level of specificity as well as direction as to what to the consent holder must do if the sound power level is exceeded.

419 Next she addressed the issue of a permanent monitoring point. She observed that NZWF does not consider such a station is required given the amendments it has a proposed to the conditions. However she said if we were minded to impose a permanent monitoring station that condition should not apply until 12 months after the completion of the review and should be contingent on there being continuing noise issues raised during that 12 month period. Finally, she said the Irvin property would be an appropriate location for the monitoring station subject to their consent.

420 Finally she emphasised that the conditions set that NZWF proposes includes conditions which are appropriate to manage the Windfarm's noise. She submitted they also go further because they include conditions which will assist NZWF in its goal of being a better neighbour. In her submission those conditions should be adopted.

POST HEARING PROCESS

421 By 14 September 2017, we had heard from all parties scheduled to be heard. However, it had become apparent through the hearing that further discussions between the parties, as had been occurring during the hearing itself, would be useful in assisting to further refine the outstanding areas of contention. In particular, we were informed of the useful dialogue that had occurred between NZWF, PNCC and Dr Huffman to consider potential curtailment options and in

respect to data collection. These parties advised us that they saw benefit in ongoing discussions.

422 Accordingly, at the end of the hearing, after PNCC and NZWF had provided us with an indicative timetable on how further discussions may occur and be reported back to the Panel, we requested that PNCC and NZWF provide us by way of memorandum with a timetable that would culminate in the close of the hearing.

423 We received a joint memorandum of counsel from PNCC and NZWF on 18 September 2017, setting out the following proposed steps:

Date	Action	Who	To whom
22 September 2017	Provide a plan showing Stage 4 turbine sites	NZWF	To PNCC and submitters
29 September 2017	Provide a brief report and data demonstrating the difference between a HA limit at 6m/s across the entire windfarm, together with new conditions 5A and 5C imposing restrictions on T013 and T014 (option 1) and a HA limit of 8m/s across the whole Windfarm (option 2)	NZWF	To PNCC and submitters
6 October 2017	The outcome of joint conferencing between Mr Evans and Mr Halstead on the above matter	Mr Evans and Mr Halstead	To PNCC, NZWF and submitters

10 October 2017	A revised set of conditions to be provided, incorporating changes from the joint conferencing and including changes to address matters raised in the hearing	NZWF in consultation with PNCC	To PNCC and submitters
13 October 2017	Comments and suggested changes to be provided on revised conditions	PNCC and submitters	NZWF, PNCC and submitters
20 October 2017	Joint memorandum of counsel attaching a final proposed set of conditions each by NZWF and PNCC (if not agreed), and outlining and remaining areas of difference and reasons why, including remaining submitters concerns	NZWF and PNCC	To submitters
25 October 2017	Hearing closed	Panel	

424 On the 21 September 2017, we issued a memorandum requesting that the question put by Mr Harding on the use of 50HZ filters be responded to, and confirming the timetable proposed by counsel, with the following changes:

- (a) that PNCC was to confirm their agreement with the Stage 4 plan by 26 September 2017; and

(b) that NZWF advise if there are any other WTGs that should be considered beyond T013 and T104, and whether the new options should apply to Stage 4 of the Windfarm.

425 We received the joint statement of acoustic experts on 6 October 2017. This joint statement provides a statement of matters agreed between the two experts in respect of Options 1 and 2.

426 On 10 October 2017, NZWF provided revised conditions to PNCC and the submitters. We received comments from the Wallaces on the 12 October 2017 expressing concern about the short turnaround time, having received the conditions on the 11th, as well as providing feedback on the revised conditions.

427 On 13 October 2017, we received a submission from Mr Hill, setting out his main areas of concern with the revised conditions.

428 On the same day we also received an email from Mr Maassen advising that PNCC would not be able to provide a response on the NZWF until the 17 October 2017.

429 On 16 October 2017, we received a memorandum from Mr Hill, expressing concern that the timeline and actions set out in our 21 September 2017 had not been followed and in particular, that NZWF had not completed with consultation with PNCC prior to submitting their revised set of conditions. Mr Hill sought that submitters have the opportunity to comment on PNCC's view of the revised conditions or that the Panel otherwise confirm that the requirement on NZWF had been fulfilled.

430 On 16 October 2017, we also received a memorandum from NZWF's counsel requesting a revised timetable, as follows:

Date	Action	Who	To whom
17 October 2017	Provide a response on NZWF revised conditions	PNCC	To NZWF and submitters
20 October 2017	Comments and suggested changes to be provided on revised conditions	Submitters	To NZWF and PNCC
27 October 2017	Joint memorandum of counsel	NZWF and PNCC	To submitters

		attaching a final proposed set of conditions each by NZWF and PNCC (if not agreed), and outlining and remaining areas of difference and reasons why, including remaining submitters concerns		
1 2017	November	Hearing closed	Panel	

- 431 We confirmed this revised timetable in a memorandum dated 17 October 2017.
- 432 On 17 October 2017, PNCC provided a revised set of conditions, and included an evaluation of the set of conditions provided by NZWF.
- 433 On 20 October 2017, we received a submission from Mr Hill on the PNCC set of conditions.
- 434 On 25 October 2017, we received an email from the Wallaces, asking for the timetable to be extended to allow them to provide a submission by the 27 October 2017. We agreed to this extension on 26 October 2017. Given this, we also amended the timetable to require the joint memorandum of counsel to be provided by the 1 November 2017, and for the hearing to be declared closed on the 6 November 2017.
- 435 We received the submission from the Wallaces on the 27 October 2017. Therefore, the only comments we received on the revised conditions were from the Wallaces and Mr Hill. We note that we also received correspondence from Mr Harding during this period however, this was not related to the conditions of consent.
- 436 The joint memorandum of counsel dated 31 October 2017 was provided to us on the 1 November 2017, and we closed the hearing on the 6 November 2017.

437 The joint memorandum of counsel provided an agreed revised set of conditions, noting that there remained areas of disagreement. That area of disagreement is in respect of tonality conditions 8.4, 8.5 and 11.5 and whether they be deleted as sought by NZWF or redrafted and retained as suggested by PNCC. This is included by a discussion of NZWF's and PNCC's respective positions on these conditions.

438 The joint memorandum also sets out a discussion on remaining submitters concerns. Both NZWF and PNCC were of the view that the amendments to conditions addressed the concerns raised by the Wallaces and Mr Hill. The memorandum also contains a more detailed response to the matters raised by the two parties in an appendix. We address these outstanding issues and the difference in positions in the next section of this decision.

KEY ISSUES AND FINDINGS

439 Utilising the headings below we identify what we considered were the key issues in this review and include our findings.

Is section 128(1)(c) RMA engaged?

440 In terms of section 128(1)(c) RMA, by virtue of Court decisions we have been referred to it has been confirmed that the information made available to PNCC by NZWF for the original consent contained inaccuracies which materially influenced the decision made on the application and also that the effects of the exercise of the consent are such that it is necessary to apply more appropriate conditions.

What are the effects of concern?

441 The particular effects that this section 128 RMA review is considering are the noise effects generated by the WTGs. Mr Auckram⁴³ usefully provided a discussion of the adverse effects arising from the material inaccuracies in the original application.

442 In detail the reviews and evaluations that occurred through the Court processes identified that the Windfarm has WTGs that produce sound at a sound power level of approximately 5 dBA more than originally consented. The MDA2014 report identified that some of the residents who were advised that the noise effect on them would be nil, or less than or equal to 30 dBA, was more in the order of

⁴³ Mr Auckram Section 42A report Paragraph 32

40 dBA, based on measured sound levels. We heard that the particularities of the topography and wind directions meant that noise levels (and annoyance levels) are not consistent between properties⁴⁴. We also heard that the claim in the noise impact assessment report that the WTGs did not possess SACs was incorrect.

443 We were advised that because of the erroneous prediction in the original noise assessment report, many of the properties that were experiencing noise effects were not properties for which background noise assessments had been undertaken when the application was prepared. This is because they were located outside of the anticipated 35 dBA threshold, which would have triggered the requirement for background noise testing under NZS6808:1998. We also were advised that the inference has been made that it is conditions where there is low background sound conditions at certain low wind thresholds that the potential noise effects are most annoying. It was certainly the submission of Ms Tremain, the Wallaces, and Dr Huffman and Mr Devey that this was the case.

444 Dr Huffman and Mr Devey usefully described some of the noise effects that they, and other residents, were experiencing. This was based on their own experience, as well as the reviews they had undertaken of data collected from the Windfarm. Dr Huffman⁴⁵ provided the following descriptions of the SACs being generated from the Windfarm based on her analysis:

- (a) the tonality of "whoosh, swishing, pulsing or beating" was reported by the residents 90% to 100% of the residents' log records for north-westerly winds;
- (b) the tonality of "high pitched whine" is heard by the residents in both wind directions: 65-85% with the south-easterlies and 40-60% for the north-westerlies;
- (c) the tonality of "mechanical/truck or grinding" is reported by residents in both directions: 20-40% with the south-easterlies and 40-60% with the north-westerlies; and
- (d) the tonality of "road of the train, ferry or airplane" is reported by the residents for 90% of the south-easterlies".

⁴⁴ Mr Auckram Section 42A report paragraphs 53 and 55.

⁴⁵ Submission of Dr Huffman Page 17

- 445 So based on the evidence and submissions received, we find that these are the amenity effects that are relevant for our consideration of the appropriateness or otherwise of the review conditions presented to us.
- 446 In reaching this finding we have carefully considered evidence relating the existing environment, including background sound levels, the qualities and characteristics of the subject amenity, the range of permitted activities in the surrounding Rural Zones, the ODP noise limits for permitted activities and the ODP objectives and policies that provide the framework for the area so that we could carefully consider the extent of effects on amenity in the correct context.
- 447 As we understood the position NZWF did not dispute the position advanced by PNCC and submitters that there were effects on amenity rather it was the extent of those effects that NZWF to some extent challenged.

In terms of section 131(1)(b) RMA, in what manner has the consent been used and does that in any way influence our consideration of conditions?

- 448 This issue was principally debated between Mr Maassen and Ms Morrison-Shaw. We have captured the essence of the debate when earlier reviewing Ms Morrison-Shaw's opening submissions.
- 449 Overall we prefer Ms Morrison-Shaw's position on this issue. It is our finding that there is nothing in the manner the consent has been used that either informs or influences our consideration of the appropriate reviewed conditions.
- 450 In reaching this finding we acknowledge the issue of an adverse noise effects arising from the operation of the Windfarm has been a longstanding issue. However, we agree with Ms Morrison-Shaw that NZWF has over this time spent several years in litigation with PNCC which as we see it created uncertainty for NZWF and required it to focus on dealing with the litigation.
- 451 We accept that NZWF has not been inactive over this same period in that it has undertaken extensive monitoring to investigate noise and compliance issues. While some of the submitters in particular might be critical, we acknowledge NZWF, albeit recently, has changed its approach to the noise issue as a consequence of change in management and change in its approach to operating the Windfarm. The fact there has been a change by NZWF which is acknowledged by both PNCC and submitters is, we think, important.

452 For these reasons then we conclude there is nothing in the manner in which the consent has been used that in any way informs or influences our consideration of conditions.

Should we treat the New Zealand Standard as being determinative or persuasive in determining the appropriateness of conditions?

453 Mr Maassen advanced the view that we should not take into account Dr Chiles' views as to the meaning of the NZS6808:2010. Ms Morrison-Shaw took an opposing view. Because of the parties' approach to conditions, we did not feel the need to rigorously interpret NZS6808:2010 so this matter was not an issue for us.

454 Mr Maassen initially advanced the proposition that there was credible evidence that the WTGs on the Windfarm are an outlier class. Mr Hill also advanced that issue. However, given the way this hearing transpired, we do not consider we are required to address and answer that issue.

455 In the end, despite commencing with opposed positions on this issue PNCC, NZWF and the submitters have developed conditions involving tailored solutions which take into account the particular environment, and the particular noise characteristics in which the conditions will apply. This has led to conditions which we agree are more meaningful to the wider resident group.

456 Yet we believe that the conditions still respect the New Zealand Standard. So we do not see the NZ Standard as being determinative in its own right. We see and have considered that the NZ Standard is a very informing guide in our decision-making process after taking into account the particular characteristics of the environment including the noise in issue. In that way, we have endeavoured to respect the guidance provided in *Pickering*.

Which conditions are most appropriate and why, to avoid, remedy of mitigate the effects of concern arising from operation of the Windfarm, as detailed above, and its future expansion (if any) and to enable effective monitoring and review?

457 In the end this broad question can be broken down to several more discrete issues which were helpfully crystallised over the hearing and during post hearing exchanges.

- 458 The key issues identified in joint conferencing related to;
- (a) application of the HA limit, particularly the wind speed threshold for applying the HA limit;
 - (b) measurement of tonality;
 - (c) an appropriate methodology for objective determination of AM;
 - (d) an appropriate method for applying SAC penalties when undertaking wind-speed/sound level data analysis for determining compliance; and
 - (e) the consideration of a condition to limit turbine sound power level and the associated requirement to undertake a nearfield sound power level compliance test.

459 We now move on to address each one of these issues and record our findings linked to the particular review conditions. We have included our findings directly into the conditions attached as Appendix A.

Wind speed for HA limit (Condition 5)

460 The parties have previously accepted that the secondary HA Windfarm noise limit contemplated under Section 5.3 of NZ6808:2010 would apply at some properties due to changes in property zoning related to PC15A. It was agreed this would be the boundary of the Rural-Residential Overlay, as notified in PC15A. To extend this to the Rural Zone closer to the Windfarm would be inconsistent with and undermine the non-complying activity status for new dwellings in the Rural Zone under PC15A. That is, it would afford them a higher level of amenity than is anticipated within that location, and unreasonably constrain the operation of the Windfarm.

461 In his Section 42A Report and submission to the Panel, Mr Evans argued that an 8 m/s threshold for the application of the HA limit was justified on the basis that existing background noise levels in the area were low (<30 m/s), nearfield tonality from the WTGs could manifest at the receivers, the local topography results in large differences in wind speed between the hub height of the WTGs and the property locations, and the wind-farm cut-in of 5.5 m/s would make the 6 m/s threshold ineffectual. In particular he showed evidence from site measurements documented in the compliance reports (undertaken by Mr Halstead) indicating a significant difference in noise level (up to around 10 dBA)

between the measured background noise level and the operational wind farm sound level.

462 However, while NZWF and Mr Halstead accepted that an alternative wind speed threshold could be applied 'where justified' (in accordance with Section 5.3.2 of the standard), they maintained that a 6 m/s wind speed threshold was appropriate (i.e. the HA limit would only apply at wind speeds lower than 6 m/s).

463 Dr Chiles also disagreed with Mr Evans' conclusions, in particular because the 8 dB difference between the background and Windfarm sound level contemplated in C5.3.1 of the Standard is intended to be an average across all wind speeds – which clearly does not occur in Mr Evans' examples. Dr Chiles stated that the absolute level of the background noise level in the area is not abnormally low, relative to many wind farms he has considered, and the topography and relative location of the Windfarm and nearby sensitive receivers was also not particularly different to most wind farm sites. He therefore concluded that additional protections were not warranted beyond the default threshold provided in the Standard.

464 The Panel is similarly not convinced by Mr Evans' argument that an 8 m/s wind speed threshold is more reasonable in this case.

465 Nevertheless, we note the specific requirement in C5.3.2. of the standard which states that *'the wind farm developer will collect, analyse, and provide data according to this Standard justify that their proposed wind farm speed threshold is appropriate'*. This was also clearly highlighted by Mr Maassen in his Section 42A Report. This requirement places the burden of proof for the applicability of a 6 m/s on NZWF, and requires the collection and analysis of data to support their view. In our view, the required level of data analysis was not presented to the Panel by NZWF or their experts. On that basis, and despite the corresponding lack of convincing evidence to support a 6 m/s threshold, we are minded to support a threshold of 8 m/s.

466 As it has eventuated, investigations undertaken by the parties in part informed by the evidence of submitters articulating their needs relating to differing impacts of noise at different times of day and during different seasons both at and

subsequent to the hearing to consider targeted curtailment options⁴⁶ has made the selection of a HA threshold somewhat irrelevant.

467 During the course of the hearing, NZWF agreed to examine a range of curtailment options that would be more targeted to concerns of submitters and local community than simply extending the HA threshold speed from 6 to 8 m/s.

468 It is our understanding, based on the supplementary letter-report prepared by Mr Halstead (28 September 2017), and the joint statement of experts dated 6 October 2017, that the proposed curtailment option outlined in condition 5B is “broadly similar” in acoustic terms to adopting a 8 m/s threshold for applying the HA limit (‘option 2’) in addition to being ‘targeted to those times when the potential impacts on amenity seem greatest’.

469 We have therefore adopted the curtailment regime proposed. However, the cumulative sound power level contribution graph shown on page 4 of Mr Halstead’s supplementary report and associated tables indicate that turbine T088 also has significant effect on residual noise levels. We note that paragraph 9(j) of the Joint Statement of Experts dated 6 October 2017 indicates that curtailment of T088 is not as critical as T103 and T104. However, on the basis of the evidence presented to us in Mr Halstead’s supplementary report, we believe that there is benefit in also including it in the proposed curtailment documented in condition 5A. That being said, we do not believe that NZWF should also be compelled to upgrade the gearbox on T088, and we have therefore not included it in condition 5B.

470 We note that Mr Halstead’s supplementary report indicates that the change to the gearbox on T103 has resulted in a significant reduction in sound power output and tonal audibility generated at the source. We therefore accept that if similar changes are made to T104, then there is likely to be a significant reduction in Windfarm sound at the affected residences.

Measurement of tonality (Condition 8.1)

471 Mr Halstead and Mr Evans agreed during conferencing to use adopt the Joint Nordic Method to measure tonality. They agreed that the highest tonal penalty determined from each 2 minute period in any 10 minute data period would be adopted as the penalty.

⁴⁶ Documented in Mr Halstead’s report dated 28 September 2017

472 We agree that this is a reasonable approach, and have adopted it in the conditions.

Method for objective determination of AM (Condition 8.3)

473 In terms of the objective measurement of AM, the experts accepted that the NZS6808:2010 Interim Method was based on input from international experts. However the United Kingdom IoA Hybrid method, published in 2016, has also been based on extensive industry input and consultation, and is widely considered by acoustic experts to be the state-of-the-art. Nevertheless, we accept that it is currently relatively untested, and that there is little published data to demonstrate positive correlation with annoyance caused by AM.

474 However, it is clear to us that the current interim method documented in NZS6808:2010 was only intended to be adopted in the absence of other definitive guidance, and that adoption of a more modern, state-of-the-art methodology was explicitly contemplated by the Standard. We also agree with Mr Evans that the United Kingdom IoA method is to be preferred, because it is implemented using common, publicly available software for the analysis, which assists to provide consistency in the application of the test method.

475 We therefore adopt the United Kingdom IoA method with the penalties as recommended by the United Kingdom DECC Phase 2 Report (i.e. the United Kingdom IoA 'hybrid method').

Method for applying SAC penalty in wind-speed/sound level data analysis (Condition 8)

476 With respect to the required approach to applying any SAC penalties to the data analysis, and accounting for the extent of penalised periods as a proportion of the assessment period, we believe that the New Zealand Standard is sufficiently clear that individual noise-level/wind-speed data pairs should be penalised prior to inclusion in the regression (or bin) analysis. Dr Chiles has made it clear that this approach was intended to account for the extent of penalised data – in that a greater number of penalised data points would exert a greater influence over the assessed noise level. However, while used in some other jurisdictions, the alternative methodology suggested by Mr Evans of applying the SAC penalty to the whole dataset if 10% or more of the data points in a particular period are penalised is not supported by the standard.

- 477 We agree with Dr Chiles that the selection of 10% as the threshold for 'full penalisation' is arbitrary and could result in a 'step change' in assessed level.
- 478 Nevertheless, we accept that the selection of the analysis period (or periods) is very important, since the proportion of penalised data points in each period will clearly change the extent that the penalised data points influence the regression (or bin) analysis. When questioned, the experts all agreed that the procedure outlined in Section 7 of NZS6808:2010 explicitly allowed for analysis of subsets of the measured data based on visual inspection of the data-pairs and particular wind directions, wind speeds, meteorological conditions, time of day, season, etc.
- 479 We also note that Mr Evans highlighted the importance of adopting a 'sliding penalty scale' when considering the objective measurement of AM using the United Kingdom IoA methodology, yet would seek to introduce a non-sliding scale in applying the penalty to the data.
- 480 Therefore, we cannot accept Mr Evan's proposed approach, and recommend using the sub-set analysis procedure proposed under Section 8.4 of the New Zealand Standard, which provides some detail about the selection of conditions for the analysis. The witnesses agreed that when combined with the requirement for independent peer review (condition 11), this approach is likely to provide sufficient safeguard to the reasonable selection of the analysis parameters, while allowing flexibility and professional judgement.
- 481 We believe this is in keeping with the intent of NZS6808:2010, and will allow for the reasonable objective assessment of SACs without setting an unhelpful and unjustifiable precedent as to the extent of 'acceptable' SAC's.

Nearfield compliance measurement of turbine Sound Power Level (Conditions 12.4 and 12.5)

- 482 Mr Hill suggested that if additional wind turbines were installed at the Windfarm, then nearfield compliance measurements should also be undertaken to demonstrate compliance with turbine sound power level limits. This was opposed by NZWF on the basis that the New Zealand Standard is effects based, and therefore compliance should only need to be demonstrated at sensitive receivers.
- 483 Nevertheless, we accept that such nearfield measurements would be helpful to provide additional safeguards regarding the noise emissions from any future wind farm expansion. We agree with Mr Evans' observation that, while in usual

circumstances, a nearfield sound power compliance level requirement would not be warranted, in this case, additional measurements are warranted on the basis that original turbines were significantly louder than originally adopted in the predictive modelling.

Specification of Turbine Type

484 Mr Hill submitted that turbine type for any future development at the wind farm should be explicitly specified in the consent conditions. It is our view, and we agree with Mr Maassen on this point, that this is unnecessarily restrictive and is actually likely to be counterproductive, since newer wind turbines are likely to have significantly lower noise emissions than the current Windflow 500 turbines used on the site.

485 We have therefore not imposed any condition that would seek to explicitly specify the turbine type. In addition, should the consent holder wish to amend the turbine type beyond that already described in the application and generally referenced in condition 1, they are likely to require a new resource consent application.

Provision for future stages (Condition 12)

486 Submitters raised the issue of how the conditions would apply to possible future stages of the Windfarm. Clearly the conditions would have to apply to future stages, and the revised conditions include particular conditions (condition 12) that require compliance to have been demonstrated for the existing wind turbines, as well as additional information to assess the impact of installing additional turbines in the future. We consider the condition provides appropriate requirements for pre and post commissioning of any new turbines on the Windfarm, and the rigour required to ensure compliance is achieved. The rigour includes the requirement for an independent peer review.

The need for long-term or permanent noise monitoring (Conditions 13.1 and 13.2)

487 As outlined earlier in this decision, both Mr Hill and Dr Wallace and Ms Banks-Wallace expressed the desire for continuous monitoring of noise from the Windfarm.

488 While it was not considered in the original recommendations made by Mr Evans, in response to discussion at the hearing around whether continuous monitoring

would be a desirable outcome, NZWF and PNCC agreed on the following recommended new conditions:

13.1 Within six months of the commencement of this condition under section 116(1) of the RMA, the consent holder must install a Noise Monitoring Terminal (NMT) at 38 Ridgeview Road, or at an appropriate alternative representative location approved by PNCC.

13.2 The NMT must operate for at least five years after the commencement of this condition under section 116(1) of the RMA and must make available to be stored:

13.2.1 Measured noise levels as required by NZS 6808:2010; and

13.2.2 Sufficient data to enable a later assessment of SACs.

489 We note that PNCC advice in the final joint memorandum to us that while it has agreed to a five-year sunset clause for continuous monitoring it notes there is a case for longer continuous monitoring than five years.

490 In an earlier iteration of recommended conditions, Mr Hill requested that condition 7.2 be amended to require continuous assessment of all operational and background noise levels and require breach notices. Mr Hill provided detailed wording of what he considered appropriate wording, in Attachment C of his supplementary submission dated 12 September 2017. NZWF's response was that a continuous monitoring condition is provided for in condition 13 with reporting required in condition 20 (the annual noise monitoring report). In terms of the breach notices requested by Mr Hill, NZWF advised that such a proposal is inconsistent with NZS6808:2010. Mr Hill reiterated his position on the data that should be collected in his response to PNCC conditions of 20 October 2017.

491 The Wallaces supported the new condition; however, they requested that wind speed and direction data be continuously stored to allow the relationship between wind speed at the Windfarm and wind speed at the residence to be established, and to assist with refining when the 9.0 m/s that they request be the cut in. They also sought a second monitoring site within the HA area.

492 Condition 7.2 recommends that the operational and background noise levels are to be assessed for the period starting one hour after sunset and ending one hour before sunrise. As we understand from the evidence before us, this time period is

appropriate given the requirements of NZS6808:2010 in respect of HA areas as it represents generally the period of the day when background noise is at the lowest.

- 493 It is apparent that a large amount of attended noise monitoring has been undertaken by Mr Halstead at various times at the nearby residences as part of the compliance monitoring and associated work to qualify the presence of SACs. The potential for the installation of a permanent noise monitor to record ambient and Windfarm sound near the sensitive receivers was discussed during the hearing, but both PNCC and NZWF's experts were concerned that such a system may not be cost-effective.
- 494 We accept that long-term or permanent noise monitoring for wind farms is challenging and often of limited value. We therefore do not believe that permanent noise monitoring or recording should form a usual condition for wind farms. However, in this particular case, due to the large amount of attended noise survey work that has already been undertaken, and is likely to be necessary in the future, we believe that a simple permanent sound recording system could be installed at reasonable cost. We believe that this would provide ongoing value to NZWF as they seek to understand whether SACs are occurring under particular meteorological conditions and aid in the development of further potential curtailment options, should they be necessary. It will also provide additional records which are likely to provide additional surety to the local residents about the actual conditions at their properties.
- 495 In terms of the breach notice request, we note NZWF's advice on NZS6808:2010. Overall, we consider that there is sufficient remedy already in the conditions as recommended, including the complaints procedure and the annual monitoring report, as well as of course the compliance and enforcement role of PNCC in ensuring that conditions are met. We therefore reject Mr Hill's request for breach notices.
- 496 In respect to the Wallace's requested amendments, we have addressed the cut in wind speed elsewhere in this decision and do not repeat it here. We do not consider a second monitoring site to be necessary, particularly since the nominated site is located closer to the Windfarm than the HA area.

497 In respect of PNCC's position that there is a case for longer term continuous monitoring, given the relevant condition identifies tonality and AM in the future we conclude that given the condition requires that at least five years monitoring occur that is sufficient. We have included a five year period within the condition.

498 We consider that 13.2.2 should refer to the storage of sufficient digitalised audio data, to provide better clarity of the data required. We have carried this requirement through to the conditions.

Complaints and community liaison group (Conditions 16-19)

499 In response to submitter concerns, NZWF and PNCC agreed on new conditions 16 to 19, which between them provide for:

- (a) a dedicated and up to date website available to the public, containing contact details and any noise monitoring reports;
- (b) the publicity of the website in (a) above through a local newspaper and direct notification of those listed in Schedule 2 to the conditions;
- (c) the development, implementation and maintenance of a complaint management plan;
- (d) the maintenance of a complaints register, and that being made available to PNCC on request; and
- (e) the establishment of a community liaison group (CLG) by NZWF, with membership comprising the occupiers and owners of the 6 properties where monitoring occurs and those listed in Schedule 2 of the conditions, and a nominated PNCC staff member. The CLG would provide a forum for information dissemination and for concerns and issues to be reported and discussed. It would operate for at least five years.

500 We note that the new conditions respond to the matters raised by the Wallace's original submission. We observe, as we earlier recorded, Mr Hill sought automated breach software and immediate remedial action by NZWF to a complaint. If we adopted Mr Hill's submission this would lead us to providing an unreasonable condition. We have concluded the approach to dealing with complaints, set out as above, is to be preferred.

- 501 The last outstanding matter in respect of the Wallace's submission is their request that on receipt of a complaint the Windfarm must be turned off for one hour. This is to quantify any drop in noise level and so demonstrate that a complaint was justified. They had earlier sought an iteration of this.
- 502 We concur with Mr Low that there are issues of vires in terms of this request⁴⁷. In particular, it gives a third party control over the operations of the Windfarm. But more so, we consider there are issues of fairness involved with this request. Such an unfettered provision brings with it an opportunity for the Windfarm to be shut down due to vexatious behaviour rather than the noise level being generated. We concur with PNCC's note in the Joint Memorandum of Counsel dated 31 October 2017⁴⁸ that the complaint management procedure and review options are the appropriate means if there are any ongoing issues; noting that the conditions framework is intended to deliver improvements, but not inaudibility.
- 503 Mr Hill objected to the use of the term "occupiers and owners of properties" used in 16B.1.1 and 16B1.2 as it constrains the meaning of community. Both PNCC and NZWF agreed that the purpose of the condition is to invite those who live in close proximity to the Windfarm and who may be affected by the Windfarm to be part of the CLG, noting that the PNCC is also invited given their regulatory role. In their opinion, opening the group to the public or wider community serves no useful RMA purpose.
- 504 We concur with PNCC and NZWF that the noise generated by the Windfarm is a matter between NZWF, PNCC and the owners and occupiers of residents who live in close proximity to it. We agree that there is no RMA purpose in opening the group wider than that.

The date that conditions 4 and 5 should apply from

- 505 In his first submission, Mr Hill raised concerns with the effects on property rights, and particularly the variance between conditions 4 and 5 relating to the timing of when the conditions apply. He was concerned that there would be additional

⁴⁷ Paragraph 90 of Mr Low's Statement of Evidence dated 25 August 2017.

⁴⁸ Paragraph 21

economic burden for those residences that post-dated the granting of consent in 2005.

506 We note that NZWF and PNCC's final recommended position in the joint memorandum of 31 October 2017 on these two conditions were that the conditions should apply to residential dwellings constructed prior to 30 May 2009. While Mr Auckram was originally against a limitation on when the condition applied to residential dwellings, through questioning he agreed with Mr Low that it would be appropriate to be date-bound. Condition 4 applies to the Rural Residential Overlay, which was agreed between NZWF and PNCC as being a HA area for the purpose of NZS6808:2010. Condition 5, subject to condition 4, applies in addition to any other residential dwelling.

507 We consider it appropriate that there is a defined date in respect to when conditions 4 and 5 apply, which has been agreed by PNCC and NZWF at a reasonable date as to when the Windfarm was operating and there was general awareness of it in the surrounding area. It would be unreasonable for a consented wind farm to have to constrain its operation because of a new dwelling being constructed within a noise contour approved through a resource consent process. We therefore reject Mr Hill's position.

Impact on Plan Change 15

508 In his first submission, Mr Hill raised concerns that:

"It is also against the Independent Commissioners decision [dated 22 August 2016 at para 355 & 378] who favoured setbacks of 1.5 kilometres rather than the 40 dB isoclines argued for by some of the submitters. The Commissioners also preserved the 'high amenity' provision that would apply under NSZ6808:2010 thus preserving the character of the Rural Residential Area identified in the Council's District Plan as shown in the Rural Residential Overlay (and contained within the planning maps therein)."⁴⁹

509 It was Mr Hill's view that the re-phrasing of the proposed conditions sought to recast NZWF arguments before Independent Commissioners and thus furtively have those published decisions revisited.

⁴⁹ Paragraph 48 of Mr Hill's original submission.

510 It is unclear to us as to how these conditions in some way would lead to decisions made on PC15 being revisited. As we heard, any new dwelling within 1.5 kilometres of an existing wind farm would be a non-complying activity under PC15, primarily to address any reverse sensitivity effects on the Windfarm, as well as avoiding adverse effects on any new residents. The outcome of the conditions as we see it, is consistent with PC15. We therefore reject Mr Hill's position.

Which conditions are consistent with the relevant objectives and policies of the planning framework?

511 As outlined earlier, the fundamental issue in dispute in this matter is the management of noise effects associated with the Windfarm on the residents' amenity. At the conclusion of the hearing, there was no dispute between PNCC and NZWF on the consistency of the conditions with the planning framework. There remained dispute with the submitters, in particular the Wallaces, as to their expectation of a quiet rural-residential environment.

512 We find that all the amended and new conditions are consistent with the relevant objectives and policies of the planning framework. In our opinion, the conditions will provide for the on-going operation of the Windfarm, while at the same time ensuring that the noise levels from the Windfarm maintains the amenity of the surrounding area, which is consistent with the goals of the planning framework. In respect to the Wallace's expectation, we consider the revised and new conditions will ensure that the level of noise being generated is reasonable and acceptable for the environment in which the Windfarm is located.

Will the activity allowed by the consent continue to be viable after the conditions of consent change?

513 In the end because, much was agreed between PNCC and NZWF as to condition content we are satisfied that no issue as to viability arises. We say this because NZWF, being well aware of the economic impacts of conditions on operations, nevertheless volunteered amendments and alterations in conditions. So whatever economic impacts such steps have, we concluded NZWF accepted them. In the end, given the limited points of difference between PNCC and NZWF as evidenced by the 31 October 2017 joint memorandum, we concluded that the position advanced by NZWF in its reply, particularly that a balance had been struck

between providing a greater level of amenity for near neighbours while ensuring the Windfarm continues to remain viable remains the case.

514 However, on the issue of the meaning of viability in the context of section 131 RMA we prefer the submissions advanced by Mr Maassen that viability in this context is to do with the ability to put the conditions into effect. Of course, we had no evidence before us that the means of measuring, monitoring and or curtailment could not be deployed. Nor did we receive evidence that the proffered conditions were not the best practicable option or that were technical or financial implication that prevented implementation. Also, no party contended that the proffered review conditions would render the consent nugatory.

Part 2 matters

515 Applying Part 2 RMA as a form of check we recognise the contribution the Windfarm makes regionally and nationally. We acknowledge its contribution to the national objectives linked to renewable energy and that it is consistent with section 7(j) RMA which requires us to have particular regard to the benefits to be derived from the use and development of renewable energy.

516 We also recognise the planning framework while seeking to make provision for wind farms does not seek to do so at the cost of near neighbour's amenity due to unreasonable noise.

517 We consider the review conditions enable the continued viable operation of the windfarm while at the same time ensuring the amenity of the near neighbours is appropriately maintained.

518 These conditions also provide for assessment of noise related effects if the windfarm is further developed and for the revisiting of conditions relating to the existing turbines, if required.

519 So in this way we consider the purpose of the RMA as expressed in Part 2 is met.

Miscellaneous

Dirty energy and asynchronous generation

520 Mr Harding was primarily concerned use of wind farm measuring meters, the use of asynchronous generators, as well as his overall assertion that wind energy is "dirty energy". Despite his apparent experience in the electricity generation and

supply industry, Mr Harding's assertions regarding fundamental limitations of wind turbine generation were unsupported by any evidence.

521 A particular question that Mr Harding requested we put to NZWF, which we did, was whether the Windfarm revenue metering meters have 50 Hz Active Bandpass Filters fitted to them.

522 During the hearing, he also raised concerns about the impact of wind farms on cockle beds in Liverpool, cow deaths in Taupo and attributed recent blackouts in Australia and the United States to the asynchronous generation issue. Mr Harding was unable to provide us with evidence on which these assertions were based, beyond what he told us.

523 It is clear that Mr Harding's primary concern relates to whether the power generated from the Windfarm is actually legal and usable.

524 The response from NZWF on the issue of the filters was as follows:

We can confirm that we do not have 50Hz Bandpass filters on our generation equipment, nor are we aware of any such technology used in the power industry. Mr Harding's insistence on the use of such filters appears to relate to his assertion that all wind turbines use asynchronous generators; whilst this is generally true in that most variable speed pitch control modern turbines use asynchronous generators, our turbines have limited pitch control and use synchronous generators. At the hearing Mr Harding referred to a Te Apiti observation post where site information referred to asynchronous wind turbines; we assume he was looking toward the Te Apiti or Tararua Wind farms, which both employ variable speed asynchronous turbines. As stated, our generation platform is very different, and is hard to see from this observation post, hence the potential confusion for Mr Harding. The generators in our turbines are Cummins Stamford HCI 534F models, a very commonly used synchronous generator widely used in gas, diesel and hydro generation.⁵⁰

525 Mr Harding continued to raise concerns with us after this response and to the close of the hearing, focused on metering, electricity generation and its value, as well as over correspondence with Mr Worth of NZWF. The joint memorandum of counsel filed on 31 October 2017 immediately prior to the close of the hearing

⁵⁰ Email from Ms Morrison-Shaw to the hearing panel dated 22 September 2017

notes that the further material received from Mr Harding did not relate to the conditions of consent, and was a reinstatement of points made during the hearing.

526 Mr Harding did not provide any evidence that asynchronous power cannot be properly conditioned for delivery by retailers to consumers using the common electricity distribution network operated in New Zealand. However, it is apparent from evidence from NZWF that an unusual and positive feature of the Windflow 500 turbines operated at the Windfarm are actually synchronous generators, that operate at grid frequency in order to eliminate the need to provide more complicated and expensive power electronics used at other wind farms.

527 We understand that Mr Harding has many concerns with wind farms, the generation of electricity from them and their legality. Irrespective, the topic that we are traversing in this review and in our decision is noise effects from the Windfarm. The matter of whether the power is usable or not as we see it falls into the realm of the Electricity Act and the Electricity Industry Participation Code 2010 (referenced by Dr Wallace). The usability of electricity generated by the Windfarm and the power, its ability to be transferred into the National Grid is not an environmental effect that comes into the realm of the RMA.

528 The issues raised by Mr Harding are better addressed at a central government level through the Electricity Commission Transpower and the Ministry of Business Innovation and Employment rather than through a resource consent process, focused on a specifically narrow review of conditions relating to noise generated by the Windfarm.

Infrasound

529 The Wallaces consistently requested that conditions be imposed to address infrasound, specifically requesting the baseline testing be undertaken. However, they did not provide us with any evidence that there are any infrasound effects arising from the operation of the Windfarm, beyond two references to recent papers which we were not advised the context of.

530 Both Mr Halstead and Mr Evans rejected this matter as being relevant to this review, both agreeing that it is not a significant issue at this Windfarm and not commonly found in wind farm emission. Mr Evans also noted that it would not be considered as a SAC. Mr Halstead advised that work undertaken with

NZS6808:2010 demonstrates that the level of infrasound produced is far below levels that would affect human health.

531 Based on the expert's advice, that no expert evidence was provided to the contrary and that we are considering the review of the existing specific conditions of the Windfarm, we reject the Wallaces' request.

Conclusion to Key Issues and our findings

532 We are satisfied that the changes we have made and those that have been agreed by the parties to the conditions, having regard to the particular circumstances of this case are the most efficient and effective means of removing or reducing the adverse effects of noise beyond the Windfarm boundary to an acceptable level within the environment in which it is located.

533 We are satisfied that the way in which we have applied the New Zealand Standard takes into account the specific factual content including the characteristics of the subject environment, its amenity values and also meets the overarching and appropriate planning goals.

534 We consider the review conditions are for a resource management purpose. They, in our view, fairly and reasonably relate to the activity authorised by the consent. We considered the conditions we have approved are not unreasonable such that no reasonable consent authority would impose them. Clearly we consider there is, as discussed in our decision, a logical connection with the activities and its noise effects.

DECISION

535 After being satisfied the review circumstances as required by section 128(1)(c) RMA are made out and after considering and having proper regard to the matters provided for in sections 104, 131 and 132 RMA and for all of the reasons referred to above in relation to the NoR by PNCC to vary and review conditions of the Windfarm consent before us pursuant to section 104 and section 132 RMA we grant the Review as detailed within Appendix A which forms part of this decision.

536 Within Appendix A the approved new reviewed conditions are shown in red and underlined and those conditions that no longer apply are struck out. All conditions are consequently renumbered.

Dated this 27th day of November 2017



Paul Rogers Commissioner (Chair)



Gina Sweetman Commissioner



Kym Burgemeister Commissioner

APPENDIX A – REVIEWED CONDITIONS

1. The proposed Te Rere Hau Wind Farm must be constructed and operated generally in accordance with all the information, site plans and drawings accompanying the application or submitted as additional information, except the noise predictions accompanying the original application. The relevant noise standards for the Te Rere Hau windfarm are set out in conditions 4-12 of this consent. Each turbine shall be located within a 20m radius of its nominated coordinates as outlined in the Application (contained on File No: N21/PLN – Plans drawn by Connell Wagner drawing number 101E, 3A).

Advice Note: (a) the ability to alter the specific location of each turbine within a 20m radius is to provide for likely movement related to detailed design layout and the recommendations made in the Applicant's ecologist's report; and (b) non-reflective finishes shall be used and be maintained in such a manner to prevent blade glint and to assist in reducing the prominence of the turbines when viewed from a distance.

Noise (General)

2. Noise from all construction and decommissioning work including (but not limited to):
 - (a) site works;
 - (b) wind turbine generator (WTG) foundation construction;
 - (c) WTG assembly and placement;
 - (d) WTG removal;
 - (e) foundation demolition and removal; and
 - (f) land reinstatement

shall be measured, assessed and controlled using NZS 6803:1999 Acoustics – Construction Noise. The noise limits shall be those set out in Table 2 of NZS 6803:1999 for works of a "long term" duration.

3. Noise from all other activities (other than WTG operation and construction activities) shall not exceed the following limits at or within the boundary of any land (other than the wind farm site or a road):

7:00am to 10:00pm	50dBA L10
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10:00pm to 7:00am	40dBA L10 and 70dBA Lmax
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Sound levels shall be measured in accordance with New Zealand Standard NZS 6801:1999 *Acoustics – Measurement of Environmental Sound* and assessed in accordance with NZS 6802:1991 – *Assessment of Environmental Sound*.

WTG Noise Management

Operating Limits

4. ~~WTG sound levels shall not exceed:~~
- ~~— the best fit regression curve of the A-weighted background sound level (L95) plus 5dB; and~~
 - ~~— 40dBA~~
- ~~whichever is the higher.~~

From the date 12 months after the commencement of this condition under section 116(1) of the RMA, the wind farm must operate so that when measured within the notional boundary of any residential dwelling in existence on or before 30 May 2009 that is within the Rural Residential Overlay mapped in the Palmerston North District Plan as notified in Plan Change 15 on 29 January 2015, wind farm noise does not exceed the greater of:

4.1 35 dB(A); OR

4.2 The background noise level plus 5 dB(A).

This condition only applies from 7pm to 7am, up to a hub height wind speed of 6 m/s. This condition applies in conjunction with condition 5.

This condition does not apply to the dwellings on Lot 1 DP 20911 (130 Harrison Hill Rd), Lot 2 SP 85413 (629 Pahiatua Aokautere Road) and Lot 1 DP 85413 (631 Pahiatua Aokautere Road).

5. ~~The sound levels shall be measured and controlled using NZS6808:1998 *Acoustics – The Assessment and Measurement of Sound from Wind Turbine Generators* but with the following additional requirements to be met.~~
- a) ~~The 10 minute background sound levels (L95,10) shall be measured at the notional boundary of the dwelling existing at the date of this consent on Lot 2 DP 307640 (being the nearest dwelling to the wind turbines (other than the dwellings on Lot 1 DP 20911 (130 Harrison Road), Lot 2 DP 85413 (629~~

~~Pahiatua Track) and Lot 1 DP 85413 (631 Pahiatua Track)), the principle being that if the WTG noise was excessive, then the largest difference between the post-installation noise level and the acceptable limit would be obtained.~~

- ~~b) The 10 minute average wind speeds shall be measured at a height of 10 meters, and 30 metres along with the wind direction and these measurements shall be made at the same time as the 10 minute background L95,10 measurement (and called data pairs).~~
- ~~c) The wind speed and wind direction measurements shall be made near to where the wind turbines are located. In any case these are not to be taken at a distance further than 1.5km from the measurement point.~~
- ~~d) Background sound level L95,10 shall be correlated with wind speed, and wind direction and time of day.~~
- ~~e) The size of each class in each parameter shall not be more than:~~

~~— Wind speed — 1m/s bins~~

~~— Wind direction — 45° arc~~

~~— Time of day — night time (1 hour after sunset to 1 hour before sunrise) and daytime~~

~~The four predominance wind direction arcs are:~~

~~— WNW — 270° — 315° relative to true north (typically 37% frequency)~~

~~— NNW — 315° — 360° relative to true north (typically 28% frequency)~~

~~— SSE — 135° — 180° relative to true north (typically 19% frequency)~~

~~— ESE — 90° — 135° relative to true north (typically 8% frequency)~~

~~The total number of data points obtained across all wind speeds and directions shall not be less than 1440. In respect of each of the four predominant 45° wind direction arcs, the total number of data points obtained for background sound or compliance testing shall (unless exceptional wind conditions preclude it) be not less than 2000 (but not less than 350 for arcs SSE and ESE) and shall be sufficient to cover the range of wind speeds set out in NZS6808:1998.~~

~~In respect of the other four 45° wind direction arcs, there shall be no minimum number of data points for any or all wind speed bins.~~

- ~~f) The following effects shall be excluded from the analysis:~~
- ~~— seasonal sounds (eg of seasonal cicadas, crickets and frogs etc);~~
 - ~~— other identifiable noise sources (eg tractors working at night, pumps, periods of precipitation, etc)~~
- ~~g) Sufficient data shall be gathered such that accurate best fit regression curves can be obtained.~~
- ~~h) Post installation compliance testing shall be carried out at the same location as the background sound monitoring as soon as reasonably practicable over a 6 month period after completion of the wind farm. If the wind farm is installed in stages then compliance testing shall be undertaken as soon as reasonably practicable over a 6 month period after each stage or annually if there is more than one stage installed per year. The applicant shall notify Council when a stage is completed.~~
- ~~i) The same parameters as required for the background noise monitoring shall also be measured for post installation compliance testing. The cut in operation times of the WTG shall also be recorded and this shall be indicated on the results.~~
- ~~j) The best fit regression curve shall be provided for:~~
- ~~— the times WTGs are operating above cut in;~~
 - ~~— wind speeds up to 14m/s at 10m height;~~
 - ~~— wind directions including adequate samples for the 45° arc from the nearest wind turbines to the measurement location; and~~
 - ~~— day and night.~~
- ~~k) The best fit regression curve of the L95,10 of the WTGs is not to exceed the noise limit under the same wind speed, wind direction and time of day.~~
- ~~l) If noise is judged to be tonal then the tonal correction as contained in NZS6808:1998 shall be applied except the assessment technique is that~~

~~contained in IEC61400-11(2002) *Wind Turbines – Part 11 – Acoustics – Noise Measurement Technique*. No correction is to be applied to a measured noise level for the additive affect of the background noise.~~

~~m) Where reasonable doubt exists regarding compliance at any other dwelling (at the notional boundary) existing at the date of this consent (other than the dwellings on Lot 1 DP 20911 (130 Harrison Road), Lot 2 DP 85413 (629 Pahiatua Track) and Lot 1 DP 85413 (631 Pahiatua Track), then monitoring shall be repeated at that location.~~

~~n) Sound monitoring equipment shall conform to the following requirements:~~

~~— the complete measurement and analysis measurement system shall conform to the requirements of NZS6808:1998 and the Standards referred to by NZS6808:1998, and~~

~~— microphones shall be fitted with a wind shield such that the noise generated by wind on the wind shield is, to the extent practicable, at least 10dBA below the noise being measured.~~

~~o) All results shall be provided in a timely manner to the Principal Planner, City Contacts Unit, Palmerston North City Council.~~

~~p) All sound monitoring shall be carried out by suitably qualified and experienced persons.~~

~~q) The consent holder shall provide all necessary data required to carry out the compliance testing including:~~

~~— wind speeds at 10m and 30m and direction during periods of compliance testing;~~

~~— The times at which individual wind turbines are operating above the cut-in wind speed;~~

~~— Any other information required by the Principal Planner, City Contacts Unit, Palmerston North City Council.~~

~~r) The operator of the wind turbines shall pay all costs associated with compliance testing.~~

~~s) Where compliance is not achieved then the consent holder shall propose and implement remedies within three months. If the sound levels have not been remedied within that time then the consent holder shall cease operation of the WTG's until modifications are made to reduce the noise. Further operation of WTG operation shall only be for sound measurement checks as specifically agreed with the Council's Principal Planner to demonstrate compliance.~~

Subject to condition 4, the wind farm must operate so that when measured within the notional boundary of any residential dwelling in existence on or before 30 May 2009, the wind farm noise does not exceed the greater of:

5.1 40 dB(A); OR

5.2 The background noise level plus 5 dB(A).

This condition does not apply to the dwellings on Lot 1 DP 20911 (130 Harrison Hill Rd), Lot 2 SP 85413 (629 Pahiatua Aokautere Road) and Lot 1 DP 85413 (631 Pahiatua Aokautere Road).

T103, T104 and T088

5A. By 1 December 2017 the WTGs identified as T103, T104 and T088 must be operated so that when measured in accordance with IEC61400-11:2012:

5A.1 The sound power level of each turbine does not exceed 104.2dBA; and

5A.2 The WTGs do not produce tonal audibility greater than 4dB at wind speeds between 6m/s and 10m/s.

Advice Note: For the avoidance of doubt this is intended to be achieved by upgrading the Stage 3 gearset in T104. However, this condition may be achieved in part by curtailing WTG operation in addition to a gearset upgrade.

5B. By 30 January 2018 the consent holder must provide Palmerston North City Council (the Council) a report that:

5B.1 Includes details of the T103 and T104 gearset upgrade including a description of the mechanical changes undertaken; and

5B.2 Demonstrates compliance with condition 5A; and

5B.3 Includes test results for the sound power levels of T103 and T104 measured in accordance with IEC 61400-11:2012; and

5B.4 Identifies any curtailment procedures necessary for WTGs T103, T104 and T088 for ensuring compliance with the noise limits in condition 5A.

5C. If the wind direction falls within the south easterly quadrant (i.e. 90 to 180 degrees in summer (i.e. between 1 December and 31 March inclusive) during the following times:

5C.1 During weekends and public holidays from 6am until 10pm; and

5C.2 On weekdays from 6pm to 10pm;

then the consent holder must curtail operation of the WTGs identified as T103, T104 and T088 so that neither WTG operates until the one-minute average windspeed exceeds 9m/s.

6. ~~The post installation testing required under Condition 5(h) must include a minimum period of 3 months' operation of the Stage 1 turbine(s). "Operation" means that actual operation of the turbine(s) on a minimum of 60 days that involves at least 240 hours over a 3 month period at times when the wind is above the turbine's cut in speed. "Actual operation" means operation of the wind farm with all installed turbines made operable as they would be for normal operation, regardless of the winds on any given day. A "day" means a single 24 hour period.~~

~~Advice Note: at the hearing the Applicant made it clear that the proposed wind farm would be constructed in stages, with Stage 1 involving 5 turbines. This condition is directed toward ensuring that the installed turbines have a 'history' of reliable operation. If a valid testing of the Stage 1 turbines does not eventuate within the 6 months referred to in Condition 5(h), then any subsequent stages shall not proceed (refer Condition 28). The requirement for a minimum of three months' actual operation is to establish and verify the 'in the field track record' of the Windflow 500 turbine.~~

For the purposes of Condition 4 and Condition 5, the background noise level used to establish noise limits should not be influenced by noise from the Te Rere Hau Extension or any other wind farm.

Windfarm Noise Assessment and Measurement

7. Wind farm noise is to be measured and assessed in accordance with NZS 6808:2010 subject to the specific requirements set out below that prevail in the event of conflict:

7.1 Noise levels are to be assessed over the 30m height wind speed range from 5.5 m/s to 15.5 m/s;

7.2 The operational and background noise levels are to be assessed for the period starting 1 hour after sunset and ending 1 hour before sunrise only;

7.3 The operational and background noise levels are to be individually assessed for each of the following wind sectors:

7.3.1 WNW – 270° to 315° relative to true north;

7.3.2 NNW - 315° to 360° relative to true north;

7.3.3 SSE - 135° to 180° relative to true north;

7.3.4 ESE - 90° to 135° relative to true north.

7.4 Any data points collected under any of the following circumstances are to be excluded from the assessment:

7.4.1 Less than 95% of the WTGs are online and available for generation. That is, more than 5% are offline for maintenance or due to failure;

7.4.2 Less than 9 of the nearest 10 WTGs to a measurement location are online and available for generation;

7.4.3 Either T103 or T104 (or both) are not online and available for generation (for Harrison Hill Road, 428 Pahiatua-Aokautere Road and Ridgeview Road measurement locations only).

Any WTGs that are not operating, or have been curtailed, as a noise reduction measure for particular wind conditions shall be considered to be online and available for generation for those conditions. However which WTGs are not operating and which are curtailed must be reported in the post compliance assessment under condition 10.6.

7.5 At least:

7.5.1 200 valid data points are to be collected for each WNW and NNW wind direction sectors; and

7.5.2 350 valid data points are to be collected cumulatively across the SSE and ESE wind direction sectors and at least 150 data points must come from across each of these sectors;

unless this is not reasonably practical, at the discretion of the Council, due to the wind characteristics of the site's meteorological mast.

8. The following procedure shall be assessed separately for each wind direction sector and only for the night time period (1 hour after sunset to 1 hour before sunrise).

8.1 If a tone that attracts a penalty in accordance with NZS 6808:2010 and is attributable to the wind farm is detected in any two-minute period at a residence, then the penalty shall be applied to the 10-minute data point in which that period occurs. If multiple tones that attract a penalty are detected for a 10-minute data point, then the highest penalty shall be applied;

8.2 The total penalty for any 10-minute data point shall not exceed 6 dB in accordance with NZS 6808:2010;

8.3 If average amplitude modulation exceeding 3 dB is detected for any 10-minute period in accordance with the UK Institute of Acoustics amplitude modulation metric, then a penalty shall be applied to that 10-minute period in accordance with the penalty scheme detailed in the UK Department of Environment and Climate Change Wind Turbine AM Review – Phase 2 Report dated August 2016;

8.4 Where penalties apply for one or more data points at a residence, a separate assessment must be undertaken of the measured wind farm noise levels for the conditions under which the penalties occur. The separate assessment must reasonably consider and provide for the following in selecting the conditions for analysis:

a) The time of day under which the characteristics occur.

b) The wind directions under which the characteristics occur.

c) The wind speeds under which the characteristics occur.

Where different characteristics occur that attract penalties, separate assessments shall be conducted for each characteristic.

For any assessments required to fulfil Condition 8.4, the minimum data point requirements defined in Condition 7.5 do not apply.

The calculated special audible characteristic (SAC) penalty, where applicable, shall be applied independently to each 10-minute wind-speed/noise level data point. Where practicable, the resultant assessment level shall be calculated using a regression analysis in accordance with section 7.4.2 of NZS 6808:2010 applied to all of the penalised and non-penalised data-pairs for each assessment condition.

Where characteristics that attract penalties occur for a limited wind speed range, then bin analysis should be considered and applied where it is reasonable to do so as described in C7.4.2 of NZS 6808:2010 having regard to reported levels of annoyance. The calculated SAC penalty, where applicable, shall be applied independently to each 10-minute wind-speed/noise level data point. The resultant assessment level shall be calculated as the arithmetic average of all of the penalised and non-penalised data points within each data bin for each assessment condition.

9. For the purposes of any background or operational noise monitoring, all noise data is to be referenced to 30 m height wind speeds, and 28 m height wind directions, as measured at the Te Rere Hau Wind Farm western meteorological mast.

Post Amendment Noise Compliance Assessment

10. A compliance noise monitoring report for the existing 65 Te Rere Hau WTG's must be submitted to the Council within twelve months of the commencement of this condition under section 116(1) of the RMA to demonstrate compliance with conditions 4, 5 and 5A – 5C as amended under s128 of the RMA. The report shall be prepared in accordance with NZS6808:2010 and may use existing monitoring data collected before the Council's review, and any further monitoring data which

has been collected following the review using the on/off method or any other method provided for in NZS6808:2010. The report must detail:

10.1 The results of the noise monitoring conducted at, as a minimum, the following six locations:

10.1.1 104 Harrison Hill Road;

10.1.2 428 Pahiatua-Aokautere Road;

10.1.3 48 Ridgeview Road;

10.1.4 38 Ridgeview Road;

10.1.5 367 Forest Hill Road;

10.1.6 662 Pahiatua-Aokautere Road.

Advice Note: For the purposes of condition 10 above, where further background sound measurement is required, this consent does not require that any other existing windfarms has to be turned off. Clause C5.6.3 in NZS6808:2010 provides an accepted method for calculating the background sound level excluding noise from other existing windfarms.

10.2 Alternative representative monitoring locations to those listed in 10.1.1 – 10.1.6 may be used if for any reasons unimpeded and safe access is not provided to one or more of the above locations and the alternative location is approved by the Council. If an alternative representative monitoring location is to be used the consent holder shall provide the consent authority with written notice of the alternative representative location for approval in a technical certification capacity. The written notice shall contain:

10.2.1 the location of the alternative representative location;

10.2.2 the reason for using the alternative representative location; and

10.2.3 a statement from a suitably qualified and experienced acoustic expert which outlines why the alternative representative location is a suitable replacement for the site(s) in condition 10.1 to which the consent holder is unable to obtain unimpeded and safe access.

- 10.3 Objective tonality and amplitude modulation assessments conducted over the range of wind speeds and wind directions defined in Condition 7.
- 10.4 Where near field tonality assessments are used to support the tonality assessment at the residence, the consent holder shall ensure that the relevant tones are considered at the residence.
- 10.5 A conclusion as to the compliance, or otherwise, of the wind farm.
- 10.6 The identification of any mitigation measures required to achieve compliance (including keeping turbines curtailed or off line) and:
- 10.6.1 Evidence that these measures have been implemented;
- 10.6.2 Demonstration to the satisfaction of the Council of the steps taken to ensure that these measures will continue to be implemented during operation of the windfarm; and
- 10.6.3 All other information as required by NZS 6808:2010.
- 10.7 If any mitigation measures are identified within the compliance noise monitoring report the consent holder shall provide evidence to Council that these measures have been applied at all times of the day, unless the consent holder has provided justification within the compliance noise monitoring report as to why the mitigation measures should be limited to specific times of day. This is not intended to suggest that mitigation required in order to meet the high amenity noise limit should also be applied during hours when that does not apply.
11. The post-amendment noise compliance assessment is to be independently peer reviewed by an acoustic expert appointed by the Council. The peer review must consider whether the report satisfactorily demonstrates compliance with the consent conditions, including, but not limited to consideration of whether the assessment:
- 11.1 Adopts noise limits as required by Condition 4 and Condition 5;
- 11.2 Provides evidence that background noise levels used to set noise limits are not influenced by noise from other wind farms;
- 11.3 Is based on sufficient data to fulfil the requirements of Condition 7;

- 11.4 Includes an objective assessment of Special Audible Characteristics at the residences over the range of wind speeds and directions required and, where near field test results from the WTGs are used to support this, considers appropriate wind speeds and wind directions at the residence;
- 11.5 If Special Audible Characteristics occur at residences, separately considers the wind/time conditions under which these occur.
- 11.6 If required, provides evidence that appropriate curtailment measures have been implemented to comply with the noise limits in Condition 4 and Condition 5.

Unconstructed Turbine Sites

12. Prior to the installation of any WTG at a turbine site on any part of the windfarm site which is within the Council's jurisdiction (the Unbuilt PNCC turbine sites) in Schedule 1 to this consent:

12.1 Compliance must have been demonstrated to have been achieved for the 65 installed WTGs at the site in accordance with Conditions 4 to 8;

12.2 An acoustic assessment must be submitted to the Council for approval prior to construction demonstrating that predicted noise levels for the revised windfarm layout, including the extension, will achieve compliance with the consent conditions;

12.3 The acoustic assessment shall, as a minimum:

12.3.1 Provide predicted wind farm noise levels from all WTGs at the site, including the Te Rere Hau Extension WTGs. The predictions shall be validated on the basis of measurements taken from the currently installed WTG's on Te Rere Hau;

12.3.2 Provide evidence supporting the assumed sound power levels for the WTGs to be located on Unbuilt PNCC turbine sites. This shall include sound power test data for the WTGs. Sound power levels are to be measured in accordance with IEC 61400-11:2012 and specify any uncertainty; and

12.3.3 Provide justification as to why the addition of WTGs on Unbuilt PNCC turbine sites would not result in Special Audible

Characteristics at residences that would attract a penalty. This shall have reference to measurement results from the currently installed WTGs at Te Rere Hau.

12.4 When installed, the new WTGs must not exceed (allowing for measurement uncertainty) the sound power levels stated in the acoustic assessment at 12.3.

12.5 Prior to commissioning any WTG on an unbuilt PNCC turbine site the consent holder must provide to the Council a pre-commissioning compliance report prepared by a suitable qualified and experienced acoustic expert that:

12.5.1 Includes test results for the sound power levels of a minimum of 2 representative WTGs installed on the unbuilt PNCC turbine sites measured in accordance with IEC 61400-11:2012, unless only 1 additional WTG has been installed in which case only that WTG need be tested. Where more than 2 WTGs are installed, the Council must approve the WTGs selected for testing prior to the commencement of testing; and

12.5.2 Identifies any further procedures necessary for ensuring compliance with the noise limits in conditions 4 to 8 should the sound power levels measured in accordance with condition 12.4.1 be greater than those predicted in condition 12.3.2.

12.6 Following the installation of the additional WTGs on an Unbuilt PNCC turbine site, the consent holder shall conduct compliance monitoring again to demonstrate compliance of the whole site including the Te Rere Hau extension with conditions 4 – 8.

12.7 A post commissioning compliance monitoring report shall be provided to the Council within 12 months of installation of the additional WTGs on Unbuilt PNCC turbine sites. The post commissioning compliance monitoring report must:

12.7.1 Address all the matters required of the post review compliance monitoring report in Condition 10;

12.7.2 Address any further procedures identified under condition 12.4.2 when fulfilling the requirements of conditions 10.6 and 10.7; and

12.7.3 Be independently peer reviewed by an acoustic expert appointed by the Council in accordance with the process set out in condition 11.

12.8 Should the additional WTGs be installed on Unbuilt PNCC turbine sites in multiple stages, then compliance monitoring must be undertaken following each stage.

Continuous Noise Monitoring

13.1 Within six months of the commencement of this condition under section 116(1) of the RMA, the consent holder must install a Noise Monitoring Terminal (NMT) at 38 Ridgeview Road, or at an appropriate alternative representative location approved by the Council.

13.2 The NMT must operate for at least five years after the commencement of this condition under section 116(1) of the RMA and must make available to be stored:

13.2.1 Measured noise levels as required by NZS 6808:2010; and

13.2.2 Sufficient digitised audio data to enable a later assessment of SACs.

General Management and Reporting

14. The Consent Holder shall maintain the turbines in good condition at all times and shall undertake appropriate regular servicing in accordance with industry practice.

15. The Consent Holder shall advise the Council if there is any material change to the noise emissions from the WTGs from the emissions existing at the time that these conditions commenced under s116(1) of the RMA as a result of wear and tear.

Contact and Complaints Procedure

16. At all times the Consent Holder must maintain a dedicated and up to date website which makes the following information available to the public:

16.1 a specified point of contact and local telephone number for the public to contact in respect of Te Rere Hau wind farm operations;

16.2 any compliance noise monitoring reports required under this consent which have been provided to the Council.

16A Within six weeks of the commencement of this condition under section 116(1) of the RMA, the consent holder shall publicise in the local newspaper, and via written notification to all occupiers and/or owners of the houses listed in Schedule 2 of this consent, details of the website established in accordance with condition 16, and a local telephone number and specified point of contact for the public to contact in respect of wind farm operations.

16AA The consent holder must maintain and implement a Complaint Management Plan (CMP), which must, as a minimum specify:

- a) A local telephone number and email contact in respect of the Te Rere Hau windfarm for complaints and queries;
- b) Details of the appropriate Palmerston North City Council contact telephone number and email address;
- c) A requirement that all complaints will be recorded in a complaints register;
- d) A process for recording the information required for each complaint under condition 17;
- e) Procedures for responding to complainants; and
- f) A procedure for refinement and improvement of the CMP through operation of the wind farm.

16.AA.1 The CMP must be submitted to the Council within three months of the commencement of this condition under section 116(1) of the RMA.

16AA.2 The CMP and any updates must be to a standard acceptable to the Council acting in a technical certification capacity. In determining if the CMP and any updates are to an acceptable standard, the Council is limited to an assessment of whether or not the CMP and any update adequately address the matters identified in the conditions of this consent.

16AA.3 The certified CMP must be made available on the website required by condition 16.

17. The Consent Holder shall maintain a Complaints Register to record complaints from the public in respect to adverse off-site environmental impact that may arise during construction, operation and maintenance of the wind farm. This Register is to include the name and address of the complainant (if provided), the date and time of the complaint, the nature of the complaint, wind and weather at the time, activity occurring on the site at the time, details of whether the complaint was or was not able to be verified, and any remedial measures undertaken by the Consent Holder.

18. A copy of the Complaints Register shall be made available within 5 working days to the Council's Environmental Compliance Manager upon request.

Community Liaison Group

19 Within 3 months of the commencement of this condition under section 116(1) of the RMA, the consent holder shall establish a Community Liaison Group (Group) for the Te Rere Hau windfarm.

19.1 Membership of the Group shall include representatives of the Consent Holder, and shall be open to:

19.1.1 the occupiers and owners of the 6 properties noted as monitoring locations in condition 10.1; and

19.1.2 the occupiers and owners of properties listed in Schedule 2 of this consent; and

19.1.3 a nominated staff member from the Council.

19.2 The purpose of the Group shall be to:

19.2.1 provide a means for receiving regular updates on Te Rere Hau windfarm activities;

19.2.2 provide a regular forum through which information and monitoring data about the windfarm can be provided to the neighbours; and

19.2.3 enable opportunities for concerns and issues to be reported to and responded to by the Consent Holder.

19.3 The Consent Holder will use its best endeavours to ensure that the Group meets at least annually for the first five years following the establishment of the Group under condition 19. After that five-year period, the consent holder shall only be required to organise a meeting following a specific request by a Group member and provided it has been at least 12 months since the last Group meeting.

19.4 The consent holder shall, prior to submitting the annual monitoring report required by condition 20, provide the Group with a copy of the draft report and invite the Group to a meeting to discuss the report. Any such meeting must be at least five working days after supply of the draft report.

Advice note: The Consent Holder can opt to hold Group meetings more frequently but is not required by these conditions to do so.

19.5 The Consent Holder shall provide reasonable administrative support for the Group including organising meetings at a local venue, inviting all members of the Group as well as the taking and dissemination of meeting minutes.

Annual Noise Monitoring Report

20. The consent holder shall submit an annual noise monitoring report for the year ending 31 March to the Council Environmental Compliance Manager by 31 May each year which:

20.1 Provides technical operating data certified by a duly authorised representative of the consent holder to demonstrate compliance with conditions 4, 5 and 5A- 5C.

20.2 Identifies all alterations made to turbines during the year which may have the potential to either increase the noise levels from any WTG, or change / introduce special audible characteristics from any WTG in an adverse way, including replacement of gearboxes and / or generators, replacement of blades, new blade profiles, and changes to the isolation between gearboxes and / or generators and the turbine structure.

20.3 Includes a statement from a suitably qualified and experienced acoustic consultant that identifies, and characterises any of the changes identified in 20.2.

20.4. Includes an annual summary of the Complaints Register for the year ending 31 December.

20.5 Includes the minutes of any meeting of the Community Liaison Group under condition 19 during the calendar year.

20.6 Provides an analysis of the annual noise monitoring undertaken during the year, including:

20.6.1 Provision of the following operational data:

- a. The location of the NMT.
- b. Confirmation that the NMT was operating with sufficient accuracy as required by NZS 6808:2010.
- c. The total number of hours of data collected by the NMT during the calendar year.
- d. A summary of times during which the NMT was not operating, an explanation of the reasons for this and any measures that have been implemented to prevent similar occurrences in the future.

20.6.2 An analysis of the operational data for the calendar year by a suitably qualified and experienced acoustic consultant, including:

- a) A comparison of the data with previously collected and reported results to identify and make comment on any emerging trends
- b. An assessment of the potential causes for any complaints about noise and whether they are attributable to changes in noise emissions from the WTGs.

20.7 Includes any feedback received from the Community Liaison Group to the Draft Annual Noise Monitoring Report provided to them in accordance with condition 19.4.

20.8 The Annual Noise Compliance Report submitted on 31 May 2019 must be independently peer reviewed by an acoustic expert appointed by the Council. The peer review must consider:

20.8.1 Whether the methodology used to conduct the analysis under condition 20.6, and presentation of the results of that analysis, is appropriate; and

20.8.2. The appropriateness of any conclusions drawn from that analysis.

20.9 The Council may, if it considers there are reasonable grounds to do so, obtain an independent peer review of any subsequent Annual Noise Monitoring Report. Reasonable grounds could include, but are not limited to:

20.9.1 The consent holder using a different methodology to conduct the analysis under condition 20.6 relative to that used in the previous year's Annual Noise Monitoring Report.

20.9.2 A notable change in the number or nature of the noise complaints received relative to previous years.

20.9.3 A notable adverse trend in the noise recorded by the NMT.

20.10 The Consent Holder must keep all raw data collected by the NMT under condition 13.1 and 13.2 for the duration of this consent, and must make that data available to the Council upon request, along with corresponding data on hub height wind speed and wind direction.

Review

21. The Council may, in accordance with the RMA 1991, ss 128 and 129 serve notice of its intention to review the conditions of consent relating to noise emissions and effects of WTGs following receipt of a compliance noise monitoring report required by condition 10 or condition 12.6, and at 5 yearly intervals thereafter (whichever occurs first)-in order to:

21.1 Address environmental effects relating to noise emissions not anticipated by this consent; and

21.2 To better monitor and manage noise emissions and effects.

Roading and Traffic

~~7~~22. Prior to any construction works commencing, the Consent Holder shall submit and have approved by Council's Roothing Manager, a Traffic Management Plan including a construction timetable, detailing vehicle movements to and from the site and which includes consideration of traffic management practices at times that the Manawatu Gorge Road is closed.

Advice Note: The Plan is to be prepared in accordance with the PNCC Traffic Management Guidelines (2000) and should provide for safe and practical access to and from the site during the construction phase of the wind farm.

~~8~~23. The Consent Holder shall submit engineering plans for approval by Council's Roothing Manager, for the required upgrading of North Range Road in accordance with ARRB Unsealed Roads Manual, Guidelines to Good Practices (August 2000) or similar standard. Such plans shall include a minimum carriageway width of 4 metres, appropriate passing opportunities and a sealed ingress/egress area at the intersection of Pahiatua-Aokautere Road for a length of no less than 30 metres to prevent gravel overspill onto the adjoining carriageway.

~~9~~24. The Consent Holder shall complete the roading works required and specified in the approved engineering plans (condition ~~8~~23) prior to the commencement of the construction works on the wind farm.

~~10~~25. Following the completion of the required roading upgrade works (Condition ~~9~~24) the Consent Holder shall regularly carry out sufficient roading maintenance works to maintain the length of North Range Road from Pahiatua-Aokautere Road to the wind farm site to the same standard (or better). The maintenance works are to be carried out until all construction works for the wind farm have been completed, at which time the maintenance liability will revert back to the Council.

Ecological

~~11~~²⁶. The Consent Holder shall record any birds found killed or injured resulting from the operation of the wind farm. This record shall include the time, location, date and species of any birds found dead on the site. This recording should include coverage of all turbine areas and shall be undertaken as part of the regular duties of the staff. This recording shall be undertaken from the installation of the first turbine and continued for a period of five years. Once every 12 months for the duration of the specified period of recording, the information shall be forwarded to the Head of Planning, Customer Services Unit, Palmerston North City Council. A copy of the record is also to be forwarded to the Department of Conservation Area Office in Palmerston North.

Advice Note: In developing the recording approach it is understood that the Consent Holder will consult with the Department of Conservation. The Consent Holder will cooperate with any other party that may want to undertake a monitoring strategy of bird life. If any dead native bird species are found on the site, then these birds shall be placed in a freezer as soon as practicable and the Department of Conservation informed. Where injured birds are found the Veterinary Department at Massey University should be contacted.

~~12~~²⁷. The Consent Holder or its nominated agent shall ensure that there is ongoing pest control of magpies, rabbit and hare within the application site; and of cats, possums and mustelids within the QEII covenanted area.

Advice Note: The Consent Holder should contact horizons – Regional Council for advice on appropriate methods of pest control.

Landscaping and Earthworks

~~13~~²⁸. The Consent Holder shall submit for approval to Council's Senior Landscape Architect detailed landscape contour plans for all cut and fill earthworks. These plans must identify the disposal sites for fill.

Explanation Note: Approval of these plans is based on the integration of the cut and fill earthworks that are visually prominent with the surrounding landforms, and on disposal sites for fill not being in visually prominent locations.

- ~~14~~²⁹. The Consent Holder must ensure that all cut and fill earthworks and disposal of fill is undertaken in accordance with the approved landscape and contour plans required by Condition ~~13~~²⁸.
- ~~15~~³⁰. The *horizons* – Regional Council shall be notified prior to any on-site earthworks being undertaken to ensure compliance with the relevant regional plan provisions.
- ~~16~~³¹. The consent holder shall ensure that the proposed development of the access tracks and rehabilitation of this system after construction is completed (within the first planting season following each stage of the construction works) including topsoiling and appropriate hydro-seeding of the same areas around all concrete foundations flush to all outer edges of the concrete foundations, and the topsoiling and grassing of the secondary tracks, farm tracks and temporary tracks be undertaken in accordance with the detail outlined in the application.
- ~~17~~³². The Consent Holder shall submit for approval to Council’s Senior Landscape Architect a landscape plan detailing proposed landscaping around the site office buildings and associated outdoor yards to provide visual screening such that the works integrate the buildings with the site when viewed from the west and south west of the site.
- ~~18~~³³. The Consent Holder shall complete the landscaping works proposed in plans certified pursuant to Condition ~~17~~³² within the first planting season after initial occupation and use of the buildings.

Balance Radar Station

- ~~19~~³⁴. The Consent Holder shall prepare a report which:
- (a) Takes into account the experimental work done by New Zealand Windfarms Ltd and Airways Corporation of NZ Ltd (Airways) on 10 November 2004 and involves further experimental work following the installation and operation of the first turbine situated on the skyline in the line of site of the Balance Radar Station.
 - (b) Identifies and assesses potential and actual adverse effects of the wind farm development on the operation of Airways’ Balance Radar Station and any other navigational sites and facilities which are deemed by Airways to be

potentially affected by the wind farm, as defined at the time the report is prepared.

- (c) Includes measures as necessary to avoid, remedy and/or mitigate any such adverse effects to ensure the safe and efficient operation of the air transport network other than remove or relocate any turbine which is 500m (or more) away from the Balance Radar Station or not in direct line of sight of the flight path into Palmerston North Airport when viewed from the Balance Radar Station.

~~20~~³⁵. The report required under Condition ~~19~~³⁴ shall be prepared by Airways or a company expert in radar systems and shall be provided to the Head of Planning, Customer Services Unit, Palmerston North City Council for approval within 6 months from the date of installation of the first turbine in line of sight of the Balance Radar Station.

~~21~~³⁶. The Consent Holder shall as a precaution install the first six turbines in such a way that the towers are either clearly separate or completely aligned radially (ie fully overlapping) as seen by the Balance Radar Station.

~~22~~³⁷. The Consent Holder shall implement the mitigation measures detailed in the report prepared in accordance with Condition ~~19~~³⁴ within 1 month of the report being provided to the Head of Planning, Customer Services Unit, Palmerston North City Council. Turbine numbers 1 to 6 may have been installed prior to the completion of the report in which case the Consent Holder shall not be required to remove or relocate any of these 6 turbines, unless there is evidence to indicate that their operation is resulting in actual adverse effects to the safe and efficient operation of the air transport network and other mitigation measures have not proved to be affective.

~~23~~³⁸. Within 12 months of the date of commencement of this consent and within 3 months of the first, second, fifth and eighth anniversary of the commencement of this consent, the Palmerston North City Council may, in accordance with sections 128 and 129 of the Resource Management Act 1991, serve notice of its intention to review the conditions of consent if there is documented evidence that adverse effects on the safe and efficient operation of the air transport network beyond the limits contemplated by the granting of this consent have been generated by the activities on the site, or that the measures implemented to avoid, remedy and/or mitigate any such adverse effects have not been effective (see Note 1 below).

Note 1: The operation of this consent relies on the adoption of measures to ensure any adverse effects on the Ballance Radar Station and any other navigational sites and facilities which are deemed by Airways (as defined at the time the report required by Condition 34 is prepared) to be potentially affected by the wind farm are avoided, remedied, and/or mitigated. As the timing of the commissioning of the entire wind farm is to be progressive, actual effects may not be identified until some time after the granting of the consent.

Consent has been granted on the basis that the potential effects of the wind farm on the Ballance Radar Station will be able to be identified and avoided, remedied, and/or mitigated. In the event that the actual effects differ from those contemplated by the granting of this consent, adjustments in the conditions to address such adverse effects could include, amongst other things, a requirement for the removal of any turbines that are within 500m of the Ballance Radar Station to ensure that those adverse effects are adequately avoided, remedied or mitigated.

Cultural

2439. If at any time during the site excavations authorised by this Consent potential historic artefacts or cultural remains or koiwi items are discovered, then all work shall stop and the Consent Holder shall immediately advise the Palmerston North City Council's Head of Planning and Tanenuiarangi Manawatu Inc. The Consent Holder shall also call its archaeological advisor to the site to verify whether or not the objects form archaeological evidence. Further excavation work at the site shall be suspended should Tanenuiarangi Manawatu Inc wish to carry out their procedures and tikanga for removing taonga. Work at the site shall not recommence until approval to do so has been given by the Palmerston North City Council's Head of Planning.

Advice Note: The Consent Holder is reminded of its obligations under the Historic Places Act 1993.

In the event that any artefact or any object which may be of Maori or historic significance is uncovered or disturbed during the course of the earthworks, the contractor, supervising engineer, or Consent Holder shall immediately cease work and inform the Palmerston North City Council's Head of Planning and contact the New Zealand Historic Places Trust to determine whether an archaeological authority is required. In the interim the contractor, supervising engineer or

Consent Holder shall secure the site until approval to proceed has been granted. If an archaeological authority is required, work may only recommence once the written approval of the New Zealand Historic Places Trust has been obtained and a copy provided to the Head of Planning.

~~25~~⁴⁰. Where Rangitane o Manawatu have nominated that sites of significance exist in relation to this site, the Consent Holder shall invite Rangitane o Manawatu as represented by Tanenuirangi Manawatu Inc, Ngati Hineaute Hapu Authority and Te Rangimarie Marae to be present at times excavations are being undertaken in these nominated sites, in order that they may observe the excavations to identify if any historical artefacts or cultural remains or koiwi are uncovered.

Note: Any discussion regarding reimbursement for representatives of Rangitane o Manawatu being present on site is a matter that is between the Applicant and Rangitane o Manawatu.

Implementing consent

~~26.~~ Upon completion of the work required under conditions 5, 7, 8, 9, 13 and 17 above and prior to the operation of the wind farm, the Consent Holder shall give written notice to the Principal Planner, City Contacts Unit, Palmerston North City Council, or their nominee, that the conditions that have been complied with. ON receipt of that notice the Principal Planner or their nominee will carry out an inspection of the site, if necessary, to ensure that the conditions have been complied with. Once the conditions have been fully met a performance certificate will be issued and the operation of the wind farm may commence.

Lapse Date

~~27~~⁴¹. This consent shall lapse eight years after the date of commencement, unless the consent is either given effect to before that lapsing date, or unless the Palmerston North City Council fixes a longer period pursuant to section 125 of the Resource Management Act 1991.

Staging

~~28.~~ Stage 2 and any subsequent stages of the construction programme shall only proceed upon successful operation of Stage 1, which shall mean Stage 1 achieving

~~compliance with the noise levels prescribed in Condition 4, having been tested and operated in accordance with Conditions 5(h) and Condition 6.~~

~~Advice note: the construction programme is as outlined in the evidence of Mr Chris Freear, Chief Executive, NZ Windfarms Ltd, being Stage 1 (5 turbines), Stage 2 (28 turbines), Stage 3 (30 turbines) and Stage 4 (34 turbines).~~

Wind Farm Decommissioning

~~29~~42. Within 12 months of the wind farm ceasing to operate all structures associated with the operation of the wind farm (including all turbine structures, and accessory buildings) shall be removed completely from the site by the Consent Holder.

Charges

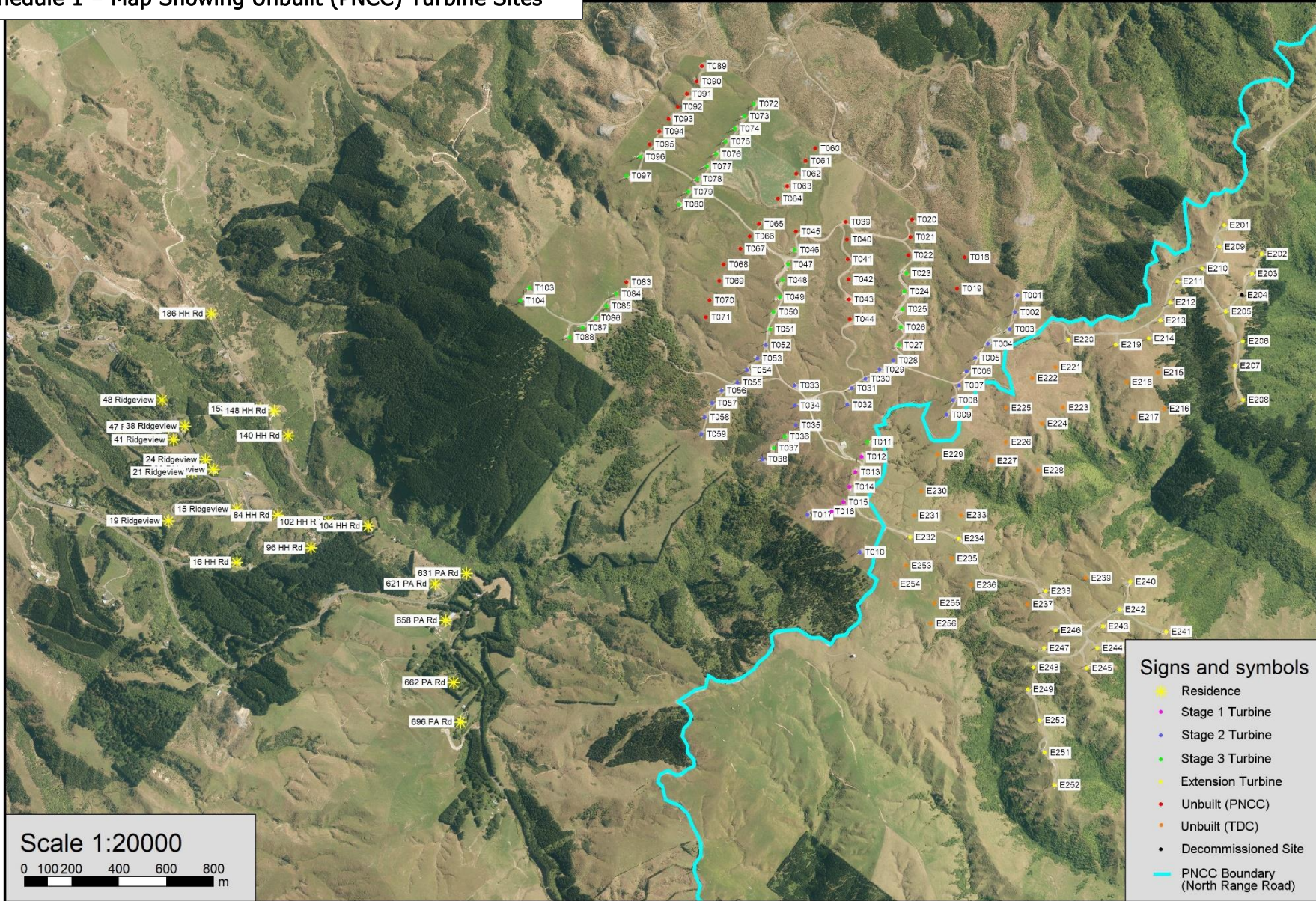
~~30~~43. A monitoring fee of \$430.00 (GST inclusive) shall be paid at the time the resource consent is granted to cover the cost of monitoring compliance with the above conditions. This fee covers four monitoring visits.

- (i) A fee will be payable by the Consent Holder if any non-compliance with the conditions of this consent are discovered as a result of monitoring. This fee is set in accordance with Section 36(1)(c) of the Resource Management Act 1991 ~~and Section 690A of the Local Government Act 1974.~~

~~Note: Currently the monitoring fee is \$108.00 (GST inclusive) per inspection. This amount may alter in the future if fees are reviewed. The monitoring fee charged will be the fee applicable at the time of monitoring, and will be charged on each inspection necessary until full compliance with the consent conditions is achieved.~~

44. The consent holder shall pay the Council all actual and reasonable costs pursuant to RMA, s 36, in relation to any administration, monitoring and inspection relating to these consents, and charges fixed by regulation.

Schedule 1 – Map Showing Unbuilt (PNCC) Turbine Sites



Schedule 2- List of properties to which condition 16A and 16B apply.

<u>Address</u>	
<u>84 Harrison Hill Road</u>	<u>48 Ridgeview Road</u>
<u>19 Ridgeview Road</u>	<u>621 Pahiatua Aokautere Road</u>
<u>15 Ridgeview Road</u>	<u>631 Pahiatua Aokautere Road</u>
<u>208 Forest Hill Road</u>	<u>265 Forest Hill Road</u>
<u>96 Harrison Hill Road</u>	<u>102 Harrison Hill Road</u>
<u>24 Ridgeview Road</u>	<u>662 Pahiatua Aokautere Road</u>
<u>20 Ridgeview Road</u>	<u>319 Forest Hill Road</u>
<u>41 Ridgeview Road</u>	<u>696 Pahiatua Aokautere Road</u>
<u>47 Ridgeview Road</u>	<u>239 Forest Hill Road</u>
<u>38 Ridgeview Road</u>	<u>148 Harrison Hill Road</u>
<u>21 Ridgeview Road</u>	<u>140 Harrison Hill Road</u>
<u>153 Harrison Hill Road</u>	<u>276 Forest Hill Road</u>
<u>658 Pahiatua Aokautere Road</u>	<u>104 Harrison Hill Road</u>
<u>349 Forest Hill Road</u>	<u>186 Harrison Hill Road</u>
<u>16 Harrison Hill Road</u>	<u>428 Pahiatua-Aokautere Road</u>
<u>367 Forest Hill Road</u>	<u>406 Pahiatua-Aokautere Road</u>