

IN THE ENVIRONMENT COURT OF NEW ZEALAND  
WELLINGTON REGISTRY

I MUA I TE KŌTI TAIAO O AOTEAROA  
TE WHANGANUI-Ā-TARA ROHE

ENV-2024-WLG-000001

Under the	<b>RESOURCE MANAGEMENT ACT 1991</b>
In the matter of	the direct referral of applications for resource consents under section 87G of the Act for the Mt Munro Wind Farm
By	<b>MERIDIAN ENERGY LIMITED</b>  Applicant

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**JOINT STATEMENT OF THE ACOUSTICS EXPERTS**

8 August 2024

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## **INTRODUCTION**

1. This joint expert witness statement relates to the direct referral application lodged by Meridian Energy Limited for resource consents to construct, operate and maintain a windfarm on Mt Munro, Eketāhuna.
2. The experts attending the conference were:
  - (a) Nigel Lloyd (**NL**) for the Consent Authorities (Manawatū-Whanganui Regional Council, Wellington Regional Council, Tararua District Council, and Masterton District Council)
  - (b) Miklin Halstead (**MH**) for Meridian Energy Limited (**MEL**).
3. The conference took place on 7 August 2024 at the Wellington registry of the Environment Court. It was facilitated by Environment Court Commissioner Myers.

## **AGREED AGENDA**

4. The agenda for discussion is set out below in Annexure A.

## **CODE OF CONDUCT**

5. This joint witness statement is prepared in accordance with section 9 of the Environment Court Practice Note 2023.
6. We confirm that we have read the Environment Court Practice Note 2023 and agree to abide by it.

## **PURPOSE AND SCOPE OF CONFERENCING**

7. The purpose of this expert conferencing was to identify, discuss, and highlight points of agreement and disagreement on acoustic issues.
8. Issues have been identified following the reporting of the Consent Authorities in the s 87F reports, and through evidence filed by MEL and the s 274 parties. At mediation in June 2024, the parties also agreed that some issues would be discussed at expert conferencing.

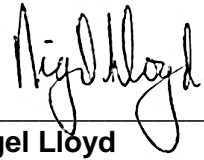
## **AGREED ISSUES**

9. Refer to Annexure A.

## DISAGREEMENT AND REASONS

10. Refer to Annexure A.

Date: 8 August 2024



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**Nigel Lloyd**

**Miklin Halstead**

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**Miklin Halstead**

## ANNEXURE A

In the matter of the Mt Munro windfarm application

Expert conferencing – Acoustics – NL and MH

Issue	Agreed position with reasons	Disagreements with reasons
<b>Topic: Methodology</b>		
1. Appropriateness of methodology	As far as the wind turbines are concerned, the methodology is based on the standard NZS6808:2010. We agree this is the appropriate standard. Construction is based on more of an envelope approach and is appropriately controlled by conditions as is non turbine related operational noise.	
<b>Topic: Noise Effects Assessment (General)</b>		
2. Appropriateness/accuracy of characterisation of the project's acoustic effects.	<p>We agree the report adequately sets out that the project can achieve a reasonable acoustic effect. This will be verified by the applicant at the detailed design stage, in accordance with the various noise conditions.</p> <p>The conditions will need to ensure that the acoustic requirements are met.</p>	
3. Potential adverse effects and mitigation – operational and construction	<p>We agree that there will be adverse effects on several houses relating to:</p> <ul style="list-style-type: none"> <li>- night time operation of concrete batching plant; and</li> <li>- traffic on, and construction of Old Coach Road.</li> </ul> <p>These effects and the mitigations required will be addressed through the relevant noise management plans.</p>	

Issue	Agreed position with reasons	Disagreements with reasons
<p>4. Particular issues (with reference to Mr Maxwell's evidence):</p> <ul style="list-style-type: none"> <li>- Effects of multiple turbines</li> <li>- Infrasound effect (if any) from the wind turbines</li> </ul>	<p>We agree that NZS6808:2010 adequately addresses the noise effects of wind turbines.</p>	
<p><b>Topic: Concrete batching plant and aggregate crushing activities</b></p>		
<p>5. Appropriate NZS standard to apply to the concrete batching plant and aggregate crushing activities at the project site</p>	<p>We agree that a 250m setback is appropriate and this should also be applied to the concrete batching plant. We agree that the setback will achieve compliance with daytime noise limits, and that constraint on night-time activities will address compliance at night-time, except that night-time operation of the concrete batching plant which will not comply with either of those standards.</p> <p>Agree that the noise management plan will need to be called into effect to address night operation of the batching plant.</p>	<p>We disagree on whether the construction noise standard or <i>non turbine related</i> WFO1 should apply for the reasons set out in our respective reports and evidence.</p>
<p>6. Implications of updated location of concrete batching plant</p>	<p>We agree that the concrete batching plant needs to be greater than 250m from any existing dwelling which is external to the project.</p>	
<p><b>Topic: Construction</b></p>		
<p>7. Effects on amenity and enjoyment of the residents' properties.</p>	<p>We agree that there will be adverse effects that will be controlled through the management plan, but these are consistent with paragraph 5 of the foreword of NZS6803:1999 which provides:</p> <p><i>'The generally acceptable level of intrusive noise in the community is assessed under the provisions of the NZS 6802:1999. However, construction noise is outside the scope of NZS 6802:1999 because it usually cannot be kept within the specified</i></p>	

Issue	Agreed position with reasons	Disagreements with reasons
	<i>limits. Although this may mean that the noise is undesirable, it is not necessarily unreasonable when all the relevant factors are taken into consideration. Construction noise is an inherent part of the progress of society.'</i>	
8. Construction of OCR, and increase of construction traffic, including whether the noise associated with increased volume traffic has been considered as part of noise assessment.	We agree that this is covered in paragraphs 55-57 of MH's evidence.	
9. Confirm appropriateness of mitigations proposed to manage noise effects associated with construction of OCR, and whether (and what) further mitigation is required.	We agree that this is covered in paragraph 58 of MH's evidence.	
<b>Topic: Hours and days of operation</b>		
10. Appropriate hours and days of operation of activities to control noise (for example: noise associated with concrete batching plant, aggregate crushing, blasting).  Note: please consider the duration of works during the day as it relates to residents' enjoyment of their environment and ability to conduct their own work on properties	We agree that time limits set out in MACF2 are appropriate for the aggregate crushing plant and we agree that similar constraints should be placed on the concrete batching plant except when exclusion is specifically provided for in the construction management plan. This will be related to essential night-time concrete pours.  We agree that this will protect residential amenity; the amenity of rural working land does not receive the same degree of protection.  We have considered 'enjoyment' only in the context of amenity as provided for in the RMA.	
<b>Topic: Special Audible Characteristics (SACs)</b>		

Issue	Agreed position with reasons	Disagreements with reasons
11. Application of the SAC penalty regime	Yes, the SAC penalty regime is applied.	
12. How is this addressed through conditions?	<p>The conditions are WFO3(d) and WF08(b).</p> <p>For condition WF03(d) – it should read ‘If tonality is suspected it is to be assessed’...</p> <p>We agree that special audible characteristics other than tonality will be assessed as required by section 5.4 in NZS6808:2010 using prevailing best practices.</p>	
<b>Topic: Blasting noise</b>		
<p>13. What is the effect of the differentiation of production blasting as part of blasting management process and conditions?</p> <p>Note: the effect of explosive blasting is a concern of s 274 parties.</p>	<p>We agree that production blasting at unlimited times is inappropriate.</p> <p>We do not have enough information to reach an agreement on an appropriate limit and constraint on times at this stage. We will seek additional information regarding the need and times of production blasting to allow a decision to be made.</p>	
14. Confirm the appropriate conditions to manage effects of blasting noise.	We will consider the conditions once we have made a decision.	
<b>Topic: Meteorological mast</b>		
15. Confirm the extent of noise effects associated with the proposed permanent meteorological mast.	Our experience of meteorological masts is that they normally do not cause adverse noise impacts but we recognise that there is audible noise from the existing meteorological mast.	

Issue	Agreed position with reasons	Disagreements with reasons
16. What conditions are required to manage the potential noise from the meteorological mast?	<p>We agree that WFO1 adequately considers potential noise effects from the meteorological mast.</p> <p>We propose the following addition at the end of WFO12: 'and must demonstrate compliance of the meteorological mast with the condition WF01.'</p>	
<b>Topic: Conditions</b>		
17. Review and comment	As detailed in the sections below	
18. Address questions from planning experts	As detailed in the sections below – The relevant excerpts from Standards are included in Annexure B.	
19. Condition MACF2 – review and comment on the appropriateness of the proposed weekend and public holiday hours.	See discussion in point 10. The mobile aggregate crushing facility will comply with either set of conditions when applied on weekends and public holidays between 7:30am and 6:00pm. We agree this is appropriate.	
20. Condition MACF4 – Is the activity meeting the noise limits for the rural zone (as a primary industry activity). Experts to consider and comment on the difference between the Councils' and Meridian's proposed conditions. Confirm applicable noise limits.	We can agree that the MACF is predicted to comply with the rural zone primary industry noise limits when set back from dwellings by at least 250m as in condition MACF1.	As set out in our evidence we disagree on whether MACF4 should be removed. MH thinks it should be removed and NL thinks it should be retained.
21. Condition CBL3 – confirm the specific requirements of the standard to be set out in condition. Provide specific standard section.	Yes, 115dBL at dwellings is the appropriate limit. We agree that a noise monitoring requirement would require sufficient representative measurements to demonstrate compliance. This is the recommendation of Table J5.4(A) of AS 2187.2-2006 (Annexure B-1).	

Issue	Agreed position with reasons	Disagreements with reasons
22. Condition CN1 (a) – confirm the specific requirements of the standard to be set out in condition. Provide specific standard section.	We agree that the long-term duration noise limits in Table 2 of NZS6803:1999 should be included in the conditions (Annexure B-2).	
23. Condition CN2 (a) – confirm the specific requirements of the standard to be set out in condition. Provide specific standard section.	Yes, 5mm/s at dwellings is the appropriate limit. We agree that a vibration monitoring requirement would require sufficient representative measurements to demonstrate compliance. This is the recommendation of Table J4.5(A) of AS 2187.2-2006 (Annexure B-3).	
24. Condition CN2 (b) – provide definition of production blasting vs other blasting. Review condition.	We agree that the definition of production blasting does not assist with the setting of noise limits.	
25. Condition CN3 (b)(I) and (II) – confirm the specific requirements of the standard to be set out in condition. Provide specific standard section.	We agree that CN3(b)(i) will reference the new table of noise limits in CN1.  CN3(b)(ii) will reference 'Table 1 – Guideline values for vibration velocity, for evaluating the effects of short-term vibration on structures' of DIN 4150-3:2016-12 (Annexure B-4).	
26. Condition WFO1 (a) – confirm the specific requirements of the standard to be set out in condition. Provide specific standard section.	We agree that the application of these standards (NZS6801:2008 and NZS6802:2008) must be applied in their entirety by a suitably qualified expert.	
27. Condition WFO3 and part (d) – confirm the specific requirements of the standard to be set out in condition. Provide specific standard section.	We have considered this request and agree that a suitably qualified expert needs to apply the relevant standards in their entirety as required by WFO4.	

Issue	Agreed position with reasons	Disagreements with reasons
28. Condition WFO4 – confirm the specific requirements of the standard to be set out in condition. Provide specific standard section.	We agree that a suitably qualified expert needs to undertake modelling as required by WFO4 using NZS6808:2010 in its entirety.	
<b>Topic: Other matters</b>		
29. Any other matters	None	

## ANNEXURE B

**B-1: Table J5.4(A) of AS 2187.2-2006.**

**TABLE J5.4(A)**  
**AIRBLAST LIMITS FOR HUMAN COMFORT CHOSEN BY SOME**  
**REGULATORY AUTHORITIES (see Note to Table J5.4(B))**

Category	Type of blasting operations	Peak sound pressure level (dBL)
<b>Human comfort limits</b>		
Sensitive site*	Operations lasting longer than 12 months or more than 20 blasts	115 dBL for 95% blasts per year. 120 dBL maximum unless agreement is reached with occupier that a higher limit may apply
Sensitive site*	Operations lasting for less than 12 months or less than 20 blasts	120 dBL mm/s for 95% blasts. 125 dBL maximum unless agreement is reached with occupier that a higher limit may apply
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	125 dBL maximum unless agreement is reached with the occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely effect the equipment operation

\* A sensitive site includes houses and low rise residential buildings, hospitals, theatres, schools, etc., occupied by people.

**B-2: Table 2 of NZS6803:1999**

**Table 2 – Recommended upper limits for construction noise received in residential zones and dwellings in rural areas**

Time of week	Time period	Duration of work					
		Typical duration		Short-term duration		Long-term Duration	
		(dBA)		(dBA)		(dBA)	
		$L_{eq}$	$L_{max}$	$L_{eq}$	$L_{max}$	$L_{eq}$	$L_{max}$
Weekdays	0630-0730	60	75	65	75	55	75
	0730-1800	75	90	80	95	70	85
	1800-2000	70	85	75	90	65	80
	2000-0630	45	75	45	75	45	75
Saturdays	0630-0730	45	75	45	75	45	75
	0730-1800	75	90	80	95	70	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75
Sundays and public holidays	0630-0730	45	75	45	75	45	75
	0730-1800	55	85	55	85	55	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75

**TABLE J4.5(A)**  
**GROUND VIBRATION LIMITS FOR HUMAN COMFORT CHOSEN BY SOME**  
**REGULATORY AUTHORITIES (see Note to Table J4.5(B))**

Category	Type of blasting operations	Peak component particle velocity (mm/s)
Sensitive site*	Operations lasting longer than 12 months or more than 20 blasts	5 mm/s for 95% blasts per year 10 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Sensitive site*	Operations lasting for less than 12 months or less than 20 blasts	10 mm/s maximum unless agreement is reached with occupier that a higher limit may apply
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	25 mm/s maximum unless agreement is reached with occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely effect the equipment operation

\*A sensitive site includes houses and low rise residential buildings, theatres, schools, and other similar buildings occupied by people.

NOTE: The recommendations in Table J4.5(A) are intended to be informative and do not override statutory requirements with respect to human comfort limits set by various authorities. They should be read in conjunction with any such statutory requirements and with regard to their respective jurisdictions.

**B-4: Table 1 of DIN 4150-3:2016-12 (Annexure B-4).**

**Table 1 — Guideline values for vibration velocity,  $v_{i, \max}$ , for evaluating the effects of short-term vibration on structures**

	Type of structure	Guideline values for $v_{i, \max}$ in mm/s				
		Foundation, all directions, $i = x, y, z$ , at a frequency of			Topmost floor, horizontal direction, $i = x, y$	Floor slabs, vertical direction, $i = z$
		1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz <sup>a</sup>	All frequencies	All frequencies
Column Line	1	2	3	4	5	6
1	Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50	40	20
2	Residential buildings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15	20
3	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (e.g. listed buildings)	3	3 to 8	8 to 10	8	20 <sup>b</sup>
NOTE Even if guideline values as in line 1, columns 2 to 5, are complied with, minor damage cannot be excluded.						
<sup>a</sup> At frequencies above 100 Hz, the guideline values for 100 Hz can be applied as minimum values.						
<sup>b</sup> Paragraph 2 of 5.1.2 shall be observed.						