

The Resource Management Act 1991

**APPLICATION FOR RESOURCE CONSENTS**

by

**Meridian Energy Limited**

to the

**WELLINGTON CITY COUNCIL, PORIRUA CITY COUNCIL AND  
WELLINGTON REGIONAL COUNCIL**

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**Decision of Wellington City Council, Porirua City Council and Wellington Regional Council on an application for Resource Consent by hearing commissioners appointed pursuant to section 34A of the Resource Management Act 1991**

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## Introduction

1. This Decision is made by Independent Commissioners David Hill (Chair), David McMahon and Pamela Peters, appointed by Wellington City Council, Porirua City Council and Wellington Regional Council (collectively "**the councils**") pursuant to section 34A(1) of the Resource Management Act 1991 ("**the RMA**") to hear and decide an application by Meridian Energy Limited ("**Meridian**") for resource consents for a wind farm at Mill Creek, Wellington.
2. The application was lodged by Meridian on the 12<sup>th</sup> March 2008.
3. The application was publicly notified on 17<sup>th</sup> April 2008. The closing date for submissions was extended to 40 working days under section 37 of the RMA. A total of 776 submissions to the proposal were received by the close of submissions at 4.00 pm on Monday 16<sup>th</sup> June 2008. 364 submissions were in support of the application and 408 submissions were in opposition and 4 submissions were neutral.
4. An additional 27 late submissions were received, of which 17 were in support and 9 were opposed and 1 was neutral. Late submissions were accepted by the councils under due delegation. The timeframe for submissions was further extended to 50 working days with the agreement of Meridian.
5. The Hearing was held on consecutive working days between the 11<sup>th</sup> August and 5<sup>th</sup> September at Shed 22 located on the Corner Taranaki & Cable Streets, Wellington, and the 15<sup>th</sup> – 19<sup>th</sup> September at Wellington City Council, 101 Wakefield Street, Wellington.
6. Site visits were undertaken on Sunday 10<sup>th</sup> August, Monday 18<sup>th</sup> August and Wednesday 17<sup>th</sup> September 2008.
7. The Hearing was adjourned following the Applicant's reply on Friday 19<sup>th</sup> September 2008. The hearing was formally closed on 28<sup>th</sup> October 2008.
8. Commissioner deliberations were held on the 23<sup>rd</sup> October in Auckland and 10<sup>th</sup> December in Wellington, and thereafter by phone and email.

## Brief description of the Application

9. Meridian seeks resource consents for the construction, operation and maintenance of a wind farm and ancillary activities. The proposal is commonly known as Project Mill Creek ("**PMC**").
10. The Core Site is located in the area between approximate map references NZMS 260:R27; 2663060.6004198, NZMS 260:R27; 2660360.6001451, NZMS 260:R27; 2656060.6001287, NZMS 260:R27; 2654441.5997772, NZMS 260:R27; 2655487.5997004 and NZMS 260:R27; 2656960.5997151.
11. The proposal is for a wind farm with 31 wind turbines and a total capacity of up to 71.3 megawatts (MW). The proposed wind farm would include the following:
  - (a) The erection of 31 Siemens 2.3-82 VS wind turbines ("**the turbines**") of up to 111.2m in height with a rotor diameter of 82.4m. The turbines would be coated with a light grey low reflectivity coating. The majority of the turbines are located in the western portion of the site. The Applicant is seeking to consent to locate the turbines within a 100m radius of their identified positions to take account of geotechnical and engineering conditions.

- (b) The erection of 31 transformer buildings, with each transformer housed in a cubicle steel building adjacent to the turbines. Each transformer building would be 2.5m high, 4.5m long and 3m wide.
- (c) Earthworks are proposed, including cut volumes of up to 814,700m<sup>3</sup>, to create turbine platforms and access tracks and roads. The main access road would enter the site from Boom Rock Road (“**BRR**”) and would run through the site in a south-westerly direction and then branch off to provide access to each turbine platform.
- (d) Fill areas are proposed to accommodate excess excavated material. The location of these fills areas will be determined by a fill site selection strategy.
- (e) The erection of two 70 metre high wind monitoring masts is proposed to provide wind data for operation purposes. The location of the wind masts would be within a 150m radius of that shown on the plans.
- (f) The erection and operation of an electricity substation and an operations and maintenance building which is located east of turbine G01. The substation would be located adjacent to the existing transmission line (Tower 333). Therefore no new transmission line tower construction is required. However, Tower 333 will have to be strengthened to support the new connecting wires. The substation would occupy an area of 72m by 105m. Within the substation area there would be located a permanent switchgear building (32m by 12m and 5m high), switch yard, transformer, lightning masts and communication equipment.
- (g) The erection of a permanent operations building, proposed to be located on the western side of the transmission line opposite the substation. This building would be approximately 15m by 12m with a maximum height of approximately 5.5m.
- (h) The realignment of a section of the overhead HVDC earth electrode transmission line located on the site.
- (i) On-site dry concrete batching is proposed, however, no location has been identified. The Applicant has stated that this will depend on where the construction team believe it is best placed to maximise efficiency of delivery of raw materials and the concrete itself to the turbine platforms on site. The Applicant has stated that the plant would only be on site for a short time, approximately 4 months, and would be set back at least 100m from any waterway.
- (j) A range of temporary construction activities including but not limited to, geotechnical investigations, extraction and processing of basecourse aggregate, site offices and ancillary activities. The location of the main site offices would be near the beginning of Road A. Signage is proposed at the entrance of the site. A 30,000 litre diesel tank is also proposed to be located near the main site offices.
- (k) If required, construction lighting will be supplied via portable lighting rigs. All lighting will be sited to avoid any light spill being directed to any adjoining land.
- (l) Aviation lighting is proposed to be installed on up to 11 turbines as the site is near the flight path approaches for Wellington International Airport. The lights required by the Civil Aviation Authority are expected to be medium intensity flashing lights, shielded so that they are not directly visible below the horizontal plane of the light.
- (m) The installation of an internal transmission network.

- (n) Site reinstatement works are also proposed which include regrading of areas disturbed by heavy vehicles, backfilling with local topsoil over tower foundations, re-vegetating exposed areas of cut and fill, and removal of all the temporary stockpiles of materials and equipment.
  - (o) Access is proposed via SH1 Ngauranga Gorge, Mungavin Bridge Porirua, Kenepuru Drive, Rahia Street, Broken Hill Road, Spicer Forest, Ohariu Valley Road (“**OVR**”) and BRR. It is proposed to widen and upgrade a 2.3km long section of the northern end of OVR.
  - (p) It is proposed to construct a purpose-built access road through Spicer Forest which would connect to the site via upper OVR and BRR.
12. The new access road through Spicer Forest incorporates approximately 450m<sup>2</sup> of land within Spicer Landfill, which is in the Porirua City Council (“**the PCC**”) jurisdiction, before connecting to Broken Hill Road, Porirua City. To create the access road through Spicer Landfill earthworks are required. The earthworks would have an approximate cut to waste volume of 2700m<sup>3</sup>, maximum height of cut and fill areas would be 5.5m and the area of land disturbed would be 5200m<sup>2</sup>.
13. The core site ‘starts’ at the entry to the site (250m down BRR from its intersection with OVR) and involves five properties and some 18km<sup>2</sup> of pastoral land. The proposed 814,700m<sup>3</sup> of earthworks within the Core Site cover approximately 56 hectares of land.
14. Land use consents for the above activities, and as discussed further below, are required from Wellington City Council (“**the WCC**”) and PCC.
15. The works that require consents from the Wellington Regional Council (“**the WRC**”) are:
- (a) Discharges to land and water from earthworks and soil disturbance to construct 19.4km of road network to access the 31 turbine sites;
  - (b) Discharges to land and water from earthworks to create and use fill disposal sites;
  - (c) Piping a section of both the permanently flowing Ohariu Stream and Mill Creek;
  - (d) Piping and reclamation sections of 21 intermittent and ephemeral streams within the Core Site and Spicer Forest;
  - (e) Stream modifications, the placement of new structures and extensions to existing structures within the beds of tributaries of the Ohariu Stream (Ohariu Valley and Boom Rock roadworks);
  - (f) The permanent diversion of flow through new structures and realigned channels;
  - (g) Discharges to land and water from earthworks associated with the sourcing and crushing of suitable quality aggregates for road surfaces;
  - (h) Discharges to air from the operation of an onsite concrete batching plant.
16. The potential generation capacity for the project is up to 71.3MW, based on the use of Siemens 2.3-82 VS turbines (i.e. 2.3MW variable speed). The annual energy output of the wind farm is therefore expected to be sufficient to provide electricity equivalent to the needs of 35,000 households.
17. The land involved is legally described as follows:  
 Lots 2 - 4 DP 347825, Lot 2 DP 385946,  
 Lots 2 - 3 DP 78259

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Secs 73 - 75 Ohariu District, Sec 77 Ohariu District, Lots X, XI and XII Ohariu District, Pt Sec 111 Ohariu District, Pt Sec 7 Ohariu District, Pt Sec 4 Ohariu District, Sec 3 Ohariu District  
Lots 2 – 6 DP 303803  
Lot 1 DP 302866, Lot 14 DP 302866, Lots 17-20 DP 302866  
Lot 1 DP 334043 139480  
Pt Lot 2 DP 54371, Lots 2 - 3 DP 77503, Lot 1 DP 52949  
Legal Road (area of the K series)

18. The land owners were identified as : GF & EJ Bruce; GK & JD Best and KJ Sampson; RB Kellahan & JM Green; LJ Bryant & RD Peterson, WD Bryant & SR Tong; JWR Eastwick Ltd; Wellington City Council; and Porirua City Council.

### **Decisions made**

19. That, pursuant to sections 104, 104B, 105 and 107 of the RMA, the applications for resource consents by Meridian Energy are granted with conditions.

### **Appearances for Parties**

20. Meridian Energy Ltd:  
Andrew Beatson, Marija Batistich and Humphrey Tapper (Counsel)  
Expert witnesses  
Alan McKinney (Operations / construction)  
Adam Muldoon (Energy sector and wind development)  
Paul Botha (Wind resource)  
Malcolm Hayes (Noise)  
Len Wiles (Construction and Geotechnical)  
Anna Broadhurst (Climate change policy)  
Ed Breese (Sediment control)  
Stephen Fuller (Ecology)  
Dr Vaughan Keesing (Aquatic ecology)  
Paul Wilson (Construction approach)  
Tony Coggan (Photosimulation and imaging)  
Peter Rough (Landscape)  
David Dunlop (Traffic and transportation)  
Maurice Love (Maori)  
David Macdonald (Valuation)  
Mary O'Keefe (Archaeology)  
Lynley Fletcher (Consultation)  
Dr David Black (Public Health)

Mary O'Callahan (Planning)  
Dr Tim Haggitt (Marine surveys)

21. Major Submitters:

Ohariu Preservation Society

Morgan Slyfield (Counsel)

Expert witnesses

Mariana Alves-Perreira (Vibro-acoustics disease) – By open teleconference

Brian Leyland (Energy)

Dr Daniel Sheppard (Psycho-acoustics)

Jim Mikoz (Marine)

Colin Knowles (Digital simulation)

Anne Steven (Landscape)

Dr Jeremy Trevathan (Acoustics)

Richard James (Acoustics) – By open teleconference

Kerry Geange (Planning)

Robert Barraclough (Traffic engineering)

Makara Guardians Inc

Jennifer Jorgenson (Legal)

Molly Melhuish (Energy)

Paul Hughes (Open Space)

Ian Leary (Planning)

Wendy Brock, Murray Martin, Harvey Jones (Lay witnesses)

Makaracarpas Society Inc

Dr Michael Joy (Ecology)

22. For the Councils:

Kerry Anderson (Counsel for the Councils)

Wellington City Council (and Porirua City Council)

Rachel Pawson and Lisa Hayes (Reporting officers)

Soon Teck Kong (Traffic and transportation)

Matthew Borich (Noise compliance) and Peter Dodge (Traffic compliance)

Wellington Regional Council

Jeremy Rusbatch and Ange Lenz (Reporting officers)

Expert witnesses

Nigel Lloyd (Noise)

John Hudson (Landscape)

Dr Paul Blaschke (Ecology)

Committee Secretaries

Karen Williams and Lauren Neale.

## **The application site and surrounds**

### The Mill Creek Site

23. The Mill Creek site (referred to as “**the site**” or “**the core site**”) is located approximately 12km south of Porirua city centre and 8km northwest of Wellington city centre, and covers approximately 18km<sup>2</sup> in area of privately owned pastoral land. The site is generally bounded by OVR and Takarau Gorge Road to the east, BRR to the north, the coast to the west, and abuts privately owned land to the south and southeast along Makara Road and Takarau Gorge Road.
24. The topography of the site is characterised by a series of ridgelines which run through in a northeast-southwest direction and are generally parallel to the coast. The ridgelines are flanked by steep sided slopes, typically greater than 30 degrees. At the coast the land ends in a steep escarpment that drops to a rocky shoreline.
25. The existing land use is predominantly pastoral farming, supporting cattle and sheep grazing, as well as stables and horse trekking. There are a number of dwellings located on the site. The site at 184 Takarau Gorge Road also provides a number of non-rural activities including a high-wire confidence course and a function centre. Resource Consent (SR No. 176715) has been recently granted for the construction of a chapel and butchers shop at this property to complement the existing non-rural activities. These non-rural activities are located within one area close to the dwelling at No. 184 Takarau Gorge Road.
26. The remainder of the site is predominantly covered in grassland, with very little gorse or native bush. Smiths Gully, which is the first gully back from the coast, is predominantly covered in coastal scrub and does not appear to be accessible for farming purposes. There are a number of streams which run through the site. The most notable are Ohariu Stream, Mill Creek, Hawkins Gully Stream, and Smiths Gully Stream. These streams all feed into the Makara Stream, with the exception of Smiths Gully Stream which enters the sea directly at Smiths Bay.
27. The Wilton-Bunnythorpe transmission line runs northeast-southwest through the site on a set of double circuit steel lattice towers. These towers are visible from various points along Takarau Gorge Road and OVR. The HVDC earth electrode transmission line also runs through the southern portion of the site, in an east-west direction. This connects to the electrode station at the south-western end of the site. The HVDC line is visible from various points along Takarau Gorge Road and Makara Road.
28. There are numerous farm tracks and Transpower tracks that run through the application site, which provide access for rural activities and maintenance of the transmission lines.
29. A 60m high wind anemometer mast has been erected in the western portion of the site. This is clearly visible from various locations outside of the application site.
30. There is a section of unformed legal road which runs in a northeast-southwest direction through the middle of the site. This section of unformed legal road runs from near the



junction of Makara Road and Takarau Gorge Road north/northeast towards BRR. It has no connection to other formed legal roads within the area and there appears to be no logical reason for the road. Furthermore, it traverses relatively difficult terrain.

#### Spicer Forest and Porirua Landfill - Access

31. Vehicular access to the site will be via Spicer Forest and the Spicer Landfill which is located at the northern (upper) end of OVR. This new access road would connect to the site via upper OVR and BRR.
32. The land of Spicer Forest is owned by WCC and is partially within the jurisdiction of both WCC and PCC. The trees located within Spicer Forest are owned and maintained by the WRC. The Spicer Landfill is owned by PCC. Each of the Councils as land or asset owner has entered into separate access agreements with the Applicant.
33. Spicer Forest has some established tracks which link to Colonial Knob and provide for recreation activities such as mountain biking, horse riding and walking.
34. The Spicer Landfill operates as a commercial landfill with the majority of the area restricted access to the general public. The landfill is accessed from Broken Hill Road via Porirua.

#### Surroundings and Adjacent Uses

35. The Makara Beach community is located to the south of the site and the Ohariu Valley / Takarau Gorge community is located to the east of the site.
36. The Makara Beach area is characterised by a number of residential and rural residential allotments clustered around the valley floors, particularly at Makara village, along Makara Road and South Makara Road and at Makara Beach. These residential and rural residential properties are interspersed with larger pastoral and forestry blocks.
37. The Ohariu Valley / Takarau Gorge area is also characterised by a mixture of rural pastoral farms and rural-residential allotments along the length of both roads. As detailed in the application, approximately 120 houses are located in Ohariu Valley.
38. Activities in the wider area include farming and forestry, as well as recreational activities such as horse-riding, cycling, walking, running and golf.

#### Access Agreements

39. In August and June 2007 respectively, Wellington and Porirua City Councils entered into access agreements with Meridian in relation to the proposed use of their respective parts of Spicer Forest and Spicer Landfill.

#### Activity Status

40. The application fell to be considered under a number of provisions of the operative Wellington City District Plan 2000 ("the **WCDP**"). These were identified in the Report as follows:
  - (a) A wind farm is not provided for as a rural activity and requires resource consent as a Discretionary (Unrestricted) Activity under Rule 15.4.1. Consent is also required under Rule 15.4.2 for the construction or siting of any structure, or the undertaking of any earthworks, on identified ridgelines and hilltops. This relates to the construction of the turbines and the associated operations building.

- (b) Earthworks are required for a number of different aspects of the proposed development, including the development of access tracks, laydown areas, and turbine platforms. The details of the proposed earthworks involve cut-to-fill volumes of up to 814,700m<sup>3</sup> and cuts of up to a maximum of 20 metres. It is noted though that these figures represent the worst case scenario. The proposed earthworks require consent as a Discretionary (Restricted) Activity under Rule 15.3.7 in general areas and Discretionary (Unrestricted) Activity under 15.4.2 within the ridgelines and hilltops.
- (c) The majority of the proposed Spicer Forest Access Road is within the Wellington City Council jurisdiction, and consent is required for earthworks to facilitate the construction of the track as a Discretionary (Restricted) Activity under Rule 15.3.7 in general areas and Discretionary (Unrestricted) Activity under 15.4.2 within the ridgelines and hilltops. The use of the existing track for access to the wind farm site also requires consent under Rule 15.4.1 with respect to the non-rural use.
- (d) The construction and use of the section of the Spicer Forest access track within the Open Space B zone requires land use consent as a Discretionary (Restricted) Activity under Rule 17.3.2 as the track is for a non-recreational purpose, and under Rule 17.3.3 for earthworks.
- (e) The proposed concrete batching plant is not provided for as a rural activity and requires resource consent as a Discretionary (Unrestricted) Activity under Rule 15.4.1.
- (f) The proposed electricity substation constitutes a utility structure under the Operative District Plan, and requires consent as a Discretionary (Unrestricted) Activity under Rule 23.4.1.
- (g) The operations building requires consent as a Discretionary (Unrestricted) Activity under Rule 15.4.1 as it is for the purpose of carrying out non-rural activities.
- (h) The proposal requires two single-span overhead connections to connect the substation to the existing transmission towers. The tower's cross-arms will need to be modified to accommodate the two sets of down leads. The proposed 220kV overhead connection and the proposed realignment of the HVDC earth electrode transmission line and consequent requirement to erect new support structures require consent as a Discretionary (Unrestricted) Activity under Rule 23.4.2.
- (i) The proposal includes the temporary installation of a bulk fuel storage tank to supply fuel to construction vehicles during the construction phase. Consent for the fuel storage facility is required as a Discretionary (Unrestricted) Activity under Rule 15.4.3.
- (j) Temporary buildings, including workshops, stores, lay down areas and security offices will be located on the site during the construction period. Consent for these buildings is required as a Discretionary (Unrestricted) Activity under Rule 15.4.1 as they are non-rural activities.
- (k) The Applicant proposes to use locally sourced materials for the road construction. This requires the establishment of borrow areas and the use of a mobile crushing plant. The Applicant has therefore requested consent to extract and process materials from within the site. The quarrying and processing of materials requires consent as a Discretionary (Unrestricted) Activity under Rule 15.4.1 as it is a non-rural activity.

- (l) Rule 15.4.4 of the District Plan states that any use of a contaminated site requires consent as a Discretionary (Unrestricted) Activity. Lots 17-19 DP 302866 within the Bryant property on the corner of BRR and OVR is listed on the Wellington Regional Council's Selected Land Use Register (SLUR) as potentially contaminated. Accordingly, land use consent is also required under Rule 15.4.4.
41. The application also fell to be considered under a number of provisions of proposed Changes 32 and 33 (2004) to the WCDP. These were identified in the Report as follows:
- (a) Plan Change 32 (“**PC32**”) introduced a series of rules related to renewable energy. Rule 26.1.1 provides that where the rules in this chapter apply to any wind energy facility the relevant area based rules do not apply. Consequently, under PC 32 consent is required as a Discretionary (Restricted) Activity under Rule 26.2.1 for the proposed anemometers and as a Discretionary (Unrestricted) Activity under Rule 26.3.1 for the proposed construction, operation and maintenance of a wind energy facility and ancillary structures listed earlier in this report.
  - (b) Four of the proposed turbines are to be located within the Ridgeline and Hilltops overlay area defined in Plan Change 33 (“**PC33**”) as adopted and decided by the WCC. However, wind energy facilities (including structures) are considered under Rule 26.3.1 of PC 32, and the proposed turbines within the overlay area do not require a separate assessment under Rule 15.4.2 of PC 33 because of the requirement of Rule 26.1.1, as discussed above – although an overall assessment against the objectives and policies is still necessary.
42. The application also fell to be considered under a number of provisions of the operative Porirua City District Plan 1999 (“**PCDP**”). These were identified in the Report as follows:
- (a) The Spicer Landfill area to be used is located in the Rural Zone. The site is also listed as being within a Seismic Hazard Area and as being a Potentially Contaminated Site.
  - (b) The earthworks associated with the construction of the access route, which will extend through Spicer Landfill from the end of Broken Hill Road, requires consent under Rule D4.1.4 of the Porirua City District Plan. The construction of the track and the associated earthworks requires consent as a **Discretionary (Unrestricted) Activity** under Rule D4.1.4 of the Plan.
43. Overall, the territorial land use applications are therefore to be considered a **Discretionary Activity**.
44. The application fell to be considered under a number of the provisions of the operative Regional Freshwater Plan for the Wellington Region 1999 (“**the RFP**”).
45. The placement of proposed culvert structures, reclamation of stream beds within the Ohariu Stream, Mill Creek and Hawkins Stream Catchments, and structures within the stream bed which are additional to the culvert pipes such as fish rock ramps and rock protection structures, proposed culvert extension/replacement works greater than 5% of the cross-sectional area of the existing structures, fall for consideration under Rule 49 of the RFP, which provides for all uses of river beds not specifically provided for in Rules 22 to 48, as a Discretionary Activity.
46. Flows that are proposed to be permanently diverted through culvert and associated rock protection structures within permanently flowing streams within the Core Site (Mill Creek and Ohariu Stream) fall for consideration under Rule 16 of the RFP, which provides for

diversions of water that are not specifically provided for in other rules, as a Discretionary activity.

47. Flows that are proposed to be permanently diverted through realigned channels, in association with the BRR upgrade works, are within a permanently flowing watercourse and are also located within 50m of a property boundary and as such, cannot meet the requirements of Rule 9 of the RFP. The diversions associated with the BOOM 011 and BOOM 019 works also fall to be considered under Rule 16 of the RFP as a Discretionary activity.
48. Overall, the application(s) for regional resource consents are therefore to be considered a **Discretionary Activity**.
49. While we acknowledge that some aspects of the proposal may, in isolation, have a lesser formal activity status, we find that there is insufficient justification for assessing the application more narrowly in terms in its component parts, and that 'bundling' of consent categories is more appropriate. This issue is particularly relevant to the upgrade of the OVR, to which we return later in this Decision.
50. While there was some discussion during the Hearing about the possibility of "unbundling" some lesser status consents, in the end the overall activity status classification seemed to us to be accepted.

## Summary of evidence and submissions heard

### The Applicant

51. The submissions made and evidence presented by the Applicant was extensive and is summarised in part in Appendix 1 to this Decision.
52. This summary was prepared by the Committee Secretary (Ms Williams and Ms Neale) from notes taken during proceedings, the tabled material and responses to questions. While they represent a good and fair summary of matters, they are not an exhaustive minute. Accordingly, we note that we have not relied upon this summary for this decision but, rather, upon our own notes, the written material and other material referenced by counsel and witnesses.

### Submitters

53. We heard 142 submitters (in addition to the Applicant and councils); too many to individually identify their concerns. Generally submitters' concerns were encompassed by the matters raised by the principal "public interest" submitters – Ohariu Preservation Society Incorporated ("**OPS**"), Makaracarpas Society Incorporated ("**Makaracarpas**"), and Makara Guardians Incorporated ("**the Guardians**"). For the purpose of our Decision we have highlighted evidence and submissions made by these parties.
54. As with the evidence for the Applicant, submission material was extensive and we have chosen to provide an abbreviated and partial summary of this only in Appendix 1 to this Decision.
55. Again we note that this is not exhaustive and covers only aspects from those who we have characterised as the major submitters. This is not meant to imply, and should not be taken as implying, that we have thereby taken less account of other submitters. It is simply a vehicle of convenience for indicating many of the issues that were addressed to us. To

catalogue the detail of the many submissions heard would, in our opinion, unnecessarily protract this Decision without assisting the reader.

## Relevant statutory provisions

56. It was common ground that the relevant statutory provisions for determining this application were Part 2 and sections 104, 104B, 105, and 107 of the RMA.
57. Part 2 also contains sections relating to matters of national importance (section 6); other matters to which particular regard is to be had (section 7); and a requirement to take into account the Principles of the Treaty of Waitangi (section 8).
58. Section 104(1) of the RMA, which is subject to Part 2, directs the consent authority to have regard to certain matters in consideration of an application:
  - (a) *any actual and potential effects on the environment of allowing the activity; and*
  - (b) *any relevant provisions of—*
    - (i) *a national policy statement;*
    - (ii) *a New Zealand coastal policy statement;*
    - (iii) *a regional policy statement or proposed regional policy statement;*
    - (iv) *a plan or proposed plan; and*
  - (c) *any other matter the consent authority considers relevant and reasonably necessary to determine the application.*
59. Section 104(2) contains a discretion by which “... a consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect.” However there is little guidance on the circumstances when the permitted baseline should be disregarded.
60. In this respect, we record that Ms O’Callahan outlined certain effects that have been highlighted in submissions in relation to the application that could arise from carrying out permitted activities. For example, and in terms of construction effects, and particularly transportation and sedimentation effects, she noted that forestry and intensive rural land uses such as dairying are permitted in the Rural Area in the WCDP. Indeed, dairying and forestry are not restricted under any of the relevant Regional Plans. Other permitted activities include vegetation clearance of less than 1ha in area, and road widening.
61. Accordingly, the Applicant argued that it was open to us to disregard (either fully or in part) in accordance with section 104(2) of the Act, certain permitted effects such as construction traffic, noise, and loss of occupied frontage associated with the road widening works.
62. We accept that forestry development has the potential to create effects that are in some ways similar to those associated with the construction and operational aspects of the wind farm. For example, the planting and particularly harvesting periods might have similar erosion and sedimentation and nuisance (dust and water quality) effects to the construction of the wind farm. In addition, the use of heavy machinery and transportation during harvesting could be said to be similar in character to traffic impacts. However there is a clear scale difference and it was not suggested that the magnitude of the construction effects of forestry would be on a par with the potential effects of the wind farm construction – despite the evidence we heard about the effects of recent deforestation on the water bodies adjacent to Takarau Gorge Road and, ultimately, the Makara Estuary.

63. In the present circumstance we have determined not to disregard the adverse effects of activities permitted by any of the relevant operative plans – since on a practical level this would prove both difficult and somewhat artificial – but to keep this matter in the front of our minds when coming to our overall broad judgement.
64. We record the other three relevant sections of the RMA for the record.
65. Section 104B states that:
- After considering an application for a resource consent for a discretionary activity ... a consent authority—*
- (a) may grant or refuse the application; and*
  - (b) if it grants the application, may impose conditions under section 108.]*
66. Section 105 states:
- (1) If an application is for a discharge permit ... to do something that would contravene section 15 ... the consent authority must, in addition to the matters in section 104(1), have regard to—*
- (a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and*
  - (b) the applicant's reasons for the proposed choice; and*
  - (c) any possible alternative methods of discharge, including discharge into any other receiving environment.*
67. Section 107 states:
- (1) Except as provided in subsection (2), a consent authority shall not grant a discharge permit ... to do something that would otherwise contravene section 15 ... allowing—*
- (a) The discharge of a contaminant or water into water; or*
  - [(b) A discharge of a contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water; or]*
- if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:*
- (c) The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;*
  - (d) Any conspicuous change in the colour or visual clarity;*
  - (e) Any emission of objectionable odour;*
  - (f) The rendering of fresh water unsuitable for consumption by farm animals;*
  - (g) Any significant adverse effects on aquatic life.*

*[(2) A consent authority may grant a discharge permit ... to do something that would otherwise contravene section 15 ... that may allow any of the effects described in subsection (1) if it is satisfied—*

*(a) That exceptional circumstances justify the granting of the permit; or*

*(b) That the discharge is of a temporary nature; or*

*(c) That the discharge is associated with necessary maintenance work—*

*and that it is consistent with the purpose of this Act to do so.]*

*[(3) In addition to any other conditions imposed under this Act, a discharge permit ... may include conditions requiring the holder of the permit to undertake such works in such stages throughout the term of the permit as will ensure that upon the expiry of the permit the holder can meet the requirements of subsection (1) and of any relevant regional rules.]*

68. We return to consider these provisions further later in this Decision.

### **Relevant planning document provisions**

69. It was common ground that the relevant regional planning documents were:

- (a) The Regional Policy Statement for the Wellington Region (1995);
- (b) The Regional Soil Plan for the Wellington Region (2000);
- (c) The Regional Plan for Discharges to Land in the Wellington Region (1999);
- (d) The Regional Freshwater Plan for the Wellington Region (1999);
- (e) The Regional Air Quality Management Plan for the Wellington Region (2000).

70. No proposed regional plans (plan changes or variations) were identified to the Committee by any party as being relevant.

71. It was common ground that the relevant Wellington City district planning documents were:

- (a) The Operative Wellington City District Plan (2000);
- (b) The Proposed Wellington City Plan Change 32 - Renewable Energy (2004);
- (c) The Proposed Wellington City Plan Change 33 - Ridgelines and Hilltops (Visual Amenity) and Rural Area (2004); and
- (d) The Proposed Wellington City Plan Change 65 – Earthworks (2008).

72. It was common ground that the relevant Porirua City district planning documents were:

- (a) The Operative Porirua City District Plan (1999);
- (b) The Proposed Porirua City District Plan Change 7 - Windfarms (2007)

73. Two other non-RMA planning documents were frequently referred to, being:

- (a) Ohariu Valley Rural Community Plan (2001); and
- (b) Makara Rural Community Plan (2001)

However, as neither of these is a statutory RMA document, no reliance was placed upon them by the Applicant and little weight *per se* accorded them in this Decision - other than to note that they represented a clear indication of community expectation at the time regarding the future of their respective communities - and in which wind farming was not an obvious part of that consideration – expressed through a formal participatory Council process. The extent to which those expectations were subsequently translated into the operative and proposed plans, and the community participated and continues to participate in those processes, is a matter of record. These two Community Plans are also referred to as an implementation method (“*other mechanisms (Rural Community Plans)*”) under the Rural Areas Objectives and Policies section of PC33 (for example).

74. With respect to the various operative Plans, the key sections of objectives and policies were comprehensively addressed by the expert planning witnesses for the Applicant, the councils, OPS and the Guardians.
75. There was no fundamental dispute between the parties about the extent or relevance of the numerous relevant operative provisions of any of the WCC, PCC or WRC planning documents. We therefore see no need to rehearse those provisions in this Decision but note, for the record, that we find the appropriate operative provisions generally as disclosed in the evidence of those respective witnesses.
76. The one significant matter on which there was disagreement between the experts related to the relevance, as noted above, of the Community Plans, and the weight to be placed on the two WCC plan changes – numbers 32 and 33. These matters are discussed in the following section.
77. For the record, we note that we were subsequently advised that the Environment Court released its decision on appeals on PC32 and PC33 on the 29<sup>th</sup> January 2009 – i.e. after this Hearing had closed but before this Decision was released. We have turned our minds to the question of the extent to which section 88A(2) of the RMA might thereby apply – being a plan(s) which exists at the time the application is being considered. This matter is also addressed further below.

### **Principal issues in contention**

78. For convenience we have identified the principal issues in contention in broad terms as follows:
  - (a) Project envelope
  - (b) Consultation
  - (c) Scientific risk and uncertainty
  - (d) Standard and burden of proof
  - (e) Project divisibility
  - (f) Project West Wind
  - (g) Commencement date for “existing environment”.
  - (h) Government’s energy strategy.
  - (i) Coastal environment -v- coastal influence
  - (j) Construction effects – overview



- (k) Construction effects – roading works
- (l) Construction effects – traffic safety and efficiency
- (m) Construction effects - Sediment and erosion control from earthworks
- (n) Construction effects - nuisance (dust, noise, water)
- (o) Visual amenity effects
- (p) Noise amenity effects
- (q) Health effects from infrasound and low frequency noise
- (r) Rural Community Character – Ohariu Valley
- (s) Ecological effects
- (t) Cultural sites and archaeology
- (u) Weight to be accorded proposed plan changes

79. These are discussed in the following sections. On each of these matters we have made a finding which follows immediately a discussion of the general issue.

### **Project envelope**

- 80. A number of submitters questioned whether the application made properly covered the scope of the activities (and their potential adverse effects) for which consent was sought – and therefore raised questions about the adequacy of the assessments undertaken (and by extension, our ability to hear and decide the application).
- 81. In this respect, for example, OPS raised concerns about the potential for turbines to be relocated within the turbine envelope applied for, and thus cause greater or different adverse effects on the receiving environment (i.e. visual, earthworks, operational turbine noise etc) than those described in the application.
- 82. In terms of the visibility of earthworks for example, Ms Steven for OPS pointed out that there is a potential for each turbine to be moved 100 metres and therefore (with 31 turbines being proposed) there is potential for an additional 3km of access road to be developed that has not been assessed by Meridian. The implication being that additional visual, sedimentation and construction traffic effects have not been assessed by either the Applicant or the councils.
- 83. Whilst we accept Ms Steven's hypothesis as a possibility, we also note Meridian's comment that when it comes to detailed design turbines are usually located close to where they are shown in the application drawings. We also note that there is an economic driver to minimise the extent of earthworks wherever possible and therefore the scenario outlined by Ms Steven for an additional 3km of roading is unlikely. In addition, we note that the total footprint of the development (roading, platforms, lay down areas etc) represents only a small fraction of the core site (less than 1%) and therefore even if the 3km was correct it would have no significant impact on the magnitude of the works in this location.
- 84. Similar concerns were raised in terms of turbines potentially being closer to residences and therefore causing greater operational noise and visual effects. However, given the small dimension of micro siting (100m) sought by the Applicant involved, we do not think this claim has any serious foundation.

85. We also note that the councils, whose professional role includes ensuring that applications are properly made, raised no additional scope issues for our consideration.

#### Finding

86. We find that the application as made and notified has appropriately defined the scope, sufficiently well described the overall effects on the environment for them to be understood generally and submissions to be made, and identified the corresponding consents required. It is inevitable with projects of this scale that matters of substance will arise during a Hearing that may not have been fully addressed at the time of application. The important point is that those matters *be* addressed during the Hearing to the satisfaction or otherwise of the decision makers.
87. We note in passing that “effect” matters go to the very heart of the decision to be made and, if not satisfied by the assessments made and opinions offered by an Applicant, this would be reflected in the decision accordingly.
88. Neither council staff nor the Applicant identified any further resource consents that might be necessary during the Hearing.

#### **Consultation**

89. The adequacy of Meridian’s consultation with the relevant communities of interest was raised by many submitters.
90. We generally accept the criticism made by submitters of Meridian’s ‘consultation’.
91. It is true, as Meridian stated, that there is no duty under section 36A of the RMA to consult, and instead is merely required under the 4<sup>th</sup> Schedule to the Act to provide a statement of consultation.
92. However, having entered into a “consultation process”, as was outlined to us by Ms Fletcher for Meridian, we consider that such a duty is then effectively adopted and should be pursued appropriately.
93. The presentations to, and discussions with the residents (and the submitters), in particular could not, in our opinion, be described as consultation in the proper sense of the term. It seemed to us that while Meridian was willing to describe its proposal and to provide information on it, on its own evidence, once the project shaping phase was completed and ‘locked in’, it appeared to have no real intention of making, or even considering, any changes to the design or the concept based on the views that it received from the residents. On this basis there was a clear disjunction between the expectation of residents and the reality set by Meridian.
94. In the end, however, we must consider the merits of the application rather than the limitations of the Applicant’s consultative efforts.

#### Finding

95. We find that the consultation undertaken by the Applicant met the requirements of the RMA.

#### **Scientific risk and uncertainty**

96. Many parties to this Hearing urged us to take a precautionary approach to scientific risk and uncertainty, particularly with respect to the perceived potential for adverse health and noise effects.

97. We note that the Courts have discussed this matter under the RMA on many occasions and their general direction has been to affirm a precautionary course of action where a reasonably objective, provable, and real risk can be demonstrated. The Courts have also consistently upheld the finding that the RMA is not a “no risk” statute and that where any real risk can be mitigated (in particular through conditions and review) then such a risk is not necessarily fatal to an application.
98. Where mitigation of risk imperils the application – in that the conditions imposed would effectively prevent an application from being given effect – then that is not considered a proper use of conditions and the application for consent should be declined.
99. In the present case, this situation would only arise if it was considered that the risk imposed either by the entire wind farm or by substantial numbers of turbines was of such a magnitude that mitigation was not practicable.
100. We heard no compelling evidence that the entire wind farm posed any risk that was not able to be mitigated.
101. We did hear evidence that numbers of individual turbines did pose such risks – although this was not unequivocal - and we discuss this further below.

#### Finding

102. We find that we should adopt a precautionary approach in the event that a matter is credibly established as having a sufficient scientific risk or level of uncertainty of adverse effect.
103. We do not find that this “principle” applies to the proposed wind farm in its entirety.

#### **Standard and burden of proof**

104. Some submitters have sought to have us apply a very high level of proof to this application.
105. It is generally accepted that the burden of proof under the RMA is the lesser *balance of probabilities* test rather than the stricter one of *beyond reasonable doubt*.
106. This test requires the Applicant and submitters to establish their arguments along that balance which, in the imagery of the Court, is a swinging balance. That is, as a matter is established the burden shifts to the opposing party to redress that balance or the matter is effectively “home”. Unfortunately many parties often fall into the trap of simple repetition of statements and claims which, while providing commissioners with a clear understanding of their position, does little to counter evidence – especially where that evidence is led as expert evidence.
107. That is not to say that commissioners are entirely in the hands of experts. Frequently the experts do not agree and we need to make findings as to which we prefer. We are also obliged to make an overall judgement in light of all the evidence and submissions heard.
108. In that regard our task was made easier by well-prepared and thoughtful evidence, particularly by OPS and the Guardians, but also by many group and individual submissions.
109. We note that the main issues to which this swinging burden applied was noise, health effects, and visual and community amenity.

#### Finding

110. We find that the *balance of probabilities* test is the appropriate standard of proof for us to apply.

## Project divisibility

111. While the Mill Creek project is a single project for the purpose of the resource consent application, wind farms have become divisible by commissioner and court decisions that both remove and relocate individual turbines.
112. In the present application the Applicant argued against this approach – although not wanting to imperil the application simply because one turbine is found wanting in some respect.
113. In this respect Mr Beatson submitted in reply:

*These requests taken together would preclude the construction of any turbines on this site. There is limited scope to delete turbines without rendering the project uneconomic and thus perhaps inadvertently frustrating the grant of consent ... Considerable thought and analysis has been applied to achieve a proposal that efficiently captures the exceptional wind resources while maintaining appropriate set backs to the greatest extent practicable. The Court in consenting the West Wind proposal clearly indicated that comparable setbacks for the coastal environment and from nearby residences, are within the range of effects considered acceptable.*
114. A number of opposing parties advocated the removal of either single or clusters of turbines.
115. We agree that the project is to be assessed overall and only at the margins would we consider redesigning the Applicant's project by removing or repositioning turbines. We do, however, note Mr Beatson's acknowledgement above that, within limits, the project was not set in concrete at 31 turbines.

## Finding

116. In a primary hearing, and unless there is overwhelmingly compelling evidence to do so, we find it inappropriate for us to contemplate redesigning the application – whether within the scope of the application or otherwise. The application has been presented as a package of wind turbines designed to achieve a certain energy outcome.

## Project West Wind

117. The topic of the relevance of Project West Wind ("**PWW**") to the application arose in relation to a number of construction and non-construction effects issues.
118. In terms of **construction effects**, submitters made frequent comment on the perceived performance of Meridian during the construction of PWW. This criticism covered all aspects of the construction regime including pre-construction, road widening and background noise monitoring through to traffic management during the construction period and ultimately, the issue of erosion and sediment control during high rainfall events.
119. The key theme presented by submitters was that we could have no confidence that the construction effects associated with this application would in fact be mitigated because PWW demonstrated the Applicant's unwillingness or inability to adhere to 'bottom line' conditions and/or requirements of management plans.
120. The Applicant took exception to all such assertions and advised us that it takes its responsibilities very seriously and seeks to ensure compliance with any conditions and management plans.

121. We agree with the Applicant that the present application is not the appropriate forum for re-litigating matters related to PWW. Furthermore, and on the categorical response from the WRC reporting and compliance Officers (Mr Lisle in particular), we have no grounds for finding that there have been non-compliances of such a significant nature associated with PWW as to warrant us taking that into consideration in our Decision on PMC.
122. Certainly it was clear to us that issues have arisen that indicate the need for improvement in the management of some matters - transport and erosion/sediment effects (for example). On those matters we accept the Applicant's repeated commitment to better practice based on learning from that experience in order to avoid similar situations arising by applying those lessons at Project Mill Creek.
123. In terms of **post-construction effects** re PWW, the main issue presented by the submitters was that they have little or no confidence in the prediction of operational noise for either PWW or PMC. It was therefore suggested to us that a decision on PMC should be delayed until verification of the operational noise for PWW turbines has been undertaken. We return to this theme under the heading of Noise Amenity effects but it suffices to say that we are confident that noise monitoring results from an operational PWW wind farm will be relevant to this application and we have imposed a review condition accordingly.

#### Finding

124. We find that PWW is a helpful comparative case in terms of calibrating better and more appropriate conditions for this application.
125. We do not find that practices undertaken at PWW provide any grounds for contemplating refusal of consent for this application.

#### **Commencement date for existing environment**

126. Throughout the Hearing Mr Beatson urged us to accept the date of lodgement of the application as the relevant date from which any calculation of the existing environment was to be determined. That date was the 12<sup>th</sup> March 2008.
127. The particular significance of the date relates to the lawful existence of consents for subdivision and the construction of dwellings which, in such an event, must be taken into account as part of our section 104 consideration. Of particular concern would be the potential adverse effect on the visual and noise amenity of any duly consented but as-yet-unbuilt dwelling.
128. The councils disagreed with Mr Beatson on this matter indicating to us that the date of decision was their notional date, stating that the receiving environment should include all relevant consents granted at the time the application is considered.
129. We find council's position on this matter a little problematic in that, in the event of a substantial delay in the decision being released, other applications could be decided that were not even lodged when a hearing closed.
130. We prefer to adopt the date of public notification for the purpose of defining the existing environment, being the date when all possible parties are effectively put on notice of an application – and can submit in protection of their interests. The issue then goes to the weighting to be given any such other application or grant of consent at the time of decision. The date of public notification was the 17<sup>th</sup> April 2008.

#### Finding

131. We find that the general principle established by the Courts on the matter of priority sensibly applies by extension in this context. That is, that it is at the point an application is ready for notification that the clock effectively starts ticking and the application can be said to be live and to have priority over other applications not at that stage. To find otherwise would, in our opinion, risk encouraging abuses of process whereby legitimate applications could be ambushed by parties lodging hopelessly incomplete applications in order to gain advantage.
132. We find that the sensible commencement date for our consideration of the existing environment is the 17<sup>th</sup> April 2008. All consents granted at that time or applied for and determined prior to our Decision are thereby relevant considerations. We have not considered the effects of the wind farm on any dwelling applications lodged or consented after that date.

### **Government's NZ energy strategy**

133. Much evidence was put before us regarding the general issue of renewable energy and the merits of wind generation (in that respect).
134. We feel no great need to rehearse again all the arguments about the face of public policy on this question. We accept the national importance of renewable energy generation – indeed this is underscored by the 2004 RMA amendment that introduced this matter explicitly into section 7(j). We also accept that the Government of the day had expressed a clear preference for increasing the nation's generation from renewable sources and had set a target quotient and timeframe for that. These are matters that are able to be taken into consideration in our Decision under section 104(1)(c) of the RMA (and, by implication, section 104E).
135. What was more at issue was whether renewable generation from *this* project is critical to achieving that target, given the quantum of, particularly, wind generation already either built, fully consented, or in process.
136. In fairness to the Applicant we must note that it did not rely upon the argument that its project was critical to the Government's target. Indeed we were assured by Mr Beatson in closing that if the project is not economically viable and necessary to meet NZ's energy needs it would not be built.
137. Meridian's argument, reduced to its simplest, was that:
- (a) NZ needs more electricity, and more widely distributed sources of generation for a number of reasons, including transmission ones;
  - (b) wind generation from a quality wind resource makes sense irrespective of the extent to which it contributes to national goals (which it maintains it does anyway);
  - (c) the lower wind-generated electricity market price has clear benefits (economic as well as environmental) even though not generating continuously and requiring stand-by alternative system reserves;
  - (d) true life-cycle costs for wind generation (including its overall construction and operational carbon footprint) are materially less than for non-renewable (i.e. thermal) generation; and
  - (e) this project would provide the energy equivalent needs of 35,000 average households annually – in itself a significant contribution to future forecast demand.
138. Opponents argued to the contrary that:

- (a) Public policy encourages more efficient use of existing electricity supply through a variety of demand management measures as a priority over new generation;
- (b) Developments committed to and in train across and to the national grid make distributed generation less of a priority in the short term;
- (c) The lower dispatch price is a structural artefact that does not take into account the need for (and cost of) system reserves;
- (d) The unreliability of wind generation requires back-up duplication of generation capacity and frequency keeping within the overall system – which is unlikely to be renewables-based;
- (e) Wind farms impose externalities on communities (such as noise and visual pollution) that are not properly internalised; and
- (f) In the final analysis, Government's policy position is not intended to override the broader considerations of the RMA.

139. We note that we did not hear evidence from Government's main energy or resource management policy departments, although the Energy Efficiency and Conservation Authority (EECA), the crown entity responsible for helping to deliver the Government's energy efficiency agenda, represented Government's general strategy to us. As an aside, we record that the basis for Government deciding when to submit on renewable energy resource consent applications appears to be quite inconsistent. We merely note that this creates some uncertainty for decision makers when deciding the application on section 7(j) RMA matters.
140. Fortunately under the RMA we are not required to evaluate the merits of Government's strategy on energy, renewables or any other similar matter. We accept that Government has such and that these are material considerations, whether under section 7 or section 104(1)(c), and simply goes into the mix of our overall broad judgement under Part 2 of the RMA – and to which we return in our Decision below.

#### Finding

141. We find that the Government's NZ Energy Strategy is a relevant consideration under section 104(1)(c) of the RMA but the weight to be accorded is significantly less than it would attract if it were a National Policy Statement or a National Environmental Standard.
142. We also find that generation of energy from a renewable wind resource, albeit intermittent, represents a clear national energy benefit to the extent that while generating it displaces modes that are more expensive and potentially have greater adverse environmental effects. Whether this benefit outweighs local adverse effects is a matter to which we return later in this Decision.
143. We also note that the absence of direct representation in the Hearing from the Ministry responsible for the Energy Strategy meant that we were unable to directly inquire behind the face of this document.

#### **Coastal environment v coastal influence**

144. The site is bounded on its western side by the coastline. This interface, as required by Section 6 of RMA, warrants special consideration.
145. Chapter 7 (The Coastal Environment) of the RPS lists *'coastal escarpments and small beaches from Paekakariki to Owhiro Bay (excluding Pukerua Bay settlement, Porirua*

*Harbour and Plimmerton) under Table 9: Landscapes and Seascapes of National or Regional Significance. The particular classification for this part of the coast is regional significance. Notwithstanding this classification in the RPS, the steep coastal escarpment of the Mill Creek site is considered by all parties as part of an outstanding natural landscape.*

146. We were advised by the landscape experts that while the outstanding natural landscape extends beyond the site southward to Tongue Point, it does not extend inland to the Mill Creek site itself - which did not warrant this outstanding 'classification'.
147. Accordingly we needed to determine how far inland the coastal environment extends - this therefore required our special attention. The landscape architects for both the Applicant and the Councils and Mr Hudson and Mr Rough respectively, agreed on the inland extent of the coastal environment. This was defined by them in terms of areas of coastal dominance, coastal influence and coastal hinterland. They respectively concluded that this was the first ridge and its associated escarpment – and which therefore required protection.
148. Ms Steven – landscape architect for OPS - disagreed and gave her opinion that the coastal influence zone extended further inland. In this assessment she used historical vegetation mapping as a key determinant arguing, in effect, that the coastal environment was where it would be as indicated by coastal species if undisturbed by introduced elements.
149. This line of demarcation is very important for the siting of turbines. The front coastal escarpments are protected by exclusion from the application; the F-Series turbines are located on the second inland ridge.
150. Mr Rough advised us that his delineation was based on the same methodology which was used for PWW and accepted by four landscape professionals at the time – and subsequently the Environment Court.
151. Mr Hudson observed that:

*While Mr Rough and I agree that the inland extent of the coastal environment lies along the ridge on the which the F- series are located, Ms Stevens (sic) is of the view that the inland extent lies along the next ridge to the east. This would place some of the E-series and both of the H-series turbines within the coastal environment.*
152. Mr Hudson and Mr Rough largely agree that if the proposal goes ahead, the turbines to the west nearer the coast seem less contentious, noting that the prominent coastal escarpment is protected by the application layout.

#### Finding

153. We find that while *coastal influence* is a useful indicator of potential effect, it is altogether too imprecise a spatial and temporal criterion to adopt for the purpose of either an overall assessment or for setting good, practical conditions. We find that the line of the first inland ridge provides a commonsense spatial marker of and for the coastal environment as well as being justifiable in terms of broad landscape and natural species characteristics.
154. We also find that to permit an historical regression in the setting of the inland line of the coastal environment under the RMA, however meritorious in scientific or bio-geographical terms, would open planning to impractical argument as most of our major settlements, at least, would then fall for protection within the direct purview of section 6(a). We do not believe that this is what the RMA intends.



## Construction Effects – Overview

### Context

155. Construction effects associated with the application were extensively discussed by witnesses appearing before us. The specific concerns raised involved a suite of issues including:
- (a) the construction of the external roading upgrades;
  - (b) the transportation effects associated with component/materials delivery;
  - (c) the potential erosion and sedimentation effects associated with the large scale earthworks on the project site; and
  - (d) the potential for nuisance effects from dust, noise, and water supply contamination.
156. In large measure, and we understand due to recent experience with the PWW construction phase, the issue of construction effects was at the forefront of concerns for those who presented before us. We heard as follows:
- (a) The Applicant: Meridian called several technical witness dealing with all aspects of construction including traffic engineering, noise, environmental engineering, ecology and planning to address the concerns of Submitters and Officers;
  - (b) The Councils: The Reporting Officers of all three councils included planners, ecologists, scientists and compliance officers. The management of construction impacts was a clear focus in the s42A Report and the supplementary reports of those officers; and
  - (c) Submitters: With very few exceptions, submitters to the application raised some aspect of effect associated with the construction of the project.
157. Our clear impression was that concerns with this aspect of the project were almost on a par (in terms of potential adverse effects) with those concerning the ongoing operational impacts of the wind farm - should it be granted. As we discuss later in this section of the Decision, this level of concern is aligned to a number of factors including the scale and magnitude of the construction (particularly the nature of the earthworks and the transportation aspects of the project) and also due to the expected duration of the effects; i.e. some two years.
158. Before addressing the specific issues underpinning this issue, however, we need to address some contextual aspects which have a significant bearing on our consideration of this topic. Those matters are as follows:
- (a) Outline of proposed works as a source of effects;
  - (b) Statutory context for considering effects arising;
  - (c) Physical environment for assessing construction effects.

### Outline of proposed works as a source of effects

159. While we have provided a comprehensive description of the proposal in an earlier section of this Decision, it is nevertheless useful to reiterate those construction aspect of the project that are particularly likely to give rise to adverse effects. In this respect it is useful to divide the works into three parts as follows:

- (a) Internal site works comprising:
  - (i) Earthworks associated with roads, tracks, fill areas, borrow / disposal sites;
  - (ii) Concrete Batching Plant;
  - (iii) On-site construction activity.
- (b) External roading works comprising:
  - (i) OVR upgrade from BRR to Spicer Forest;
  - (ii) Spicer Forest Access Road.
- (c) Construction transportation effects associated with delivery of components, materials and personnel to the project site.

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 Not at 2.54 cm

160. In terms of construction effects from the *internal* site works a significant volume of earthworks will be undertaken (approximately 815,000m<sup>3</sup>) on the site. We were also advised that a *cut-to-fill* approach is proposed in areas of gentler terrain whereas a *cut-to-waste* approach will generally be adopted for sideling cuts in steeper terrain. Essentially, this means that the amount of side-casting or uncontrolled earthworked material undertaken on the site will be limited and confined to only the very steep parts of the site. Meridian noted that although this adds cost and time delays to the construction, it would nevertheless have a positive effect on their ability to control erosion and sedimentation effects. We have no reason not to accept that contention.
161. The other areas of *internal* site works involve a range of temporary construction activities including, but are not limited to, on-site concrete batching, geotechnical investigations, extraction and processing of basecourse aggregate, site offices and ancillary activities. The key issues here are largely localised nuisance ones such as dust, noise and water supply contamination and we cover that briefly at the end of the construction effects section.
162. In terms of *external* site works these are largely associated with the construction of the public roading infrastructure to facilitate the delivery of components and people to the project site. These works are largely confined to the 2.6km upgrade of OVR / BRR and the construction of a new access road through Spicer Forest to link Ohariu Valley to Porirua. These issues concern both the short term physical effect of road construction (noise, dust etc) as well as the longer term “character” effects of construction such as property loss and a changed traffic environment.
163. The final category of construction effects involves transportation associated with the construction period. This raises issues of traffic safety and efficiency as well as nuisance.
164. The above effects are discussed further in the sections following.

#### Statutory context for considering effects arising

165. The resource consents sought that give rise to these construction effects are as follows:
- (a) Regional Plans
    - (i) Land use consents for earthworks associated with the construction of access roads and turbine platforms; and
    - (ii) Discharge permits for discharge of stormwater containing contaminants onto land in circumstances (i.e. earthworks in proximity to water bodies) where it

might enter water and discharge permit for contaminants to air relating to the concrete batching plant.

(b) District Plans

Land use consent for various construction activities for the following:

- (i) To construct and use the Spicer Forest Access Road;
- (ii) To undertake earthworks that exceed the permitted thresholds and where located on identified ridgelines and hilltops;
- (iii) To construct and use an access track and associated earthworks within an Open Space B Area;
- (iv) To store and use hazardous substances;
- (v) To construct a temporary concrete batching plant; and
- (vi) To undertake temporary quarrying and processing of aggregates.

Physical context for assessing construction effects

166. As previously noted, the project site is located 12km south of Porirua and 8km north of Wellington City, sandwiched between the Ohariu Valley and Wellington's west coast. It is physically separated from the residential suburbs of both Wellington and Porirua.
167. The land covers around 18km<sup>2</sup> of privately owned pastoral farmland. There are approximately 120 houses located within the Ohariu Valley area, the majority of which are owner-occupied. There are also a number of baches located on Makara Beach and nearby Smiths Beach which are not occupied by permanent residents. The surrounds is a mixture of rural, rural-residential blocks, residential developments, forestry, WCC owned land and the coastal margin.
168. In our view the key points relating to site context relevant for construction effects are:
- (a) The development area is predominantly located on rounded ridges which are separated by steep gullies;
  - (b) The area comprises well-cared grassland with little gorse or native bush;
  - (c) There are five main water courses on the core site and immediate area, all of which are highly modified by land clearance or farming; and
  - (d) Makara Estuary is located downstream of and in reasonable proximity to this site.
169. We note in passing that the condition of Makara Estuary has been affected by various natural and man-made events including deforestation in the Takarau Gorge area, natural erosion in both the Ohariu Valley and Makara areas, and alleged sedimentation from earthworks associated with PWW.
170. Overall, the site is situated in a locality which, whilst natural, is highly modified in terms of land use and occupation. However, the rolling nature of the landform and the presence of several water bodies through the site does create potential for erosion and sedimentation effects.
171. We now turn to a consideration of the actual and / or potential adverse effects associated with the construction of PMC, dealing with the following four issues:
- (a) Roading - upgrade of upper OVR / Spicer Forest access;

- (b) Construction Traffic Effects (i.e. effect of traffic using the route);
- (c) Sediment and Erosion effects from earthworks (on the core site); and
- (d) Nuisance effects of construction on the core site: noise, dust / water supply.

## **Construction effects – Roading works**

### Context

172. Aside from sedimentation issues discussed later, the principal issue causing most concern to submitters related to the potential for disruption during the construction phase, particularly in respect to construction traffic and roading related effects. These fell into two categories, namely:
- (a) Effects from the actual upgrade of OVR / BRR / Spicer Forest Access Road (both a construction and a post-construction effect); and
  - (b) Traffic effects during construction of the wind farm (excluding the effects of road construction covered in (a) above).
173. In terms of 172(a) above this covers the longer-term traffic related effects, including:
- (a) The upgrade to OVR / BRR;
  - (b) The traffic effects associated with Spicer Forest Access Road; and
  - (c) Traffic associated with the operational phase of Project Mill Creek.
174. We deal with 172(b) later in this section.
175. The key evidence heard regarding 172(a) included submissions from the following:
- (a) Meridian (Messrs Beatson, Dunlop and Wiles) regarding all works in the legal road reserve and controls on access arrangements for Spicer Forest;
  - (b) Submitters: All submitters with properties on or adjacent to the 2.6km section of OVR / BRR including Mr Robert Best and the traffic and planning witnesses for OPS (Mr Barraclough, and Mr Geange);
  - (c) WCC (Mr Kong and Ms Pawson) covering the activity status of the road upgrade / maintenance and road construction issues and access restrictions.
176. The principal issues raised by submitters regarding adverse effects associated with the upgrade of upper OVR and the Spicer Forest Access Road were:
- (a) Physical effects of constructing the road – noise, dust and other nuisances;
  - (b) Loss of property / facilities - e.g. horse paddocks and equestrian practice/show area;
  - (c) Loss of wetland habitat adjacent to OVR;
  - (d) Effect on forest / future reserve status (Spicer Forest); and
  - (e) Changed traffic environment post-construction due to creation of through road and widening of both OVR / BRR and Spicer Forest access track.

### Preliminary/Procedural Issues

177. Before dealing with the substantive effects issues we need first to discuss three procedural / preliminary issues raised with us:

- (a) Status of roading activity under the District Plan; and
- (b) Application of the permitted baseline.

Status of roading activity

178. Mr Geange for OPS raised an issue in relation to the status of the OVR / considered under the WCDP.
179. In particular, he questioned the Applicant's interpretation of Rule 15.1.7 of the WCDP which states that:
- Any activity relating to the upgrade and maintenance of existing formed roads and accessways, except the construction of new legal road, is a permitted activity.*
180. Mr Geange stated that the correct interpretation of the Rule is that, in this instance, the permitted activity status is limited to the existing road carriageway and that the Rule should be constrained to relating to 'minor' upgrades of that existing carriageway.
181. In response, Meridian rejected Mr Geange's interpretation as being "*superficial, not developed in any detail and erroneous*". Mr Beatson suggested that Mr Geange's interpretation would render the Rule uncertain and invalid. We observe that Mr Slyfield did not advance any legal proposition to support Mr Geange's interpretation.
182. We note that the WCC staff (notably Ms Pawson and Mr Kong) advised us that this Rule has been applied, and relied upon, for many years when carrying out upgrade work within the legal road. Ms Pawson added that, in her experience, the Council has never required consent for such works.
183. Mr Beatson referred us to the Shorter Oxford English Dictionary which defines 'upgrade' as "*To raise to a higher standard or level; improve or enhance.*" He submitted that it should be beyond dispute that where there is already an existing formed road in the locality and the enhancement works are directly related to that road then the works so qualify.
184. We therefore find that activity associated with the maintenance and upgrade of existing roads is a Permitted Activity under Rule 15.1.7 of the WCDP

Application of permitted activity rule to PMC roading upgrades

185. Having accepted that road upgrades *per se* qualify as a permitted activity in the WCDP, it is necessary to determine if this rule has equal application to all of the roading upgrades associated with the application.
186. In this respect we note the following:
- (a) Meridian stated that all works associated with the OVR / BRR upgrade will occur within the boundaries of the legal road and illustrated that with the provision of a preliminary survey plan for the full 2.3 km stretch of OVR from BRR to the Spicer Forest entry point. These plans were also supplied to all landowners who front onto those parts of the road.
  - (b) The construction of an access track through Spicer Forest does not follow legal road reserve and therefore is subject to the normal Rural Area requirements of both the WCDP and the PCC DP. In this respect, and as Ms Pawson advised us, the new access track requires resource consent as a Discretionary Activity under the WCDP.

187. Mr Beatson concluded that there can be no serious suggestion that what is proposed by Meridian in relation to the upgrade of OVR does not fall within the Rule 15.1.7
188. With the assistance of the detailed long sections and survey information provided to us we observe that the application documentation is clear that the proposed road works are indeed to take place within the legal road reserve corridor and are to improve (i.e. upgrade) the existing formed road.
189. Accordingly, we find that the upgrade of the OVR / BRR component of the application qualifies as a permitted activity in the WCDP but that the construction of the access track through Spicer Forest requires a resource consent.

#### Spicer Forest Access Track

190. The submissions in respect of this matter generally raised two principal concerns as follows:
- (a) The potential loss of a future reserve in Spicer Forest; and
  - (b) The effect on the character of OVR due to the creation of a thoroughfare from Porirua to Ohariu Valley,

##### *The potential effect on a future reserve in Spicer Forest*

191. The issue raised here was that the construction of an access track through the forest could adversely impact on the existing forestry and more importantly would preclude development of part of the Forest as a reserve once the trees are harvested and the landfill is closed.
192. In assessing this matter, we note that the proposed access road within the Spicer Landfill site is entirely within the Rural Zone of the WCDP and therefore the objectives and policies relating to this zoning are relevant. We consider that the proposal is consistent with the objectives of avoiding, remedying or mitigating adverse environmental effects on the ecosystems and characteristics of the Rural Zone in that:
- (a) The landfill site in the Forest is highly modified; and
  - (b) The location of the access road will have limited impact on the character of the rural environment as the Forest will largely screen it.
193. We also note that the Spicer Forest is covered under the Wellington City Council's Outer Green Belt Management Plan which proposes that the existing pine trees are harvested in approximately 10 years time and that the area would be left to revert to natural vegetation. This management plan also proposes to vest this area as a reserve. We were advised that Council has yet to designate / gazette the area as reserve as it still needs to confirm the appropriate reserve status that best fits the future use of the land.
194. Irrespective of any future decision WCC might make regarding the use of the land once forestry and landfill activities cease, we see no sensible reason why the proposed limited access road should prevent that option. We accept that once a road is formed, albeit not an unrestricted public road, the option is there for WCC to confirm its open public status. But that is a decision for WCC at a future time. It is not a necessary consequence of this application. More importantly however, we are satisfied that there is a statutory management plan process for dealing with the forestry and reserve issues and that this process has currently earmarked the future use of the land as a reserve.

##### *Effect on character of Ohariu Valley Road*

195. Several submitters, particularly those in the upper part of OVR, raised a concern that the proposed access through Spicer Forest and Spicer Landfill would open up a thoroughfare between Porirua and Ohariu Valley. There was also the suggestion that this route would be used by 'boy racers'. It was suggested that the route would change the cul-de-sac nature of Ohariu Valley and compromise the character of the Valley and the security of its residents.
196. For various reasons, we do not consider that the submitters' concerns about this track will eventuate. These reasons are:
- (a) There is no public access to Spicer Landfill currently outside of the Landfill operating hours;
  - (b) While Spicer Forest has some links to Colonial Knob for recreational purposes, these links do not provide continuous access through to OVR for vehicles; and
  - (c) The proposed new alignment for the access road does not follow any existing legal road alignment. For this road to become a public road which links Ohariu and Porirua it would have to be upgraded to an appropriate standard and then vested as a legal road. We were advised that the Wellington City Council has no intention of undertaking this process.
197. Notwithstanding the above, we also note that the Applicant made it clear that the proposed Spicer Forest Access Road will be a private road with the following restrictions:
- (a) Construction period: No through access will be permitted, apart for access for construction vehicles; and
  - (b) Post-Construction: Access to the road will be restricted with locked gates and physical barriers at each end.
198. In terms of 197(a) above we note that the resource consent for use and development of the Spicer Forest Access Road will be limited to use for the wind farm only, which is essentially limited to the construction period although occasional access would be available to the Applicant for extra-ordinary maintenance activities requiring large items (such as blade replacements) to be delivered to the project site.
199. Similarly, and in terms of 197(b) above, we note the restriction proposed by Meridian and supported by the WCC and PCC, regarding restrictions on access to either end of the access track at both the Porirua and Ohariu Valley end. The restriction proposed is that once construction of the wind farm is complete access to the track will be physically blocked and no vehicles will be able to use it. This restriction will be imposed through a condition of consent.
200. We also note that a further RMA authorisation (resource consent or designation) would be required to use the proposed access road as a public road because use of this land for a public road is not a permitted activity in the Rural Area of the WCDP.
201. We also note the view of OPS (to which Mr Kong concurs) that, notwithstanding their opposition to the wind farm proposal *per se*, should it proceed then the new road through Spicer Forest should be constructed before widening on the northern part of OVR commences so as to prevent additional traffic demand south of the proposed road widening. We concur with this recommendation and discuss it further below.

## OVR / BRR upgrade

### Context

202. A number of submitters, particularly those living along the upper section of OVR raised concerns about the widening of this road and, in particular, the following potential post-construction / operational effects arising from the roading upgrade; namely:
- (a) *Property effects* such as the impact on existing site access, property loss and effect on activities undertaken on the property, e.g. horse grazing; and
  - (b) *Traffic environment effects* associated with an increase in speed of vehicles travelling on OVR and BRR and the resulting effects on the safety of road users, including recreational users (cyclists, walkers and horse riders).
203. These concerns raised a number of issues for us; namely:
- (a) The necessity for the road widening; and
  - (b) The nature of effects (property loss / activity disruption, safety and efficiency; changed traffic environment etc) and the extent of mitigation of these potential effects.

*Necessity for the road widening*

204. Meridian has stated, and Mr Kong agreed, that it is necessary to upgrade and widen the northern section of OVR and a portion of BRR so as to enable construction vehicles to access the site. This is because those sections of the existing road are sub-standard for the movement of the large number of over-weight and over-dimension loads which will be transported to the wind farm site, together with the haulage of substantial quantities of construction equipment and materials using heavy trucks during the construction phase of the project.
205. Accordingly, we accept that there is a necessity for the roading works if this route is used. In fact as we discuss later, we have some sympathy for the view advanced that the use of this route through Spicer Forest and the upper section of OVR will create far less community impact than would alternative routes such as Takarau Gorge Road and the lower section of OVR.

*Property effects and disruption to adjoining activities*

206. We are well aware that the formation of legal road into carriageway for road widening purposes will have the effect of displacing certain activities and/or facilities that currently occupy legal road.
207. In this respect we refer to the submissions by several of the property owners along the upper part of OVR who consistently raised this concern.
208. The evidence of Mr Barraclough covered the technical transportation aspects of this issue, whilst the individual submitters who presented all raised, to varying degrees, the concerns they had regarding physical loss of road frontage and disruption of adjoining activities such as horse grazing and equestrian activities. In terms of the latter, one particular submitter (the Tolo family) advised how their equestrian facilities will be adversely affected in this way.
209. It seemed incomprehensible to all the submitters in this category that land they had occupied for varying periods of time (in some cases for many years) and which contains their accessways, front yards, paddocks and in some instances more substantial structures, could be converted into road without their input and without any compensation whatsoever.
210. In assessing this however we note that Meridian has assured us, and provided survey plans in confirmation, that all road widening will be located within the legal road and thus there is



no private property directly affected. Rather, the activities and property effects referred to by submitters are effects associated with their essentially “non-lawful” occupation of legal road. As unwelcome news as that might be, that appears to be the legal situation.

211. A possible mitigating factor in this is the advice from Meridian that with the exception of one property (the Robert Best property), all the road widening along OVR will be confined to its western side, on the opposite side to most driveways. In this respect, we note that road widening on the eastern side could also have been undertaken as of right provided it is in the legal road corridor.
212. While this is likely to be of little consolation to Mr Best and his family (and he illustrated this through extensive photographs of the land affected), it does at least reduce the impact on the remaining approximately 20 landowners along this section of the upper OVR. It also demonstrates to us a willingness on behalf of Meridian to attempt to keep the disruption to the status quo (in property occupation terms at least) to an absolute minimum.
213. We were also encouraged to learn that Meridian and the Tolo’s were engaged in on-going discussions to determine whether or not an agreed solution can be found with regard to the effects on the Tolo’s equestrian activities. In such matters there is little scope for intervention through the RMA.
214. In terms of Mr Best’s concerns, we accept that there will be some disruption to his current farming operations and possibly the loss of some mature boundary trees. Again while of little compensation to him, we do note that this road alignment is the most appropriate one for minimising effects on the majority of landowners along this stretch of upper OVR.
215. We find that the property effects of the OVR upgrade are unavoidable as they are authorised outside of the RMA process.

*Changed traffic environment / changed rural amenity*

216. For the record, the upper section of OVR, between BRR and Spicer Forest, is proposed to be permanently widened and upgraded to an overall formed width of 6.5m (where possible), comprising a sealed width of 5.5m with two 0.5m sealed shoulders on either side. There will also be a number of improvements to curves in the road. Where 6.5m is not possible, a minimum width of 6m will be achieved.
217. Submitters opposed the permanent widening of the upper OVR because of the effect the considered it would have on the traffic environment and subsequently on the amenity of the surrounds. In particular, and in addition to the previously mentioned issue of the OVR cul-de-sac becoming a thoroughfare, the submitters fronting this part of OVR expressed discomfort with the idea that their local road would become a wider and faster traffic environment in the post-construction period of the wind farm. They were not only concerned about the potential safety aspects of having a wider, faster section of road, but were also concerned about the loss of rural amenity with an upgraded road. In this sense they explained that they liked the country look and feel of the existing sinewy road in this vicinity and that this affords them some considerable amenity.
218. In considering this matter we accept that a change in the traffic environment post-construction would be an inevitable consequence. It will definitely be a wider and straighter OVR and, despite signage, will almost certainly lead to a faster traffic environment in this upper section of OVR. On the other hand the general roading condition and the current traffic environment, although high in amenity terms, has inherent safety risks associated with it. While a wider, straighter road is likely to post a higher environmental speed, it will

also have more inherent safety as there is no reason to expect a consequent dramatic increase in traffic volumes post-construction. Mr Kong seemed to accept this point.

219. The speed environment aside, the key planning issue for us in terms of the District Plan is whether there will be a loss of rural character associated with an upgraded upper OVR.
220. In this respect we note the following:
- (a) That an overall aim of the WCDP is maintaining rural character within the Rural Area zone. In this respect, we note that the upgrade of the road will not hinder the continuation of pastoral farming, which will continue alongside the wind farm and its attendant infrastructure such as the external roading.
  - (b) We also note that another key objective for Rural Areas is promoting the efficient use and development of the natural and physical resources in the Rural Area. In this regard, the project provides for the efficient use and development of the roading network through the Ohariu Valley while enabling the continuation of the use of the land for farming and lifestyle living.
221. Finally we accept that these potential traffic character and rural amenity effects need to be considered in light of two generally agreed factors; namely :
- (a) The limited stretch of road affected (2.3km) and location of road affected, i.e. north of BRR – the small stretch of the road and its location away from the busier Takarau Gorge Road / OVR intersection are significant contextual factors in understanding the ongoing nature of the impact of the upgrade; and
  - (b) The advantages associated with having construction traffic effects limited to a back-entry to OVR via Spicer Forest which (with almost universal agreement) is viewed as being less disruptive than using Takarau Gorge Road and the remainder of OVR from its junction.
222. For the above reasons we find that while the existing upper OVR road alignment does afford residents in the upper OVR with some amenity, and this will be adversely affected, the purpose of a public road is to enable the transportation of goods and people safely and efficiently. The proposed upgrade works for OVR will certainly facilitate and enhance this function in relation to the construction period for the wind farm. Furthermore, road improvements - including the widening of the road, improved geometric design and improved sightlines at intersections - will provide short and long term safety benefits. Increased road width will also provide safer opportunities for vehicles turning out of driveways onto upper OVR.
223. Overall, and as we discuss further, there are also positive safety and efficiency benefits for the community associated with the upgrades in connection with the transportation of construction components and materials to the site.

#### Finding

224. We find that the post-construction effects from the building of the Spicer Forest Access Road and the upgrade of OVR / BRR will result in long-term improvement to the roading conditions of this part of OVR.
225. We find that the rural amenity of this part of the Ohariu Valley will be adversely affected.
226. However, in making these findings we record the following:

- (a) The risk to Spicer Forest and its option for becoming a future reserve are not affected by the roading upgrades.
  - (b) The OVR/BRR upgrades are to be undertaken on legal road and therefore any affect on property or displacement of activities is largely limited to those activities that current encroach on that legal road.
  - (c) Any change in amenity resulting from the wider and faster roading environment is limited to a small stretch of road located away from any major activity. The net result will be an improved traffic environment but without any substantial increase in traffic. This should result in long term benefits to the community.
227. We also note how critically important it will be to the community to ensure control over the timing of the construction of the Spicer Forest Access Road and the upgrade of OVR /BRR.
228. In this respect, and given the importance placed upon having construction access to the core site from the Spicer Forest / upper OVR route, and a suggested further restriction requiring that all construction traffic use this route, we consider it essential that all roading improvement works are undertaken and completed prior to the commencement of the wind farm on the core site.
229. We impose conditions accordingly.

## **Construction effects – traffic safety and efficiency**

### Overview of Issue

230. The Issues raised by submitters on this issue generally fall into the following topics:
- (a) Inadequacy of Traffic Impact Assessment (TIA) in application;
  - (b) PWW experience with its Traffic Management Plan (“the TMP”);
  - (c) Traffic effects on OVR / BRR during construction period;
  - (d) Disruption / safety / efficiency;
  - (e) Effect on equestrian activities;
  - (f) Construction noise effects;
  - (g) Alternative access not considered;
  - (h) Adequacy of road width, widening to enable safe and efficient move to construction vehicles;
  - (i) Adequacy of Traffic Management Plan provision; and
  - (j) Compliance and enforceability of the TMP.
231. We note that there were no submissions expressing concern about the potential construction traffic associated with the use of Spicer Forest / Spicer Landfill during the construction period. The only relevant concern raised by submitters was a concern already discussed relating to the thoroughfare matter.
232. The only exception to this was that a small number of submitters commented that the use of Spicer Forest by construction vehicles could pose a risk to the safety of recreational users of the area (walkers, cyclists and horse riders). The solution proposed to us by Meridian was to segregate the existing recreational track from the new track to the extent that the

existing track is shifted so that it runs parallel to the wind farm traffic in order to prevent conflict between wind farm traffic and recreational users of the Forest.

233. We heard no evidence against what appeared to us to be a commonsense proposition and impose a condition accordingly.

#### Safety and efficiency of the OVR network

##### Context

234. In terms of construction traffic effects associated with the use of the OVR / BRR route, the starting point for us (and many of the council advisers) was an acknowledgment that the magnitude and duration of these effects is directly correlated with the overall traffic demand associated with the construction period, which, in turn, is related to the size of the wind farm.
235. There was no dispute that such will affect the current road users, i.e. drivers, pedestrians, cyclists and equestrians, and the community residing in this area. In this respect, we are of the view that there are three categories of construction traffic effects arising from the construction phase of the PMC, namely:
- (a) Efficient operation of the road network;
  - (b) Road safety; and
  - (c) Effects of traffic on the amenity of the area.
236. Effects on amenity are addressed further below. It is the remaining safety and efficiency to which we now turn, noting that these effects result from a number of factors, including:
- (a) Road width;
  - (b) Traffic operating speed;
  - (c) Delays imposed on other road users; and
  - (d) Increased traffic volumes / increased HCV and over-weight / over-dimension vehicle movements.

##### Road Width

237. At issue were the adequacy of the road width and the necessity of local road widening in order to enable the safe and efficient movement of construction vehicles along the upper section of OVR and the initial section of BRR.
238. As already discussed, Meridian indicated that all road works will occur within the boundaries of the legal road. The proposed "normal" width for OVR and BRR is 6.5m which includes a 5.5m wide sealed carriageway and includes 0.5m sealed shoulders on either side. Although the width had been agreed after consultation between the Applicant and the Council, Meridian later indicated that there may be portions of road where the 6.5m width would be unable to be met due to physical constraints.
239. Mr Kong advised us that prior to the Hearing he was not satisfied that the information provided by the Applicant adequately showed those section of upper OVR where the 6.5m width will not be achieved and wished that to be addressed. Accordingly, at the Hearing he recommended a condition requiring the Applicant to provide detailed survey construction plans and cross-sections of both OVR and BRR.

240. It appeared that the basis for Mr Kong's concern related to the safe and efficient operation of this route. He stated that this depended on the provision of adequate safe passing areas along the route for both following and opposing traffic to be able to pass the truck and trailer units (HCVs) and, in particular, during the transportation of over-dimension and over-weight loads.
241. As we detail later in this section, Mr Kong did not agree with the Applicant's initial position that passing areas were not required, but considered that passing areas were needed to ensure that the delay to other vehicles will be no more than 2 minutes, particularly during the transportation of over-dimension and over-weight loads. In addition, Mr Kong proposed additional local widening to accommodate HCVs at tight curve radii.
242. In respect to this issue, the OPS submission presented by Mr Barraclough recommended a road width of no less than 7.5m to address both safety and efficiency issues. While reserving OPS' opposition to the project, Mr Barraclough submitted that wider roads were safer for road users, particularly venerable road users such as pedestrians, cyclists and horse riders. We note that Mr Kong disagreed with the OPS position on the ground that a wider road would be even more conducive to higher traffic speed and increased the risk and severity of incidents if they occur for the following reasons:
- (a) Drivers would take longer to stop due to the higher speed when evasive action is required, particularly to avoid vulnerable road users; and
  - (b) The forward sightline distance would need to be increased to achieve an acceptable road alignment around bends, super elevation requirement, and subsequent changes to existing driveways.
243. Mr Kong also pointed out that at the completion of wind farm construction, speed along a wider rural road would be an issue - which we have already addressed in terms of the changed character of the traffic environment, and which OPS was concerned about.
244. We agree with Mr Kong's assessment.
245. While dealing with the issue of road width, we note that during the course of the hearing the Applicant agreed to make provision for a passing bay.
246. We also note Mr Kong's statement that if those widening provisions were implemented, he would be satisfied that wind farm related construction traffic could be accommodated on all sections of the route and that the safety and convenience of the public (including walkers, cyclists and horse riders) as well as construction vehicles and personnel would not be compromised.

Traffic Operating Speed

247. A number of submitters raised concern about the potential speed of construction traffic on upper OVR. Mr Barraclough addressed this issue for the OPS.
248. Mr Kong shared some of these concerns and proposed an operating speed limit on this traffic along upper OVR of no greater than 40km/hour. In doing so, he noted that the current posted speed of 60km/hour is not conducive to safety with increased construction traffic and truck and trailer unit (i.e. HCV) movements. He argued that a lower operating speed during the construction traffic period would have a number of safety benefits for all road users, especially pedestrians, cyclists and horse riders. He also noted that a lower operating speed was particularly relevant for HCVs and would have the following safety benefits:

- (a) Ensures that overtaking manoeuvres by HCVs for slower road users (pedestrians, cyclists and horse riders) are undertaken in a less threatening manner;
- (b) Improves safety for opposing vehicles along this stretch of road as higher operating speeds would require larger clearances between opposing vehicles; and
- (c) Creates benefits for vehicles exiting private driveways. In this respect, Mr Kong advised us that the sightline distance for a 40km/hr operating speed is half the distance of a 60km/hr area. Mr Kong also noted additional sightline distance is not easily achieved along all stretches of this road without significant modifications - such as vegetation removal, and re-alignment of driveway layout and intersections. Also additional road markings and installation of reflective markers adjacent to such driveways would further highlight their locations.

249. While we understand the theoretical benefits of a reduced operating speed for construction traffic, particularly heavy traffic, we have some doubt about both the practicality of placing restrictions on one class of road users, and the lawfulness of any RMA condition imposing such a restriction (in that the road is the property of a public authority and not the Applicant). In any event, we note that councils have the power to impose bylaw controls over their roads and this would be a more preferable option in our opinion.

250. Notwithstanding the above, we note the following:

- (a) Regardless of any speed restriction imposed, the likelihood of construction traffic, particularly over-weight / over-dimension vehicles exceeding 40km/hr, is considered to be very low. In this respect we note that the Applicant modelled the speed of such truck-and-trailer units at 16km/hr, and we observe that Mr Barraclough actually expressed doubt that even this was a realistic speed for the loads, dimensions and road conditions involved; and
- (b) Additional signs can be installed to warn construction traffic that there are other road users along this road and remind them to control their operating speed. This would be in addition to any similar provisions contained in the TMP.

251. On the above basis, we are satisfied that potential speed of construction traffic on OVR will not compromise the safety and efficiency of the upper OVR.

#### Traffic Delays

252. Largely on the basis of their experience with PWW, many local submitters raised concerns about the effects of delays on the daily operations and travel of residents of the upper Ohariu Valley as a result of construction traffic.

253. Mr Kong addressed this matter by proposing a condition on 'acceptable delay' so as to define a measurable maximum delay that the community might expect and the consent holder deliver. He proposed a 2 minute delay "standard" and added that it could be achieved if the consent holder provided sufficient and adequate passing areas. He also added that such a quantitative measure would be both manageable and enforceable from a compliance point of view. We agree.

254. We note that there was some debate between the various traffic witnesses (Messrs Barraclough, Dunlop and Kong) as to whether one passing bay would be sufficient to meet the 2 minute delay standard. That debate focussed on the modelled speed of the over-weight and over-dimension vehicles over the 2.3km distance between Spicer Forest and the BRR entry point to the core site.

255. As indicated earlier, Meridian relied upon a 25km/hr average speed for over-weight and over-dimension vehicles which they argued was conservative. Mr Barraclough disputed this, expressing his opinion that 12.5km/hr was a more realistic speed for such over-weight and over-dimension vehicles.
256. Given the already physically constrained nature of the available roading reserve on this side of the road, we are not inclined to require more passing bays than are strictly necessary and have therefore accepted Mr Kong's opinion at this point, which is that one passing bay is sufficient.
257. We do, however, add that we expect (and have imposed a condition accordingly) monitoring to occur during the initial phases of component delivery so that if this delay standard is not achieved then either additional road widening infrastructure can be provided (including passing bays) and / or the management of the deliveries can be altered so that the standard is achieved.
258. On the above basis, we accept that whilst there will be delays in upper OVR during the construction period, these will largely be confined to the component delivery periods. We find that with the provision of the passing bay and a condition to monitor it, along with a comprehensive TMP, the efficiency of this part of the roading network is not likely to be unduly compromised.

#### Traffic Volumes

259. Mr Barraclough for OPS commented extensively on construction traffic demand and projected associated traffic volumes that would be likely to use OVR, concluding that the effects would be adverse due to the substantial increase in traffic volume compared to the existing low traffic volumes.
260. Mr Kong felt that such a comparison was not necessarily meaningful because current usage is well below design capacity. In his view, a more useful assessment was one based on the impact of those traffic volumes on the existing road network, which in turn, identifies the degree to which alterations to that roading network (both infrastructural and traffic management) are necessary.
261. Mr Kong assessed the roading network based on estimated traffic volumes generated by the construction phase in addition to the existing traffic volumes. He concluded that the road width proposed (6.5m) combined with both the passing bay and the local widening at tight bends, would adequately handle the additional traffic volumes. He added that he was confident that the traffic effects generated (speed, safety and delays) could be satisfactorily mitigated by consent conditions.
262. We agree with Mr Kong's assessment. Moreover, and in terms of frequency and duration of construction traffic, we note the evidence of Meridian's traffic experts which established that most traffic generation associated with the project will occur during construction when equipment, materials, contractors and staff will travel to and from the site.
263. Meridian advised that their experience with wind farms elsewhere in New Zealand showed that the number of HCV movements is greatest in the first two months of construction and begins to reduce from the third month onwards. This supports our finding that the traffic volumes will be adequately accommodated by the infrastructural (road widening) and traffic management regime proposed by the Applicant and accepted by the WCC.
264. For the record, and although not a construction issue per se, we note that operational traffic is likely to be minimal and largely confined to routine maintenance as and when required.

265. In terms of the mitigation matters alluded to earlier, one example of a possible mitigating factor in respect of undue traffic volumes relates to the timing of the road construction through Spicer Forest. In this respect, we note that Mr Barraclough for OPS recommended that Meridian be required to construct the new access road through Spicer Forest before undertaking road widening of the northern part of OVR and BRR. We agree with this suggestion, and note (as indeed did Mr Kong) that it would prevent additional traffic demand originating from the south of the BRR / OVR intersection where there is no proposed road widening.

#### Finding

266. We find that conditions can be imposed that will ensure that there will not be any significant adverse impact on the safety and efficiency of OVR during the time that constructing traffic is operating along the route.

### **Construction Effects - Sedimentation and erosion control from earthworks**

#### Overview

267. This was a substantial issue of concern to submitters – and was extensively addressed by the Applicant and reporting officers.

268. We need to record that a considerable number of submitters raised concerns about the ability of Meridian to undertake effective erosion and sediment control, based on perceptions of performance regarding erosion and sediment control for PWW. We have already discussed this earlier in our Decision.

#### Issues considered

269. The key question for us to determine here is the realistic potential for the proposed earthworks to lead to non-trivial contamination of Hawkins and Smiths Gully catchments and ultimately Makara Estuary, and the means by which the Applicant is proposing and / or able to avoid, mitigate or remedy such an occurrence.

270. In considering this issue we have had regard to the following matters, which were brought to our attention by parties at the Hearing:

- (a) Understanding the evolved position of WRC officers and Meridian's response;
- (b) Comment on existing and receiving environments;
- (c) Assessing the range of conditions to enforce above regime with differentiation between "Bottom Line" standards (conditions) and Management Plan process;
- (d) Evaluation of the CEMP/SEMP approaches; and
- (e) Considering the role of the proposed "environment offset "(remedy).

#### Respective Council Jurisdiction

271. It is important to distinguish between and appreciate the two types of earthworks consents applied for; namely:

- (a) Resource consents (discharge and land use) for earthworks required of the regional council under the Regional Plans; and



- (b) Resource consents (land use) for earthworks required of the territorial authorities under the WCDP and the Porirua City District Plan (“**the PCDP**”).
272. The function of the WRC in this respect is to focus on any effects associated with water quality. The WRC report addresses these issues in relation to the discharge permits sought in relation to the bulk earthworks and the regional land use consent required for the earthworks under the Regional Soil Plan.
273. The specific provisions are:
- (a) Regional Soil Plan
    - (i) Discharge/land use consent is required for sediment run-off to waterbodies and to manage erosion risk.
  - (b) Regional Freshwater Plan
    - (i) Land use consent is required for works within the beds of streams.
  - (c) Regional Plan for Discharges to Land
    - (i) Discharge consent is required for sediment laden discharges to land during the construction period of this project.
274. In terms of the two district plans, there are controls in both the operative WCDP and PCDP on earthworks, and in the former case these have been supplemented by Proposed Plan Change 65 (although little weight attaches to that plan change as discussed earlier).
275. As acknowledged by officers for all councils, there is an overlap between the Regional Council and City Council functions and documents when it comes to sedimentation and erosion effects associated with large scale earthworks occurring on land. Hence, in this case, the entire scope of the earthworks for PMC requires consent from both the Regional Council and the respective City Councils.
276. Despite this, and appropriately we think, the City Council evidence largely deferred to the WRC on general sedimentation concerns and helpfully focussed on other earthwork effects, namely visual, traffic and engineering stability.
277. In like vein we note the need for us to ensure that we set consistent conditions in respect to the relevant consents and avoid unnecessary subsequent confusion.

#### Sedimentation Issues

##### *Initial position of WRC*

278. At the commencement of the Hearing the WRC Officers provided a summary of their report. They recommended that some of the consents be granted subject to conditions. They also provided a “null” recommendation on the remaining earthworks consents – although this was in effect a recommendation to decline consent unless sufficient evidence was brought forward at the Hearing as to how the Applicant would avoid, remedy or mitigate the adverse effects.
279. Mr Rusbatch explained to us that the WRC had recently moved away from its previous approach to the management and control of sediment based on a management plan regime. Instead it now preferred one of input controls based on setting a qualitative/quantitative limit on the receiving stream environment pursuant to section 107. Implicit in this shift was the following:

- (a) WRC sought to move away from the role of approving SEMP's to one where the onus was placed on the Applicant to meet a robust minimum water quality standard;
- (b) The WRC Officers considered the EMP and SEMP process to be of "information value" only and instead proposed the alternative method of assessment involving the identification of reasonable mixing zones;
- (c) WRC considered that to achieve zones of reasonable mixing the Applicant needed to increase the levels of erosion control and sediment treatment proposed in order to satisfy section 107 of the RMA.

280. Mr Rusbatch agreed that this represented a fundamental shift from the approach adopted for the consent for PWW – and for which the Applicant sought consistency in order to apply standard procedures across both developments.

281. Mr Rusbatch acknowledged that the issues arising during the construction of PWW partly contributed to this shift. However, he advised us that the WRC remained open-minded on the issues and the type of information Meridian might produce during the Hearing to address the concerns and the null recommendation.

Meridian's response to WRC initial position

282. Meridian advised that it had considered the initial position of WRC in relation to the need for more explicit controls and triggers and had accordingly advanced a series of proposed conditions that they submitted were a significant improvement on those imposed for PWW. Meridian also provided advanced drafts of the SEMP for the sub-catchments affected by Turbines F13 and F14 to illustrate how the SEMP process would deal with many of the specific issues that WRC had raised in relation to those two turbines but also to illustrate the capability of that process to deal with many of the issues arising from the WRC position.

283. The Applicant disagreed with WRC's rejection of a management plan approach noting that:

- (a) The alternative mixing approach recommended by WRC was not provided for in any of the Regional Planning documents, and is unusual for projects of this nature in New Zealand being more suited to point-source discharge considerations.
- (b) The best method by which to control and monitor erosion and sedimentation effects is by the use of the EMP/SEMP processes as set out in the application. In its opinion this would not only ensure that the requirements were clearly specified, but also that the proposed mitigation measures are able to be monitored effectively and efficiently, and with sufficient flexibility on both sides for amendment as circumstances warranted.
- (c) The WRC had wrongly interpreted the intent of s107 in relation to the concept of reasonable mixing, and were requiring provision in excess of its own guidelines - the GW Erosion Sediment Control Guidelines (GWESCG) – with which Meridian was confident it could comply.

WRC's revised response

284. In response to matters raised throughout the Hearing, WRC officers subsequently advised us that they had "*modified [their] position slightly regarding how we will consider discharges from the site*". While WRC still considered there were adverse effects on which the Applicant had not provided sufficient details as to how those effects would be avoided, remedied or mitigated, WRC was now satisfied that those effects could be addressed through conditions of consent.

285. As such, the Officer's recommended that we grant the resource consents subject to the recommended conditions of consent. The Officer's stressed that a number of the consent conditions were critical to this revised favourable recommendation, particularly those conditions relating to mitigation being undertaken within the core site and best practice being applied to the treatment of sediment laden water.
286. Explicit in the revised position was a review of some of the new and revised approaches put forward by Meridian. These included:
- (a) A 50% increase in pond volume in the Hawkins catchment;
  - (b) Retiring of grass areas to 'polish' discharges; and
  - (c) Placing topsoil bunds at the end of F13 and F14.
287. The officers also reviewed the erosion and sediment control proposal, specifically for the Hawkins catchment (where an SEMP was prepared) and considered the measures to a large improvement but still to be inadequate in two respects.
- (a) First, they doubted whether the Applicant could meet the tests of section 107 using the proposed measures; and
  - (b) Secondly, and of principal concern to the Officers, the measures were not assessed to be the "best practicable option" under section 108(2) (e) of the Act.
288. In order to deal with these "shortcomings" of the draft SEMP, the Officers recommended the inclusion of a condition that required the best practicable option for the discharges from the site as the most efficient and effective means of minimising the actual or likely effects on the environment.
289. As noted previously, this is a broadening in emphasis from the original focus on compliance with section 107. Indeed, Officers expressed the opinion that neither the current practices at PWW nor the proposed measures before this Hearing represented the best practicable option. Therefore a condition requiring best practice to ensure the actual or likely effects on the environment are minimised was necessary in their view.
290. In passing, we observe that there seemed to be some confusion in the minds of witnesses before us between a BPO under the RMA and the concept of industry best practice. That confusion persisted and we note for the record that the Applicant did not make application as or for a BPO, and nor was the requirement of section 108(8) properly satisfied.
291. So that we were clear on exactly why the Meridian proposal did not constitute best practice we requested examples and reasons from the officers and were told that:
- (a) The proposal to treat all runoff from the construction of the roads (19.4 km of road, moving around 643,000m<sup>3</sup> of earth) with grit traps is not best practice, in that grit traps are not used as a primary measures on any other large scale earthworks site in the region.
  - (b) There are some current examples in the Wellington region of other projects involving large volumes of earthworks (but still less than PMC) that use best practicable option to treat discharges. Examples cited were: James Cook Drive subdivision, Whitby (111,000m<sup>3</sup> of cut); Staithe Drive subdivision, Whitby (189,000m<sup>3</sup> of cut); Aotea Block, Porirua (272,000m<sup>3</sup> of cut).
292. WRC's justification for requiring best practicable option / best practice was based on the following:

- (a) The scale of the earthworks;
- (b) The potential that the material is at least as, and in many places more, weathered and clay rich, than is the West Wind site;
- (c) The quality and sensitivity of both immediate and downstream receiving environments;
- (d) The species of fish and invertebrates present in the immediate receiving waters; and
- (e) The Makara Estuary will receive all discharges directly from the Hawkins catchment via Hawkins Stream.

293. On this basis, the Officers recommended a suite of new conditions.
294. One of the key measures of the above conditions was a requirement to flocculate all sediment retention ponds. Mr Rusbatch advised that this was based on advice from Mr Ridley, who was engaged by WRC as the expert peer reviewer of the Meridian programme.
295. In light of the proposed new conditions, WRC indicated that it was then satisfied that the SEMP management plan process, with approval by WRC, would be satisfactory in outlining how the intent of the conditions would be met.
296. WRC maintained throughout the Hearing the need for monitoring the effects of an earthworks site of this scale, noting that there would be at least 10 sediment retention ponds, or 1 pond for every kilometre of road as well as discharges from sediment retention ponds associated with fill sites in the catchments.
297. Furthermore, WRC considered that, despite the imposition of conditions, significant adverse effects were likely as a result of the Applicant's proposal (given the nature of the terrain and the climate of the area), and recommended a requirement to undertake mitigation for the anticipated adverse effects of sediment discharges (and the stream works) in the form of riparian planting.
298. In this respect the WRC recommended conditions requiring a total of 1000m of riparian planting, to be undertaken prior to works commencing (or a bond to be paid to provide certainty that the works would be implemented).

Meridian's Response

299. Meridian broadly accepted WRC's revised position based as it was on:
- (a) Stipulating standards to be met;
  - (b) Setting the environmental baseline to be monitored;
  - (c) Stipulating a certification process for various Plans (CEMP, SEMP, flocculation, rehabilitation etc); and
  - (d) Setting a monitoring regime for compliance with management plans and standards.
300. However, on the particular issues of best practice, the role of the SEMP, conditions and mitigation (riparian planting), Meridian disagreed.
301. Meridian was critical of the WRC Officers for, in their opinion, approaching the application on the basis that significant erosion / sedimentation adverse effects are inevitable. The Applicant's experts were of the opinion generally that the mitigation and response measures proposed (and to be further refined through the Hearing) meant that significant adverse

sedimentation effects were unlikely to occur – and that should have been the point from which the WRC assessment started.

302. On the issue of Best Practice, Meridian accepted the WRC measures outlined to the extent that they formed part of a 'BPO Toolbox', to be applied as/where/when appropriate. Meridian did not accept them as prescriptions to be followed everywhere. Indeed, it pointed out that many were already contained or implied in the draft EMP and / or is what the GWESCG requires.
303. The Applicant's main concern was with the requirement that all sediment discharges from all cut and fill areas were to be treated with sediment retention ponds.
304. Meridian's objection was that such a condition pre-determined the solution for erosion and sediment control when there are a range of appropriate methods to choose from i.e. the "toolbox" concept. It submitted that the best approach for determining which methods will be used is the SEMP process, which involves particular and specific erosion and sedimentation environmental plans being produced for the 8 relevant sub-catchments contained within the project site.
305. To help our understanding of these Meridian submitted a draft SEMP in relation to the F13 and F14 area. This involved a revised methodology for the treatment of sediment in those areas in response to concerns raised by Dr Blaschke. We discuss this particular SEMP in some detail later but the point of note in this context is that the particular methods proposed in that SEMP for that area do not presently include a sediment retention pond. Of significance to us is that Dr Blaschke deemed that methodology to be generally appropriate.
306. Meridian's point – and one that was well made in our view - is that the condition as promoted by WRC would make retention ponds mandatory, when such is assessed as neither being required nor desirable in this particular area.
307. Meridian also submitted that the need for flocculating all sediment retention ponds had not been identified and therefore the mandatory requirement that all ponds be fitted with rainfall activated flocculation systems was both inappropriate and disregarded costs.
308. In this regard, Meridian noted that at PWW WRC had identified the need for flocculent in ponds in some locations, particularly those in sections of track with high traffic volumes. Accordingly, Meridian accepted this where sediment retention ponds had the potential for receiving higher than average sediment loadings (e.g. where there are high traffic volumes or high proportion of fines in the fill material). The Applicant submitted that other ponds should be monitored to see if they required flocculation.
309. We note the requirement for a Flocculation Management Plan which would provide WRC with sufficient scope and flexibility to assess the need for flocculation in different parts of the site. Accordingly, we do not accept a 'one size fits all' approach – particularly in view of the fact that the Applicant accepted WRC's recommendation for an increase in pond size which, presumably, lessens significantly the need for flocculation.
310. In relation to WRC's recommendation that all overflows from ponds be directed to a grass buffer area, Meridian noted that this would not be possible in all circumstances due to terrain, grass type and poor growing conditions etc. Instead, Meridian recommended flexibility to provide for other methods (such as silt fences or filtrex socks) where the requirement cannot be met.
311. Again, we see considerable merit in such a toolbox approach.

312. Meridian was also concerned that WRC recommended mitigation in relation to temporary sedimentation effects within the mixing zones, immediately downstream of discharge points.
313. The evidence of Dr Keesing and Mr Fuller was that the receiving environments are neither pristine (a point acknowledged by Dr Blaschke) nor did they contain sediment sensitive communities. All the ecologists presenting to us acknowledged that the receiving streams contained species which tolerate occasional failures – and which events occur “naturally”. As such, Meridian’s experts’ view was that the long-term effects of concern from earthworks activities would not arise – and any short-term effects were within “normal” bounds. Accordingly, the Meridian ecologists recommended that monitoring and ‘offset’ type mitigation / remediation be instigated as a condition of consent only in the unlikely event that monitoring showed such long-term or permanent effects.

#### Assessment of sedimentation Issues

314. In order to determine the key points of difference between the Applicant and the councils (and those others who gave opinion on this matter), regarding the significance of potentially adverse sedimentation effects, we examined the following matters in closer detail:
- (a) The existing receiving environment;
  - (b) The nature of the works; and
  - (c) The role of management plans

#### Existing receiving environment

315. We approached this matter from a dual perspective:
- (a) First by an initial assessment of the local environment and its sensitivity; and
  - (b) Secondly, by considering how this environment is regarded in its statutory context.
316. In terms of the physical environment, and in considering the potential for sedimentation and erosion to occur as a result of the proposed earthworks for PMC, we took account of the existing receiving environment around the South Coast of Wellington generally, and particularly within the Mill Creek and Makara catchments.
317. In this respect we noted the following:
- (a) All waterways and coastal areas in New Zealand are subject to periodic erosion and sedimentation. Sediment entering waterways is a natural geological occurrence and will continue for as long as there is a land mass subject to normal geological processes. As several presenters illustrated to us, notably Mr Mikoz (OPS) and Dr Joy (Makaracarpas), the South West Coast and the Makara and Mill Creek waterbodies are not immune from these processes; and
  - (b) Sedimentation is found in most aquatic and estuarine environments. It is in fact a function of estuaries that sediment settles out of them and a key part of their development is that they can receive sediment. The challenge for resource managers is to avoid excessive sediment that will impair that function.
318. We received substantial evidence illustrating the above points; namely that the existing receiving environment, namely Makara Estuary, is subject to a range of activities that are continually supplying sediment into the in-stream and estuarine environment, irrespective of Meridian’s existing activities at PWW and proposed activities at PMC. For example, we noted the photographic evidence of Mr Breese which showed a range of such human and

natural activities (for example, deforestation, farming activities and heavy rainfall events) which have/are contributing to sedimentation in the estuary. We have taken this into account as a basis for assessing any proposed effects from the PMC source.

319. In terms of the prevailing statutory documents both the Regional Policy Statement (RPS) and the Regional Freshwater Plan (RFP) are relevant to our considering of the receiving environment as follows:
- (a) The streams where works within the beds of streams are to take place for Project Mill Creek are not identified in the RFP or the RPS as outstanding or regionally significant natural features. However, the Makara Stream Estuary is identified in the RPS as a “significant waterbody”.
  - (b) The RPS contains a policy about avoidance of effects on Makara Estuary.
320. There was much interpretative discussion about the implications of the latter policy and the fact that it is cast in absolute terms.
321. The WRC officers referred to a legal opinion suggesting the policy is defensible in terms of s6 of the RMA.
322. Meridian argued that it would be inappropriate to place excessive reliance on a single policy in a document and, in any case, it cannot be translated into an absolute bottom line requirement for a Discretionary Activity – to which the full import of Part 2 of the RMA applies.
323. We agree with the Applicant’s submission – and note that even section 6(c), as a matter of national importance, does not stand alone. Regardless, we were certainly alive to the importance of the estuary and the need to keep the effects from the earthworks associated with the construction of the wind farm to an absolute and sustainable minimum. It is to those works and their potential to create sediment that we now turn.

*Nature of works / comparison with PWW*

324. It was common ground that the prime contributor to potential sedimentation would be the earthworks on the core site. Fortunately or otherwise there is a direct and relevant comparative earthworks benchmark for this application in PWW, and we found that comparison helpful.
325. There will be approximately 800,000m<sup>3</sup> of earthworks for PMC. Meridian emphasised that we should take into account the fact that the earthworks for PWW were approximately twice that volume, and that site is located within far more difficult terrain. The total volume of earthworks (internal and external works) associated with PWW were in the vicinity of 1.6Mm<sup>3</sup> and, in general terms, the terrain at PWW is more dissected and steeper than the rolling, rounded topography of the Mill Creek core site.
326. However, as both Dr Blaschke and Mr Rusbatch for WRC noted, there are also some important qualifiers to be taken into consideration, including the following:
- (a) In some instances for Mill Creek, the location of foundations for the turbines and platforms are situated at the head of steep gullies which drain into streams. This creates some difficulties for containing soil spoil. This particularly relates to Turbines F13 and F14 and we discuss these turbines in further detail later in this section;
  - (b) Secondly the soils in the Mill Creek catchment are likely to be more weathered as the landscape is more rolling than the rocky PWW site. This potentially increases the risk of sediment being transported into waterways;

- (c) The proportion of the site where earthworks are in proximity to a watercourse is not only several orders of magnitude greater for Mill Creek than it was for PWW, but the Hawkins Stream enters the Makara Estuary near the mouth/bar on the north side – i.e. it is a direct feed.

327. We record these factors to emphasise that despite the comparatively lower volumes of earthworks and easier country, particular attention still needs to be given to erosion and sedimentation control on the site in order to avoid, mitigate and remedy the adverse effects of sedimentation.

*The role of management plans*

328. Earlier in this Decision we discussed the relationship between fixing bottom line standards (as measurable and enforceable conditions) and a Management Plan process designed to capture further protection through detailed design and management. By the end of the Hearing that dual control mechanism seemed to be accepted by the Applicant and WRC.

329. Having “locked in” such standards we think it is reasonable to acknowledge the role that Management Plans can play in achieving solutions to erosion and sediment control issues. We do by referring to the development of a SEMP for turbines F13 and F14 during the course of the Hearing.

330. By way of background, we note that prior to the Hearing Dr Blaschke had raised concerns about sedimentation in the Hawkins Stream and Makara Estuary. He was particularly concerned about such issues arising from the placement of two turbines (F13 and F14) at the head of a steep section of the Hawkins catchment which led directly to the Hawkins Stream.

331. Meridian’s experts, notably Mr Breese, responded to this issue by producing a draft SEMP for the construction of turbines F13 and F14. The draft contained the following details:

- (a) Realignment of access track to F14 so as to relocate culvert F1 upstream and reduce its impacts on the Hawkins Stream tributary;
- (b) The volume of earthworks was calculated (estimated to be 30,000m<sup>3</sup>) and demonstrated to come from the road cuts along the whole length of the road, rather than from the immediate vicinity of the turbines;
- (c) Rank grass buffer strips were proposed to catch any sediment overtopping grit traps or sediment ponds at the site of the two turbines; and
- (d) The two turbines are located at the end of the road, and traffic movements on this part of the road both during and after construction would be light.

332. Dr Blaschke generally accepted these measures as being appropriate and adequate, although he did recommend that the rank grass buffer strips proposed be increased in size and dimension.

333. On this basis he withdrew his specific objections to these two turbines, subject to the new sediment avoidance measures and to the various generic and specific conditions recommended by Mr Rusbatch - which included treatment of road sedimentation by flocculated sediment ponds and mitigation by riparian restoration and/or pasture retirement within the Hawkins catchment.

334. We have intentionally spent some time in discussing this matter because in our view it represents an excellent example of the manner in which the environmental management



plan system is able to work towards the avoidance, remedying or mitigation of sedimentation effects.

335. Before we leave this topic altogether, and as final word on the performance of Meridian in respect of PWW, we note that despite the extensive discussion of this matter by submitters and the WRC reporting officers, we received very little definitive evidence on this. We note that Mr Breese stated that to his knowledge there had not been a number of significant sediment spills from PWW. This was largely confirmed by the evidence of WRC enforcement officers (Messrs Lisle and Faithful). We also note that WRC, in a letter in relation to PWW dated 9 June 2008, acknowledged the following:

*Overall we are happy with the standard of work displayed by you and your contractors on site and we are satisfied that you are mostly complying with your resource consents with regards to the works related consent conditions to date. We are also satisfied with the actions you have undertaken in relation to the resolved incidents to date.*

336. Essentially, and while we understand that the performance at PWW was not without its problems, we accept that there is no evidence this has led to any significant or lasting adverse effects on the receiving water bodies. More importantly we accept (as indeed does the WRC) that Meridian has learnt for the PWW experience and the benefits of that learning can and will be applied to PMC.

#### Assessment of the degree to which effects are avoided, mitigated and remedied

337. Having considered the forgoing, we are satisfied that the sediment and erosion control measures outlined in the AEE, and expanded upon in evidence, do represent a workable range of avoidance, mitigation and remediation techniques as follows:
- (a) In terms of avoidance; discharges to sensitive environments, such as the Hawkins Stream, will be avoided as far as practicable (e.g. SEMP for F13 and F14);
  - (b) Sediment retention ponds, the use of downstream pasture and silt fences etc are all examples of methods to avoid and mitigate sediment effects on streams in that these measures all reduce the sediment that would otherwise be received;
  - (c) Replanting is an example of remediation. In this respect, the main examples are:
    - (i) The permanent retirement from grazing on steeper parts of the wind farm (especially in the Hawkins Stream Catchment) where reversion is already quite widespread; and
    - (ii) Restoration of the riparian margins of streams in the Makara Catchment.
338. Notwithstanding this, we are conscious however that there was much discussion about the degree to which adverse sedimentation effects could be completely avoided and mitigated, and the extent to which remediation might be necessary. In this respect we are very mindful of the view of Dr Blaschke that despite the Applicant's considerable efforts to avoid adverse sedimentation effects and to manage sediment to a high standard, there is still a significant risk of adverse sedimentation in the project area streams and in the Makara Estuary.
339. Like us, he heard all the relevant evidence and made this conclusion in the context of his assessment of the values and current condition of the aquatic environment of the project area and full consideration of the Applicant's evidence (Fuller, Breese and Keesing), as well as the evidence of Dr Joy (Makaracarpas). He stated that he heard no serious suggestion that remedy on such a scale is feasible and this meant that, in his view, if there were

adverse effects that cannot be avoided then mitigation is required. The type of potential effects that required mitigation were, in his opinion:

- (a) Deposited sediment in the mixing zones - potentially causing long-term loss of habitat; and
- (b) Loss of ecosystem function in culverted headwaters and ephemeral stream areas and piped fill areas. Dr Blaschke noted that the sections of stream lost have functional ecosystems values in terms of the collection of water, filtering of nutrients and trapping of sediment.

340. Dr Blaschke argued that this mitigation should either be provided upfront, or be set as a condition of consent, rather than being left in response to any future specific adverse effects. He identified two forms of mitigation:

- (a) Restoration of the riparian margins of streams in the Makara Catchment; and/or
- (b) The permanent retirement from grazing of steeper parts of the wind farm (especially in the Hawkins Stream Catchment) where reversion is already quite widespread.

341. In terms of restoration, Dr Blaschke suggested that any estimate of an appropriate amount of land/planting is somewhat arbitrary. In his initial report he suggested that restoration of high quality stream habitat, at least equal to the length of new culverts established and stream habitat lost, should be a minimum requirement - noting that this total did not include headwater loss under fill areas.

342. In light of evidence about the significance of potentially deposited sediment, Dr Blaschke revised his initial calculation to include allowance for the long-term loss of habitat in the mixing zones. Accordingly, he recommended a minimum of 1000m of riparian restoration as a reasonable quantum of restoration.

343. We have difficulty squaring this recommendation with evidence we heard from the various ecologists about the actual environmental state and values of the affected catchments in question – putting to one side the Makara Estuary – and apparent acceptance of the management measures to be put in place. In that regard the general conclusion seemed to us to be that the net effects – with the reasonable working assumption that the management controls are effective - would be in the realm of minor rather than significant.

344. Notwithstanding this, and as the Applicant has placed the issue on our table, we do accept that some form of mitigation for the effective use of public estate is appropriate, whether in the form of an “environmental offset” or “compensation”.

345. Toward the end of the Hearing, Meridian offered to covenant land opposite the entrance to Opau Road in the vicinity of Makara Stream and Estuary for the benefit of the community. Meridian particularly noted that the land would be protected from further modification, and degradation and its natural values will be enhanced. Both banks of the Makara Stream bisect this 5.8ha parcel of land.

346. There was some debate between Meridian and WRC as to the purpose of covenanting this land, namely whether it was to be viewed as an “environmental improvement” (Meridian’s contention) or as an “environmental offset” (WRC’s contention) to mitigate the effects of sedimentation on Makara Stream and Estuary.

347. Meridian was firmly of the view that the land was required for environmental improvement and should not be regarded as a section 108(9) offset requirement as the adverse effects it considered likely from the project were more than adequacy catered for by other provisions.

Meridian submitted that the environmental improvements to this land would help address concerns about both projects in a positive and community-spirited manner – and therefore the riparian planting condition proposed by WRC was inappropriate.

348. On the other hand, WRC submitted that the provision of the land and associated management (including the proposed riparian planting) represented an essential environmental offset to balance the potential effects of sedimentation on the Stream and Estuary.
349. Meridian also opposed the proposed WRC bond as being unjustified in circumstances where an SOE with the resources and commitment of Meridian was involved.
350. Regardless of how the provision of this land is categorised, we agree that its provision will help address the concerns relating to the existing condition of the Makara Stream and Estuary in a positive and community-spirited manner. We are particularly heartened to hear that the Applicant suggested that a conservation management plan will be prepared, drafted and implemented in consultation with all stakeholders
351. Overall, we accept that Meridian has offered this land in good faith and for the benefit of the local community and acknowledged the potential to enhance the ecological values of the local area.

#### Finding

352. We find that:
- (a) Sedimentation can be managed and treatment carried out in an appropriate manner;
  - (b) Continual improvements are to be made in the spirit of applying industry best practice in managing the effects of earthworks and, in particular, to build on the experience gained previous projects, namely PWW;
  - (c) the effects of any sediment loss on ecological values and, in particular Hawkins Gully and Makara Estuary, associated with the construction effects are likely to be minor and short term;
  - (d) Significant cumulative effects on the Makara Estuary are unlikely to arise.
353. We also find that the Applicant's proposed approach to managing sedimentation through the use of best practice, and sediment and erosion control measures, is likely to avoid, remedy or mitigate the short-term effects associated with the proposed earthworks. In particular we find that those effects are:
- (a) Mitigated to the greatest extent possible by a suite of bottom line standards, conditions (and for which we record that, except for a few matters, there was general agreement between Applicant and Council by the end of proceedings); by the use of an extensive system of management plans to give effect to these bottom line standards/conditions; and via a comprehensive monitoring system; and
  - (b) Remedied to a degree through the provision of land for waterway enhancement at Makara.
354. We also record that these findings are made in the context of our understanding of the immediate receiving environment, which is generally agreed to be in a degraded state, and is not afforded any regional or national significance in the statutory documents administered by the WRC. Lest it be thought otherwise however, we are not treating this as a mandate to authorise further degradation and in this respect we have sufficient confidence in the

information before us to hold that this will not occur. Furthermore we note that the ultimate receiving environment is the Makara Estuary which is recognised as having regional significance under the RPS.

355. Overall, we conclude that on balance we are satisfied that with an extensive suite of proposed mitigation measures to contain sediment, monitoring to assess effects, timely response where appropriate based on best practice, and long term baseline monitoring, that the proposal is not likely to give rise to adverse sedimentation of any consequence.

## **Construction effects - nuisance (dust, noise, water)**

### Introduction

356. Having considered the effects of the roading upgrades, construction traffic and the effects of earthworks, we now turn briefly to focus on the potential nuisance effects arising from these aspects of the proposal. We acknowledge that we have touched on these effects in the preceding subsections but in this section we provide some detail about the concerns of submitters and assess the degree to which the nuisance effects can be mitigated.
357. The principal issue causing most concern to submitters in terms of nuisance relates to disruption during the construction phase; particularly in respect of construction traffic and roading-related effects. We discuss these effects under the following three categories:
- (a) Construction noise effects;
  - (b) Effects on water supplies; and
  - (c) Dust effects.
358. Submitters also commented on their lack of confidence about compliance and enforcement issues associated with these nuisances, particularly in respect to dust and noise during construction. On this basis we called Mr Borich from the WCC to address this particular concern.

### Construction noise effects

359. The principal source of noise during the construction period is associated with the following three aspects of the project:
- (a) Construction of the road upgrade;
  - (b) Construction vehicles moving along Spicer Forest and OHV/BRR; and
  - (c) Activity on the core site.
360. Notwithstanding this potential for construction noise effects, there were only 11 comments in respect to this source of noise from submitters. Most of these concerned operational noise effects, with few comments on construction noise, (either in terms of construction of the road, transportation noise, or core site construction).
361. We note that some submitters expressed confusion over the hours of traffic movements and, in particular, noted that the draft conditions stated that no heavy construction vehicles could use OVR and BRR at night – while requiring over-size / over-dimension vehicles to move to the site only at night. Ms Pawson clarified this confusion by stating that the trucks will travel to Spicer Forest at night and wait there till the day time hours when they can use the OVR and BRR roads.

362. Construction noise impacts were addressed in Mr Hayes' evidence. He advised that all construction related noise would be assessed in accordance with, and will need to comply with, *NZS 6803:1999 Acoustics – Construction Noise*.
363. His assessment indicated that:
- (a) On-site operations during the construction period will meet the requirements of the long-term duration noise limits proposed within the Standard.
  - (b) Traffic noise associated with construction activities will have a potential impact upon properties located at the northern end of OVR. He predicted that these may be subject to an increase in noise associated with traffic by as much as 26.9dB. However, he stated that the overall noise levels associated with construction traffic will comply with the NZ Standard, provided that appropriate limits are placed on activities taking place within the OVR area during weekday night hours, and in the early morning and late evening periods during weekends and Public Holidays. He added that normal daytime noise levels for construction activities will be satisfied without any particular restrictions.
364. Mr Lloyd generally endorsed these findings but emphasised the need for conditions to ensure compliance with the Standard and to introduce some restrictions on the duration and timing of construction traffic.
365. In terms of 363(a) above we have imposed a condition to ensure this.
366. In terms of 363(b) however, we note that a condition on its own is unlikely to be sufficient, and additional restrictions relating to the night-time and early morning period will be necessary. We note that the Applicant proposed the following hours for construction related vehicles:
- (a) Monday - Friday 7am-7pm
  - (b) Saturday 8am - 6pm
  - (c) Sunday and Public Holidays – No construction vehicles.
367. We largely agree with those restrictions with the exception of Saturdays, where after careful consideration, we have decided not to permit any construction traffic.
368. In imposing this restriction we note that the reasons go beyond noise effects alone into traffic and road safety and efficiency considerations. In other words, having heard the concerns from submitters, particular the 20+ residents who live along upper OVR and BRR, we believe that the character of Saturday recreation activity in this part of the Valley (walkers, cyclists, horse operators etc) as well as normal residential movements, would be unduly disrupted by Saturday construction traffic. We gave careful consideration to allowing Saturday morning traffic only, as was suggested by some, but in the end concluded that a two day break from construction traffic at the weekends would be of immense benefit to the residents and regular visitors to the valley and go some way toward redressing concerns about community. In so doing we appreciate that this may result in either an extension to the construction period (estimated to be approximately 4 months) and/or some intensification of construction traffic during the permitted hours. Either way, we (and the majority of submitters we heard from) considered this a valid trade off.
369. Finally, and for the record, we note that unlike operational noise there is little or no potential for cumulative construction noise to occur for locations neighbouring the Mill Creek site and PWW site.

Effects on water supplies

370. Several submitters suggested there could be a reduction and/or degradation of their water supplies as a result of the construction of the wind farm.
371. To illustrate they described the source of their water supplies. In the main, these were a mixture of rainwater tanks and groundwater takes, either from springs or bores. A good summary of this is provided by Mr Barraclough in paragraphs 35 to 45 of his evidence. His two concerns were that:
- (a) Meridian had insufficient water supply to deal with effects such as dust; and
  - (b) There would be disruption to residents' water supplies as a result of construction activity, particularly dust and sedimentation.
372. We deal with the effect of dust later in this section.
373. In terms of 371(a), Mr Barraclough noted that construction for this project will require large volumes of water, particularly during warm, dry weather. Water will be required for a variety of reasons including forming fills and for compacting the gravel pavements on roads. Appreciable additional volumes of water will also be required for dust suppression, with further amounts required for washing vehicles and watering new plantings. Mr Barraclough noted that it was difficult to estimate the volume of water required for earthworks, dust control and the like; he estimated that these functions may require 500,000 litres of water per day. Mr Barraclough concluded that he was surprised that the effects of taking water from streams on the site for construction had not been considered in the application and referred to a situation at PWW where temporary storage dams were constructed, in his view, without the necessary resource consents.
374. In response Meridian noted that the necessary water take during the construction period is within the volume permitted by Rule 7 of the Regional Freshwater Plan. That Rule permits the extraction of 20,000 litres of water per day, provided that certain conditions relating to rate of extraction, number of extraction points and fish passage are met. Meridian continued to say that with four separate land holdings within the site and two permanent streams within each land holding, it is possible to extract up to 160,000 litres per day as a permitted activity. Meridian experts estimated that the peak daily demand for non-potable water for construction works at PMC is approximately 100,000 litres per day. They dismissed Mr Barraclough's calculation of 500,000 litres per day as 'unfounded'.
375. We accept Meridian's calculation of the water demands for this project based on its experience with PWW. However, even if Meridian is wrong and the requirements are greater than 100,000 litres per day, we note that there is some permitted activity 'freeboard' of 60,000 litres - and this can also be supplemented by either transporting water in or applying for resource consents for additional water takes.
376. In terms of 371(b), Mr Barraclough said that one of the most serious effects not considered in any of the reports was the contamination of drinking water. He noted that all residents collect water from their roofs for domestic purposes and almost all residents use water collected from this source for cooking and drinking. He noted that few residents have effective filtration or treatment for their domestic water supplies, and concluded that it was unacceptable to have these domestic water supplies contaminated with dust arising from construction and that effective mitigation was required.
377. On the basis of the material presented by submitters and our own site visit to the PWW site, we accept that this is a very real risk, and note that Meridian is prepared to accept a

condition that requires it to take all reasonable measures to ensure dust suppression is adequate during construction. We also note Mr Borich's endorsement of such a control.

378. We would expect those measures to be developed through the CEMP process and be based on best practice as a result of the PWW project. In our site visits to the PWW site, we noted extensive use of water carts to suppress dust and would expect Meridian to further develop these measures for the PMC project. However, and as a backstop should such measures not be entirely successful, we note that Meridian is prepared to accept a condition that it will guarantee water supply during the construction period for all residents and provide an alternative water source in the event that construction causes an effect with existing water supplies. We note that a similar condition was imposed for PWW.

#### Dust Effects

379. The principal source of dust during the construction period is associated with the earthworks associated with the roading upgrades, construction traffic, and activity on the core site
380. We note that under the Regional Air Quality Management Plan (RAQP) discharge consent is required for air discharge associated with the Concrete Batching Plant. However, there are no controls in the RAQP relating to fugitive dust emissions associated with general construction.
381. The advice of the Council Officers, particularly Mr Borich and Ms Pawson, was that given the size of the application site, and the location of the works within the site, it is considered that the Applicant will be able to control dust to an acceptable level. We note that a condition was recommended requiring the consent holder to minimise dust hazard or nuisance. We impose this condition.
382. On the above basis we are satisfied that :
- (a) dust nuisance can be adequately controlled within the boundaries of the project site; and
  - (b) For the external roading we are satisfied that the CEMP and TMP process will control this issues through provision for watering and avoiding operations in high wind conditions.

#### Finding

383. Based on the foregoing we find that all potential nuisance effects of construction can either be:
- (a) avoided in some instances due to distance from properties;
  - (b) mitigated in other instances though conditions such as the CEMP/SEMP and TMP, compliance with NZS6803, and restrictions on days and time of construction; or
  - (c) remedied through provision of alternative water supplies.
384. Of these matters we find that the noise and traffic effects are potentially the most significant. In this respect we impose a set of consent conditions relating to construction noise (including compliance with NZS6803) that are based upon consent conditions agreed to for PWW.

## **Visual amenity effects**

### Overview

385. The issue of visual amenity, and particularly the impact of the Mill Creek turbines in this environment, was critical to our Decision.
386. There is little doubt that wind farms often can and do give rise to visual and landscape effects. However individuals have different attitudes to wind farms, to turbines and to the circumstances under which these elements are considered attractive, unattractive, acceptable or unacceptable. As a consequence, expert opinion in this area is helpful but not entirely sufficient. In particular we must pay careful attention to the views of those most directly affected as they are the ones who must live with the consequence of our Decision.
387. Meridian is proposing 31 turbines on the Mill Creek site. Its evidence was that it had shaped the application, through a specific project shaping methodology, to ensure an acceptable impact on the local environment while still providing a viable project. The Applicant argued that it had taken the lessons from other wind farms and Court decisions, and put forward a careful application on that basis.
388. The councils, many property owners, and representatives of the community (including Ms Steven) on the other hand recommended that significant numbers of turbines be removed – largely but not exclusively on visual amenity grounds.
389. Not surprisingly the Applicant rejected these recommendations, noting at the same time that the final recommendation of the councils (i.e. Mr Hudson) to remove 10 turbines would result in the project not proceeding at all on this site being, in effect, a recommendation to decline resource consent.
390. In order to work through these issues we note that in addition to hearing the evidence and submissions on this matter, we made a number of site visits - including to a number of the identified affected homes and properties - to personally assess the alleged potential visual amenity impacts.

#### Visibility of other elements in Mill Creek wind farm.

391. For the record we note that while turbines are the most obvious elements of the proposal, they are not the only project element that causes potentially adverse visual effects.
392. Other elements include permanent modifications to the landscape (such as the access roads, turbine platforms, substation, potential power transmission lines, two wind monitoring masts and aviation lighting) as well as temporary modifications to the landscape (such as temporary offices, soil stockpiles, portable batching plant, lay down areas and temporary construction effects of earthworks, and night lighting).
393. We did not, however, receive large numbers of submissions on these other elements, as the turbines and associated earthworks were the clear focus of attention, but have taken them into consideration in the Decision and conditions imposed.

#### The setting - the Mill Creek site and environs

394. The site lies on the Wellington west coast, north of Makara, currently used as farmland west of Ohariu Valley. The site involves 5 properties and incorporates some 18km<sup>2</sup> of pastoral land.
395. The following elements seemed generally to be agreed by all presenters:
- (a) It has steep to rolling hill country with open pasture, patches of trees and some forestry, with clear skylines and ridges;



- (b) Its rural character comes from pastoral farming, equestrian interests, lifestyle blocks, understated buildings, and narrow windy country roads;
  - (c) There are transmission lines and transmitters running through the site and nearby environs; and
  - (d) The nearby Makara beach and coastline are dramatic with steep coastal escarpments and a regionally significant coastal estuary.
396. Many of the elements of the wind farm proposal which have potential visual impact are what we might term semi-permanent. That is, they are technically reversible in time – albeit measured in spans of generations. These include the turbines themselves, the transformers, electricity sub-station, a link from the substation to the external power grid, a maintenance and operating building, meteorological masts, access roads, fill and aviation lighting on 11 turbines.
397. The visual elements in contention to nearby residences lie primarily to the south (Takarau Gorge and Makara Beach) and east (residences along OVR, particularly the lower and central parts of this road) of the site.

#### Visibility and rural amenity

398. A matter that seemed to be a constant refrain from submitters was the implied linear relationship between *visibility*, *amenity values* (particularly rural amenity) and *rural character* - particularly regarding what is or is not acceptable to individual residents and to the wider public. We think it worth rehearsing that matter before moving to specific visual amenity issues. We also note that we have specifically assessed the issue of *rural character* later in the Decision.
399. Many people will see the wind farm and turbines. This is likely to evoke a reaction, whether close up or on the distant skyline. The reaction will take different forms, disapproval, neutral or approval and many degrees in between.
400. However, the mere fact of visibility, i.e. that people can see the turbines, is not in itself an adverse effect in the opinion of Mr Hudson and Mr Rough. Rather it is the significance of this visibility (i.e. whether, and in what way, it is intrusive) rather than visibility *per se* that is the real visual amenity issue in their opinion. Ms Steven seemed to us to hold to the more radical opinion that visibility *per se* was unacceptable in this setting – and her methodology relied very heavily on this dimension of visibility.
401. Based on their respective methodological ‘starting points’ outlined above, all the landscape experts before us gave careful consideration to the boundary points at which turbines became unacceptably dominant, prominent or significant. However, each of the experts advising the parties had different recommendation arising from their assessment of visibility.
402. Mr Rough held that the effects are acceptable for all but possibly 2 turbines from a visual distance and domination perspective – remaining open to the possibility that adverse effects from these two might be able to be mitigated. Visibility as such was not an issue for him.
403. Mr Hudson held that 10 turbines were candidates for removal because of his assessment of dominance and significance in a scenic aesthetic landscape. Again, visibility as such was not an issue for him.
404. Ms Steven held, or so it seemed, that all visible turbines should be removed – leaving, at best, 2 turbines.

405. In reply the Applicant noted that the RMA provides no protection for private views; to which Ms Pawson responded that the RMA does provide for amenity, noting that visual aspects and views are part of the pleasantness and aesthetic coherence elements of the definition of Amenity Values.
406. We find that while visibility clearly contributes to visual and rural amenity, it is not a sufficient proxy for visual amenity. We prefer the approach of Mr Rough and Mr Hudson of further analysing the landscape and visual amenity significance of visibility.

#### Photo simulations and computer generated images

407. Both Meridian and OPS made extensive use of computer generated imagery and photography to provide guidance to us and submitters as to what the proposal may look like.
408. Meridian produced a series of TrueView (Mr Coggan) computer / photographs of vistas from public viewing areas and offered to do an image for properties in the area, showing potential turbines from their residences. Extensive photopoints were made available from this. They also produced a time-lapse DVD showing vistas throughout the day.
409. OPS used the 3D computer visualisation K2Vi software to demonstrate the visual impact of the wind farm. It was presented by Mr Knowles and could be used to view the wind farm from any private residence as well as different geographical points in the area.
410. Reservations about the accuracy and reliability of these respective simulations were expressed by both proponents and opponents of the application. However, we do not consider it particularly helpful to the reader or necessary to our Decision to rehearse the often complex arguments made for and against these competing models and methods.
411. Suffice to say that we found this range of computer generated imagery presented by both Applicant and OPS as being valuable contributions in providing assistance as to the look of the development on this site. However, both had deficiencies that were well acknowledged by their designers – and amply demonstrated by their detractors. In our opinion the benefits to be gained from the use of technology such as this far exceeds the cautions - provided they are approached critically.
412. As a supplement to our site visits, and the evidence of the expert and lay witnesses on this matter, we record that our understanding was immeasurably facilitated by the images made available to us throughout the Hearing by many of the parties.

#### Cumulative Effects

413. Finally, before turning to the individual expert evidence on landscape and visual amenity matters, we address the matter of cumulative effects.
414. The effect of Project West Wind as an immediate neighbour to Project Mill Creek at a distance of 2.46km (to the nearest proposed turbine) was the subject of assessment and submissions regarding potential cumulative visual (and noise) effects.
415. There was general agreement that from a limited number of public viewpoints (inland on Colonial Knob, Mt Kaukau and offshore) the wind farms would look and read as one continuous wind farm, with the same make and model of turbine on both sides of the valley.
416. However, neither Mr. Hudson nor Mr. Rough considered the public viewing of the “cumulative” wind farm as being sufficiently significant to warrant any change to the project.
417. Ms Steven disagreed, maintaining that the combined wind farms would become the defining

element rather than the current pastoral farming; raising the very reasonable question as to when 'enough is enough'.

418. In Ms Steven's opinion this project is one wind farm too many; one that will change the environment in perceived character and community. In support of this contention, Ms Steven reported that of the 33 properties she visited 24 would see both wind farms.
419. We accept the evidence that skylines and ridgelines will change with this proposal and that a cumulative effect will occur. However, for the most part these are distant views, shaped and altered already by the consented West Wind project. We prefer the conclusion of Mr Rough and Mr Hudson that the additional cumulative effect of PMC with PWW is not significant.

#### Visual amenity from public viewing points

420. The Mill Creek turbines will be seen from public viewing points from the Northern Walkway, Skyline Track, and Mt Kaukau. They would also be seen clearly from the Makara Walkway and in particular the gun emplacements.
421. Visibility of the turbines from the coastal beaches is generally limited because of the setback and the shape of the coastline. However they would be seen from the beach south of Fishermans Point.
422. Ms O'Callahan, based on Mr Rough's evidence, acknowledged that the proposal would have an effect on the natural character of the coastal environment. She concluded that in some locations this will be moderate and others significant depending on the viewing location. In particular she noted that significant effects would be apparent from off-shore views where the turbines will be prominent and where they may appear to be located on the top of the escarpment.
423. Mr Hudson stated his opinion that there are a very limited number of public viewing points that will be exposed to significant effects in terms of visual amenity.
424. Ms Steven assessed public viewing points reinforcing her conclusion that the wind farm was inappropriate in this landscape.
425. Views from seaward aside, we accept that views of PMC from public viewing points will not constitute a significant adverse effect. We received no detailed evidence that enabled us to assess the significance of any adverse visual effect from seaward. We do, however, note that mitigation of such would likely be impossible and certainly be impracticable.

#### Visual amenity from private viewing points

426. The issue of visual amenity and the impact of Mill Creek turbines on nearby residential views was one of the matters on which submissions and opinions were most frequently expressed.
427. As alluded to earlier, it was particularly important for us to understand the professional assessments made and methodologies used to determine potential adverse effects from private properties.

#### *Applicant's professional assessments and methodology*

428. Meridian engaged Mr Peter Rough to assess the landscape and visual amenity impact of their proposal. His evidence in relation to private residences was presented in conjunction with the TrueView photo-simulations created by Mr Coggan of Truescape.

429. Mr Rough analysed 76 residential photo-simulations from 68 locations on private properties, and considered digital terrain simulations showing visual effects over time. He based his 'decision matrix' on two scales and then undertook a professional assessment property to property. He advised us that he was not able to visit all properties. However, Mr Rough expressed his confidence to us that the sample used was more than representative of all properties that might be visually affected.
430. The first scale used by Mr Rough was the 'visual impact related to viewing distance', derived from that used for Tararua 3 and the Te Apiti wind farm applications. This scale assessed turbines viewed at 5 distances ranging from less than 1 km to 25 +km.
431. The second scale used assessed the extent to which the turbines affect the views of nearby residences, in terms of whether the turbines are;
- (a) *Dominant* - The feature has a defining influence on the view and is a focus in the view
  - (b) *Prominent* – The feature is clearly visible in the view and forms an important but not defining element of the view
  - (c) *Present* – The feature is neither dominant nor prominent but is visible in the view.
  - (d) *Negligible* – The feature is visible but may go unnoticed as a minor element, or is not visible.
432. Mr Rough analysed each of these properties by grouping them into a Table of all properties (and photopoints) based on a 5-point scale ranging from *no effect* to *potentially significant effect*.
433. His conclusions were presented in his Schedule 6, which identified 16 properties on which the turbines would have a '*potentially substantial effect*' on visual amenity values.
434. Mr Rough also detailed mitigation measures that he proposed would minimise the adverse effects of this proposal. These included (but were not limited to):
- (a) roading and earthworks being minimised on site, using existing farm roads where possible;
  - (b) wind turbine generators designed as integral units;
  - (c) turbines all the same design in a low gloss pale grey colour; the careful placement of turbines to suit the terrain and open character of the landscape; and
  - (d) aviation obstacle lighting that had limited visibility below the horizontal plane.
435. From his assessment of private residential views Mr Rough considered that one turbine, G4, warranted further attention because of its prominence to a number of household views. He was not specific as to whether that attention would require its removal or whether further mitigation measures were practicable.
436. In addition, after seeing the K2Vi presentation and listening to submissions, Mr Rough agreed with Mr Hudson that like G4, F11 had a potentially substantial effect and, by implication, might also be considered for removal (if no other mitigation is practicable) because of its visual affect on the proposed dwelling at 1000 Makara Rd.
437. His overall conclusion, setting G4 and F11 aside for the moment, was that the landscape and visual effect of the wind farm was not significant; the proposal was not contrary to

relevant landscape and amenity provisions of the RMA; and avoids, remedies or mitigates any significant potential adverse landscape and visual amenity effects.

438. We note that, like Ms Steven, Mr Rough conducted his assessment primarily in terms of the effect of individual turbines on properties rather than strings or sets of turbines.

Wellington City Council professional assessment and methodology

439. Mr John Hudson, a landscape architect engaged by the WCC, used essentially the same matrix as Mr Rough.

440. Where he differed from Mr Rough was in his use of what he termed the “*scenic aesthetic model*” of landscape assessment to describe the site as a whole and to make his property-by-property assessment.

441. In brief, this model apparently relies on an ideal or picturesque landscape state, recognising that it is now a pastoral rural environment, modified from its original vegetated state. The visual effects of the turbines were assessed in terms of the extent to which they detract from the picturesque ideal of a rural landscape.

442. In addition, Mr Hudson used his interpretation of the Environment Court’s PWW decision to modify and apply as guidelines to the specifics of the nearby Mill Creek site and the PMC application.

443. In particular, Mr Hudson drew our attention to what he considered the general principle adopted from the PWW Decision, as follows:

*While it is not possible to have set criteria concerning distance from turbines in order to recommend their removal, my interpretation of the Westwind [sic] decision was that mitigation involving removal was considered in situations up to 1.8km between the viewer and the turbine.*

*The individual circumstances dictate the recommended mitigation, but I found this to be a rough guide, with turbine removal only imposed if relocation could not mitigate the adverse effect and generally for turbines 1-1.8km from the viewer.*

444. Mr Hudson’s conclusions were provided in a Table that summarised the visibility and visual amenity effects from those houses that he considered to be the most affected by the proposed wind farm. He identified 35 properties of which 12 are approximately 1.8km or less distance from proposed turbines.

445. Mr Hudson’s approach differs from Mr Rough’s and Ms Steven’s in that he places emphasis on clusters or strings of turbines rather than individual ‘offenders’ or turbines en masse. That is, his conclusions are based in good part on the extent to which he finds the clusters or strings dominant or prominent in relation to the rural vista and its scenic aesthetic.

446. The Table which summarised his findings for turbines needing “*visual mitigation or potential removal*” identifies that the G1-4 series significantly affects 4 properties, the F13-14 series significantly affects 2 properties and the K1-3 series significantly affects 1 property. Turbine G4 is identified individually for its effect on a further 2 properties.

447. Mr Hudson also changed his initial recommendation of removal to include F11 after viewing the K2V1 simulation and learning of the proximity of the house site to that turbine.

448. In summary, Mr Hudson recommended for consideration the removal of 3 series - being G-1, 2, 3, 4, F-11, 13, 14, and K-1, 2, 3.

Ms Anne Steven for OPS

449. Ms Steven, a landscape architect, gave evidence on behalf of OPS. She was assisted by Mr Colin Knowles from Data Interface Technologies Ltd who had developed a computer simulation model for the site referred to as K2Vi (= *key to virtual insight*).
450. Ms Steven visited 33 private residences from the north end of Ohariu Valley through to the lower Takarau Gorge and around to Makara Beach.
451. Ms Steven assessed (and scored) turbines in terms of the extent of turbine *visibility*, (from blade tips only to full turbine and blades), *distance* (0 for less than 3km away and -1 for more than 3km away), *context* (main view or part of wider view), and *cumulative effect* with West Wind.
452. From this Ms Steven identified individual turbines which she considered would be problematic. Her results were provided in a full ranking of turbines from the highest scoring (high visual impact) to lowest and least offensive.
453. She listed the 'worst offenders' in order as G2, G4, G3, J2, K1, G1, E4 and E5, and she went on to state:
- F13 and F14 drop off because there are fewer people affected by them but they score highly where they do affect people. Likewise K3 and the F turbines which affect the fewer Makara residents, drop off. J1 and E4 drop off because they are less problematic for Makara residents and are lower scoring for Ohariu residents overall.*
454. In conclusion Ms Steven stated.
- My analysis has identified which turbines are problematic. Removal of these turbines would reduce the adverse effects; however with respect to Ohariu Valley Road, there should be no change to it.*
455. Ms Steven did not clearly specify the turbines 'for removal' in her written or verbal statements and even after questioning we were left no clearer as to whether they are the list above or a wider selection.
456. For comparison, we note that, on the basis of Ms Steven's turbine assessment, the 10 turbines that she considers have the most negative effect are G2, G4, G3, J2, K1, G1, E4, E5, J1, and H1.
457. While the G series are in common with Mr Hudson's assessment, and include Mr Rough's G4, the other turbines listed are quite different. In particular, Ms Steven does not include F11 (as identified by Mr Hudson and we think by Mr Rough as a potential candidates for either removal or relocation respectively) in her overall worst offenders list.
458. In fairness, we note that this characterisation of the 10 "worst" turbines is our construct for comparative purposes from her overall assessment table. Ms Stevens did not actually draw an "acceptability" line because she gave as her professional opinion that the whole application is an inappropriate land use from a visual landscape perspective and should be declined, stating:

*It would not represent sustainable management of the landscape resource, and it would not maintain landscape character and quality that underlies people's wellbeing here nor sustain it for future generations to enjoy.*

Response to Ms Steven

459. Mr Rough in his rebuttal expressed reservations about the methodology used and therefore the conclusions of Ms Steven's approach. He suggested that Ms Steven had:
- (a) drawn the inland extent of the coastal environment too far inland thus encompassing an additional 6 turbines within that environment;
  - (b) placed undue reliance on the K2Vi model which did not show important aspects of landscape context (e.g. vegetation); and
  - (c) based her conclusions on the premise that if the landscape changes then the turbines are necessarily unacceptable.
460. Mr Hudson largely agreed with Mr Rough's criticisms.
461. We agree with Messrs Rough and Hudson that certain limitations in Ms Steven's methodology bring her overall conclusions into question. As already mentioned, we prefer the matrix used by Messrs Rough and Hudson and that has been developed and refined through previous primary and Court hearings and which analyses distance and dominance before considering the evaluative dimensions of significance of effect and acceptability.
462. Having said that, however, we acknowledge in particular the way in which Ms Steven took the time with many of the residents to understand and explore their perspective. This was not something that Mr Rough and (to a lesser extent) Mr Hudson were able to duplicate due to timing and property access factors; instead they relied more on samples of representative views.
463. However, where we have three different professional approaches with three quite different conclusions, the methodology used is obviously of the utmost importance. This is especially the case where the subject goes to the very heart of the decision – the reason all parties (including ourselves) spent such considerable time at the Hearing exploring these differences.
464. The difficulty this leaves us with is that the G series of turbines was identified by both Mr Hudson and Ms Steven as candidates for removal – and for quite different reasons – and one out of that series, G4, was also acknowledged by Mr Rough as being such a candidate.
465. Before drawing our conclusions on this matter we now turn to a consideration of specific identified properties that were commonly agreed to be potentially adversely affected in a more than a minor way.

#### Consideration of particular properties

466. As noted above, Mr Hudson generated a Table summarising the visibility and visual amenity effects from houses that he considered to be the most affected by the proposed wind farm. Of the 35 properties in the Table, 12 are approximately 1.8km or less distance from any proposed turbine.
467. Ten of these 12 properties are also identified in Mr Rough's Schedule 6 – which identifies 16 properties where he considered turbines to have potentially substantial effects on visual amenity values.
468. The 10 properties common to both were:
- (a) 91 Takarau Gorge Road
  - (b) 182 Takarau Gorge Road
  - (c) 252 Takarau Gorge Road

- (d) 335 Takarau Gorge Road
- (e) 535 Takarau Gorge Road
- (f) 570 Takarau Gorge Road
- (g) 952 Makara Road
- (h) 1000 Makara Road
- (i) 1011 Makara Road
- (j) 1012 Makara Road

469. We note that of these 10 properties, 6 either:

- (a) have the option to use vegetation for screening purposes; or
- (b) have a wider cluster of turbines in their view, for which the removal of a small number of turbines would provide little relief.

470. We include 335 Takarau Gorge Road, 952 Makara Road and 1011 Makara Road as properties in this latter category, being particularly heavily affected by groupings of turbines in a central part of their view - #335 is exposed to G1, 2, 3, 4, E1, 4, 5, 8, H1, 2, J1, 2, L1, 2 and K1; #952 is exposed to F10, 11, 13, 14, but also E4, F7, 8, 9, H1, 2, J1, 2 and L1; and #1011 is exposed to K1, 2, 3, G1, 2, 3, 4, and F13,14.

471. Of the other 4, in reply, Mr Beatson pointed out that 3 of these properties (182 and 535 Takarau Gorge Road, and 1000 Makara Road) did not have consents for dwellings or existing houses on them. We will return later in our Decision to this question of the relevance of land use consent and the existence of buildings to the section 104 consideration of effects on the "existing" environment. The remaining property of the four is 570 Takarau Gorge Road.

472. In the following we focus briefly on these four properties – which we understood all received the requisite consents before this application was notified.

*535 Takarau Gorge Road*

473. Mr Beatson submitted that this property did not hold consent to establish a dwelling and that consent to subdivide was granted after PMC was announced. He also pointed out that the fact that it had not yet been built on gave the owners the ability to shape the house to minimise the view of the wind farm if they so wished. We also record that Mr Rough noted in his Schedule 6 there is no potential for existing vegetation to further screen the wind farm from the view.

474. Mr Hudson gave his opinion that the closeness and elevation of the house site and full view of G4 made this turbine, at 828m away, a dominating structure.

475. While we concur with Mr Beatson about the design of the house, we note that the nature of this site makes it difficult to mitigate the visual effects.

476. We do not accept that the date on which PMC was announced has any bearing on the matter whatsoever. The time taken to make a decision, whether to grant or decline, is not within the control of an applicant. Furthermore, if we were to accept Mr Beatson's own submission that the present application has priority status from the time of lodgement, and apply it to the matter in question, his own argument is largely undermined.



*570 Takarau Gorge Road*

477. This property has an approved building site. The house site is a little further away than 535 Takarau Gorge Road, being 1158m from G4 and has lesser views of G3, G2, G1 and the K series. Mr Rough considered that there was the ability for existing vegetation to further screen the wind farm on this site.
478. Mr Hudson disagreed, considering that the closeness, elevation above the house site, and full view of G4 made this turbine a dominating structure, as for 535 Takarau Gorge Road.

*182 Takarau Gorge Road*

479. Mr Beatson submitted that this site is the most significantly impacted because of the number and proximity of turbines. Again he pointed out that it did not yet have a dwelling constructed or consented, and argued that while Meridian had priority in terms of the consent process, the owners would be able to orientate any house to the northeast, and “look” away from these turbines.
480. Council officers confirmed that the subdivision had been consented, identifying a house site, but that a land use consent for a residence had not been issued at the time of the hearing.
481. Mr Hudson stated that this site has views of almost the entire wind farm. He assessed the proximity of the G series as a dominant feature in the western view of this house site.
482. We noted from site visits that this property has expansive rural views in the other direction away from the turbines.

*1000 Makara Road*

483. This is a large property that extends from Makara Road valley floor up to the ridge and coast towards Smiths Bay.
484. While there is a dwelling on the bottom of the site, near the Makara Stream, that is approximately 1414m from the nearest turbine, there is also a land use consent issued last year (just prior to the hearing) for another dwelling on the hill overlooking Smiths Bay, Cook Strait and the Tasman Sea. The proposed dwelling is potentially the closest to any turbine with F11 approximately 560m away and F10 approximately 700m away.
485. After seeing the K2Vi model it became apparent just how visible F11 would be from the rear of the property; albeit the “preferred” panoramic view would be seaward to the west. Nevertheless there is clearly a significant potential for adverse visual and associated effects from its proximity.
486. Mr Rough agreed under questioning that turbine F11 would have a similar adverse effect to turbine G4.
487. Mr Hudson agreed with Mr Rough and recommended that consideration be given to its removal.
488. The owner of the property, Mrs Kim Bowen, appeared in opposition to the wind farm. She sought relief to the effect that all turbines should be sited at least 2km from her (and any) adjoining boundary. She doubted that the proposed house would be habitable if the closer F series turbines proceeded – though largely from a noise perspective.

Overall evaluation of visual amenity effects

489. Skylines, distant views, hilltops and ridgelines will definitely be changed as a result of this project proceeding. The landscape will change, the views will change, and rural character

will change. The significance of that change will largely depend on individual perceptions and dispositions to the turbines. Many of those who currently enjoy uncluttered views of skylines and ridgelines, and who will see West Wind and Mill Creek, will be affected. We heard from large numbers of nearby residents who did not welcome this change; a number of whom will have their skyline view, middle distance and / or long views changed significantly.

490. Whether some people will see the turbines as graceful structures putting the wind to good use, as the Applicant suggests, is pure conjecture as we did not hear from any disinterested residents to that effect.
491. If we are to adopt the recommendation of the landscape experts and contemplate removal of turbines, we need to decide whether the unit that offends is an individual turbine (Rough) or a cluster or series of turbines (Hudson and Steven).
492. As a matter of logic, and as a general principle, we see little value in removing individual turbines (e.g. G4) or series of turbines (e.g. G1-4) if the residences concerned can still see other individual turbines or groupings of turbines. For the record, we surmise that many submitters were reacting to the fact that the wind farm actually has what economists' term "existence value" – except that in this instance this is a negative value. In other words, people were reacting adversely to the fact of turbines – more than they were to individual turbines.
493. Furthermore if the G series is removed then, for many residents of Makara (for example), the F series (being the next visible series) becomes the next contender for removal because it has a similar magnitude of psychological effect. If not careful, then, one moves to the position of Ms Steven whereby mere visibility becomes the criterion for removal. A position we have already rejected.
494. Mr Hudson describes this phenomena himself when explaining possible mitigation measures, noting that we have to decide which if any turbines should be relocated or removed to reduce the substantial effects. He pointed out that:

*... for house sites that see the majority of turbines, e.g. 182 Takarau Gorge Road, removal of the G-series will reduce the visual effects, but it should be remembered that by removing the nearest row of turbines, the next row forms the view. Therefore removal of the most prominent turbines in this view, and in any other view that comprises a substantial cluster of turbines, will not take the visual effects away but simply reduce the dominance.*
495. Despite that caution, however, Mr Hudson went on to recommend precisely that course of action. That is, to delete the G series (and some).
496. Mr Hudson did not present us with any photographic evidence that might demonstrate how the wind farm would appear with the recommended 10 turbines (or some lesser number) removed. Thus, while we can accept the *logic* of the argument, we have no basis for knowing that the result would not only achieve the objective Mr Hudson implies – i.e. maintenance of the rural scenic aesthetic – but also promotes sustainable management.
497. If we are unable to conclude that the removal of clusters / series will achieve the above objective, what then is the rationale for the removal of individual turbines?
498. Clearly the scenic aesthetic model as such is not as appropriate for a house-by-house assessment. Such an assessment is properly all about dominance of the particular situation rather than the general landscape.

499. At the same time, we cannot agree with the assertion by a number of submitters that the addition of turbines at the proposed density into this rural environment, by that fact alone, creates an industrial environment. We observe that while many transmission lines criss-cross this area, and are decidedly obvious, no-one submitted that this created an industrial or non-rural landscape – indeed they are an integral part of the rural landscape so-proclaimed.
500. We must also observe that we have difficulty accepting the proposition that vegetation has no role in enhancement, either now or in the future. While the Court has found that vegetation on another person's property cannot be relied upon as screening mitigation, this is entirely different to the deliberate and careful landscape screening on one's own property (which may be undertaken in mitigation and certainly could, and arguably should, be assisted by an applicant where it is their project that "brings the nuisance").
501. Inevitably, and over time, vegetation will emerge to soften views or rural vistas generally. Vegetation is and will continue to be part of the rural and pastoral context.
502. We also accept that while the rural amenity may not be enhanced by this project, neither is it destroyed. Rural landscape amenity will be lessened but we heard no reliable evidence suggesting that the rural landscape in this area was at a point of "collapse" such that this project would tip the balance.
503. Individually. G4 is nominated by Mr Rough as warranting mitigation or possible removal, because of its prominence to a number of households. Ms Steven from her analysis has G4 as her second most offensive turbine in her ranking. Mr Hudson has G4 as part of his recommendation on the G series and also identifies it with sole selection for potential removal for two properties in Takarau Gorge Road. Turbine G4 as proposed is set to be only 828m from a consented house site.
504. F11 is in a similar position with respect to 1000 Makara Road – but a visual analysis of this is less important as (see below) we consider this turbine wholly unacceptable on potential adverse noise effect grounds alone.

#### Finding

505. We find that there will be some unavoidable effects on the natural character of the coastal environment. While no turbines are planned to be located on the coastal escarpment, from some viewpoints they will appear as if on the escarpment. We do not find this adverse effect on natural coastal character so significant as to require either the removal of particular turbines or series of turbines.
506. We find that general rural amenity will be affected but will not be destroyed or reduced to a point where that becomes significant.
507. We find that existing and future vegetation (landscaping and revegetation) has a legitimate role in mitigation. We accept that vegetation cannot be relied on as mitigation where it exists on others' property.
508. We find that the cumulative visual effects with PWW are not significant.
509. We find the methodology employed by Messrs Rough and Hudson to be preferred to that used by Ms Steven.
510. We find that the wind farm has potentially significant adverse effects on approximately 12 residential properties that are approximately 1.8 km or less from the proposed turbines.

511. We find that turbines G4 and F11 would be visually dominant on a small number of residential properties and have potentially significant adverse effects on visual amenity. Furthermore, we find that practical options for mitigation are very limited for some of those properties – among which we include 952 Makara Rd, 335 Takarau Rd, and 1011 Makara Road.
512. We find that turbine G4 should be deleted on visual amenity grounds.
513. We find that turbine F11 has potentially significant adverse visual effects on 1000 Makara Road. We make a further finding on F11 in terms of adverse noise effects below.
514. We find insufficient evidence to justify accepting Mr Hudson's and/or Ms Steven's recommendation to remove turbines in series.

### **Noise amenity**

515. Noise was extensively discussed by a number of acoustic experts and many submitters throughout the Hearing. Because all the noise issues were commented upon by the experts, no further reference is made to the concerns of submitters. We are, however, mindful of the considerable weight placed on this issue by submitters in opposition.
516. In general terms the noise "positions" were identified by respective counsel in submissions.
517. Mr Beatson notes that the Applicant was satisfied that its operations would comply with *NZS6808:1998 (Acoustics – The Assessment and Measurement of Sound from Wind Turbine Generators)* ("**the Standard**") but was prepared to accept and to meet the lower sub-6808 condition (relating to night-time noise limits of 35 dBA L<sub>95</sub> when the background noise level is 25 dBA L<sub>95</sub> and wind speed conditions of <1.5 m/s exist) that had been imposed on PWW. It accepted this additional burden not because it thought it would create noise in those conditions but because it was satisfied that no significant noise issue would arise, and the sub-6808 condition was therefore, in effect, redundant.
518. Mr Beatson drew our attention to the fact that the Standard does not require a complete absence of noise or audible sound at the receptor. In the event that any particular turbine proves not to comply, it would be operated in such a way as to make it comply (through, for example, mechanical attenuation either by de-rating its power or limiting production from certain wind directions). He expressed confidence in the noise conditions proposed.
519. Mr Slyfield summarised OPS' position on noise as challenging the validity of the Standard and the Applicant's use of it. He submitted three reasons for this:
  - (a) There had been considerable and reputable peer review of wind turbine noise since 1998 when the Standard was promulgated;
  - (b) PWW and Motorimu had indicated the need to further refine the Standard through the so-called sub-6808 conditions;
  - (c) The Standard failed to account for advances in the physical and psychological health sciences.
520. Mr Slyfield submitted that section 16 of the RMA required a more stringent standard than NZS6808.
521. Mrs Jorgensen, a lawyer but careful to clarify that she was not making legal submissions for Makara Guardians Inc ("the Guardians"), advised us that the Guardians adopted the OPS evidence of Dr Trevathan (one of the noise experts appearing for OPS), particularly in

respect of his analysis of Mr Hayes' evidence for Meridian and the DELTA sound power level report which effectively underpins Mr Hayes' noise predictions.

522. Mrs Jorgensen advised us of the involvement the Guardians had had with the Standard since 1998 – including submissions on the original draft. The Guardians challenged the appropriateness of the Standard, noted its current review, and urged us to set it aside as it does not represent current best practice. The Guardians promoted the interim establishment of 3 km noise buffer zones around residential homes, and 2 km buffer zones from adjoining property boundaries.

#### Siemens 2.3- 82VS turbine and its sound power level

523. Since all noise effects begin with their source, the rated sound power level ( $L_{WA}$ ) of the preferred turbine is clearly important.
524. Mr Hayes included the so-called DELTA report supplied by Siemens for this 2.3-82 VS variable speed, pitch-regulated wind turbine as Appendix 8 of his Noise Impact Assessment. Mr Hayes summarised that report in a Table indicating an overall  $L_{WA}$  for wind speeds between 5.5 m/s and 16.4 m/s ranging from 89.3 dBA to 102.3 dBA. The DELTA report indicates that 95% of the rated power level is reached at wind speeds of 9.8 m/s.
525. Dr Trevathan, an acoustic engineer (with particular expertise in sound transmission through built structures and the use of computational methods) who gave expert evidence for OPS, disputed the use of the DELTA  $L_{WA}$ , cautioning that a +1 dBA difference at source moves the 35 dBA noise contour outwards several hundred metres (and, of course, vice versa). Dr Trevathan criticised the methodology behind the DELTA report in several respects and concluded that it was not therefore appropriate for Meridian to conclude that the turbines complied with the international standard *ISO 61400-11: 2002* as it was not in full accordance with the methodological standard *IEC 61400-11:2002*.
526. Dr Trevathan noted that *ISO61400-11* describes two uncertainties associated with wind turbines. Type A uncertainties relating to actual variations in the noise output of the turbine, and Type B uncertainties relating to the measurement and calculation techniques and equipment. Recalculating these uncertainties, he arrives at a variation figure of 2.3 dB above and below the quoted sound power at 9 m/s – contrary to Mr Hayes estimated overall uncertainty of 1.2 dB.
527. The Applicant's response to this, inasmuch as there was one, was to repeat that noise would be managed within the specified conditions. If that required mechanical attenuation under certain climatic conditions then that would be the appropriate response.
528. We accept that provided a management response to "excessive" noise is practicable and available without undue burden of process on the part of the receiving community, then we can accept that the risk of any over-rating of the sound power source is one for the Applicant to manage. If the consequence of that is to make the wind farm non-viable then, on this single point alone, that is a matter for the Applicant.
529. We add, however, that while we accept that the noise contours produced by various parties, albeit Mr Hayes alone actually derived one from a comprehensive model, are useful in a predictive sense, where the community has to rely upon the empirical accuracy of these and an unanswered doubt is raised, we note that the burden of risk is properly returned to the Applicant. In that regard we note the Court's various directions that a risk needs to have a level of reality (and we might add, credibility) before being entertained.

### Noise prediction

530. It was common ground that the predominant wind directions are from the north and the south.
531. It was also common ground among the noise experts that setting wind turbine noise limits represents a special case in that these operate in wind conditions above the limits that apply to "normal" noise standards. That being the reason why NZS6808:1998 was developed.
532. Mr Hayes considered that an assessment based on the A weighted scale was appropriate for this project.
533. Mr Hayes undertook initial background noise level monitoring at 2 properties neighbouring the proposed wind farm. A further 6 receptor locations were subsequently added. From this Mr Hayes concluded that the noise floor (i.e. the lowest levels of noise measured) was 20 dBA  $L_{95}$  measured at 10 m above ground level ("agl") when there was no local wind, with noise levels increasing as the wind increased from 6 – 10 m/s. He also took into account potential wind shear effects.
534. Mr Hayes produced Tables for all-day and night-time periods detailing prevailing background noise levels at the 6 representative locations at varying wind strengths from 4 m/s to 12 m/s at 10 m agl (equivalent to a wind speed range from 5.5 m/s to 16.4 m/s at 70 m agl – the height of the anemometer mast). These were produced for northerly winds from 270 - 90° and for southerlies from 90 - 270°.
535. He repeated this for the sub-6808 low noise conditions – i.e. a background level of <25 dBA  $L_{95}$  with a local wind speed of <1.5 m/s at 10 m agl.
536. He then generated Tables showing what he termed the NZS6808:1998 noise criteria for "normal" and low noise conditions – i.e. under turbine operating conditions.
537. From these, Mr Hayes predicts that the night-time noise levels would not exceed that required by NZS6808:1998.
538. At the same time it was likely to also comply with another Standard referred to by Plan Change 32 - *NZS6802:2008 Acoustics – Assessment of Environmental Noise* - which sets a broad criterion of general background noise level +10 dBA (above a background level of 30 dB). However Mr Hayes points out that this Standard explicitly exempts sound sources that are subject to other New Zealand acoustical Standards – as is the case with wind turbines – and is therefore not applicable (despite its reference in the Plan Change).
539. Finally Mr Hayes produced a summary Table for the sub-6808 periods. He concluded that for 40% of this time the wind turbines would not be generating because the wind speeds were below the cut-in production speed of 2 – 5 m/s measured at the turbine hub height.
540. Mr Hayes explained how he had developed his prediction algorithm using the appropriate industry standard - *ISO9613:1996 Part 2 Acoustics – Attenuation of Sound during Propagation Outdoors* – and the assumptions made to ensure that his predictions represented the average worst-case propagation conditions.
541. We were also advised that Mr Hayes had added an additional 24m to the blade tip height as a conservative measure to ensure an over-estimation of any barrier attenuation for those locations with partial line-of-sight.
542. Mr James, an acoustical engineer and expert witness for OPS in acoustical measurement procedures, gave evidence (and answered questions from us by conference call to the

USA) primarily on what he considered to be deficiencies in NZS6808. In summary he argued that:

*...deviations from commonly accepted acoustical measurement practices as standardized by US and international standards organizations that are permitted in the NZ standards have introduced bias and artefact into the results of the reports and testimony provided ...*

543. The two main methodological concerns of Mr James (paraphrased for the purpose by us) were:
- (a) The windscreen used on the microphones makes results in wind speeds in excess of 5 m/s unreliable and these 5+ m/s results are thereby contaminated and should be disregarded;
  - (b) The wind speed readings were taken at a height of 10 m or more agl, and are not therefore reliable for the microphone.
544. This led him to conclude that the proper background sound with the addition of the predicted wind turbine sound is in the range of 19 to 25 dBA (or possible lower) rather than Mr Hayes' 38 to 42 dBA.
545. Mr James also criticised reliance upon the WHO guidelines for undisturbed sleep. He noted that the guideline has a codicil, not taken into account by Mr Hayes, that the 15 dBA reduction of noise from outside to inside a house – and therefore giving the 30 dBA inside and 45 dBA outside criteria – applies only where the noise source is predominantly in the mid to high frequency range. Where there is a low frequency component, lower external levels should be adopted. This led Mr James to recommend an external limit of 35 dBA.
546. Mr James suggested an adjunct to this conclusion, which was to also use C-Weighting (dBC) to determine the sound-dampening of typical wall and roof materials.
547. Finally Mr James expressed concern about the lack of external verification and validation of wind turbine computer models.
548. In Mr James opinion, the predicted levels should be adjusted (i.e. increased) by 10 – 11 dBA to account for the various uncertainties and tolerances he identified. He also recommended that a night-time operating curfew buffer of 2 km around homes be imposed.
549. In addition to a number of other criticisms that we find not determinative, Dr Trevathan referred to *ISO9613 – 2*, and commented that *NZS6808:1998* refers to this source for further methodological information – the clear implication being that *NZS6808* derived its method from that source; an implication not refuted.
550. Dr Trevathan advised us that *ISO9613 – 2* applies to moderate downwind conditions of average winds in the range 2 – 5 m/s, noting therefore that there will be periods of time when actual noise levels are either above or below those predicted. Dr Trevathan concluded that Mr Hayes “average worst case scenario” needed to be recognised as applying only to those 2 - 5 m/s wind conditions. Because winds at Mill Creek are likely to have a higher average, he gave his opinion that the general estimated accuracy of the method (i.e. +/- 3dBA) was more likely to be in the real order of +/-6dBA. Accordingly he recommended that we impose / adopt a lower design target of 30dBA  $L_{eq}$  rather than 35dBA  $L_{eq}$  in order to account for this.

551. Dr Trevathan's overall conclusion was that the combination of uncertainties and expected noise levels produced an average underestimate in expected noise levels of a 6 dBA increase (being a range of +4 – +8 dBA).
552. Dr Trevathan concluded that 13 turbines (F13, F14, G01 – 04, K01 – 03 and F08 – 11) would need to be removed.
553. In rebuttal, Mr Hayes noted that the microphone windscreen effect artefacts commented on by Mr James would need to exist for 95% of the measurement time period in order to be "recognised" under an  $L_{95}$  index. Similarly for any noise events measured with respect to the ambient background noise. Occasional traffic or animal noises are not "counted". Mr Hayes argued that the average is in fact the appropriate measure as this is representative of the noise environment across a range of wind speeds. To base everything on the lowest noise background noise recorded would be artificial. Mr Hayes appears to agree with Mr James if and only if the  $L_{Aeq}$  index is the relevant measure – which, in Mr Hayes view, it is not. As he comments, the adoption of the  $L_{95}$  index was precisely to eliminate the artefact effects Mr James describes.
554. On the matter of Mr James' conclusion that the predictions are under-estimated by 10 – 11 dBA, Mr Hayes gave evidence of post-operational testing against prediction showing a tendency to slight over-prediction, and therefore concluded that Mr James' suggestion was "untenable".
555. Mr Hayes responded to Dr Trevathan's criticisms in his rebuttal evidence. He did not change the opinions made or conclusions reached in his primary evidence-in-chief. In particular he refuted Dr Trevathan's comments relating to source sound power levels noting a very high degree of consistency across wind turbines within the same farm as empirically measured.
556. Mr Hayes also noted that if one were to adopt the levels of uncertainty postulated by Dr Trevathan, this would require separation distances between turbines and dwellings of between 3 and 5kms, which would certainly provide protection for the most noise-sensitive members of the public but would be inconsistent with other sources of noise that are permitted activities – although he failed to specify what these might be as far as night-time noise is concerned.

#### Councils – Mr Lloyd

557. While Mr Lloyd for the councils had points of disagreement with the other experts, he generally accepted Mr Hayes evidence. The main point of difference concerned the so-called sub-6808 condition, where background sound conditions at residential dwellings are quiet (less than 25dBA  $L_{95}$ ), with wind speeds less than the cut-in speed of turbines, but wind speed at the wind farm is above cut-in speed.
558. The Applicant accepted, or so it seemed to us, the imposition of a 5dBA penalty in such conditions, but argued that the trigger wind speed should be the same as that set by the Environment Court for West Wind for consistency – i.e. 1.5m/s at the residential dwelling. Mr Lloyd argued that this condition should be triggered at the "normal" cut-in speed of 3.5m/s. While the difference was not resolved by the experts, we conclude that the onus falls squarely on the Applicant rather than the community in this instance to demonstrate that it can operate within acceptable night-time noise bounds. As such we prefer Mr Lloyd's more cautious proposition.



559. Mr Lloyd also argued strongly for some form of continuous monitoring – based in part on what he (and others) considered to be potentially wide margins of uncertainty arising from the noise contour modelling.
560. We note in passing that numbers of submissions sought that we make a noise precondition relating to the monitoring of actual noise effects at PWW. That is, that PMC not be allowed to “go operational” unless the noise predictions for PWW, on which Meridian based its noise “case” for PMC, were verified.
561. We have some sympathy for this approach but do not impose such a condition because, in the event that data is incorrect as applied to PMC, council can initiate a review of conditions under section 128(c) of the RMA as follows:
- If the information made available to the consent authority by the applicant for the consent for the purposes of the application contained inaccuracies which materially influenced the decision made on the application and the effects of the exercise of the consent are such that it is necessary to apply more appropriate conditions.*
562. Furthermore we record that, while the predictive data *may* be found not to be absolutely accurate, we received no compelling evidence that those predictions would be so inaccurate as likely to prove fatal to the application. In other words, we are persuaded that evening that circumstance, appropriately revised conditions could be imposed.

#### Finding

563. We find that noise amenity for some residents will be affected under certain conditions.
564. We find that neither the WCDP nor any of the applicable NZ Standards require noise to be inaudible at a receptor site.
565. We find that the turbine of choice, being pitch regulated, is able to be managed to comply with any noise limit – including, in the final analysis, being switched off. We accept Meridian’s commitment on this matter.
566. We find that the various noise contour maps and predictions provided, relying as they did on different assumptions, were helpful in painting a picture of the likely range and spatial extent of noise effects, but were not sufficiently reliable to adopt as a true representation of what might actually occur. For that we find that post-commissioning monitoring is necessary.
567. We find that the proximity of many turbines to dwellings requires a more stringent night-time standard under sub-6808 conditions, and we prefer Mr Lloyd’s recommendation of a wind speed trigger of 3.5 m/s over Mr Hayes’ proposed 1.5 m/s (which, we accept, introduces an anomaly between PWW and PMC). For the record we note that, in the event that post-commissioning monitoring of either or both PWW and PMC proves this restriction unnecessary, a remedy is available through a s127 RMA review of conditions.
568. We find that noise amenity for some residents could be affected under certain conditions of low background noise (typically at night-time) but accept the evidence that recommends 40dBA  $L_{eq}$  as the appropriate sleep disturbance limit at the notional boundary of any residential dwelling, reducing to 35dBA  $L_{eq}$  when background sound conditions are at or below 25dBA  $L_{95}$  and the mean wind speed at the residential dwelling is less than 3.5m/s at 10m agl.
569. We find that the noise conditions imposed should meet the recommended WHO internal sleep non-disturbance level of 30dBA  $L_{eq}$ .

570. We have already found that turbine F11 poses a potentially significant adverse visual effect on 1000 Makara Road. As this turbine is only some 560m from the house site, and despite the land contour, we find that this turbine poses a very significant risk of adverse noise effect – that is unlikely to be able to be mitigated. On this ground alone we find that turbine F11 should be deleted. For the record we note that when these two effects are put together, we find the case for deletion of F11 compelling.

## Health effects

571. Dr Black gave evidence on public health matters for the Applicant. He helpfully refined his brief as being: “... *to identify actual health effects caused by the characteristics of the proposal, not those which might result from the eventual existence of the wind farm in combination with a community’s attitude to it.*”
572. Dr Black’s overall conclusion on health-related matters was that no significant impact on the community would arise from the proposal.
573. Dr Black accepted that there would be some degree of perceptible sound but concluded that this was an amenity effect rather than a health effect. He did not accept that visual flicker would be significant as the essential causal elements of amplitude, frequency, colour and area of visual field did not exist.
574. With respect to low frequency noise and vibration, Dr Black relied upon the evidence of Mr Hayes in terms of quantifying the magnitude of the energy. He noted that in order for low frequency noise to be of medical concern a source of high energy pulses had to exist. In Dr Black’s opinion the evidence did not support such a pre-condition. Indeed he submitted that there would be no low frequency vibration above levels routinely encountered in everyday life.
575. It followed for Dr Black that, in the absence of a clearly identifiable source of energy, the corollary condition known as vibro-acoustic disease (“VAD”), the subject of much submission, could not occur. He opined that the levels of energy received from the turbines were many orders of magnitude below those speculated to cause VAD. It was clear to us from Dr Black’s evidence in rebuttal that he does not accept VAD as a genuine disease entity – certainly not as far as wind turbine induction is concerned.
576. Dr Black accepted that concern about and irritation at a development – particularly in the presence of noise or sensations that call attention to its existence – coupled with misconceptions about possible effects, can trigger anxiety and distress, which verges on a psychiatrically diagnosable phobia.
577. Dr Palmer, Medical Officer of Health for Regional Public Health (Hutt Valley District Health Board), discussed what he referred to as “the grey literature” surrounding wind turbine sound; case reports that postulate causal linkages and that have entered the public realm but have not been, nor are, subject to professional peer review. He cautioned against giving any medical weight to such reports as these are often based upon dubious science or are very poorly designed. They are often presented as irrefutable proof. In particular he noted the work of Ms Mariana Alves-Pereira as forming “*the cornerstone of the grey literature on vibro-acoustic disease and the link to wind turbine infrasound.*”
578. Dr Palmer advised us, from a public health perspective, causality from an environmental source needed to satisfy two criteria. There must be:
- (a) a biologically plausible exposure, and

(b) the hypothesis must be confirmed by high quality epidemiological research that has sufficient power and is reproducible.

579. Dr Palmer concluded that because the first criterion is not met on the evidence of Mr Hayes, the second does not even come into play.
580. Dr Palmer continued by noting that in situations where a relationship is evidentially-based but not yet systematically proven, he would ordinarily recommend a precautionary approach. In this instance he concluded that: "...*there is insufficient evidence to support recommending the precautionary approach with respect to vibro-acoustic disease.*"
581. However, and for different reasons, Dr Palmer did recommend taking a precautionary approach overall. The reason being that the local community of Ohariu Valley is now sensitised to the noise issue and, if heard and associated with sleep disturbance, levels of annoyance could lead to health effects.
582. Dr Palmer did not see this precaution requiring the abandonment of the project. His opinion was that the magnitude of any adverse effect was likely to be small and able to be mitigated. Accordingly, he recommended a robust process for receiving and responding to complaints (and for filtering out trivial matters) to ensure the quick and thorough mitigation of any serious nuisance.
583. Dr Palmer did not agree entirely with Dr Black's characterisation of community effects as indirect and therefore not of RMA relevance. He gave the opinion that these are relevant, particularly as the community division and mistrust has resulted directly from the manner in which the project appeared to have been managed. Dr Palmer noted that the healing process needed to be undertaken by the community itself – including Meridian and the beneficial land owners.
584. Dr Shepherd, a psycho-acoustician, gave evidence for OPS on the potential psychological and psycho-physiological effects of turbine noise on health and well-being.
585. Dr Shepherd's evidence was that wind turbines are a new source of community noise and their public health effects are only now beginning to emerge. He relied upon the WHO definition of health, being:
- A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.*
586. Dr Shepherd was critical of acousticians who assume that the human auditory system simply mimics the physics of sound. He noted that sensation is a top-down process mediated by the brain, which interprets sensory information. Fear, anxiety, auditory and visual annoyance, etc sensitise individuals. He contended that NZS6808 has little to do with health – as previously defined.
587. Dr Shepherd advised that there are two important criteria in assessing whether noise annoyance is detrimental to health. The noise must be audible, and then the socio-psychological context becomes relevant – that is, the *meaning* of the noise.
588. Dr Shepherd recommended that a precautionary approach be taken to wind turbine noise because insufficient empirical research has so far been conducted on this aspect, despite a growing trend of complaints. For Dr Shepherd this meant that turbine noise limits must be set at a level whereby it is *inaudible* inside dwellings. He suggested a separation distance of 1.5 miles or 2.4 kms – although his clear preference was for a suspension of further wind turbine developments until the necessary NZ research is conducted.

589. Ms Mariana Alves-Pereira, a researcher and assistant co-ordinator of the New University of Lisbon Vibro-acoustic Disease Team gave evidence for Mr John Third and OPS by teleconference. That evidence was on the relationship between infrasound and low frequency noise and VAD and reviewed the known and the controversial elements of the physics of sound and the limitations of acoustic standard units of measurement such as dBA.
590. Ms Alves-Pereira also provided an overview of the morphology and pathology of VAD and discussed certain resonance phenomena effects - whereby solid (and some cellular) structures may act either as a vibrating membrane or directly amplify the signal. According to Ms Alves-Pereira awareness of the sound source was not a pre-condition. She held a clear opinion that wind turbines are capable of both generating sufficient low frequency sound and inducing adverse cellular change in the human body. She supported the option of proper epidemiological research – a deficiency noted by Dr Black and Dr Palmer - but noted the difficulty of securing financial support for this because the variables are so complex. As she noted, *“This agent of disease is insidious, ubiquitous, and spans many frequencies all with their own levels of amplitude.”*

#### Finding

591. We find that the health effect concerns expressed by those opposing the application to be insufficiently well-established for us to accord them the weight sought. We have no doubt as to the sincerity with which those concerns are held and remain open-minded as to the possibility that future empirical research may cause that view to change. However, we heard sufficient authoritative opinion such that we find it more likely than not that those alleged health effects will not manifest themselves under the conditions that we have imposed.

#### **Rural Community Character – Ohariu Valley**

592. While rural character (undefined in the RMA) is often introduced as a consideration under section 7(c) *the maintenance and enhancement of amenity values*, what we might refer to as *rural community character* is seldom discussed nor provided for directly in sections 6 or 7 of the RMA.
593. It was reflected in the provisions of Schedule 2 Part 2 of the RMA relating to matters that may be included in District Plans prior to the repeal of that Schedule in 2003. That provision (clause 2) stated:
- Any matter relating to the management of any actual or potential effects of any use, development, or protection described in clause 1 of this Part, including on—*
- (a) The community or any group within the community (including minorities, children, and disabled people) ...*
594. We note that while that scheduled provision was repealed it was not because these matters were considered to be irrelevant but because local government had, since 2002, been given a wider mandate under the Local Government Act to determine for itself the matters relevant to its community. The 2003 RMA amendment was in kindred spirit - provided the plan matters fell within the ambit of the section 31 functions of territorial authorities and the section 72 purpose of district plans.
595. Based on the RMA as it stands therefore, the relevant “hook” for character considerations is the section 2 definition of *amenity values* which states:

***Amenity values*** means those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes.

596. Typically this matter has been the province of landscape architects. However, as in the present application case, their evidence tends to the aesthetic and scenic qualities rather than including the sociological "sense of place" that constitutes "community".
597. The community of Ohariu was well represented in this Hearing. Not only did a significant number of individual property owners come before us but professional witnesses were presented by the collective known as the Ohariu Preservation Society Inc. This was in addition to other local interest groups – the Makara Guardians Inc. and the Makaracarpas Society Inc. – and residents.
598. The weight of this evidence was that:
- (a) It was evident that one of the primary elements of any community, i.e. full participation, was to the fore in the evidence and submissions made.
  - (b) The decision by the landowner "collective" to promote a joint venture with Meridian Energy had caused deep-seated rifts within the community – and this was itself an indication of the cohesiveness of the Ohariu Valley community.
  - (c) The essentially cul-de-sac nature of OVR insulates this community from a number of problems such as security and is particularly safe for pedestrians and equestrian activity due to low through-traffic volumes. The road thereby acts as a genuine community conduit.
  - (d) Many of the residents have not only deliberately moved into (or have remained in) the Ohariu Valley, they told us that they had invariably waited in some cases many years for property to become available.
  - (e) While the Ohariu Valley has undergone a rate of rural lifestyle development, this has not been so rapid as to overwhelm the basic character.
  - (f) The community is very horse-orientated – both recreationally and professionally. We understand that horse riding both along the OVR and across the paddocks is a common activity. Indeed, because of the nature of the road, this appears to be used as a significant recreational resource in its own right for walking, exercising animals (horses and dogs particularly), etc.
  - (g) The Ohariu Valley is a very quiet place. Potential for noise disturbance is a particular concern.
  - (h) The vista is essentially rural, despite the significant number of power pylons and transmission lines in the general area.
  - (i) A number of residents indicated their personal endeavours to live sustainably in terms of generating their own power requirements.
  - (j) The Ohariu Valley community had engaged fully in the 2001 *The Ohariu Valley Rural Community Plan* exercise. While this document is non-statutory it was evident to us that the community placed considerable reliance upon it – modified as it was from the Rural Area Objectives formally adopted by Council's City Development & Business and Environment & Recreation Committees in January 2001 - and the community appears to have assumed, rightly or wrongly, (and without necessarily

taking an active role in PC32 or PC33) that the District Plan would promote and protect these commonly agreed objectives (acknowledging that the areal extent of the District Plan Rural Areas is considerably wider and therefore has a different scale of consideration).

- (k) Under the Ohariu Valley Rural Community Plan the community had identified its priority objective as:

*To maintain and enhance rural character, amenity and identity for people living, working and visiting Ohariu Valley.*

This clearly remained a fundamental objective for many of the local resident witnesses who appeared before us.

- (l) As noted earlier in our Decision, on the relevance of PWW, residents had seen the problems caused to themselves and the residents of Makara village throughout the construction period for PWW; considered that these would seriously and irrevocably disrupt the community of the Ohariu Valley if repeated; and were not confident that conditions of consent on the present application would or could mitigate similar disturbances.

599. In the above terms, the question for us to decide is whether the effects of this application, if granted, are so disproportionate to this particular community that any national or regional benefits likely to arise from the harnessing of renewable wind energy in this location should yield to that effect.

600. This is not a question of removing one or more turbines for visual effect mitigation or modifying the power rating of generation units to keep noise emissions to a standard; it goes to the heart of the matter as to whether a grant of consent *per se* is reasonable.

601. Overwhelmingly, in terms of numbers of local submitters and community groups, we heard of the anticipated and actual negative impact of the wind farm on the rural amenity and character of Ohariu Valley and Makara.

602. This rural character is something they appreciate, something to protect and to be passed on for the future. We heard about rural character of neighbours helping neighbours, moving stock down the roads and sharing stock yards. We heard of the peace in the countryside, narrow windy roads, family life and a love of animals and nature.

603. We also heard from the owners of the blocks involved in PMC about rural character and their economic reality. They stated they were not developers that had just come along recently to make money but were committed farmers and descendants of the early farming families of Ohariu Valley.

604. Their land, their big blocks of hill country, are the subject of this application. Their view was that the wind farm provides income to their farms that had become increasingly marginal over many years.

605. The Applicant's planner Ms O'Callahan stated that the wind farm:

*... provides for the continuation of the underlying rural land use which is clearly valued by the community in this area.... in terms of visual amenity effects there will be some changes to the visual outlook for the properties in the wider area, particularly for a limited number of houses on Takarau Gorge Road. However the overall effects on the rural character and amenity of this rural part of the City will not be so adversely affected as to*

*result in a reduction of the overall rural character and amenity of the Ohariu Valley....*

*The underlying rural land use and character will remain, which differs from the possible alternative developments that may take place in this area such as rural residential subdivisions.*

*By not affecting the continuation of rural land use, the proposal will maintain rural character and amenity. It is important the location is acknowledged as a working rural environment and not a conservation area, nor as an area where people's residential amenity expectations should dominate the planning assessment as this area is not being considered for a residential or conservation purposes*

606. The definition of "rural character" is open. There is no definition in the RMA and "rural character" is commonly framed in terms of rural amenity and character appraised largely by landscape architects. But what is rural character and amenity? It includes the visual aspects, the noise aspects, the traffic movements and also from submitters but not technical experts, a sense of place, patterns of daily life, belonging to a community, and for others a 'working environment'. For many people in this area it means commuting to work, equestrian businesses and recreation and small scale home-based businesses. It also becomes a recreational playground for Wellingtonians in the weekends.

607. The WCDP provides guidance for the Rural Zone.

*2.5 Rural Area*

*Represents about 65% of the city's total land area..... Most of the land is used for pastoral farming and settlements are small and scattered.*

608. The WCDP notes the key objectives of the Plan as being to:

*Encourage a wide range of rural activities;*

*Control subdivision to limit housing;*

*Protect ridgelines and hilltops.*

609. This is further reflected in the main document in the following objectives with their associated policies.

(a) *Objective 14.2.1 To promote the efficient use and development of natural and physical resources of the Rural Area.*

(b) *Objective 14.2.2 Maintain and enhance the character of Rural Areas by managing scale, location and rate of new building development.*

(c) *Objective 14.2.3 Maintain and enhance the amenity values and rural character.*

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610. These of course are one set among a number of sets of rural objectives under the Plan seeking to protect natural environments, ridgelines, hill tops etc.

611. We were also apprised of PC32 and PC33 which together further refines the aim to protect ridgelines, skylines and inappropriate subdivision whilst also making provision for "wind energy facilities".

612. What was not absolutely clear to us is the *raison d'être* for the Rural Area. In Ms Pawson's conclusion she stated:

*The overall aim of the District Plan is to maintain and enhance rural character and amenity.*

613. On this rationale, Ms Pawson concludes that the application, using Mr Hudson's analysis, reduces rural character and amenity but does not destroy it. In order to make this reduction in private amenity acceptable she recommended granting the application with conditions and the removal of 10 turbines.
614. What is strongly emphasized in the WCDP and subsequent plan changes, design guide and community plan, is the protection of ridgelines and hilltops. This is strongly worded in all documents. Plan Change 33 contains an overlay prepared to give priority to particular ridgelines and skylines. Within the subject site one ridge has been so identified and this is on the north-western side of the site, where 4 turbines (E6, E7, J1 and J2) are proposed.
615. Neither Mr Rough nor Mr Hudson recommended removal on this basis.
616. Mr Hudson stated:
- The additional effect of the turbines on this identified ridgeline and hilltop area, over and above their effect on the underlying rural landscape, is not significant.*
617. Ms Steven has recommended removal of most turbines either on policy or visual assessment grounds, including in this instance J1 and J2. These two turbines are within her list of 10 worst offending turbines, her argument in relation to this issue, was consistency with planning objectives and policies.
618. Mr Geange, a planner engaged by OPS, did not specifically call for their removal on this basis either, concentrating on the G series, K series and all of the F series.

#### Finding

619. We find that the rural *community* character of the Ohariu Valley has already been materially affected by this proposal, and will certainly be further affected should the proposal be granted and proceed to construction.
620. We do not find that the rural *character* of the Ohariu Valley will be irreversibly affected by granting the proposal – although there will likely be some significant short-term adverse effects from the construction phase and during the operational phase while revegetation and landscaping initiatives take hold.
621. We find that a number of individual property owners will be adversely affected by activities associated with this proposal – particularly during the construction period.
622. Overall we find that these character effects, unwanted as they evidently are to those who consider themselves likely to be affected, are unlikely to be of such severity as to warrant refusal to grant consent to the project *in toto*.

## **Ecological effects**

#### Overview

623. The potential ecological impact of Mill Creek wind farm was a significant subject for many submitters in opposition.

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624. For the Applicant Dr Vaughan Keesing and Mr Stephen Fuller (and later through supplementary evidence Dr Tim Haggitt) gave ecological evidence. Their overall conclusion was that:

*With proper controls in place, no significant adverse effects are anticipated as an outcome of Project Mill Creek.*

625. While Mr Fuller believed the ecological effects in general would be minor, he did recommend measures to remedy and mitigate potential sedimentation effects, and strengthened these within the Hearing. The measures and conditions are reflected in the proposed Environmental Management Plan, Construction Management Plan and the 'largely agreed' draft conditions between the parties. These plans require best practice in the design, construction and operation of the Mill Creek site to minimise sedimentation effects within the site and any effects downstream, particularly to the Makara Estuary.

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626. The ecological effects that all parties considered significant (or potentially significant on Meridian's part) focused on waterways, and the freshwater and marine life that depend on these streams, estuary and coastal area. The earthworks of the proposal and control of sedimentation thereof became the critical issue for the ecological assessment.

627. The native vegetation and terrestrial native fauna of the site were not considered likely to be adversely affected to any significant degree by this project.

628. With respect to avifauna, we accept the proposition that if the sedimentation issues that could affect shore and estuary birds through habitat changes and food resources are dealt with appropriately, then adverse effects on avifauna will be minor.

#### Description of Mill Creek site and issues of concern

629. The site is predominantly improved pasture, used for farming for many years. It is estimated 98% of the project footprint area (area of construction and structures) is grass. According to Mr Fuller the site is highly degraded in ecological terms with almost no original vegetation, and the land use would continue unchanged by the construction of turbines.

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630. There are no lakes or rivers on the site. All large streams that flow through the wind farm site run south to the Makara Estuary. The streams are Mill Creek, Hawkins Stream, Ohariu Stream and Smiths Creek. These streams contain a range of native fish and their own habitat.

#### Vegetation and terrestrial habitats

631. Mr Fuller stated that there are no outstanding or rare indigenous plant communities that will be affected by Project Mill Creek. Similarly there are only small remnants of native forest all of which are avoided by the project footprint. They acknowledged that small areas of regenerating native scrubland may be affected but stated that these are not significant areas, and the species are common and abundant.

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632. In terms of terrestrial fauna, we were advised that the site contains no habitats known for rare indigenous invertebrates or lizards.

633. In turn Dr Blaschke for WRC concluded:

*I have not observed any distinctive or sensitive terrestrial vegetation in the study area that would be cleared or directly affected by the proposed construction works. Because of the generally poor habitat that the study*

*area offers for birds and other wildlife, there are likely to be no significant adverse effects of the proposed construction works on wildlife habitats.*

- | 634. He reported that the Department of Conservation had confirmed that it had no concerns regarding resident birds, lizards or invertebrates at the site.
- | 635. Dr Blaschke stated that the terrestrial environment currently has low natural ecological values and its natural values are somewhat degraded by the intensive farming land use.
- | 636. We heard no compelling evidence that held a contrary view.

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#### Avifauna

- | 637. We received evidence on the potential effect of the wind farm on avifauna from the main parties and submissions of concern from local residents and environmental landcare groups.
- | 638. Mr Fuller stated that birdlife in the project site is dominated by exotic pastoral species and common native species, and considered the likelihood of adverse effects on avifauna to be negligible.
- | 639. We heard that while it is possible that some bird species resident on the site may 'interact' with turbines but that occasional losses would not have a significant adverse effect on the ecology or on the local bird population.
- | 640. Furthermore we were advised that nearby marine and coastal birds (particularly shore birds and wading birds) were more likely to be affected by consequential potential sedimentation effects on the estuary and nearshore than by the wind farm itself.
- | 641. We heard that the Makara estuary is regarded as regionally significant and has at least three species of threatened waterfowl (species identified included reef heron, caspian tern, white fronted tern and black shags and pied shags), and is also used as a staging area by migratory species. Landcare groups are involved in enhancing the wildlife in the estuary and nearby marine environment.
- | 642. Local resident Mrs Margaret Niven suggested that the Meridian expert assessment of avifauna was flawed because it did not propose monitoring nor did it include crucial threatened species. Mrs Niven noted that coastal birds, shags and herons, were often seen in the gardens, farms and wetlands of Ohariu Valley. She maintained that if birds travelled inland the potential for adverse effects must exist.
- | 643. She also gave evidence that the threatened New Zealand falcon had recently been sighted in this area, particularly in the north end of Ohariu Valley. She rejected the proposition that the study done for West Wind was adequate to describe avifauna in the Mill Creek area as it did not include all bird species observed in the valley - for example falcon, white heron and kereru. She recommended that the Applicant be required to conduct a more robust study and monitoring, along the lines of the three stage methodology recommended by the Department of Conservation.
- | 644. Dr Blaschke concluded on this matter:

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*On the basis of an analysis of risk factors for avifauna identified in international research, and a year's baseline bird monitoring results for Project West Wind, the EVAR assesses the proposal to present a low risk to avifauna. In my opinion this assessment is sound. The Department of*

Conservation has confirmed that it considers the site to be low risk for migratory birds.

645. The rationale for this conclusion was that none of the turbines are on the first coastal escarpment; none of the turbines are closer than 0.5km to the coast; the turbines blades are minimally 120m above the coastline; and the turbines are located at least 0.65km northeast of Makara Stream mouth.

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#### Freshwater fish and aquatic habitat

646. The potential aquatic impact of the wind farm construction continues the themes/issues discussed earlier in terms of potential erosion and sedimentation effects of large scale earthworks. There, the emphasis was on the risk of sedimentation occurring; here the emphasis is on the effect on the aquatic resource.

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647. Five streams run through the site and contain a diversity of native fish and habitat necessary for their survival. Thirteen species are known to live in these streams. Fish species identified within or adjacent to project footprint were longfin and shortfin eels, redfin and upland bullies and banded kokupu. Whitebait (inanga) was also collected on site.

648. The presence of migratory fish in these streams means that fish passage needs to be considered as well as potential for sedimentation effects.

649. Meridian stated that:

*Overall the streams were moderately healthy, with macro invertebrate communities typical of rural streams in the Wellington region. While there were some indicators of degradation, it was not severe. Factors stressing these communities would include high summer water temperatures and lack of forest habitat.*

650. We understood that the greatest risk to the aquatic ecology was in the lower Hawkins Gully, Smiths Gully and the condition of the lower reaches of the Makara River and Estuary.

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651. Anecdotal evidence of increases in marine and waterway sedimentation, allegedly related to PWW, was given by Mr Hook, Mr Mikoz and Mr Hansford. Dr Joy gave general evidence on the topic of sediment, the importance of appropriate fish passages, and the effects of deposited sediment.

652. While there was disagreement about the causes of existing and recent sedimentation, all parties were agreed on the importance of the Makara Estuary as a regionally significant ecosystem and the ultimate receiving environment for both PWW and PMC.

653. It was generally accepted that this risk can be further avoided with proper design and construction of stream crossings – although the Applicant cautioned that such should allow for the nature of the existing environment, including the temporary nature of any potential effects and the proposed mitigation matters.

654. The treatment of stream crossings, culvert design, and construction methodology to minimise damage are all part of the recommended conditions for this consent. The have been developed and agreed with Mr. Wiles, Mr Breese and WRC's Ms Lenz.

#### Finding

655. We find that, overall, the potential adverse ecological effects of this proposal are not determinative. The crucial issue that comes from the application, the submissions, the

evidence and our hearings is the potential effect on waterways during the construction period of establishing the wind farm.

656. The key to resolving this concern is robust sedimentation control measures (which we discussed earlier in this Decision), sensitive and appropriate stream crossings, and a responsive monitoring system of streams within the site and at Makara Estuary. These measures collectively will minimise any adverse effect and are imposed as conditions.

## **Cultural Values and Archaeology**

657. The proposal and site were assessed by Mr Morrie Love from Wellington Tenth Trust and Ms Mary O'Keefe, Archaeologist.
658. We also heard from representatives of the Ngati Tama iwi about the history of the site.
659. It is understood that parts of the project site were historically used as gardens. The site shows a Kumuhore cultivation area known as M7. While this is shown as an historical cultivation area, it is acknowledged that the area has been used for pastoral farming for many years and little surface evidence remains. A discovery protocol is proposed in the event that any archaeological or cultural material is found or unearthed during construction.
660. We understood that the site did not include urupa, burial sites, pa or other Maori structures. However representatives of Ngati Tama did not accept this as conclusive and expressed some views of possible occupation or gardens near Turbine sites F13 and F14. This contention was not supported with any strong evidence.

### Finding

661. We find that no turbine sites are proposed to be sited in any known sensitive area, and that the discovery protocol proposed (and imposed as a condition) will ensure that any cultural and archaeological values affected by structures and works associated with the project will be appropriately managed.
662. We also find that representatives of Ngati Tama should be included within that process.

## **Weight to be accorded WCC Plan Changes**

663. It was common ground that WCC *Plan Change 65 - Earthworks* should be accorded little weight as it was only notified on the 1<sup>st</sup> July 2008 and submissions were still open at the time the present Hearing commenced.
664. As noted by Ms Anderson in her opening submissions for the councils, *Plan Change 32 (Renewable Energy)* was introduced to give effect to the 2004 amendments to section 7(i) and (j) of the RMA. She also submitted that:
- It also deals with an issue that is not expressly addressed in the operative plan and implements a coherent pattern of objectives and policies in relation to renewable energy.*
665. PC32 introduces specific provisions relating to the encouragement of efficient use of energy and the development and use of energy generated from renewable sources – provided the adverse effects on the environment can be appropriately avoided, remedied, or mitigated – including wind generation by means of wind energy facilities.
666. However Ms Anderson noted at the start of the hearing that PC32 remained subject to a number of outstanding Environment Court appeals and therefore should be given some but

not significant or over-riding weight. This situation changed through the hearing with the completion of Environment Court mediation session and now since the closing of the hearing the Court's decision on PC32 released on the 29<sup>th</sup> January 2009.

667. At the time of her submissions at the start of the hearing *Plan Change 33 (Ridgelines and Hilltops (Visual Amenity) and Rural Area)* was also subject to Environment Court appeals and Ms Anderson therefore also submitted that this should be given some but not significant or over-riding weight. However appeals relevant to this application have now been resolved (with two exceptions noted by the Court) through mediation and Court process with the Court's decision on PC33 released on the 29<sup>th</sup> January 2009.

668. PC33 amends the Rural Area subdivision and building provisions of the ODP, introducing a Rural Area Design Guide ("the Guide") for subdivision and identifying important ridgelines and hilltops that are to be given greater protection than other landforms. A relatively small part of the application falls within an identified overlay area – although we acknowledge that subdivision is not proposed and wind energy facilities are specifically exempted from the need for assessment against the Guide.

669. In his opening submissions for the Applicant, Mr Beatson noted that regardless of the status of PC32 and PC33 – on which Meridian was an appellant – the question was

*"... for most purposes largely academic. As a fully discretionary activity under any plan permutations, all matters are at issue."*

Despite that, Mr Beatson submitted that the proposal was consistent with PC32 (an opinion also given by Ms O'Callahan, expert planning witness for the Applicant) and fell to be assessed under section 7 of the RMA "*... irrespective of the presence or absence of the overlay.*"

670. In reply, Mr Beatson formed an even more forceful conclusion – largely, it seemed, in response to Mr Geange's (OPS' expert planning witness) argument that PC32 and PC33 should collectively be given little weight because they are both under appeal and therefore the ODP provides "*... no specific actual policy level support for windfarms ...*" other than generalised support for resource use efficiency.

671. Mr Beatson submitted that, to the contrary, PC32 and PC33 should be read in tandem as a packaged response by WCC to ridgeline and hilltop issues and the quality of the wind as a resource at elevated areas in Wellington. To isolate or distinguish one plan change from the other, he submitted, is simply inappropriate. He concluded that:

*It appears that both PC32 and 33 have reached a similar stage of progression towards operative status, and should be given considerable weight.*

672. In closing reply, Council officers maintained their initial s42A position that the plan changes were relevant and to be accorded weight – which had increased as appeal issues were resolved or determined.

673. As the Environment Court has now issued its decision on both PC32 and PC33, albeit after this Hearing closed, we must determine how to read section 88A(2) of the RMA, which states:

*(2) Notwithstanding subsection (1), any plan or proposed plan which exists when the application is considered must be had regard to in accordance with section 104(1)(b).*

674. The subsection (1) referred to relates to the activity status of an application subsequently changed by a notified proposed or operative plan.
675. The question arises as to whether we are still *considering* the application, and should therefore accord full weight to the two plan changes – even though the Hearing is closed.
676. In our opinion we are still considering the application and therefore should, in theory, give full weight to the plan changes. However we note that those changes are not yet finalised – the Court having directed that the terms be presented to the Court by the 20<sup>th</sup> February – and do not take full effect until Council has formally resolved under clause 20 of the First Schedule to the RMA to publicly notify its operative status. As such, the plan changes cannot yet be said to be operative.
677. We note that we were well advised during the Hearing on the position of the relevant parties to the appeals on these plan changes – including on the relief being sought.

#### Finding

678. We find that to accord the plan changes only slight weight would be to disregard the status they had reached by the end of the Hearing as well as to subsequent events.
679. We find that the plan changes should be accorded considerable weight as the Court has now issued its decision on both PC32 and PC33, albeit that the final terms have yet to be presented to the Court and the changes given operative status by means of council resolution and public notification.
680. We note for the record, however, that we have considered whether our overall determination would still stand if we should be found wrong in law on this point. In that event, we have concluded that the status of these two plan changes does not provide the tipping point for our Decision overall, and that our overall determine would remain the same.

#### **Other findings of fact**

681. In addition to the findings noted above, we note two other findings made by us for the record:

##### The activity status of the application

682. We agree with the Applicant and Council and find that this application falls to be determined as a Discretionary Activity.

##### The scope of the proposal and consultation about it

683. We find that the scope of the application was sufficient and appropriate and required no additional consents, and that the consultation undertaken met the requirements of the RMA.

#### **Section 104 Assessment**

684. Section 104 of the RMA requires that:

(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*

- (b) *any relevant provisions of—*
  - (i) *a national policy statement;*
  - (ii) *a New Zealand coastal policy statement;*
  - (iii) *a regional policy statement or proposed regional policy statement;*
  - (iv) *a plan or proposed plan; and*
- (c) *any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

685. This Decision has analysed the actual and potential effects on the environment that are reasonably foreseeable if consent is granted for this application, and made findings about those matters throughout. This has been done on the basis of all the evidence and submissions made both in response to the public notification of the application and at the Hearing, the documentation provided with the application, and responses to questions from commissioners at the Hearing.
686. We have taken account of the only National Policy Statement that applies – i.e. the NZ Coastal Policy Statement to the extent that it applies, and the relevant regional and district planning documents. That includes the two WCC planning documents (PC32 and PC33) that were subject to appeal at the time of the Hearing but have subsequently become operative (in part with the exception of 2 site-specific appeals on PC33).
687. We have also taken in account a number of documents that are matters we consider relevant and reasonably necessary to determine this application – including the NZ Energy Strategy to 2050 and the Ohariu Valley Rural Community Plan, with weight assigned respectively as we deemed appropriate (and as discussed in the relevant places in this Decision).

## **Section 105 and section 107**

688. For the record we note that no evidence was provided or substantive submission made that this application so offends section 105 or section 107 that a grant of consent is thereby prevented.
689. We have had regard to the nature of any discharge and the immediate receiving environment and have found that provided the conditions we impose are followed, the adverse effects are more likely than not to fall within sustainable bounds and, particularly, will not create a significant adverse effect on aquatic life – either in the immediate streams or the Makara Estuary.

## **Part 2 RMA Assessment**

690. The relevant provisions of sections 6, 7 and 8 were agreed between the expert parties. No one disputed these although the associated assessments, particularly relating to landscape significance, were contested.
691. Section 6 states matters of national importance and requires these matters to be addressed in such a way as to recognise and provide for that importance.
692. It was suggested by various parties that Section 6 (a), (b) and (e) applied.
693. Section 6(a) requires the preservation of the natural character of the coastal environment

(including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development.

694. We were not persuaded that the wind farm fell within the *coastal environment*, and accepted the general consensus that the remnant wetlands and stream margins would either be protected through avoidance or their natural character was largely absent. In the event, we did not find the proposed activity inappropriate in this environment. As such section 6(a) is recognised and provision made.
695. Section 6(b) requires the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development.
696. We accepted the “majority” landscape evidence that concluded that the development portion of the site does not contain outstanding features or landscape. Again, by default, section 6(b) is recognised but provision was not necessary.
697. Section 6(e) requires the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.
698. The involvement of Maori interests, either directly through the Applicant or less directly as a submitter, led us to be satisfied that this relationship was well understood and provided for – and conditions we have imposed reinforce this.
699. Section 7 states other matters to which regard is to be had in reaching a decision.
700. It was suggested to us that sections 7(a) Kaitiakitanga, (b) the efficient use and development of natural and physical resources, (c) the maintenance and enhancement of amenity values, (f) Maintenance and enhancement of the quality of the environment, and (j) the benefits to be derived from the use and development of renewable energy, applied.
701. All of these matters, and more, have been taken into account in the main body of this Decision. We accept that the subsections stated above are all relevant.
702. Section 8 requires us to take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) in making our Decision.
703. We have noted above in paragraph 698 the inclusion of and provision for what we have loosely termed “Maori interests”. We are satisfied that this adequately provides for the section 8 principle.
704. Finally, Section 5 requires us to make an overall broad judgement as to whether granting this application better promotes sustainable management than refusing to grant the same. We now turn to this exercise

## **Section 5 - overall assessment**

705. Section 5 requires our overall broad judgement as to whether this application, with the measures, conditions and offers incorporated and in place, meets the purpose of the RMA in that it promotes the sustainable management of the associated and affected natural and physical resources.
706. In reaching this determination we have had to give very careful thought to a number of matters that are on the edges of the typical mainstream RMA considerations. Of these, the most difficult task before us has been to decide what weight to accord the concerns articulated by most of the Ohariu Valley submitters about the way in which they saw this project compromising their community and its way-of-life.



707. In our view it is not possible to conclude that those concerns are necessarily unfounded – despite the fact that on a number of matters we found the arguments to lack a firm foundation. Whether, for example, noise actually turns out to be a significant operational issue in this environment, or use of the road actually turns out to cause unanticipated delays or serious harm, despite the best assessments available to us, and thereby creates the additional community friction that submitters are anxious to avoid, remains a possibility that cannot be completely discounted.
708. However, under the RMA an application cannot be refused solely on the basis of a worst case scenario. On the evidence, mitigation measures (via the adoption of measurable and enforceable conditions) can be put in place for many of these concerns – albeit that at one extreme (and based particularly on the noise conditions) this could require the decommissioning of individual or groups of turbines. This is of course a risk to the Applicant. In this respect we note and record that the Applicant has clearly indicated that it is prepared to face that prospect, even though it does not accept that as a realistic risk, and is entitled to have that commitment taken at face value.
709. While we received no “hard” evidence about the community in which they live and the “damage” that has been done, we certainly received considerable, and we believe honest, anecdote about this and we have some sympathy for submitters. In itself, though, this was not sufficiently probative for us to be able to conclude either that the current state of or the threat to the integrity of the community was so finely balanced that this project alone would tip it into some sort of negative spiral. If we were persuaded about that then there is little doubt that we would have to seriously consider whether such a project should proceed.
710. The concerns expressed about the loss of community neighbourliness occasioned between those members of the community in the joint venture and those not, is not a matter that we can resolve – irrespective of which way our decision falls. In that regard, we echo Dr Palmer’s advice that what is needed, in the event that the application proceeds, is a robust process that will help the community mitigate any subsequent anxieties or serious nuisance and create the basis for a more positive reception. This is a matter for the entire community – i.e. all the parties (Meridian, the joint venture and residents) – to address. A properly convened and focused Community Liaison Group, working together rather than as individuals to find common understanding and ground is one way to work through this. We acknowledge that this will require a change in mindset from what has occurred with the PWW Liaison Committee but, as Dr Palmer clearly stated, such a mindset change is required in the interests of community wellbeing.
711. At the end of the day, a decision to grant or refuse consent under the RMA is less about whether something is subjectively acceptable or unacceptable, than it is about whether its effects are likely to be so adverse that no reasonable person would sensibly approve.
712. Certainly the RMA requires us to reach a view on whether an application contributes to or promotes sustainable management, understood in terms of section 5 of the RMA – i.e. *which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety.*
713. In that regard, concerns about personal and community viability are all too relevant. However, it is not just the people and communities closest to the “source” that we are required to consider. Obviously these are very important but, in an application such as this with alleged national and regional benefits at stake, we have to take a wider view – unless, of course, we find that the adverse effects on those closest is sufficient ground for refusal.

714. Whatever position one finally reaches on the matter of national energy and substituted or displaced environmental benefits, and we heard some significant evidence in that regard, once cannot disregard the benefit from sustainable, renewable energy for the equivalent of a forecast 35,000 households per annum for the life of the wind farm. This, as was pointed out by the Applicant, equates to an average of 1129 households per individual turbine.
715. Against that lies a community of some 120 households (depending on where one draws the "line") who may be affected, to varying degrees, by construction period inconveniences, operational (particularly night-time) noise, and visual awareness of turbines and tracks.
716. Lest our Decision be misconstrued as simply preferring the 1,000 to the 1, we wish to make it very clear that this is not the case.
717. Part 2 requires an overall broad judgement about the merits of an application. As we noted earlier in this Decision, the burden of proof swings between the parties. On the key matters that we hold to be determinative for this application – i.e. noise, health, visual amenity, and ecology – we consider that the Applicant's proposal along with the ability to manage the adverse effects (by imposed conditions or volunteered initiatives) is sufficiently proven and more likely than not to avoid, remedy or mitigate any adverse environmental effects. In so finding we have decided to impose strict conditions on night-time noise (the sub-6808 condition as it was often referred to) which we consider the most significant likely adverse effect.
718. While clearly the development will have adverse effects with respect to the existing physical environment, we have not found any of these effects, either singly or in conjunction, to fatally fall outside the tramlines of what we may broadly gloss as the acceptable limits drawn by these provisions. That is to say, the adverse effects so identified, have been able to be remedied or mitigated by consent conditions.
719. The exceptions in that regard, in our opinion, are turbine G4 and turbine F11. We find that, despite the overall positive effects of the proposal, the potential adverse effect of these two turbines is such that they should be avoided and this can only be achieved by removing them. Accordingly, consent for those two turbines is refused.

## **Conclusions and reasons for decision**

720. Having read all submissions, relevant reports and the evidence presented at the Hearing, we conclude that the applications generally should be granted for the following reasons:
- (a) The application as modified by us generally satisfies the requirements of section 104 and 104B of the RMA.
  - (b) The application as modified by us is consistent with the purpose and principles of the Resource Management Act 1991.
  - (c) The application as modified by us satisfies section 105 of the RMA;
  - (d) The application as modified by us satisfies section 107 of the RMA.
721. Not all elements of the application should be granted. We have found that two turbines G4 and F11 do not represent the promotion of sustainable management for both visual and noise amenity reasons. Accordingly we decline the relevant consent provisions pertaining to turbine G4 and turbine F11. They are to be removed from the application along with any associated infrastructure that is not necessary for the purpose of completing the consented turbines.

722. For the record we note that the consented turbines are as follows:
- (a) E01, E04, E05, E06, E07, E08 (6)
  - (b) F03, F04, F05, F06, F07, F08, F09, F10, F13, F14, F15 (11)
  - (c) G01, G02, G03 (3)
  - (d) H01, H02 (2)
  - (e) J01, J02 (2)
  - (f) K01, K02, K03 (3)
  - (g) L01, L02 (2)
723. Many of the conditions we impose derive from and develop those proposed by the Applicant and councils at the Hearing. We comment briefly now on a few conditions that we have imposed that were not part of that discussion.
724. We have decided to impose a requirement to decommission and remove any turbines that are not used to generate electricity over a period of time. We have set that period of time as 2 years – which, on the evidence we heard, provides ample time for even the most obdurate maintenance and repair problem to be resolved.
725. We impose this condition in recognition of the fact that turbines have a pronounced visual effect; one which is able to be remedied by their removal. In the event that a turbine (including a series or even the entire wind farm) is not productive, we see no good reason for not requiring its removal. We also impose this because it is a more appropriate response in our view than to rely on the application of section 126 of the RMA which would, by default, apply a five year decommissioning regime - and even then we consider it debatable whether that section of the Act could be applied to individual turbines.
726. As the application was for a specific model of turbine (i.e. a Siemens 2.3-82 VS), and the modelling was based on the specifications for that model (and for consistency with Project West Wind), we have identified that formally in the consent. While we accept that similar specifications may be possible, we note that the Applicant submitted its evidence on such matters as the cumulative visual effect with PWW in terms of the consistency of “read” because the turbines were the same type.
727. We have not imposed a condition requiring post-construction photography to assess the accuracy of the application photosimulations. We consider that this would be a fruitful exercise for the Applicant in terms of its relationship with the community. However, in the event of a significant discrepancy, the RMA provides a remedy through a section 128 review.

## Decision

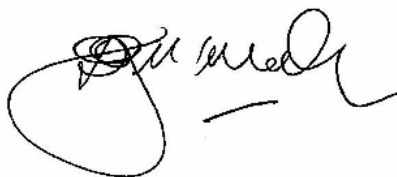
728. That, pursuant to sections 104, 104B, 105 and 107 of the RMA, Meridian Energy Limited's applications for resources consents to Wellington Regional Council, Wellington City Council and Porirua City Council is granted.

Dated this 16<sup>th</sup> day of February 2009



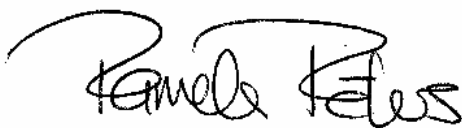
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David Hill  
Commissioner (Chair)



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David McMahon  
Commissioner



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Pamela Peters  
Commissioner

## **SCHEDULE 1: RESOURCE CONSENT CONDITIONS**

### **WELLINGTON CITY COUNCIL**

#### **General**

1. With the exception of amendments required to comply with other conditions of this consent and any conditions of related resource consents granted by the Porirua City Council and Wellington Regional Council, the proposed development must be carried out in accordance with the information and plans provided with Application Service Request number 176538.

For the purpose of the following conditions any reference to 'residential building' means a residential building in accordance with the definition in the District Plan, and applies to any such building(s) which is/are existing, have been granted a land use consent, or had a notified resource consent application in process, at the time of notification of this application on the 17<sup>th</sup> April 2008.

#### **Lapse Date**

2. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

#### **Landscape/Visual**

3. No more than twenty-nine (29) wind turbine generators ("turbines") are permitted to be installed by way of this consent.
  - a) The revised site layouts shall be taken to exclude turbines G04 and F11, and all related infrastructure and access tracks.
  - b) The approved site layout includes turbines E01, E04, E05, E06, E07, E08; F03, F04, F05, F06, F07, F08, F09, F10, F13, F14, F15; G01, G02, G03; H01, H02; J01, J02; K01, K02, K03, L01, L02 and all related infrastructure and access tracks.
4. Each turbine shall be a Siemens 2.3-82 VS and must be:
  - a) A pitch regulated upwind three bladed rotor type, with a tubular steel tower, as indicatively shown on Page 2 of Appendix B - Construction Effects and Management Report to the AEE submitted with the application.
  - b) Located no more than 100 metres from the site shown for the respective turbine on the plan marked "*Sheet 1 – Overall Site Development Plan – Site Layout*" of the AEE and the grid location shown in Table 3 of the AEE.
  - c) No higher than 111 metres measured from the base of the tower to the vertically extended blade tip.
  - d) Finished with a low reflectivity (not exceeding 30%) light grey paint finish (RAL7035 or similar) on all external parts, including turbine towers, nacelles and turbine blades of a type approved by the Compliance Monitoring Officer so as to minimise blade glint.
  - e) Maintained and upgraded to the satisfaction of the Compliance Monitoring Officer so as to ensure that it does not materially alter its visual or noise characteristics existing at the time of installation.

5. The substation and the operations and maintenance facility must be located, designed and painted so as to minimise its visibility from beyond the site and must be screened where practical from any view and any location within the legal roads of Makara Road, Ohariu Valley Road and Takarau Gorge Road in a manner approved by the Compliance Monitoring Officer. The general location of the substation area is identified in the application and is shown on the drawing labelled "*Sheet 1 – Overall Site Development*".
6. A plan showing the location of the concrete batching plant must be submitted to and approved by the Compliance Monitoring Officer prior to construction of the plant. The concrete batching plant must not be visible from any residential building and must be located at least 100 metres from any intermittent and perennial stream. The concrete batching plant must be a temporary installation for the construction period only and must be removed within six (6) months of completion of construction of the wind farm and no later than three (3) years after installation of the concrete batching plant.
7. The transformer building associated with each wind turbine must be painted Excel Colorbond "Bushland" or similar to match the surrounding landscape and located so that it is hidden from the view of nearby residential buildings. In order to achieve this earth bunding may be required.
8. The wind monitoring masts must be located within a 150m radius of the locations shown on the drawing labelled "*Sheet 1 – Overall Site Development*" of the AEE.
9. The HVDC Electrode Earth Transmission Line must be realigned to be within the 85m wide realignment corridor detailed in Appendix B - Construction Effects and Management Report of the AEE and shown on drawing "*Overall Site Development Plan – Sheet 1 of 2*" within Appendix A of the Construction Effects and Management Report.
10. Details of any internal overhead cabling must be submitted to and approved by the Compliance Monitoring Officer prior to the commencement of the works. Any overhead cabling in a visible location may not be approved and underground cabling would be required instead.

## **Noise**

### Construction Noise

11. Noise from all construction and decommissioning work including (but not limited to):
  - a) Site works;
  - b) Wind turbine generator assembly and placement;
  - c) Concrete placement;
  - d) Wind turbine removal;
  - e) Land reinstatement;
  - f) Widening of Ohariu Valley Road and Boom Rock Road; and
  - g) Construction of the new track through Spicer Forest

must be measured, assessed and controlled using New Zealand Standard NZS6803:1999 *Acoustics - Construction Noise*. The noise limits shall be those set out in Table 2 of NZS6803 for works of "long term" duration.

Note: Condition 70 places further constraints on condition 11(f) and (g) above.

12. A **Construction Noise Management Plan** must be prepared and implemented prior to commencement of construction. This shall be generally in accordance with Section 8 and the relevant annexes of New Zealand Standard NZS6803:1999 *Acoustics - Construction Noise* which detail the types of construction and procedures that will be carried out to ensure compliance with the Standard. The noise management plan shall be prepared by appropriately qualified and experienced persons, prior to relevant construction stages commencing, and shall be approved by the Compliance Monitoring Officer, prior to construction commencing. Representative construction noise measurements shall be undertaken as part of the noise management plan within one month of the start of each construction stage. A report of these readings shall be provided to the Compliance Monitoring Officer.
13. A **Decommissioning Noise Management Plan** must be prepared and implemented prior to decommissioning of the wind farm. This shall be generally in accordance with Section 8 and the relevant annexes of New Zealand Standard NZS6803:1999 *Acoustics - Construction Noise* which detail the types of procedures that will be carried out to ensure compliance with the Standard. The decommissioning noise management plan shall be prepared by appropriately qualified and experienced persons, prior to relevant construction stages commencing, and shall be approved by the Compliance Monitoring Officer, prior to any decommissioning works commencing.
14. All aspects of concrete manufacture must not exceed the following noise limits:  
 06.00am to 10.00pm 55dBA L<sub>10</sub>  
 at or within the boundary of any site other than the site from which the noise is generated;  
 and:  
 6.00am to 7.00am 35dBA L<sub>10</sub>.  
 6.00am to 7.00am 60dBA L<sub>max</sub>  
 7.00am to 8.00pm 45dBA L<sub>10</sub>  
 8.00pm to 10.00pm 35dBA L<sub>10</sub>  
 8.00pm to 10.00pm 60dBA L<sub>max</sub>  
 at or within the notional boundary of a residential building other than on the site from which the noise is generated:  
 The noise must be measured in accordance with NZS6801:1991: Measurement of Sound and assessed in accordance with NZS6802:1991: Assessment of Environmental Sound.  
 Note: For these conditions the notional boundary is defined as a line 20 metres from any side of a residential building, or the legal boundary where this is closer to the residential building.
15. Concrete must not be manufactured outside of the hours of 6.00am to 10.00pm on any day.

Operational Noise (Non-turbine Related)

16. Noise from all other activities on the site (other than wind turbine generator operation and construction activities) must not exceed the following limits at or within the notional boundary of any residential building (excluding any residential building on the Wind Farm site):  
 7.00am to 8.00pm 45dBA L<sub>10</sub>

8.00pm to 7.00am 35dBA  $L_{10}$

8.00pm to 7.00am 60dBA  $L_{max}$

The noise shall be measured in accordance with NZS6801:1991: Measurement of Sound and assessed in accordance with NZS6802:1991: Assessment of Environmental Sound.

#### Operational Noise (Turbines)

17. Wind turbine sound levels, when measured at the notional boundary of residential buildings must not exceed the appropriate regression curve of the A-weighted background sound level ( $L_{95}$ ) by more than 5dBA  $L_{95}$ , or a level of 40dBA  $L_{95}$  whichever is the greater, and

When the background sound conditions are at or below 25dBA  $L_{95}$  determined from the appropriate background regression curve, without the interference of the wind farm, and when the mean wind speed at a representative location for the residential building is less than 3.5m/s measured at a height of 10m AGL, then noise from the wind farm must not exceed 35dBA  $L_{95}$  at the residential building.

The background sound level must be determined without any influence from the West Wind wind farm.

18. Prior to installation of any wind turbine generator the Consent holder must furnish:
- An acoustic emissions report to the satisfaction of the Compliance Monitoring Officer for the selected types of wind turbine generators. The report shall be in accordance with IEC61400-11, Wind Turbine Generator Systems Part 11, Acoustic noise measurement techniques and shall include the measurement uncertainties, the A-weighted sound power levels, spectra, and tonality at integer wind speeds from 6 to 10 m/s and up to 95% of rated power for each type of individual wind turbine to be installed and for each mode of operation that is predicted to be required in (b) below;  
*(Note: There is no need to consider a mix of operational modes providing it is shown that the turbine is able to meet the noise limits set out in condition 17 at the mode of operation that represents the turbine's maximum power output and maximum sound power at each wind speed).*
  - A noise prediction report from a suitably qualified and experienced acoustical consultant that demonstrates to the satisfaction of the Compliance Monitoring Officer, that the sound levels from the wind farm will not exceed those levels set out in condition 17 above (Operational Noise - Turbines). Modes of operation and the type of turbine must be specified.

#### Pre-Instalment Measurements

19. The wind farm sound levels must be measured, assessed and controlled using NZS6808:1998 *Acoustics - The Assessment and Measurement of Sound from Wind Turbine Generators* within the notional boundary of any residential building, except for lots where written approval has been obtained, but with the following requirements to be met. Where these following requirements differ from NZS6808:1998 then these requirements shall prevail:
- The 10 minute background sound levels ( $L_{95,10min}$ ) shall be measured within the notional boundary of residential buildings. Such measurements shall be carried out before the commencement of any construction work related to the wind farm that could produce noise sufficient to affect  $L_{95}$  background sound measurements and results provided to the Compliance Monitoring Officer.



- b) Representative measurement locations shall be selected for all residential buildings within the predicted 35dBA  $L_{eq}$  noise contour and at an additional 7-9 locations (including those sites determined under condition 26 and 29) that are representative of residential buildings and residential building sites that qualify in terms of condition 17. These sites must be as agreed with the Compliance Monitoring Officer. As a guide representative background sound monitoring should take place within 200 metres of a residential building of interest and within a notional boundary of the representative residential building. Upon inspection the background sound level at a place of interest should be reasonably similar to the monitoring location. Depending on topography and the location of ambient sound generators such as streams and vegetation in the area this distance of 200 metres may need to be less. The representative locations shall be selected on the principle that if turbine noise was excessive, then the largest difference between the predicted post-installation noise level and the background sound level would be obtained.
- c) The 10 minute average wind speed and wind direction at the wind farm shall be based on the hub height of the wind turbines and wind speed measurements shall be made at the same time as the 10 minute background  $L_{95,10min}$  measurements at residential buildings (and called data pairs). Local wind speed and direction measurements shall also be made in the vicinity of the sound level monitoring (without interfering with that monitoring) at the time of these measurements and this data shall be recorded.
- d) Background sound level  $L_{95,10min}$  shall be correlated with wind speed and wind direction and time of day.
- e) Sufficient data must be collected to assess the following:
  - Operation wind speeds of the wind turbines from the cut-in wind speed (nominally  $3 \text{ m.s}^{-1}$ ) up to the rated power wind speed (nominally  $15 \text{ m.s}^{-1}$ );
  - The prevailing wind directions - N ( $300 - 015^\circ$ ) and S ( $120 - 210^\circ$ )
  - Time of day – Night-time (10pm to 5am) and Daytime (5am – 6pm) and Evening (6pm – 10pm).
- f) Sufficient data must be gathered such that accurate best fit regression curves can be obtained.
- g) Care must be taken to eliminate periods of contamination of the noise data by other noise sources, i.e. seasonal cicadas, crickets, frogs, rainfall periods, etc.

#### Post Installation Testing

- 20. Post installation compliance testing of the wind farm must commence as soon as practical, as agreed by the Compliance Monitoring Officer, once turbines are installed and commissioned, and as construction noise allows. If possible the testing must be carried out at the same locations as the background sound monitoring or, if that position is not available, then at a nearby location where the background sound monitoring is still representative.
- 21. The same parameters as in condition 19(e) required for the background noise monitoring must also be measured for the post-installation compliance testing. The cut-in operation times of the wind turbine generators shall also be recorded and this shall be indicated on the results.

22. The best fit regression curves must be provided in accordance with condition 19(e).
23. The appropriate regression curve of the  $L_{95,10min}$  of the wind turbine generator sound levels corrected for any special audible characteristics is not to exceed the noise limits specified in condition 17.
24. If required by the Council and as compliance testing takes place at each site the applicant must provide the raw results of noise and wind monitoring to the Council in a form that will allow the Council to undertake its own analysis and assessment of the results should it choose to do so. Audio recordings must be made and provided to the Council, on the Council's request, in the instance of noise complaints being received.
25. The Consent holder must provide reports to the Compliance Monitoring Officer as soon as practical following testing at each location but no longer than 21 days after the completion of each test.
26. The Council may reasonably direct testing to take place at any location.
27. If the Council wishes to undertake separate compliance testing of part or of all of the wind farm operation then the Consent holder must share with the Council any confidential and/or commercially sensitive wind data ('wind data') to allow the Council to analyse their noise monitoring in accordance with the requirements of these conditions and the wind data will be treated in confidence and not disclosed to any third party without the Consent holder's prior approval.
28. Nothing in these conditions shall prevent compliance monitoring of wind farm noise from being undertaken at any wind speed and direction or time of day.
29. Thereafter compliance testing must be carried out at locations following any reasonable request by the Council, this may be as a result of what the Council considers to be substantiated complaints regarding increased levels of noise from the wind farm or any change in the character of the noise emanating from the wind turbine generators.

### **Continuous Monitoring**

30. Continuous sound level monitoring must be undertaken at a minimum of 2 and a maximum of 3 measurement locations which are representative of residential buildings. This may be undertaken using a single monitoring device and local meteorological station to be dedicated to monitoring at a number of receiver locations at Mill Creek. These measurement locations are to be agreed with the Compliance Monitoring Officer and the Consent holder. Measurements must be made in accordance with the requirements contained within condition 19 and conditions 21 - 23, (Pre and Post-Installation Testing) for these agreed locations. Measurements shall be undertaken for a minimum period of 2 years and are subject to review in accordance with condition 106 (review condition).

### **All Measurements**

31. Sound monitoring must conform to the following measurement standards:
  - a) The complete measurement and analysis method system shall conform to the requirements of NZS6808:1998 *Acoustics - The Assessment and Measurement of Sound from Wind Turbine Generators* and the Standards referred to by NZS6808; and
  - b) 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.

- c) All sound monitoring shall be carried out by suitably qualified and experienced persons.
  - d) The operator shall provide all necessary data required to carry out the compliance testing, including:
    - wind speed and direction at hub height during periods of compliance testing;
    - the times at which individual wind turbines are operating above the cut-in wind speed.
32. The operator of the wind turbines must pay all costs associated with compliance testing.
33. Only wind turbines that can be de-rated to reduce noise levels must be installed at the wind farm.

Assessment of Special Audible Characteristics

34. When wind farm sound within the notional boundary of a residential building has a special audible characteristic i.e. impulsiveness, tonality and/or an audible modulation, condition 17 shall be so modified that the measured sound level of the source shall have a maximum 5dB penalty applied by adjustment of the measured sound level by the arithmetic addition of the penalty. The penalty for all special audible characteristics shall be no more than 5dB.
35. For the purpose of condition 34, sound with a special audible characteristic includes clearly audible tones. A test for the presence of tonality shall be made by comparing the levels of neighbouring one-third octave bands in the sound spectrum. An adjustment of +5dB for tonality shall be applied if the level ( $L_{eq}$ ) in any one third octave band exceeds the arithmetic mean of the  $L_{eq}$  levels in the two adjacent bands by more than the values given in Table 1.

**Table 1 – One-third Octave Band Level Differences**

One-third Octave Band	Level difference
25-125Hz	12dB
160-400Hz	8dB
500-10,000Hz	5dB

Where this analysis does not result in a tonal component being defined although the sound is in fact tonal, a narrow band analysis shall be undertaken in order to determine if a sound is tonal using Joint Nordic Method Version 2 with the penalties in that document applied.

If the measured peak to trough levels exceed 5dBA on regularly varying basis or if the spectral characteristics, third octave band levels, exhibit a peak to trough that exceeds 6dB on regularly varying basis in respect of the blade pass frequency, then frequency modulation shall be assumed to exist.

Reporting of Analysed Results

36. The Consent holder shall provide all sound level results to the Compliance Monitoring Officer as soon as practical but at least within 21 days of the monitoring being completed.
37. Where compliance is not achieved, the Consent holder must operate the wind turbine generators at reduced noise output until remedies are identified and implemented. If sound emissions cannot be reduced such that they comply, then the Consent holder must cease to operate the non-compliant wind turbine generators during the appropriate operational parameters as set out in condition 19(e) until modifications are made to reduce the noise.

Further operation of the non-compliant wind turbine generators must only be for sound measurement checks as specifically agreed with the Compliance Monitoring Officer to demonstrate compliance.

#### Noise Management Plan

38. Prior to the commissioning of the wind farm the Consent holder must prepare and implement a Noise Management Plan to manage the potential effects of noise. The Noise Management Plan must be prepared by a person suitably qualified and experienced in noise assessment and control, and must address all of the matters set out in preceding conditions as relevant. That person must act in liaison with the Consent holder.
39. The Noise Management Plan must include, but not be limited to, the following:
  - a) Assessment of periods of low background sound conditions with respect to condition 17 to ensure that derived regression curves are appropriate.
  - b) An assessment of the contribution to the overall sound levels from individual wind turbine generators.
  - c) An assessment of how individual wind turbine generators can be de-rated to comply with condition 17.
  - d) The implementation of an automatic control mechanism to de-rate or stop the wind turbine generators to ensure compliance with condition 17,
  - e) Continued assessment of the control measures to judge the success and to update where more information provides for improvements.
40. The information collected as part of the implementation of the Noise Management Plan must be provided to the Compliance and Monitoring Officer.

#### Water Supply

41. If any roof-top water supply is affected by dust caused by any activities undertaken pursuant to this consent during the exercise of this consent, the Consent holder at its cost must ensure that a sufficient supply of water, consistent in quality, is provided to the affected property owner until either the original supply is restored or a suitable replacement is established.

#### Earthworks

42. The relevant Environmental Management Plan relating to visual amenity, dust, stability and the road network must be submitted to and approved by the Compliance Monitoring Officer, and modified as directed by the Compliance Monitoring Officer on site to address any deficiencies in its operation.
43. The location, design, implementation and operation of all earthworks must be undertaken in general accordance with the following documents, unless any modifications are required to comply with any of the conditions of this consent:
  - a) the consent application lodged with the Wellington City Council on 12 March 2008 (including relevant s92 material and evidence presented at the Hearing); and
  - b) any additional plans or information to be prepared and submitted to the Wellington City Council for approval in accordance with various conditions of this consent.
44. Details of the location and design of any fill sites must be submitted to and approved by the Compliance Monitoring Officer prior to the commencement of work.

45. Details of the location and dimension of any borrow sites must be submitted to and approved by the Compliance Monitoring Officer prior to the commencement of work.

Pre-construction administration requirements

46. The Consent holder must provide written notification of the works commencing on each **Environmental Management Plan** (EMP) area to the Compliance Monitoring Officer at least five working days prior to works commencing in each area.
47. The Consent holder must provide a copy of this consent and all documents referred to in this consent to any operator or contractor undertaking works authorised by this consent, prior to the works commencing.
48. The Consent holder must prepare, submit and implement a site-wide EMP for the administration of all construction works authorised by this consent to the Compliance and Monitoring Officer. The EMP must be submitted to the Compliance and Monitoring Officer for approval at least 20 working days prior to works commencing. A suitably qualified ecologist and environmental management specialist shall assist in the preparation of the EMP.
- a) The EMP must include the following administrative elements, but not limited to:
- roles and responsibilities, including appointment of a representative to be the primary contact person in regard to matters relating to this consent;
  - arrangement and conduct of a pre-construction site meeting between all relevant parties, including all contractors and relevant local authorities, prior to any works commencing on the site to discuss implementation of erosion and sediment control measures;
  - sequencing of works over the whole site;
  - monitoring, record-keeping and maintenance requirements.
- b) The EMP must include, but not be limited to:
- a detailed design and construction methodology for all works;
  - notification of any operator or contractor appointed to carry out the works authorised by this consent, including the contractor's company, address, named representative and their contact details;
  - a detailed schedule of construction activities including the expected commencement date and duration of works in each location within the area;
  - a staging of works to demonstrate that the area of disturbance will be kept to a minimum;
  - evidence that a suitably qualified engineer has been appointed to carry out the overall design, supervision and certification of earthworks (including cut/fill batter stability and construction of all erosion and sediment controls); and
  - identification of measures to ensure that there is no tracking of mud or earth onto the surrounding road network.
- c) In respect of **re-vegetation and rehabilitation** activities, the EMP shall include, but not be limited to:

- principles and procedures for rehabilitation of exposed areas, including rehabilitation methods and vegetation mixes;
- identification of soil resource to be used for rehabilitation;
- identification of the vegetation types to be used on a plan or schedule;
- a programme for revegetation and maintenance activities for a period up to the expiry date of this consent (maintenance activities may include the exclusion of pest browsers and stock and the removal of weeds, and additional fencing may be required for the exclusion of stock); and
- identification of treatments of exposed rock cuttings that are to be used.

The following rehabilitation principles should be expressly adopted:

- Minimisation of sidling cuts wherever practicable, and locating road and turbine platforms on or as close to ridgelines as practicable.
- To identify and give particular attention to high cuts that will be visible from residential buildings and public open space including from at sea.
- For the engineer, ecologist and landscape architect to work together to design the final shape of, and re-vegetation proposals for, earthworks and rock cuts as part of the detailed design process.
- To educate each excavator operator, so that s/he understands the rehabilitation objectives and is able to be flexible in response to the rock that is uncovered. *Note: Informing and gaining the active support of the machine operator will often lead to superior results where they take a pride in the finished result.*
- To shape the finished cuts to emulate natural rock features and avoid the creation of uniform linear features. This may include rolling back the top, ripping sections to create shaped corners, creating gully like features and scree-like slopes, benching etc.
- To shape the finished cuts to provide areas of fractured rock that will provide microhabitats for native grasses, ferns and shrubs. *Note: This can be achieved by ripping the face, shaping the face to create hollows and guts and so on.*
- To shape the finished cuts to allow the deposition of soil in key areas so that tall shrubs can rapidly establish helping to break up the face. This can include benching, and bunding the toe of the cut when turbine erection has been completed.
- To vegetate cuts with plants equivalent to the slopes above and below the cut.

d) The EMP must demonstrate that full consideration has been given to:

- minimising the extent and effects of earthworks, including but not limited to, the following techniques;
- minimising the extent and effects of earthworks, including but not limited to, the following techniques;
  - Following ridgelines where practicable;

- Locating cuts so that they are hidden from views from residential and coastal locations outside the site as far as practicable;
  - Battered to represent natural slopes; and
  - Benching, contouring and otherwise softening rock cuts where practicable and appropriate.
- e) The EMP must include contingency measures for the containment of spills. The contingency plan must:
- identify designated bulk fuel storage, contaminant storage facilities and re-fuelling locations;
  - require that these locations are bunded, and that machinery is parked long-term only in these designated areas;
  - require that all mobile fuel tankers carry spill kits and that spill kits are stored at bulk storage tank locations at all times;
  - detail the contents of the spill kits, including absorbent pads, booms, pillow and socks and appropriate pegs/rope to hold the absorbent material in place;
  - record the names of operators trained in spill response and remediation;
  - detail an internal and external notification procedure in the event of a spill; and
  - identify measures to be undertaken to remediate a contaminant spill.
49. Works must not commence on site until the following documents have been approved by the Compliance Monitoring Officer:
- a) a site-wide Environmental Management Plan (in accordance with condition 48 of this consent); and
  - b) a Site-Wide Accidental Discovery Protocol (in accordance with condition 84 of this consent).

#### General Construction Conditions

50. The Consent holder may request amendments to the EMP by submitting the amendments in writing to the Compliance Monitoring Officer for approval, prior to any changes taking effect.
51. The Consent holder must ensure that the discharge of dust created by earthworks, transportation and construction activities is suitably controlled to minimise dust hazard or nuisance. This shall be managed through:
- a) The preparation of a Dust Management Plan which describes how the discharge of dust created by earthworks, transportation and construction activities will be controlled to avoid contamination of domestic water supplies and generally to minimise dust hazard or nuisance. The Dust Management Plan must be submitted to the Compliance Monitoring Officer for approval at least 20 working days prior to works commencing on the Spicer Forest access track.
  - b) Sealing of site to public road network transition zones to control any potential material tracked from site to the public road network. That is the initial section of the site access road from Boom Rock Road and the southern end of Spicer Forest

access track (from the intersection of Ohariu Valley Road North) is to be sealed for a minimum length of 100m.

52. The Consent holder must ensure that:
- a) all fill slopes are keyed into the surrounding land, as far as practicable;
  - b) all fill material is placed and compacted so as to minimise instability of the fill material;
  - c) fill material is restricted to natural rock and soil; and
  - d) final disposal site slope profiles are contoured to merge in with the existing slope, as far as practicable.
53. The Consent holder must provide the Compliance Monitoring Officer with an updated schedule of construction activities at monthly intervals during the works.
54. The works authorised by this consent remain the responsibility of the Consent holder and must be maintained to the satisfaction of the Compliance Monitoring Officer.
55. The Consent holder must ensure that:
- a) all contaminant storage or re-fuelling areas are bunded or contained in such a manner so as to prevent the discharge of contaminants;
  - b) all machinery is regularly maintained in such a manner so as to minimise the potential for leakage of contaminants;
  - c) no machinery is cleaned, stored or refuelled within 50 metres of any ephemeral or permanent watercourse; and
  - d) all contaminants (e.g. fuel, hydraulic oils, lubricants etc) are removed at the end of the construction period except for those required for ongoing maintenance of the wind farm and operational activities.
56. The plant species used shall be consistent with the species in the immediate vicinity of the exposed area, replacing "like with like". The re-vegetation and rehabilitation of exposed areas shall be in accordance with the requirements of the relevant EMP developed in accordance with condition 48(c) of this consent. The Consent holder shall ensure that the plants and seeds for any indigenous revegetation work carried out in regard to the proposed development shall be eco-sourced, and where practicable, this shall be from within the wind farm site.

#### Avifauna Monitoring

57. The Consent holder must record and report any evidence of bird strikes to the Compliance Monitoring Officer. Should a bird species that is nationally critical, nationally endangered, nationally vulnerable or in serious decline as listed in *New Zealand Threat Classification System 2007, Threatened Species Occasional Publication No: 23, Biodiversity Recovery Unit, Department of Conservation compiled by R. Hitchmough* be found injured or dead at the site, the Department of Conservation is to be notified immediately and the bird provided to the Department of Conservation or its nominated agent for autopsy or rehabilitation.

#### Traffic Management

58. The Consent holder must submit detailed plans and information showing the final route from the port to Porirua City to be approved by the Compliance Monitoring Officer prior to the commencement of the turbine component transportation. This must include:



- a) Tracking/swept paths for the types of construction vehicles to be used along the selected route and intersections; and
  - b) Details of any road widening, signage, visibility etc required to ensure minimal impact on other traffic, public safety and private access.
59. The Consent holder must not relocate and/or modify any traffic control devices such as traffic signal assets, signs, traffic islands, road markings, streetlight poles and trolley poles without prior approval from the Compliance Monitoring Officer for these changes.
60. The Consent holder must engage an independent consultant approved by the Compliance Monitoring Officer to carry, out at their own cost, a survey of the condition of Ohariu Valley Road and Boom Rock Road, and recommend an appropriate standard of road maintenance to be achieved throughout the construction period. This must be approved by the Compliance Monitoring Officer prior to the commencement of any works.
61. The Consent holder must maintain Ohariu Valley Road and Boom Rock Road to the standards agreed under condition 60 during the construction period of the wind farm project.
62. The proposed upgrade of Ohariu Valley Road and Boom Rock Road and additional construction details are to be further developed by the Consent holder. The Consent holder must provide detailed construction plans at a scale of 1:250 with additional 1:50 cross sections for all sections of the new and upgraded road. These plans must be submitted to and approved by the Compliance Monitoring Officer prior to the commencement of any works to the roads.
63. Prior to commencement of any site preparation (including any earthworks) or construction works on-site, the Consent holder must at its own cost undertake the roading improvement works proposed for Ohariu Valley Road, Boom Rock Road and Spicer Forest.
64. The use of the upgraded/refurbished roads by heavy construction vehicles for wind farm construction/site preparation traffic must not commence until the Compliance Monitoring Officer has approved in writing that the road meets the Council requirements.
65. All trucks using the route through Spicer Forest, Ohariu Valley Road and Boom Rock Road must be required to give way to other vehicles and pass at designated locations. A plan showing these locations and their forward sightlines must be submitted to and approved by the Compliance Monitoring Officer prior to construction works commencing. If satisfactory forward sightlines can not be provided additional signage and road marking must be installed to ensure safe usage.
66. The Consent holder must show the forward visibility at all bends along the route and provide adequate forward sight distances to ensure that opposing vehicles (excluding over weight and over dimension vehicles) will be able to pass safely and not in conflict. Where forward visibility distances can not be meet additional traffic safety signs must be installed.
67. Where the Ohariu Valley Road and Boom Rock Road cross section of 6.5m sealed width is not able to be achieved, details of the narrower cross section must be submitted to and approved by the Compliance and Monitoring Officer.
68. The tracking/swept paths for the types of construction vehicles to be used along the selected route must be submitted and approved by the Compliance and Monitoring Officer. These should show any changes (road widening, signage, visibility etc) necessary to ensure minimal impact on other traffic, public safety and private access.

69. All traffic associated with the construction of the wind farm must use the Spicer Forest access track. This includes workers travelling to and from the site.
70. All construction vehicles must only use Ohariu Valley Road (via Spicer Forest), and Boom Rock Road between the following hours:  
Monday to Friday: 7am to 7pm  
Saturdays, Sundays and Public Holidays: No construction vehicles
71. The Consent holder must take all reasonable steps to reduce the number of trips required.  
(Note this may include:  
➤ Sourcing aggregate from on-site sources.  
➤ Using truck and trailer units as opposed to truck only units.  
➤ Encouraging car-pooling facilities for workers.)
72. The Consent holder shall manage construction traffic so that no delays are caused to non-construction traffic of more than 2 minutes duration.  
*Note: Delay is defined as the duration a vehicle is stationary.*
73. Trucks accessing or departing the site must not use engine braking along the length of Spicer Forest, Ohariu Valley Road and Boom Rock Road.
74. The Consent holder must install barricades to the satisfaction of the Compliance Monitoring Officer at each end of the Spicer Forest access track to ensure that there is no direct public vehicle access between Broken Hill Road and Ohariu Valley Road over the access track during and after its construction.
75. The Consent holder must reinstate affected fencelines and driveways and leave property frontages within Ohariu Valley Road and Boom Rock Road in a tidy condition to the satisfaction of the Compliance Monitoring Officer upon completion of the works. This condition does not oblige the Consent holder to undertake any works on private property where landowner consent has not been provided.
76. Traffic management techniques must be used to ensure safe movement of heavy construction vehicles at all passing areas and widening areas shown in locations where the 6.5 metre sealed road width cannot be achieved for the duration of construction.
77. The Consent holder must clean up promptly any construction materials or components deposited on these roads. The haul route must be swept as required in accordance with the Construction Traffic Management Plan.
78. The Consent holder must maintain a log of all vehicles travelling through each site security office on a daily basis, and make this available to the Compliance Monitoring Officer on request.
79. A **Construction Traffic Management Plan** must be prepared by the Consent holder and approved by the Compliance Monitoring Officer before works relating to the transportation of construction equipment and material to the site begins, this will include plans for any pre-upgrading survey and design works affecting the road, any road works required to upgrade or modify the road in any way including changes to, or provision of, signage and or road markings, maintenance of the road during the life of the project. The purpose of the plan will be to set out in detail matters relating to the extent and timing of construction traffic activity to achieve the safe and efficient operation of the roading network, and traffic management

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provisions to be put in place during this time to achieve a safe and efficient road network. The plan shall be updated as required by the Compliance Monitoring Officer to maintain safety and efficiency of the roading network, and such amendments may take into account matters raised by the public, the community liaison group and other stakeholders during the construction process. The plan shall specifically include but not be limited to the following:

- a) An assurance that all contractors and sub-contractors comply with the Construction Traffic Management Plan including methods of monitoring and ensuring compliance.
- b) Methods of how the Consent holder will ensure that all contractors and sub-contractors access the site from the north using the route along Spicer Forest and Ohariu Valley Road. This should include ways of dealing with contractors and sub-contractors who do not comply with this requirement.
- c) Specify locations where all trucks using the Ohariu Valley Road and Boom Rock Road will be required to pull over to allow other vehicles to pass.
- d) Details of how the route through the city would be managed. This should include consideration of the following:
  - Methodologies for removing street furniture and signage along the proposed route;
  - The proposed lane occupancy of the transporters and pilot vehicles;
  - Hours of operation;
  - Consultation process relating to specific affected stakeholders;
  - Contractor methodology for monitoring of transportation, impact on overtaking and impacts on the pavement surfaces.
- e) Details of the content and location of any additional safety warning signage required by condition (forward sightline distances).
- f) Details of security measures (e.g. signage, fencing) that will be put in place to ensure the safety of recreation users of Spicer Forest, Te Ara Roa and Colonial Knob and how the separation of the construction access road from recreational users will occur.
- g) Methodology of monitoring delay times at the critical points. This could be achieved through placement of cameras, tube counts etc.
- h) Details of the traffic management measures (signs, road markings and safety measures) that are required to ensure the safety of road users.
- i) Details of how the Consent holder will minimise delays to meet condition [72](#); this could include additional passing bays, allotted travel times, consideration of peak travel times, limitations on the number of trucks on the road at any one time etc.
- j) Identify and address any potential conflicts between construction traffic and existing local users which include vehicles, horses, cyclists and pedestrian. The identification of conflicts should be done in consultation with the Community Liaison Group. The methods of addressing the potential conflicts could include speed limit restriction, limitations on number of trucks on the road at any one time, allotted travel times etc.

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- k) Details of measures for protecting the health and safety of construction workers using the Spicer Forest access route (including passing areas for vehicles using this route, signage, road marking and guard rails where required).
- l) Details of the traffic management techniques required by condition 76 such as traffic signals, manual control or benching corners.
- m) Methods of keeping the road clean including how and when this will occur.
- n) A communication system must be used to ensure trucks do not meet each other on Ohariu Valley Road and Boom Rock Road, or within Spicer Forest.
- o) A schedule detailing the movements of over-weight / over-dimension truck movements which also records that the relevant approvals have been obtained where applicable for the specific or multiple loads.
- p) A protocol for truck drivers travelling to and from the wind farm site, so as to ensure optimum safety and convenience for other road users. This should include procedures to ensure priority of travel is given to traffic not associated with the wind farm, where practicable.
- q) Procedures to ensure vehicles travelling to and from the site do not disrupt the Ohariu Valley residents (for example, stopping outside residential buildings is not permitted).
- r) The Consent holder is to cover the full cost of all road and traffic related mitigation measures.
- s) Details of how the Consent holder will provide traffic related information to the community. This should cover the following issues:
  - Provide the Community Liaison Group (refer to condition 94 for the roles and functions of the Community Liaison Group) with the proposed hours for moving overweight/over dimension loads between Spicer Forest and the Mill Creek site;
  - Proposed programme for road widening and expected delays;
  - Consideration of times for farm operations to take place (e.g. stock movement);
  - Regularly provide up to date information on proposed restrictions to the Community Liaison Group;
  - A system to collect and deal with residents concerns and issues (including an 0800 number).

#### Hazardous Substances

- 80. The secondary containment must be adequate to contain at least 110% of the tank's capacity.
- 81. Prior to filling the tank with diesel, it must be inspected by an ERMA approved test certifier and a Stationary Container Test Certificate must be issued. A copy of the certificate must be provided to the Compliance Monitoring Officer.
- 82. Signage to indicate the presence of hazardous substances, and appropriate emergency signage must be installed.

83. The ground beneath the fuel tank and refuelling area must be covered with an impervious material.

#### Cultural Heritage and Archaeology

84. The Consent holder must comply with the **Accidental Discovery Protocol** included in Appendix J of the resource consent application. This must be in place for any earthmoving or ground modification that occurs during the construction and operation of the wind farm.
85. The Consent holder must have an archaeologist on site during surface clearing work along the F and G ridges in the vicinity of the recorded cultivations. The archaeologist must be given the opportunity to examine any archaeological deposits disturbed by the development work, and to make recommendations for further detailed examination of these deposits, if located, and where appropriate.
86. The Consent holder must have an archaeologist on call during construction work on all other parts of the project area, in the lesser likelihood of intact archaeological material being uncovered in these areas.
87. Any artefacts and material uncovered and recorded during site clearing work must be lodged with an appropriate repository. The Consent holder must pay for the cost of any conservation required for artefacts or material.
88. The Consent holder will need apply to the Historic Places Trust for an authority under Section 12 of the Historic Places Act 1993 to modify, damage or destroy archaeological sites at the Mill Creek site, Wellington, being possible gardening sites along the F and G ridges.
89. Any public interpretive displays prepared in relation to the Project Mill Creek site must note the existence of the Māori cultivation sites within the area, such as Kumuhore. The content of any interpretive material on Māori cultivation sites must be prepared in consultation with mana whenua associations, in particular the Wellington Tenth Trust, Te Runanga o Toa Rangatira Incorporated and agreed representatives of Ngati Tama.
90. A Memorandum of Understanding must be developed between the Consent holder, the land owners, the mana whenua associations, in particular the Wellington Tenth Trust, Te Runanga o Toa Rangatira Incorporated and agreed representatives of Ngati Tama as an effective means of addressing issues as the development progresses.

#### De-commissioning

91. At the end of the operational life of the wind farm, or of any individual turbine or turbines which are not renewed, replaced, or used for generation purposes for a continuous period of 2 years, every inoperative turbine and all other inoperative above ground structures must be removed, and turbine footings covered in topsoil and re-vegetated.

#### Lighting

92. Lights shall only be installed on the turbines when required to meet Civil Aviation Authority requirements. The light intensity and flash requirements will be determined by the CAA. The lights will be directed upwards, shielded downwards, and installed on top of the nacelles.

93. The Consent holder must limit lighting as far as reasonably practicable to protect the night sky from unnecessary light pollution.

#### Community Liaison Group

94. The Consent holder must facilitate the creation of a Community Liaison Group, at its own cost and to the satisfaction of the Compliance and Monitoring Officer, with the following organisations or interested parties being invited to nominate a representative or representatives from:
- a) Independent Chair (convenor)
  - b) Makara/Ohariu Community Board (1 representative)
  - c) Ohariu Valley Residents (2 representatives)
  - d) Wellington City Council (1 representative)
  - e) Wellington Regional Council (1 representative)

One representative nominated by the Consent holder will also be a member of this group.

95. The function of the Community Liaison Group shall be to provide communication between the community, the Consent holder, Wellington City Council and Wellington Regional Council on issues arising from the construction of Project Mill Creek (including the construction of the Spicer Forest access track and the widening of Ohariu Valley Road).
96. The first meeting of the Community Liaison Group must occur within three months of the date of commencement of this consent.
97. The specific roles of the Community Liaison Group must be determined by the group and must be to the satisfaction of the Compliance Monitoring Officer. A document stating its terms of reference must be produced within three months of the first meeting.

*Note: The role of the Community Liaison Group is to facilitate communication between various parties and it does not have a regulatory function.*

98. The Community Liaison Group must provide a monthly newsletter, at the cost of the Consent holder, to the community highlighting issues relating to Project Mill Creek.

#### Communications Interference

99. The Consent holder must remedy any television interference that is a direct result of the installation and operation of the wind turbines as soon as practicable after interference occurs. The remedy will be restoration of reception for free to air channels at the Consent holder's cost to the level of reception quality in existence at each point of interference prior to wind farm construction.

#### Air Traffic Control

100. The Consent holder must provide confirmation that the location of each turbine has been approved by Airways Corporation of New Zealand Limited prior to the installation of the turbine.

#### Radio Links

101. The Consent holder must remedy any interference in relation to the Marlborough Marine Radio Association and the Royal New Zealand Coastguard Federation fixed radio links that is a direct result of the installation and operation of the wind turbines as soon as practicable after interference occurs.

### Complaints Procedure

102. The Consent holder must establish and publicise an 0800 number so that members of the Makara and Ohariu Valley communities have a specified and known point of contact to raise related issues that may arise during construction and operation of the wind farm including, but not limited to, noise and traffic related issues. A permanent record of all calls received alleging adverse effects from, or related to, the exercise of this consent made must be kept.

The record must include:

- a) the name and address (as far as practicable) of the complainant;
- b) identification of the nature of the matter complained about;
- c) date and time of the complaint and of the alleged event;
- d) weather conditions at the time of the complaint (as far as practicable);
- e) the outcome of the Consent holders investigation into the complaint; and
- f) measures taken to ensure that such a complaint does not occur again.

This record must be maintained at the work site and must be made available to the Compliance Monitoring Officer upon request. The Consent holder must notify the Compliance Monitoring Officer in writing of any such complaint within a 5 working days of the complaint being brought to the attention of the Consent holder.

103. The Consent holder must nominate an appropriately experienced staff member to be responsible for:
- a) Liaison with residents;
  - b) Overseeing the assessment procedure;
  - c) Receiving and dealing with complaints;
  - d) Ensuring the implementation and updating of the above automatic control measuring system on an ongoing basis.

### Monitoring

104. Prior to construction of the wind farm commencing and subsequently prior to any part of the work as determined by the Compliance Monitoring Officer, the Consent holder must give at least three months notice before work starts. This advice shall be given to the Wellington City Council's Specialist Advice and Compliance Unit by either telephone (801 4017) or facsimile (801 3165), and must include the address of the property and the service request number.
105. The Consent holder must pay to the Wellington City Council the actual and reasonable costs associated with the monitoring of conditions, or review of consent conditions, or supervision of the resource consent as set in accordance with section 36 of the Resource Management Act 1991. These costs\* may include site visits, correspondence and other activities, the actual costs of materials or services, including the costs of consultants or other reports or investigations which may have to be obtained.

*Note: Refer to the current schedule of Resource Management Fees for guidance on the current administration charge and hourly rate chargeable for Council officers.*

### Review Condition

106. The Compliance Monitoring Officer may review any or all conditions of this consent by giving notice of its intention to do so pursuant to section 128 of the Resource Management Act 1991, for the purposes specified below, annually from the date of commencement of this consent until five years after the completion:
- a) To review the landscape and visual conditions at anytime.
  - b) To review the adequacy and implementation of any recommendations of the Construction Traffic Management Plan and Environmental Management Plan, at any time.
  - c) To review the noise requirements for the following reasons: -
    - At any time subsequent to the commencement of Project West Wind should the noise emissions differ significantly from those predicted by Hayes Mackenzie Partnership for that project;
    - To deal with any adverse effects on the environment resulting from wind farm sound, including sound with any special audible characteristics, which may arise from the operation of the wind turbines;
    - Review the low background sound criteria in Condition 17;
    - To review the adequacy of any recommendations of the Noise Management Plan;
    - Continuous monitoring requirements; or
    - To address any issues arising out of complaints.
  - d) To deal with any issues arising from complaints, anytime.
  - e) To deal with any adverse effects on the environment, which may arise from the exercise of this consent, and which it is appropriate to deal with at a later stage.

*Note: Following review more appropriate conditions may be set if deemed necessary.*

**Advice Notes:**

1. Where appropriate, the Council may agree to reduce the required monitoring charges where the Consent holder will carry out appropriate monitoring and reporting back to the Council.
2. This resource consent is not a consent to build. Such a consent must be obtained under the Building Act 2004 prior to commencement of construction.
3. It is the responsibility of the Consent holder to identify and at all times operate within site boundaries.
4. For the purposes of conditions imposed under this consent, the ACOUSTIC DEFINITIONS AND TERMINOLOGY are to be applied, as shown in the table overleaf.

Background Sound Level	L <sub>95</sub> , in decibels, is the level equalled or exceeded for 95% of the time and is the component of sound that subjectively is perceived as continuously present. N.B. L <sub>95</sub> is used in the 1991 versions of NZS6801 and NZS6802 to describe background sound level whereas L <sub>90</sub> is used in the 1999 versions of these Standards. There is normally an
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	insignificant difference between the two measured values.
dBA	The term used to describe the A-weighted sound level in decibels. By A-weighting the measured sound level a representative reading is provided that correlates to human hearing.
Impulsive Sound	Is transient sound having a high peak level of very short duration, typically less than 50 milliseconds.
Intrusive Sound	As a guide to establishing limits of acceptability, and within limitations (described in NZS6802:1991) $L_{10}$ should not exceed the background sound level by 10dB or more.
$L_{10}$	Is that sound level which is equalled or exceeded for 10% of the time, in decibels.
$L_{eq}$	Time average level which is the continuous steady level that is equivalent to the time varying level, in decibels.
$L_{max}$	The maximum sound level in the period of interest, in decibels.
Notional Boundary	The notional boundary is defined as a line 20 metres from any side of a residential building, or the legal boundary where this is closer to the residential building.
Special Audible Characteristics	Noise that has tonality or impulsiveness such that it is likely to arouse adverse community response at lower levels than noise without such characteristics. When a noise has special audible characteristics the relevant performance standard $L_{10}$ descriptor may be reduced arithmetically by 5dB for comparison with the measured $L_{10}$ descriptor of the noise. N.B. Tonality is already accounted for in the tables in the NZS6803:1999 <i>Acoustics - Construction Noise</i> and no further penalty made for construction noise that has special audible characteristics when assessed using that Standard.

## SCHEDULE 2

## RESOURCE CONSENT CONDITIONS

### PORIRUA CITY COUNCIL

#### General

1. With the exception of amendments required to comply with other conditions of this consent and any conditions of related resource consents granted by the Wellington City Council and Wellington Regional Council, the proposed development shall proceed in general accordance with the information and plans provided with Application and held on Council File RC 5202.

#### Lapse Date

2. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

#### Traffic Management

3. The Consent holder must take all reasonable steps to reduce the number of trips required  
(*Note this may include:*
  - *Sourcing aggregate from on-site sources.*
  - *Using truck and trailer units as opposed to truck only units.*
  - *Encouraging car-pooling facilities for workers.*)
4. Prior to commencement of any construction works on-site, the Consent holder must at its own cost undertake the roading improvement works for Spicer Landfill. The proposed road upgrade and additional construction details are to be further developed by the Consent holder and supplied to the Porirua City Council ("the Council") for approval. The Consent holder must provide detailed construction plans for all sections of the new and upgraded road. The detailed construction plans should be to a scale of 1:250 with additional 1:50 cross sections. The Consent holder must also show the forward visibility at all bends along the route and provide the adequate forward sight distances to ensure that opposing vehicles (excluding over weight and over dimension vehicles) will be able to pass safely and not in conflict.
5. Prior to the construction of the wind farm, the Consent holder shall obtain an overweight permit from the Council for any overweight loads travelling through Porirua City. The Consent holder must abide by the requirements of any such permit issued.
6. Prior to the construction of the wind farm, the Consent holder shall obtain an Over-Dimension Load Permit from Land Transport New Zealand, for any Over-Dimension loads travelling through Porirua City. The Consent holder shall provide the Council with a copy of this Permit.
7. A **Construction Traffic Management Plan** shall be prepared by the Consent holder and approved by the General Manager Environment and Regulatory Services before any transportation of construction equipment and material to the Spicer Landfill and before any construction works commence at Spicer Landfill or within Spicer Forest. The purpose of the plan will be to set out in detail matters relating to the extent and timing of construction traffic activity to achieve the safe and efficient operation of the roading network, and traffic

management provisions to be put in place during this time to achieve a safe and efficient road network. The plan shall be updated as required by the General Manager Environment and Regulatory Services to maintain safety and efficiency of the roading network, and such amendments may take into account matters raised by the public, and other stakeholders during the construction process. The plan shall specifically include but not be limited to the following:

- a) Trucks accessing or departing the site shall not use engine braking along the length of Broken Hill Road, Raiha Street and Kenepuru Drive.
- b) Further details of the route of the over-dimension and / or overweight loads through Porirua City. This information must include the following: -
  - Details of the agreed route and any other requirements of the overweight permit which must have first been obtained from Porirua City Council pursuant to Condition 6 above.
  - Swept paths for the over-dimension vehicles;
  - Each over-dimension load must have a pilot vehicle and trailing vehicle travelling in convoy. The pilot vehicle will have a flashing beacon but no siren;
  - Details of the movement and replacement of street furniture;
  - Details of any signs that need to be displaced and provision for their replacement at the end of every night;
  - Arrangements for other traffic while the over-dimension movements are being undertaken;
  - The hours during which such movements to and from the access track will occur.
- c) Details of security measures (e.g. signage, fencing) that will be put in place to ensure the safety of recreation users of Spicer Forest, Te Ara Roa and Colonial Knob and maintain separation of the construction access road from recreational users.
- d) Details of measures for protecting the health and safety of construction workers using the Spicer Forest and Spicer Landfill access route, and landfill staff and customers, including details of passing areas for vehicles using this route; and details of signage, road marking and guard rails where required, and security arrangements.
- e) A schedule detailing the movements of over-weight / over-dimension truck movements must be provided to the Resource Consent Monitoring and Enforcement Team one month before these movements are due to occur.
- f) An agreed protocol for truck drivers travelling to and from the wind farm site, so as to ensure optimum safety and convenience for other road users. Procedures must be used to ensure priority of travel is given to traffic not associated with the wind farm, where practicable.
- g) Procedures must be used to ensure vehicles travelling to and from the site at night time do not disrupt any residents along the Porirua route (for example, stopping outside dwellings is not to be permitted).

- h) The Traffic Management Plan shall also cover any wind farm- related traffic movements which might occur during the Further Access Period as defined in and provided for in the Access Agreement with Porirua City Council dated 22 June 2007, or any signed variations thereto.
8. The Consent holder shall abide by the requirements of the approved Traffic Management plan.
  9. The Consent holder must ensure all of its contractors and subcontractors comply with the Traffic Management Plan.
  10. The Consent holder shall maintain a log of all vehicles travelling through each site security office on a daily basis, and make this available to the Resource Consent Monitoring and Enforcement Team on request.
  11. The Consent holder shall implement a consultation plan in consultation with the community liaison group to cover the following issues:
    - a) Provide the community liaison group with the proposed hours for moving overweight/over dimension loads through Porirua City Council;
    - b) Proposed programme for expected delays;
    - c) Regularly provide up to date information on proposed restrictions to the community liaison group;
    - d) A system to collect and deal with residents concerns and issues (including an 0800 number).
  12. The Consent holder shall establish and publicise an 0800 number so that road users and the public have a specified and known point of contact to raise any traffic related issues that may arise during construction. A log book of all calls received shall be kept, and in each month in which calls are received details of those calls shall be forwarded to Resource Consent Monitoring and Enforcement Team at the end of that month.
  13. Prior to commencement of construction the Consent holder shall provide detailed construction plans for all sections of the new and upgraded access track, and any traffic management measures (signs, road markings, security and safety measures) required to ensure the safety of track users, landfill employees and customers, and road users.
  14. Prior to construction commencing the Consent holder shall engage an independent consultant approved by the General Manager Environment and Regulatory Services to carry out at the Consent holder's cost and to the satisfaction of the General Manager Environment and Regulatory Services a survey of the condition of the existing internal landfill access road between Broken Hill Road and the start of the proposed new access track, Broken Hill Road, Raiha Street, Kenepuru Drive and Mungavin Bridge.
  15. The Consent holder shall maintain the following roads during the construction period to the standards approved by the General Manager Environment and Regulatory Services and restore them to a condition not less than they had at the commencement of construction works upon completion of construction:
    - The existing internal landfill access road between Broken Hill Road and the start of the proposed new access track;
    - Broken Hill Road;
    - Raiha Street;

- Kenepuru Drive and
  - Mungavin Bridge.
16. Upon completion of each overweight or over-dimensioned transportation, (or upon completion of all transportations, as the case may be), the Consent holder shall reinstate any street furniture to the location that it was in prior to the transportation, in accordance with the requirements of the Traffic Management Plan.
  17. The Consent holder shall clean up promptly any construction materials or components deposited on these roads. The haul route must be swept as required in accordance with the Construction Traffic Management Plan.
  18. The Consent holder shall establish and/or arrange for the use of suitable facilities at the end of Broken Hill Road where transports will be required to wait until dawn or until they receive clearance to continue over to Ohariu Valley. Such facilities shall include ablution facilities and comply with the Council's requirements including obtaining any necessary building consents and resource consents if required.
  19. The Council may review the traffic related conditions set out above, by giving notice of its intention to do so under Section 128 of the Resource Management Act 1991, at any time during construction of the wind farm, for the following purposes:
    - a) To deal with any adverse effects on the environment resulting from traffic related to the Wind Farm, either directly or indirectly.
    - b) To review the adequacy and implementation of any recommendations of the Construction Traffic Management Plan.

Following review more appropriate conditions may be set if deemed necessary.

#### **Earthworks and Sediment Control**

20. Prior to the commencement of any works on the site the Consent holder shall provide evidence to the Resource Consent Monitoring and Enforcement Team that a suitably qualified chartered engineer has been appointed to carry out the design, supervision and certification of earthworks.
21. For earth fills, specific design and construction requirements will be required to suit the proposed development. All fills are to be designed by, and constructed under the supervision of, a suitably qualified chartered engineer. Plans are to be supplied to the satisfaction of the General Manager, Environment and Regulatory Services, showing the location of all compaction tests, together with a certificate prepared by an inspecting suitably qualified Chartered Professional Engineer stating the suitability of the earthworks for the proposed development.
22. Upon completion of the earthworks (or, if deemed necessary by PCC, during the earthworks period) the Consent holder shall provide to the satisfaction of the General Manager, Environment and Regulatory Services, a report from a chartered engineer with geotechnical experience addressing the stability of the constructed cut batters. This report shall give specific reference to sections 205.3 and 205.3.4 of the Porirua City Council's Code of Urban Subdivision, 1983.
23. The Consent holder shall ensure that land disturbed by earthworks, trenching or building activities is regularly wetted so that dust nuisance is maintained within the site at all times.

24. The Consent holder shall ensure that all areas exposed by earthworks, trenching or building activities are re-grassed/hydro-seeded at the earliest possible opportunity following excavation or at the latest within 1 month after completion of the earthworks.
25. The Consent holder shall ensure that, where earth worked materials are carried onto the surrounding road network, the road(s) is cleaned and / or repaired back to its original condition each evening during the earthworks period. In doing this, the Consent holder shall ensure that no materials are washed or swept into any storm water drains or natural drainage systems.

#### **Access Track**

26. Prior to commencement of works, the Consent holder shall submit for engineering approval, plans and design calculations for the proposed development. The design shall be to the satisfaction of the General Manager, Environment & Regulatory Services. These plans shall show full engineering details, including technical details, of the proposed:
  - a) Earthworks, showing areas of fill and cut, depths of fill and cut and cut batters;
  - b) Any subsoil drainage system;
  - c) For stormwater disposal other than to a public main; (Long-term):
    - Any design submitted shall demonstrate that storm-water runoff is disposed in an effective and responsible way, and avoids creating any adverse effects to the environment such as erosion or scouring or a nuisance to surrounding properties or areas.
    - Where it is proposed to discharge stormwater to the surrounding countryside, stormwater pipes shall be extended down to the bottom of gullies. These stormwater pipes shall end in flow dissipation/our prevention measures, such as using a suitably designed stilling basin with downstream lip and rip-rap embedded in concrete immediately downstream.
    - The Consent holder shall submit to Council a design including construction drawings and detailing the proposed storm-water services (including calculations and allowances for storm-water runoff and over land flow paths) within or servicing the proposed development.
27. The Consent holder shall ensure that there is no direct public vehicle access between Broken Hill Road and Ohariu Valley Road over the proposed access track during and after its construction.
28. The plans required by condition 26 above shall be accompanied by a copy of Schedule 1A NZS 4404:2004, Design Certificate - Land Development/ Subdivision Work, signed by a suitably qualified design professional carrying professional indemnity insurance - the minimum of which shall be commensurate with the current amounts recommended by IPENZ, ACENZ, TNZ, INGENIUM for design professionals involved in land development/ subdivision work.

Upon completion of earthworks, the Consent holder shall submit a copy of Schedule 1C NZS 4404:2004, Certificate of Person Responsible for Inspection and Review of Construction, Upon Completion of Land Development/ Subdivision Work, signed by a suitably qualified professional carrying professional indemnity insurance - the minimum of which shall be commensurate with the current amounts recommended by IPENZ, ACENZ, TNZ, INGENIUM for As Built drawings (see below).

**As Built Drawings:**

29. As Built drawings shall be submitted for approval to the satisfaction of the General Manager Environment and Regulatory Services in accordance with Schedule 1D NZS 4404:2004 Criteria for As Built Drawings.

**SCHEDULE 3 RESOURCE CONSENT CONDITIONS**

**WELLINGTON REGIONAL COUNCIL**

**Schedule 1**

Land use consent [26777] to undertake the following works within the stream beds of unnamed tributaries of the Ohariu Stream in association with Ohariu Valley Road upgrades:

- Replace, extend and upsize existing culvert structures;
- Extend existing culvert structures;
- Place inlet/outlet works;
- Place rock ramps for fish passage; and
- Place an edge protection structure.

Including any associated temporary diversion of flow and disturbance of the beds of those streams.

**General conditions**

1. The location, design, implementation and operation of the works shall be in general accordance with the:
  - a) consent application and its associated plans and documents, lodged with the Wellington Regional Council on 12 March 2008; and
  - b) further information and amendments received by the Wellington Regional Council on 17 April 2008, 15 July 2008, 16 July 2008 and 18 July 2008; and
  - c) information that is approved by the Wellington Regional Council in accordance with the conditions of this consent.

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

2. The consent holder shall advise the Manager, Environmental Regulation, Wellington Regional Council, in writing at least 48 hours prior to the works commencing in each location.

3. The consent holder shall provide a copy of this consent, including any relevant site plans and attachments, to the contractor undertaking the works authorised by this consent, prior to the works commencing.
4. If kōiwi (skeletal remains), wahi tapu, taonga (treasures), or other artefact material is discovered in any area, all works in the vicinity are to cease immediately. The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council; the Wellington Tenth Trust; Te Runanga o Toa Rangatira Inc.; an approved representative of Ngati Tama; the Historic Places Trust; and if necessary, the New Zealand Police. Works in the vicinity shall not re-commence until a site inspection has been undertaken by the representatives of these parties, appropriate tikanga (protocols) have occurred, and the artefacts have either been recovered or the appropriate approval to continue is given.
5. If any fish are stranded due to the works, the consent holder shall ensure that these are placed back in the active flowing part of the channel as soon as practicable.
6. All works affecting the streams, including tidy up on completion of the works, shall be completed to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

#### **Pre-work conditions**

7. Prior to undertaking any works authorised by this consent, the consent holder shall engage an appropriately qualified ecologist to determine which tributaries of the Ohariu Stream, where works authorised under this consent are to be carried out, would benefit from fish passage being provided.
8. Prior to undertaking works, the applicant shall submit a report from an appropriately qualified ecologist to the Manager, Environmental Regulation, Wellington Regional Council, detailing the results of the inspection required under Condition 7 of this consent. The report shall detail the following:
  - identification of which culverts require fish passage works (using existing OHVRD culvert road pegs); and
  - for each tributary, identify whether fish passage will be provided through a replacement culvert or via a rock ramp.

#### **Design conditions**

9. All works authorised under this consent must provide fish passage, for the tributaries identified under Condition 7 of this consent, on completion and in accordance with Condition 8 of this consent.
10. Inlet and/or outlet erosion protection works must be provided for all existing perched culvert inlets and/or outlets that require extension.
11. All replaced culverts must be able to accommodate a 1 in 10 year flood event.
12. All replaced culverts must be placed at the same gradient as the existing stream bed and be sufficiently embedded to avoid erosion and scour of the stream bed and banks.

If it is determined or found that erosion and scour of the stream bed and/or banks either has or will occur, even with sufficient embedment, appropriate inlet and/or outlet protection works must be added.



13. All other structures authorised under this consent (i.e. fish passes, edge protection structures, inlet/outlet protection structures) must be sufficiently embedded so as to avoid erosion and scour of the stream bed and/or banks.
14. Within one month of constructing each structure authorised under this consent, the consent holder shall provide to the Manager, Environmental Regulation, Wellington Regional Council, a certificate signed by an appropriately qualified and experienced engineer to certify that the structure has been constructed in accordance with the conditions of this consent.
15. The consent holder shall provide design details of any of the structures authorised under this consent to the Manager, Environmental Regulation, Wellington Regional Council, on request.

#### **Contamination prevention conditions**

16. The consent holder shall ensure that:
  - all contaminant storage or re-fuelling areas are bunded or contained in such a manner as to prevent the discharge of contaminants;
  - all machinery is thoroughly cleaned of vegetation and contaminants prior to entering the site;
  - all machinery is regularly maintained in such a manner so as to minimise the potential for leakage of contaminants; and
  - no machinery is refuelled within 50 metres of any intermittent or permanent watercourse.
17. The consent holder shall take all practicable steps to minimise sedimentation and disturbance of the streams during the construction and implementation of the works, including:
  - completing all works in the minimum time practicable;
  - minimising the area of disturbance at all times;
  - avoiding placement of excavated material in the wetted channels;
  - separating construction activities from the wetted channels i.e. by temporarily diverting the flow around the area of works or bunding the works area;
  - minimising time spent by machinery in the wetted channels, including the number of vehicle crossings;
  - immediately removing any excess material from the bed and banks of the streams on completion of the works.
18. The consent holder shall ensure that appropriate erosion and sediment control measures are installed prior to, and during, all construction works.
19. The consent holder shall ensure that all exposed areas are stabilised against erosion by re-vegetating the area within 20 working days of completing the works in each location, or as soon as practicable.

*Note: For the purposes of this condition "stabilised" in relation to any site or area means inherently resistant to erosion or rendered resistant, such as by using indurated rock or by*

*the application of basecourse, colluvium, grassing, mulch, or another method to the reasonable satisfaction of the Manager, Environmental Regulation, Wellington Regional Council and as specified in Wellington Regional Council's Erosion and Sediment Control Guidelines for the Wellington Region, September 2002. Where seeding or grassing is used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once, on reasonable visual inspection by the Manager, Environmental Regulation, Wellington Regional Council, an 80% vegetative cover has been established.*

#### **Maintenance condition**

20. The works shall remain the responsibility of the consent holder and be maintained so that:
- a) any erosion, scour or instability of the stream bed or banks that is attributable to the works carried out as part of this consent is remedied by the consent holder;
  - b) fish passage is not impeded on completion of works;
  - c) the structures remain substantially free of debris; and
  - d) the structural integrity of the structures remains sound.

*Note: Maintenance of lawful structures is generally permitted under Rule 22 of the Regional Freshwater Plan for the Wellington Region. Any additional works (including structures, reshaping or disturbance to the bed of the watercourse) following completion of the construction and maintenance works as provided for in the approved plans, may require further resource consents.*

#### **Duration of consent**

21. In accordance with section 123(c) of the Resource Management Act 1991, this consent shall expire thirty five (35) years from the date of commencement.

#### **Lapse of consent**

22. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

## Schedule 2

Land use consent [26848] to undertake the following works within the stream bed of an unnamed tributary of the Ohariu Stream in association with Boom Rock Road upgrades:

- Reclaim sections of stream bed;
- Extend existing culvert structures;
- Place inlet/outlet structures;
- Place rock ramps for fish passage; and
- Place rock protection works.

Including any associated temporary diversion of flow, and disturbance of, and deposition on, the beds of those streams.

### Pre-works and general conditions

1. The consent holder shall prepare and submit a **Design and Construction Plan** for all structures and stream works authorised by this consent to the Manager, Environmental Regulation, Wellington Regional Council, for approval at least 20 working days prior to the works commencing.

Unless otherwise authorised by the Manager, Environmental Regulation, Wellington Regional Council, works may not commence until the Design and Construction Plan has been approved.

The **Design** detail and plans shall include, but not be limited to, the following:

- cross sectional and aerial drawings showing the locations (paths) and profiles of the realigned channels;
- details of the rock protection works including dimensions, size of the rock rip-rap and the depth to which it will be embedded to;
- details of how the realigned channels will be stabilised on completion;
- details of any culvert inlet/outlet structures e.g. pre-cast wing walls or aprons and the depth that these will be embedded to below the stream beds;
- design details of the rock ramp(s) for fish passage; and
- any other measures or details as appropriate to ensure compliance with all conditions of this consent.

The **Construction** detail and methodology shall include, but not be limited to, the following:

- the sequence of works, step by step, and a timeline for undertaking the works;
- details of the temporary diversions (including through use of a water pump with a fish screen) to enable works to be undertaken outside of the actively flowing channel, including methods to bund upstream and downstream of the works areas;

- how the bunded works areas will be dewatered to prevent sediment-laden water that pools in these areas from entering any surface waterbodies; and
- details of any other erosion and sediment control measures that will be employed on site to undertake the works.

Any amendments to the **Design and Construction Plan** must be approved and be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

The consent must be exercised in general accordance with the approved plan and any subsequent approved amendments.

### General conditions

2. The location, design, implementation and operation of the works shall be in general accordance with the:
  - a) consent application and its associated plans and documents, lodged with the Wellington Regional Council on 12 March 2008; and
  - b) further information and amendments received by the Wellington Regional Council on 17 April 2008, 15 July 2008, 16 July 2008 and 18 July 2008; and
  - c) the information that is approved by the Wellington Regional Council in accordance with Condition 1 of this consent.

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

3. The consent holder shall advise the Manager, Environmental Regulation, Wellington Regional Council, in writing at least 48 hours prior to the works commencing in each location.
4. The consent holder shall provide a copy of this consent, including any relevant site plans and attachments, to the contractor undertaking the works authorised by this consent, prior to the works commencing.
5. If kōiwi (skeletal remains), wahi tapu, taonga (treasures), or other artefact material is discovered in any area, all works in the vicinity are to cease immediately. The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council; the Wellington Tenth's Trust; Te Runanga o Toa Rangatira Inc.; an approved representative of Ngati Tama; the Historic Places Trust; and if necessary, the New Zealand Police. Works in the vicinity shall not re-commence until a site inspection has been undertaken by the representatives of these parties, appropriate tikanga (protocols) have occurred, and the artefacts have either been recovered or the appropriate approval to continue is given.
6. All works affecting the streams, including tidy up on completion of the works, shall be completed to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

### **Contamination prevention conditions**

7. The consent holder shall ensure that:
  - all contaminant storage or re-fuelling areas are bunded or contained in such a manner as to prevent the discharge of contaminants;
  - all machinery is thoroughly cleaned of vegetation and contaminants prior to entering the site;
  - all machinery is regularly maintained in such a manner so as to minimise the potential for leakage of contaminants; and
  - no machinery is refuelled within 50 metres of any intermittent or permanent watercourse.
8. The consent holder shall take all practicable steps to minimise sedimentation and disturbance of the stream during the construction and implementation of the works, including:
  - completing all works in the minimum time practicable;
  - minimising the area of disturbance at all times;
  - avoiding placement of excavated material in the wetted channels;
  - separating construction activities from the wetted channels by temporarily diverting the flow around the entire areas of works (including the areas of the culvert extensions and rock protection works);
  - minimising time spent by machinery in the wetted channels, including the number of vehicle crossings; and
  - immediately removing any excess material from the bed and banks of the streams on completion of the works.
9. The consent holder shall ensure that appropriate erosion and sediment control measures are installed prior to, and during, all construction works.
10. Sediment-laden water which pools within the bunded areas of works shall be dewatered by pumping it to land (where it is unable to enter surface water) or by other such method approved under Condition 1 of this consent.
11. All fill material placed in the stream beds shall be restricted to natural material, such as clay, soil and rock, shall accord with the Ministry for Environment "cleanfill" definition as detailed in *'A guide to the management of Cleanfills, 2002'* and all such fill material shall be placed and compacted so as to minimise its erosion and instability.
12. The consent holder shall ensure that all exposed areas are stabilised against erosion by re-vegetating the area within 20 working days of completing the works in each location, or as soon as practicable.

### **Fish passage and habitat**

13. If any fish are stranded due to the works, the consent holder shall ensure that these are placed back in the active flowing part of the channel as soon as practicable.

14. The consent holder shall ensure that fish passage is provided on completion of the construction works.
15. A graded mix of rock rip-rap shall be used to fill voids within rock protection works located in the stream bed at the time of construction.
16. The profiles of the realigned channels shall incorporate meandering bends where possible.
17. Existing vegetation shall only be cleared where it is necessary to implement and construct the works.

#### **Erosion and scour**

18. All structures and works authorised under this consent shall be constructed as to avoid erosion and scour of the stream beds and/or banks.

#### **Flooding**

19. All structures and works authorised under this consent shall be constructed so to avoid exasperation of flood flows.

#### **Maintenance condition**

20. The works shall remain the responsibility of the consent holder and be maintained so that:
  - a) any erosion, scour or instability of the stream bed or banks that is attributable to the works carried out as part of this consent is remedied by the consent holder;
  - b) fish passage is not impeded on completion of works;
  - c) the structures remain substantially free of debris; and
  - d) the structural integrity of the structures remains sound.

*Note: Maintenance of lawful structures is generally permitted under Rule 22 of the Regional Freshwater Plan for the Wellington Region. Any additional works (including structures, reshaping or disturbance to the bed of the watercourse) following completion of the construction and maintenance works as provided for in the approved plans, may require further resource consents.*

#### **Duration of consent**

23. In accordance with section 123(c) of the Resource Management Act 1991, this consent shall expire thirty five (35) years from the date of commencement.

#### **Lapse of consent**

24. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

### Schedule 3

Water permit [26780] to permanently divert the full flow of the following:

- Ohariu Stream;
- Mill Creek; and
- unnamed tributaries of the Ohariu Stream, Mill Creek and Hawkins Stream

through pipes, rock protection structures and realigned channels in association with the construction of new roads and the upgrade of existing roads.

#### General conditions

1. The location, design, implementation and operation of the works shall be in general accordance with the:
  - a) consent application and its associated plans and documents, lodged with the Wellington Regional Council on 12 March 2008; and
  - b) further information and amendments received by the Wellington Regional Council on 17 April 2008, 15 July 2008, 16 July 2008 and 18 July 2008.

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

2. The consent holder shall provide a copy of this consent, including any relevant site plans and attachments, to the contractor undertaking the works authorised by this consent, prior to the works commencing.
3. The works shall remain the responsibility of the permit holder and shall be maintained to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council. This shall include the repair of any erosion of the bed and/or banks of the stream that is attributable to the works.

#### Duration of consent

4. In accordance with section 123(d) of the Resource Management Act 1991, this consent shall expire thirty five (35) years from the date of commencement.

#### Lapse of consent

5. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

## Schedule 4

### Discharge permit [26847] to discharge sediment-laden water to land where it may enter water and to water in association with the operation of a mobile aggregate crushing plant.

#### General conditions

1. The location, design and operation of the plant shall be in general accordance with:
  - a) the consent application and its associated plans and documents, lodged with the Wellington Regional Council on 12 March 2008; and
  - b) further information and amendments received by the Wellington Regional Council on 17 April 2008; and

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

2. The consent holder shall advise the Manager, Environmental Regulation, Wellington Regional Council, in writing at least 48 hours prior the operation of the aggregate crushing plant commencing.
3. If kōiwi (skeletal remains), wahi tapu, taonga (treasures), or other artefact material is discovered in any area, all works in the vicinity are to cease immediately. The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council; the Wellington Tenth Trust; Te Runanga o Toa Rangatira Inc.; an approved representative of Ngati Tama; the Historic Places Trust; and if necessary, the New Zealand Police. Works in the vicinity shall not re-commence until a site inspection has been undertaken by the representatives of these parties, appropriate tikanga (protocols) have occurred, and the artefacts have either been recovered or the appropriate approval to continue is given.
4. Notwithstanding the requirements of the other conditions of this permit, the consent holder shall at all times take all practicable steps for preventing erosion and/or minimise the suspended solids content of any discharge that enters water.
5. All erosion and sediment control measures shall be well maintained so that they operate efficiently and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.
6. During the exercise of this permit, all practicable steps shall be taken to minimise any discharge to any watercourse that may result in any of the following effects after reasonable mixing:
  - The production of any conspicuous oil or grease films, scums or foams or floatable or suspended material;
  - Any conspicuous change in colour or visual clarity;



- Any emission of objectionable odour;
- The rendering of fresh water unsuitable for consumption by humans and farm animals;
- Any significant adverse effect on aquatic life;
- A change of more than 3° Celsius in the natural temperature of the water.

**Duration of consent**

7. In accordance with section 123(d) of the Resource Management Act 1991, this consent shall expire seven (7) years from the date of commencement.

**Lapse of consent**

8. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

## Schedule 5

### Discharge permit [26781] to discharge contaminants to air in association with the pneumatic conveying of bulk materials from the operation of a concrete batching plant.

#### Pre-works conditions

1. The permit holder shall prepare and submit details regarding the chosen contractor, and the detailed design, location and implementation of the concrete batching plant to the Manager, Environmental Regulation, Wellington Regional Council, at least 20 working days prior to the commencement of construction of the plant.

*Note: The location of the concrete batching plant shall not be within 100 metres of any intermittent or permanent watercourse.*

2. The permit holder shall prepare and submit for approval a **Batching Plant Management Plan (BPMP)** to the Manager, Environmental Regulation, Wellington Regional Council, at least 20 working days prior to the commencement of construction of the plant.

Discharge to air from the batching plant shall not commence until this plan is approved.

The **Management Plan** shall include, but not be limited to, the following:

- a) an operation and maintenance manual detailing regular monitoring to be undertaken, including visual checks and maintenance of all plant machinery and equipment to prevent accidental discharges;
- b) a contingency plan for spills and/or discharges to the environment from the plant; and
- c) mitigation measures to be implemented during the operation of the plant, including the installation of a water sprinkler system to minimise dust emissions, the installation of a level control alarm in the cement storage silo, speed restrictions within the plant boundary, and general yard management.

Any amendments to the **BPMP** must be approved and be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

The consent must be exercised in general accordance with the approved plan and any subsequent approved amendments.

3. The consent holder shall advise the Manager, Environmental Regulation, Wellington Regional Council, in writing at least 48 hours prior to the operation of the concrete batching plant commencing.

#### Operational conditions

4. The location, design and operation of the plant shall be in general accordance with:
  - a) the consent application and its associated plans and documents, lodged with the Wellington Regional Council on 12 March 2008; and
  - b) further information and amendments received by the Wellington Regional Council on 17 April 2008; and

- c) the information that is provided to and/or approved by the Wellington Regional Council in accordance with Conditions 1 and 2 of this permit.

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

5. There shall be no discharges to air resulting from the exercise of this permit that are noxious, dangerous, offensive or objectionable at or beyond a 20 metre wide buffer zone around the physical boundary of the plant.

#### **Maintenance and keeping of records**

6. Regular maintenance of the plant, including weekly visual inspections of the equipment prior to use, shall be carried out by a trained operator. Records of maintenance and visual inspections shall be kept and made available to the Wellington Regional Council on request.
7. The consent holder shall keep a record of any incident that results, or could result, in adverse effects on the environment at or beyond a 20 metre wide buffer zone around the physical boundary of the plant. The incident record shall be made available to the Wellington Regional Council on request.

The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council, of any incident within 24 hours, or the next working day. The consent holder shall forward an incident report to the Manager, Environmental Regulation, Wellington Regional Council, within 7 working days of the incident occurring. The report shall describe reasons for the incident, measures undertaken to mitigate the incident and measures undertaken to prevent recurrence.

8. The consent holder shall keep a record of any complaints received. The complaints record shall contain the following where practicable:
- The name and address of the complainant (if supplied);
  - Identification of the nature of the complaint;
  - Date and time of the complaint and alleged event;
  - Weather conditions at the time of the alleged event; and
  - Any mitigation measures adopted.

The complaints record shall be made available to the Wellington Regional Council on request.

The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council, in writing of any complaints received relating to the exercise of this permit within 24 hours of being received by the permit holder, or the next working day.

#### **Review conditions**

9. The Wellington Regional Council may review any or all conditions hereof by giving notice of its intention to do so pursuant to Section 128 of the Resource Management Act 1991, within six months of the first, third and fifth anniversaries of the granting of this discharge permit for either of the following purposes:
  - a) To deal with any adverse effects on the environment which may arise from the exercise of this permit, and which are appropriate to deal with at that time; and
  - b) To review the adequacy of the operating and maintenance procedures and the monitoring requirements for this permit, so as to incorporate any modification to the operation and maintenance procedures or monitoring that may be necessary to deal with any adverse effects on the environment arising from the management or operation of the processes undertaken by the permit holder.

**Duration of consent**

10. In accordance with section 123(d) of the Resource Management Act 1991, this consent shall expire seven (7) years from the date of commencement.

**Lapse of consent**

11. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

## Schedule 6

Land use consent [27383] to place pipe and rock protection structures in the beds of the Ohariu Stream and Mill Creek including any associated temporary diversion of flow and disturbance to the beds of those streams.

### Environmental Enhancement Plan

1. The consent holder shall register a covenant in favour of Wellington Regional Council for the purpose of enhancing the ecological values of the Makara Stream and Estuary, by undertaking riparian planting. The covenant shall relate to 5.79 hectares of land contained within Certificate of Title WN7D/340 (Lot 1 DP 30935).

*Note - As a part of enhancing this land the consent holder intends to consult with stakeholders who are interested in improving the ecological values along the Makara Stream and Estuary.*

Mitigation planting shall be carried out in general accordance with Greater Wellington's Mind the Stream – A guide to looking after urban and rural streams in the Wellington Region 2004.

The consent holder shall provide the following information to the Manager, Environmental Regulation, Wellington Regional Council, once consultation with stakeholders has been completed:

- The location and extent of where riparian planting will be undertaken on Certificate of Title WN7D/340(Lot 1 DP 30935);
- The species proposed to be planted and the density of planting. These species shall be suitable for the environment, including the soil type and surrounding land use;
- The method(s) that will be used to protect the planting;
- Details of how the site will be maintained and how often, including the ongoing replacement of plants that do not survive, details of any irrigation and fertilization that will be provided, and eradication of invasive weeds from the planting site(s) to ensure adequate growth; and
- A timeline for registering the covenant and completing the planting.

### Pre-works and general conditions

2. The consent holder shall prepare and submit a Diversion Design and Construction Plan for all structures and stream works authorised by this consent to the Manager, Environmental Regulation, Wellington Regional Council, for approval at least 20 working days prior to the works commencing. Works cannot commence until the Plan is approved.

**Deleted:** Environmental Compensation Plan

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**Deleted:** The consent holder shall engage an appropriately qualified and experienced ecologist to prepare and submit an Environmental Compensation Plan to mitigate for the adverse effects to aquatic ecosystems that will occur as a result of the development of the Mill Creek wind farm, ¶  
The **Environmental Compensation Plan** ("the ECP") relates to all of the following consents/permits: ¶  
WGN080368 [27383] Land use consent to place pipe and rock protection structures in the beds of the Ohariu Stream and Mill Creek; ¶  
WGN080368 [27384] Land use consent to pipe and reclaim sections of ephemeral and intermittent stream beds within the Core Site and Spicer Forest; ¶  
WGN080368 [27388] Land use consent to pipe and reclaim sections of ephemeral streams within the Core Site in association with placing fill; and ¶  
WGN080368 [27385] Discharge permit to discharge sediment-laden water to land where it may enter water and directly to water. ¶  
The ECP shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council for approval. ¶  
The ECP shall include, but not be limited to, the following: ¶  
A scaled design plan(s) clearly showing: ¶  
The location(s) and extent of 10,000 m<sup>2</sup> of riparian planting within the 5.79 hectares of land north of the intersection of Makara Road and Opau Road contained within the Certificate of Title WN7D/340; ¶  
Details of the varieties of native species to be planted and the density of planting. These ... [1]

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The **Design** details shall include, but not be limited to, the following:

- a) (for Mill Creek only) an aerial plan showing the location of the culvert, rock protection works and temporary diversion works in relation to the rocky outcrop, in accordance with Condition 20 of this consent;
- b) details of the flow capacity that the culverts can accommodate and data to support this;
- c) the location of the secondary overflow paths for events greater than what the culvert can accommodate and how these will be stabilised if they are located over any exposed earthwork surfaces;
- d) measures to ensure fish passage will be provided including details of:
  - the stony substrate that will be placed throughout the culvert structures;
  - the baffle structures that will ensure that the stony substrate is retained within the culverts; and
  - the depth to which the culverts will be embedded below the streambeds.
- e) details of the rock protection structures including dimensions, size of the rock rip-rap and the depth to which it will be embedded to;
- f) details of any culvert inlet/outlet structures e.g. pre-cast wing walls or aprons and the depth that these will be embedded to below the stream beds; and
- g) any other measures or details as appropriate to ensure compliance with all conditions of this consent.

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The **Construction** methodology shall include, but not be limited to, the following:

- a) the sequence of works, step by step, and a timeline for undertaking the works;
- b) details of the temporary diversion works including:
  - its location, width and grade to which the diversion works will be constructed;
  - the method(s) that will be used to stabilise the diversion works ; and
  - how the areas of works will be bunded off both upstream and downstream.
- c) how the bunded works areas will be dewatered to prevent sediment-laden water that pools in these areas from entering any surface waterbodies; and
- d) details of any other erosion and sediment control measures that will be employed on site to undertake the works.

Any amendments to the **Diversion Design and Construction Plan** shall be approved and be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

The consent must be exercised in general accordance with the approved plan and any subsequent amendments.

3. The location, design, implementation and operation of the works shall be in general accordance with the:

- a) consent application and its associated plans and documents, lodged with the Wellington Regional Council on 12 March 2008; and

- b) further information and amendments received by the Wellington Regional Council on 17 April 2008, 15 July 2008, 16 July 2008 and 18 July 2008; and
- c) the information that is approved by the Wellington Regional Council in accordance with Condition 2 of this consent.

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

The consent holder shall advise the Manager, Environmental Regulation, Wellington Regional Council, in writing at least 48 hours prior to the works commencing in each location.

- 4. The consent holder shall provide a copy of this consent, including any relevant site plans and attachments, to the contractor undertaking the works authorised by this consent, prior to the works commencing.
- 5. If kōiwi (skeletal remains), wahi tapu, taonga (treasures), or other artefact material is discovered in any area, all works in the vicinity are to cease immediately. The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council; the Wellington Tenth Trust; Te Runanga o Toa Rangatira Inc.; an approved representative of Ngati Tama; the Historic Places Trust; and if necessary, the New Zealand Police. Works in the vicinity shall not re-commence until a site inspection has been undertaken by the representatives of these parties, appropriate tikanga (protocols) have occurred, and the artefacts have either been recovered or the appropriate approval to continue is given.
- 6. All works affecting the streams, including tidy up on completion of the works, shall be completed to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

#### **Contamination prevention conditions**

- 7. The consent holder shall ensure that:
  - a) all contaminant storage or re-fuelling areas are bunded or contained in such a manner as to prevent the discharge of contaminants;
  - b) all machinery is thoroughly cleaned of vegetation and contaminants prior to entering the site;
  - c) all machinery is regularly maintained in such a manner so as to minimise the potential for leakage of contaminants; and
  - d) no machinery is cleaned, stored or refuelled within 50 metres of any intermittent or permanent watercourse.
- 8. The consent holder shall take all practicable steps to minimise sedimentation and disturbance of the streams during the construction and implementation of the works, including:
  - a) completing all works in the minimum time practicable;

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- b) minimising the area of disturbance at all times;
  - c) avoiding placement of excavated material in the wetted channels;
  - d) separating construction activities from the wetted channels by temporarily diverting the flow around the entire areas of works (including the areas of the culverts and rock protection works);
  - e) minimising time spent by machinery in the wetted channels, including the number of vehicle crossings;
  - f) immediately removing any excess material from the bed and banks of the streams on completion of the works.
9. The stream diversion works shall be stabilised by lining it with geotextile fabric, or other such method as approved under Condition 2 of this consent, prior to diverting stream flows through. Deleted: 4
10. The consent holder shall ensure that appropriate erosion and sediment control measures are installed prior to, and during, all construction works.
11. Sediment-laden water which pools within the bunded areas of works shall be dewatered by pumping it to land (where it is unable to enter surface water) or by other such method approved under Condition 2 of this consent. Deleted: 4
12. The consent holder shall ensure that all exposed areas are stabilised against erosion by re-vegetating the area within 20 working days of completing the works in each location, or as soon as practicable.

#### **Fish passage**

13. The temporary diversion works shall be constructed at an appropriate width and grade to provide fish passage.
14. The consent holder shall ensure that fish passage is maintained during, and on completion of, the construction works.
15. If any fish are stranded due to the works, the consent holder shall ensure that these are placed back in clear, actively flowing part of the channel as soon as practicable.
16. A graded mix of rock rip-rap shall be used to fill voids within rock protection works located in the stream beds at the time of construction.

#### **Inspection and reporting requirements for fish passage**

17. The consent holder shall engage an appropriately qualified ecologist to undertake the following:
- a) an inspection of the culverts one year after instalment; and
  - b) an inspection of the culverts four years after instalment; and
  - c) Notwithstanding the above, if fish passage is found to be restricted during the inspection, inspections shall be continued to be undertaken annually until the ecologist is satisfied that fish passage is continually being provided for.

The inspections shall be undertaken between 1 February and 30 March, if practicable, to ensure that fish passage is continually being provided for throughout the culvert structures.



The defined period above is preferred as most native fish species should be present during this time and, therefore, an accurate representation of the fish species and the effects of the structure on these will be able to be determined.

If low flow conditions during this time inhibit surveys being able to be undertaken, surveys must be undertaken as close to the defined period as possible.

The inspection shall include the following:

- a) a survey of freshwater fish in an appropriate area immediately upstream of the culverts; and
- b) a survey of freshwater fish in an appropriate area downstream of the culverts (for comparison with the upstream survey); and
- c) a visual inspection to check the following:
  - that gravel bed substrate is being retained within the culvert pipes;
  - whether there are any signs of erosion or scour of the stream bed or banks around the structures;
  - the condition of the structure including the baffles and rock protection works;
  - stream flow velocities are not increased in any areas within the culvert structures or upstream/downstream of the culvert structures that could be adverse to fish passage e.g. baffles and rock protection are adequate and in good condition; and
  - whether there is debris that could block the passage of fish or increase velocities.

18. The consent holder shall submit a report from a qualified ecologist to the Manager, Environmental Regulation, [Wellington Regional Council](#), within one month of undertaking the inspection required under Condition 17, of this consent. The report shall detail the following:

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- a) the results of the fish surveys, the methods used to survey the fish, the location of the surveys and the dates that they were undertaken;
- b) the results of the visual inspections, for each of the points that are listed under Condition 17, of this consent;
- c) an assessment of effects on fish passage using the fish surveys and results of the visual inspections; and
- d) measures/works that will be implemented to address any actual or potential effects on fish passage as a result of the inspections and when these will be implemented by.

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#### **Stream works time period restrictions**

19. No in-stream works shall be undertaken between 1 August and 30 November (inclusive) or between 1 March and 30 June (inclusive) to avoid upstream and upstream fish migration times, except for in the following circumstances:

- a) The written approval of the Manager, Environmental Regulation, Wellington Regional Council is obtained; and

b) the in-stream works are limited to 2 days out of each 7 day period and total to no more than 8 days in any 30 day period.

*Note: This condition excludes works as permitted by Rule 22 of the Regional Freshwater Plan for the Wellington Region.*

#### **Mill Creek culvert, rock protection and temporary diversion work restrictions**

20. No works, structures or part of any structures (i.e. culvert or rock protection or diversion works) shall be placed within, or extend into, the area of the rocky outcrop within Mill Creek, which begins at approximate map reference NZMS 260:R27; 2656796.5998203. All structures authorised by this consent shall be located upstream of this point.

No temporary diversion work which is constructed in accordance with Condition 2 of this consent shall extend into the rocky outcrop area defined above.

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#### **Erosion and scour**

21. All structures authorised under this consent shall be constructed as to avoid erosion and scour of the stream beds and/or banks.

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#### **Flooding**

22. All structures authorised under this consent shall be constructed so to avoid any increase in flood flows.

#### **Maintenance condition**

23. The works shall remain the responsibility of the consent holder and be maintained so that:
- a) any erosion, scour or instability of the stream bed or banks that is attributable to the works carried out as part of this consent is remedied by the consent holder;
  - b) fish passage is not impeded on completion of works;
  - c) the structures remain substantially free of debris; and
  - d) the structural integrity of the structures remains sound.

*Note: Maintenance of lawful structures is generally permitted under Rule 22 of the Regional Freshwater Plan for the Wellington Region. Any additional works (including structures, reshaping or disturbance to the bed of the watercourse) following completion of the construction and maintenance works as provided for in the approved plans, may require further resource consents.*

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#### **Duration of consent**

24. In accordance with section 123(c) of the Resource Management Act 1991, this consent shall expire thirty five (35) years from the date of commencement.

#### **Lapse of consent**

25. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

## Schedule 7

Land use consent [27384] to:

- pipe and reclaim sections of intermittent and ephemeral stream beds in association with the construction of new access roads within the Core Site and Spicer Forest; and
- undertake remedial works in association with two existing perched culverts including any associated temporary diversion of flow, and disturbance of, and deposition on, the beds of those streams.

### Environmental Enhancement Plan

1. The consent holder shall register a covenant in favour of Wellington Regional Council for the purpose of enhancing the ecological values of the Makara Stream and Estuary, by undertaking riparian planting. The covenant shall relate to 5.79 hectares of land contained within Certificate of Title WN7D/340 (Lot 1 DP 30935).

*Note - As a part of enhancing this land the consent holder intends to consult with stakeholders who are interested in improving the ecological values along the Makara Stream and Estuary.*

Mitigation planting shall be carried out in general accordance with Greater Wellington's *Mind the Stream – A guide to looking after urban and rural streams in the Wellington Region 2004*.

The consent holder shall provide the following information to the Manager, Environmental Regulation, Wellington Regional Council, once consultation with stakeholders has been completed:

- The location and extent of where riparian planting will be undertaken on Certificate of Title WN7D/340(Lot 1 DP 30935);
- The species proposed to be planted and the density of planting. These species shall be suitable for the environment, including the soil type and surrounding land use;
- The method(s) that will be used to protect the planting;
- Details of how the site will be maintained and how often, including the ongoing replacement of plants that do not survive, details of any irrigation and fertilization that will be provided, and eradication of invasive weeds from the planting site(s) to ensure adequate growth; and
- A timeline for registering the covenant and completing the planting.

**Deleted: Environmental Compensation Plan¶**

<#>The consent holder shall engage an appropriately qualified and experienced ecologist to prepare and submit an Environmental Compensation Plan to mitigate for the adverse effects to aquatic ecosystems that will occur as a result of the development of the Mill Creek wind farm, ¶

The **Environmental Compensation Plan** (“the ECP”) relates to all of the following consents/permits:¶

<#>WGN080368 [27383] Land use consent to place pipe and rock protection structures in the beds of the Ohariu Stream and Mill Creek;¶

<#>WGN080368 [27384] Land use consent to pipe and reclaim sections of ephemeral and intermittent stream beds within the Core Site and Spicer Forest;¶

<#>WGN080368 [27388] Land use consent to pipe and reclaim sections of ephemeral streams within the Core Site in association with placing fill; and¶

<#>WGN080368 [27385] Discharge permit to discharge sediment-laden water to land where it may enter water and directly to water.¶

The ECP shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council for approval.¶

The ECP shall include, but not be limited to, the following:¶

<#>A scaled design plan(s) clearly showing:¶

<#>The location(s) and extent of 10,000 m<sup>2</sup> of riparian planting within the 5.79 hectares of land north of the intersection of Makara Road and Opau Road contained within the Certificate of Title WN7D/340;¶

<#>Details of the varieties ... [2]

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## General conditions

2. The location, design, implementation and operation of the works shall be in general accordance with the:

- a) consent application and its associated plans and documents, lodged with the Wellington Regional Council on 12 March 2008; and
- b) further information and amendments received by the Wellington Regional Council on 17 April 2008, 15 July 2008, 16 July 2008, 18 July 2008 and 23 July 2008.

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

3. Culvert F1 must be placed in the location identified within Figure 16 of the further information and amendments received by Wellington Regional Council on 23 July 2008.

4. The consent holder shall advise the Manager, Environmental Regulation, Wellington Regional Council, in writing at least 48 hours prior to the works commencing in each location.

5. The consent holder shall provide a copy of this consent, including any relevant site plans and attachments, to the contractor undertaking the works authorised by this consent, prior to the works commencing.

6. If kōiwi (skeletal remains), wahi tapu, taonga (treasures), or other artefact material is discovered in any area, all works in the vicinity are to cease immediately. The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council; the Wellington Tenth Trust; Te Runanga o Toa Rangatira Inc.; an approved representative of Ngati Tama; the Historic Places Trust; and if necessary, the New Zealand Police. Works in the vicinity shall not re-commence until a site inspection has been undertaken by the representatives of these parties, appropriate tikanga (protocols) have occurred, and the artefacts have either been recovered or the appropriate approval to continue is given.

7. If any fish are stranded due to the works, the consent holder shall ensure that these are placed back in the active flowing part of the channel as soon as practicable.

8. All works affecting the streams, including tidy up on completion of the works, shall be completed to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

## **Design conditions**

9. Culverts A3, A4, C2, C5a and F1 must be able to accommodate a 1 in 100 year return flood event and be sufficiently embedded, to avoid erosion and scour of the stream beds and banks, and provide fish passage, in accordance with Conditions 11 and 12 of this consent.

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10. Culverts SF4 and SF5 (Spicer Forest) and Culverts A2, C1, C3-C5, D1-D2, E1-E3, H1-H2 and L1 (Core Site) must be able to accommodate a minimum of a 1 in 10 year return flood event, and be sufficiently embedded to avoid erosion and scour of the stream beds and banks, and provide fish passage, in accordance with Conditions 11 and 12 of this consent.

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11. All culverts authorised under this consent shall be sufficiently embedded to avoid erosion and scour of the stream bed and banks.

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If it is determined or found that erosion and scour of the stream bed and/or banks either has or will occur, even with sufficient embedment, appropriate inlet and/or outlet protection works must be added.

12. All culverts authorised under this consent must be able to provide fish passage.

13. All culverts authorised under this consent shall be placed at the same gradient as the existing stream bed, where practicable.

If the slope angles are too high, then the use of grade controls and/or drop structures shall be implemented.

14. Culverts SF4 and SF5 (Spicer Forest) and Culverts A2, C1, C3-C5, D1-D2, E1-E3, H1-H2 and L1 (Core Site) must have the provision of a secondary overflow path.

15. Culverts SF4 and SF5 (Spicer Forest) must have debris arrestors or grills fitted at the culvert inlets to prevent debris from entering and blocking the culverts.

16. Within one month of constructing each culvert structure authorised under this consent, the consent holder shall provide to the Manager, Environmental Regulation, Wellington Regional Council, a certificate signed by an appropriately qualified and experienced engineer to certify that the culvert structure has been constructed in accordance with the conditions of this consent.

17. The consent holder shall provide design details of any of the structures authorised under this consent to the Manager, Environmental Regulation, Wellington Regional Council, on request.

#### Remediation conditions

18. Within three months of the completion of Culvert F1 the consent holder shall remediate two existing perched culverts within an unnamed tributary of the Hawkins Stream (the tributary where Culvert F1 is to be placed) at approximate map references NZMS 260: R27;2654776.5997585 and NZMS 260: R27; 2654929.5997905 to enable fish passage throughout the culvert structures. This may include, but not be limited to, undertaking the following works:

- a) installing fish ramps; and/or
- b) removing and re-embedding the existing culvert or a new culvert structure to an appropriate grade and depth below the stream bed.

19. Within one month of completing the remedial works for each culvert structure identified under Condition 18 of this consent, the consent holder shall provide to the Manager, Environmental Regulation, Wellington Regional Council, a certificate signed by an appropriately qualified ecologist to certify that the culvert structures provides for fish passage.

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### **Contamination prevention conditions**

20. The consent holder shall ensure that:

- a) all contaminant storage or re-fuelling areas are bunded or contained in such a manner as to prevent the discharge of contaminants;
- b) all machinery is thoroughly cleaned of vegetation and contaminants prior to entering the site;
- c) all machinery is regularly maintained in such a manner so as to minimise the potential for leakage of contaminants; and
- d) no machinery is cleaned, stored or refuelled within 50 metres of any intermittent or permanent watercourse.

21. The consent holder shall take all practicable steps to minimise sedimentation and disturbance of the streams during the construction and implementation of the works, including:

- a) completing all works in the minimum time practicable;
- b) minimising the area of disturbance at all times;
- c) avoiding placement of excavated material in the wetted channels;
- d) separating construction activities from the wetted channels i.e. by temporarily diverting the flow around the area of works and/or bunding the works area;
- e) minimising time spent by machinery in the wetted channels, including the number of vehicle crossings;
- f) immediately removing any excess material from the bed and banks of the streams on completion of the works.

22. The consent holder shall ensure that appropriate erosion and sediment control measures are installed prior to, and during, all construction works.

23. Any sediment-laden water which pools within the areas of works shall be dewatered by pumping it to land (where it is unable to enter surface water) or by other such method to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

24. All fill material placed in the stream beds shall be restricted to natural material, such as clay, soil and rock, shall accord with the Ministry for Environment "cleanfill" definition as detailed in '*A guide to the management of Cleanfills, 2002*' and all such fill material shall be placed and compacted so as to minimise its erosion and instability.

25. The consent holder shall ensure that all exposed areas are stabilised against erosion by re-vegetating the area within 20 working days of completing the works in each location, or as soon as practicable.

### **Maintenance condition**

26. The works shall remain the responsibility of the consent holder and be maintained so that:

- g) any erosion, scour or instability of the stream bed or banks that is attributable to the works carried out as part of this consent is remedied by the consent holder;
- h) fish passage is not impeded on completion of works;

- i) the structures remain substantially free of debris; and
- j) the structural integrity of the structures remains sound.

*Note: Maintenance of lawful structures is generally permitted under Rule 22 of the Regional Freshwater Plan for the Wellington Region. Any additional works (including structures, reshaping or disturbance to the bed of the watercourse) following completion of the construction and maintenance works as provided for in the approved plans, may require further resource consents.*

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#### **Duration of consent**

27. In accordance with section 123(d) of the Resource Management Act 1991, this consent shall expire thirty five (35) years from the date of commencement.

#### **Lapse of consent**

28. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

## Schedule 8

Discharge permit [27385] to discharge sediment-laden water to land where it may enter water and directly to water in association with the following activities:

- roading and tracking;
- soil disturbance on erosion prone land;
- bulk earthworks; and
- construction of fill disposal sites.

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Land use consent [27386] to disturb soil in association with constructing tracks with an upslope batter greater than 2 metres extending for a length greater than 200 metres.

Land use consent [27387] to undertake soil disturbance on erosion prone land in association with aggregate sourcing, and the construction of turbine platforms, laydown areas and building platforms.

### Environmental Enhancement Plan

1. The consent holder shall register a covenant in favour of Wellington Regional Council for the purpose of enhancing the ecological values of the Makara Stream and Estuary, by undertaking riparian planting. The covenant shall relate to 5.79 hectares of land contained within Certificate of Title WN7D/340 (Lot 1 DP 30935).

*Note - As a part of enhancing this land the consent holder intends to consult with stakeholders who are interested in improving the ecological values along the Makara Stream and Estuary.*

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Mitigation planting shall be carried out in general accordance with Greater Wellington's *Mind the Stream – A guide to looking after urban and rural streams in the Wellington Region 2004*.

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The consent holder shall provide the following information to the **Manager, Environmental Regulation**, Wellington Regional Council, once consultation with stakeholders has been completed:

- The location and extent of where riparian planting will be undertaken on Certificate of Title WN7D/340(Lot 1 DP 30935);
- The species proposed to be planted and the density of planting. These species shall be suitable for the environment, including the soil type and surrounding land use;
- The method(s) that will be used to protect the planting;
- Details of how the site will be maintained and how often, including the ongoing replacement of plants that do not survive, details of any irrigation and fertilization that



will be provided, and eradication of invasive weeds from the planting site(s) to ensure adequate growth; and

- A timeline for registering the covenant and completing the planting.

## General conditions

2. The location, design, implementation and operation of all earthworks and associated discharges of sediment-laden stormwater to land and water shall be undertaken in general accordance with the following documents, unless any modifications are required to comply with any of the conditions of this consent:

- a) the consent application lodged with the Wellington Regional Council on 12 March 2008;
- b) further information and amendments received by the Wellington Regional Council on 17 April 2008, 15 July 2008, 16 July 2008, 18 July 2008 and 23 July 2008; and
- c) Wellington Regional Council's *Erosion and Sediment Control Guidelines for the Wellington Region* dated September 2002.

*Note: Where there may be contradiction or inconsistencies between practices described in the Erosion and Sediment Control Guidelines for the Wellington Region and conditions of this consent, the conditions shall apply.*

- d) any additional plans or information to be prepared and submitted and approved by the Wellington Regional Council in accordance with various conditions of this consent.

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

## Baseline Aquatic Monitoring Plan

3. The permit holder shall submit a **Baseline Aquatic Monitoring Plan** ("the BAMP") to the Manager, Environmental Regulation, Wellington Regional Council, for approval at least 40 working days prior to the proposed start date of the baseline water quality monitoring programme.

The BAMP shall be prepared and submitted by a suitably qualified, experienced and independent ecologist. The ecologist that the permit holder engages shall be to the approval of the Manager, Environmental Regulation, Wellington Regional Council.

Monitoring shall not commence until the BAMP is approved.

Purpose of the BAMP

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<#>The consent holder shall engage an appropriately qualified and experienced ecologist to prepare and submit an Environmental Compensation Plan to mitigate for the adverse effects to aquatic ecosystems that will occur as a result of the development of the Mill Creek wind farm, ¶  
The **Environmental Compensation Plan** ("the ECP") relates to all of the following consents/permits:¶  
<#>WGN080368 [27383] Land use consent to place pipe and rock protection structures in the beds of the Ohariu Stream and Mill Creek;¶  
<#>WGN080368 [27384] Land use consent to pipe and reclaim sections of ephemeral and intermittent stream beds within the Core Site and Spicer Forest;¶  
<#>WGN080368 [27388] Land use consent to pipe and reclaim sections of ephemeral streams within the Core Site in association with placing fill; and¶  
<#>WGN080368 [27385] Discharge permit to discharge sediment-laden water to land where it may enter water and directly to water.¶  
The ECP shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council for approval. ¶  
The ECP shall include, but not be limited to, the following:¶  
<#>A scaled design plan(s) clearly showing: ¶  
<#>The location(s) and extent of at least 10,000 m<sup>2</sup> of riparian planting along the banks of the Makara Stream which flows through the 5.79 hectares of land north of the intersection of Makara Road and Opau Road contained within the Certificate of Title WN7D/340, Legal Description Lot 1 DP 30935.¶  
<#>Details of the varieties of native species to be planted and the density of planting ... [3]

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The purpose of the BAMP is to establish sites where baseline monitoring will be undertaken to assess the current state of the aquatic environments that will receive discharges from the exercise of this consent. Monitoring of current water quality, macro invertebrates and sediment deposition is required.

The details that need to be submitted within the BAMP are listed below.

#### Period for implementing BAMP

Once the plan is approved, the permit holder shall implement the requirements of the BAMP in sufficient time to ensure that all the monitoring can occur, and that the report on the findings from the BAMP are provided to the Manager 20 working days prior to bulk earthworks commencing within the Core Project Site (principally, see the requirements of condition 8).

*Note: The timeframe for when the BAMP will be implemented should take into account the requirements for conditions 5 and 6 of this permit.*

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#### Frequency of the monitoring

The monitoring of macro invertebrates and deposited sediment shall occur at least once every 3 (three) months, except that this frequency shall increase to monthly over the period June to August (inclusive).

Water quality monitoring shall occur at each monitoring site (without a fixed turbidity sampler) when a rainfall event exceeds 20mm over a 24 hour period.

#### **Part A – Overall monitoring locations**

##### Monitoring locations and details – Hawkins Gully Stream and Tributaries

Five (5) fixed telemetric turbidity loggers shall be installed within the Hawkins Gully Stream and its tributaries to measure the water quality in these streams.

These shall be installed in the general vicinity of the following locations) drawn from the *Overall Site Development Plan Detail Plan of Hydrological Catchments 1a and 2 (Sheet 67 Rev RO)*:

- a) Southeast of Turbine F04;
- b) Southeast of Turbine F07;
- c) Southwest of Turbine E08, prior to the confluence with Hawkins Stream proper;
- d) The gully between K03 and F14, south of these turbines but prior to the confluence with Hawkins Stream proper; and
- e) Southwest boundary of the site within Hawkins Stream proper, prior to the Core Site boundary.

*Note: These sites shall generally be located around 15 metres downstream of where an indicative discharge path enters the watercourse (i.e. at the end point of the*

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*mixing zone). Overall, the sites should be representative of the whole Hawkins Gully Catchment.*

The following specifications of the fixed turbidity monitors shall be provided:

- a) sampling frequency;
- b) how the system operates; and
- c) how the data is logged.

Details shall be provided on a monitoring and maintenance programme for the fixed turbidity loggers including, but not limited to:

- a) identify how monitoring and maintenance will be triggered i.e. routine inspections, problems with the logger becoming apparent through data not being recorded etc; and
- b) Provisions that will be put in place so that continual monitoring will be achieved i.e. spare parts, spare logger etc.

Macro invertebrate and sediment deposition monitoring will also be required at these 5 (five) sites.

*Note: Details of what is required is specified later within this condition.*

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#### Monitoring locations - Ohariu Stream Catchment

The BAMP shall include a scaled plan which shows where water quality sampling, macro invertebrate surveying and deposition monitoring will occur at sites within the Ohariu Stream catchment.

The locations where sampling will be undertaken, shall include:

- a) A single sampling site, within Ohariu Stream, located 70 metres downstream of where the last indicative discharge path enters the Stream (i.e. at the end point of the mixing zone); and
- b) A single 'control site' within Ohariu Stream upstream of the proposed culvert crossing, clear of any discharges; and
- c) Two sampling sites shall be located within two of the unnamed tributaries of the Ohariu Stream, both below Road B as shown on *Overall Site Development Plan Detail Plan of Hydrological Catchments (Sheet 68 Rev RO)*.

Details of the requirements of the macro invertebrate and sediment deposition monitoring are provided further on in this condition.

#### Monitoring locations – Mill Creek

The BAMP shall include a scaled plan which shows where water quality sampling, macro invertebrate surveying and deposition monitoring will occur at sites within Mill Creek.

The locations where sampling will be undertaken, shall include:

- a) A single sampling site, within Mill Creek, located 70 metres downstream of where the last indicative discharge path enters the Stream (i.e. at the end point of the mixing zone); and
- b) A single 'control site' within Mill Creek upstream of the proposed culvert crossing, clear of any discharges;

Details of the requirements of the macro invertebrate and sediment deposition monitoring are provided further on in this condition.

**Part B - Sampling requirements – water quality, macro invertebrates and deposited sediment**

The permit holder shall provide the following details within the BAMP:

Water quality sampling

- a) Details shall be provided to show how the following parameters that will be recorded during sampling:
  - turbidity (NTU);
  - clarity observation; and
  - suspended solids (g/m<sup>3</sup>).
- b) Details shall be provided on the methodology that will be used to undertake sampling of each of the above parameters.
- c) Details shall be provided to show how water quality sampling (excluding the automatic fixed turbidity samplers with Hawkins Catchment) will be undertaken at each monitoring site when a rainfall event exceeds 20mm over a 24 hour period.

Macro invertebrate sampling

Details shall be provided to show the methodology that will be used to survey macro invertebrates, including but not limited to:

- a) the technique(s) that will be used to carry out samples;
- b) the area that sampling will be undertaken over;
- c) the number of samples that will be taken at each sample site;
- d) analysis methods that will be used to present the data i.e. MCI and QMCI; and
- e) any other assessments that will be undertaken i.e. physical habitat assessments.

Deposited sediment sampling

The methodology that will be used to survey sediment deposition, including but not limited to:

- a) the technique(s) that will be used to carry out sampling i.e. quorer method, Molman particle size assessment method;
- b) the area that sampling will be undertaken over;

- c) the number of samples that will be taken at each sample site;
- d) analysis methods that will be used to present the data;
- e) any other assessments that will be undertaken. This *shall* include photographs of the streambed of each sample site, prior to sampling being undertaken, and of any influences (e.g. landslip, failed sediment control measure) that may have had an effect on the results.

### **Part C – Other matters**

#### Rain gauge

The permit holder shall provide details of how rainfall is going to be recorded with a continuous data logging capable rain gauge within the Core Project Site.

Details shall be provided to show how, these data, will be recorded, and how they, will be made available to the Manager, Environmental Regulation, Wellington Regional Council.

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#### Monitoring Site identification

The permit holder shall provide details of how each of the monitoring sites will be clearly identifiable onsite (e.g. signage and/or brightly coloured stakes). The permit holder shall provide GPS co-ordinates of all sampling sites.

### **Amendments and Implementation to the approved Baseline Aquatic Monitoring Plan**

4. Any amendments to the BAMP shall be approved to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

This consent must be exercised in general accordance with the approved BAMP and any subsequent amendments.

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### **Baseline Aquatic Monitoring Plan Report**

5. The consent holder shall provide a Baseline Aquatic Monitoring Plan Report ("the BAMPR") by an appropriately qualified and experienced ecologist which details the findings of the approved BAMP to the Manager, Environmental Regulation, Wellington Regional Council for approval at least 20 working days prior to bulk earthworks commencing on site.

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The BAMPR shall include, but not be limited to, the following:

- a) Water quality sampling results from both the fixed turbidity logger(s) and all other sampling undertaken at each monitoring site;
- b) Macro-invertebrate sampling results from each of the monitoring sites;
- c) Deposited sediment monitoring results from each of the monitoring sites (including photos);
- d) Using the baseline results, recommendations for the following:
  - the level(s) of turbidity and/or suspended solids that will not be exceeded during the exercise of this discharge permit at each monitoring site e.g. Turbidity (NTU) and/or suspended solids (g/m<sup>3</sup>) level for each site or a

percentage that will not be exceeded for all sites when compared to either upstream monitoring or baseline data;

- the level(s) of deposition that will not be exceeded at each approved monitoring site and how this will be measured;
- identification of the sensitive macro invertebrate taxa at each approved monitoring site and how a degradation in the communities will be measured using the identified sensitive taxa i.e. comparing baseline MCI values and providing threshold values which indicate minor, moderate and severe decline.

e) All data and rationale used to calculate d) above.

*Note: A 20 working day timeframe for approving the plan has been allocated to allow for time for: the ecologist engaged by the permit holder and Wellington Regional Council staff to liaise, if required; assessment and feedback to be provided to the permit holder and any subsequent amendments to be made; and the preparation and approval of the plan in condition 6 below.*

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### Construction Aquatic Monitoring Plan

6. The permit holder shall submit a **Construction Aquatic Monitoring Plan** (“the CAMP”) to the Manager, Environmental Regulation, Wellington Regional Council, for approval at least 20 working days prior to bulk earthworks commencing on site.

No bulk earthworks or monitoring shall commence until the CAMP is approved.

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#### Purpose of the CAMP

The purpose of the CAMP is to monitor the environmental effects of the discharges on aquatic receiving environments during the construction phase of the wind farm. This requirement continues until 12 months after the site is completely stabilised in order to assess any recovery to those environments.

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#### Frequency of the monitoring

The monitoring of macro invertebrates and deposited sediment shall occur at least once every 3 (three) months during the bulk earthworks phase, except that this frequency shall increase to monthly over the period June to August (inclusive).

Water quality monitoring shall occur at each monitoring site (without a fixed turbidity sampler) when a rainfall event exceeds 20mm over a 24 hour period.

#### **Part A – Overall monitoring locations**

The monitoring sites shall be the same as the approved BAMP. If changes are required to the monitoring site evidence shall be provided as to why the change is needed and details that the new location is sufficiently similar to that site approved under the BAMP

#### **Part B - Sampling requirements – water quality, macro invertebrates and deposited sediment**

The monitoring parameters (water quality, macro invertebrates and sediment deposition) shall be the same as in the approved BAMP.

### **Part C – Other matters**

#### Specific requirements

The consent holder shall specify in the CAMP the level(s) of turbidity and/or suspended solids that will not be exceeded during the exercise of this discharge permit at each monitoring site or a percentage that will not be exceeded for all sites when compared to either upstream monitoring or baseline data (as identified through the BAMPR process)

The CAMP shall specify the level(s) of deposited sediment that will not be exceeded at each approved monitoring site and how this will be measured;

The CAMP shall identify the sensitive macro invertebrate taxa at each monitoring site and how any degradation will be measured using the identified sensitive taxa i.e. comparing baseline MCI values and providing threshold values which indicate minor, moderate and severe decline.

### **Construction Aquatic Monitoring Report**

7. The consent holder shall provide a quarterly **Construction Aquatic Monitoring Report** (“the CAMR”) to the Manager, Environmental Regulation, Wellington Regional Council from the commencement of bulk earthworks within the Core Site.

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The CAMR shall be prepared and submitted by a suitably qualified, experienced and independent ecologist and shall detail the findings of the CAMP

The ecologist that the consent holder engages to prepare the CAMR shall be to the approval of the Manager, Environmental Regulation, Wellington Regional Council.

The CAMR shall be provided on a quarterly basis to the Manager, Environmental Regulation, Wellington Regional Council;

The **CAMR** shall include, but not be limited to:

- a) The results of the monitoring undertaken under the CAMP;
- b) An analysis of the results and what this indicates in regards to the effects that discharges are having on the aquatic ecosystems in each particular monitoring location and tributaries as a whole;
- c) Recommendations for approval to the Manager, Environmental Regulation, Wellington Regional Council, to remedy or mitigate any significant adverse effects that have occurred or to avoid foreseen significant adverse effects. This may include, but not be limited to:
  - Changes in the management or implementation of erosion and sediment control measures;
  - Methods to remedy the significant adverse effects; and
  - Mitigation measures to offset the significant adverse effects.

*Note: for the purposes of this condition “significant adverse effects” are those effects which are determined to be significant in the professional opinion of the engaged ecologist.*

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The Manager, Environmental Regulation, Wellington Regional Council will consider the recommendations from the Ecologist and any recommendations approved by the Manager, Environmental Regulation, Wellington Regional Council shall be undertaken by the consent holder to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council and within the timeframe specified by the Manager, Environmental Regulation, Wellington Regional Council.

*Note: A resource consent may be required to undertake the works recommended within the CAMR.*

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### Ceasing monitoring required under the Construction Aquatic Monitoring Plan

8. Twelve (12) months after a catchment receiving discharge is stabilised (as agreed with the Manager Environmental Regulation) the consent holder may apply to the Manager, Environmental Regulation, Wellington Regional Council, for permission to cease the monitoring required under the CAMP.

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*Note: For the purposes of this condition “stabilised” in relation to any site or area means inherently resistant to erosion or rendered resistant, such as by using indurated rock or by the application of basecourse, colluvium, grassing, mulch, or another method to the reasonable satisfaction of the Manager, Environmental Regulation, Wellington Regional Council and as specified in Wellington Regional Council’s Erosion and Sediment Control Guidelines for the Wellington Region, September 2002. Where seeding or grassing is used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once, on reasonable visual inspection by the Manager, Environmental Regulation, Wellington Regional Council, an 80% vegetative cover has been established.*

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### Makara Estuary Baseline and Construction Monitoring Plan

9. The consent holder shall engage an appropriately qualified and experienced estuarine ecologist to prepare and submit a **Makara Estuary Baseline and Construction Monitoring Plan (“the MEBCMP”)** to the Manager, Environmental Regulation, Wellington Regional Council, for approval at least 20 working days prior to the proposed start date of the baseline water quality monitoring programme.

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The ecologist that the consent holder engages shall be to the approval of the Manager, Environmental Regulation, Wellington Regional Council.

No bulk earthworks or monitoring shall commence until the MEBCMP is approved.

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#### Purpose of the MEBCMP

The purpose of the MEBCMP is to monitor the environmental effects of the discharges on the Makara Estuary receiving environments during the construction phase of the of the wind farm. This requirement continues until 12 months after the site is completely stabilised in order to assess any recovery to those environments.

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### Commencement of monitoring

The baseline monitoring shall commence at least 6 (six) months prior to bulk earthworks commencing on the Core Site. The MEBCMP must be approved prior to any monitoring commencing.

### Details to be included in MEBCMP

The MEBCMP shall include but not be limited to:

- a) A scaled plan(s) that show the following:
  - the proposed location(s) of monitoring;
  - the areas that monitoring will be undertaken over;
- b) Details of the following:
  - the parameters that will be measured. These parameters shall result in, at a minimum:
    - baseline macrofauna abundance and diversity;
    - select key taxa being identified from baseline for longer term study over the remainder of the monitoring period; and
    - sediment deposition rates i.e. from core or metal plate sampling.
  - the technique that will be used to measure the parameters;
  - the frequency and duration of monitoring for baseline monitoring and details of how long it will take to identify the select key taxa;
  - the frequency and duration of monitoring once bulk earthworks commence on site;
  - the frequency and duration of monitoring once the site is stabilised;
  - the overall timeline of monitoring and when this will commence using the above; and
  - what details will be provided in a report, prepared by a qualified estuarine ecologist, which is to be submitted to the Manager, Environmental Regulation, Wellington Regional Council. The report *shall* include, but not be limited to:
    - Results of the monitoring undertaken;
    - Identification of the taxa being surveyed and their relevance/tolerance in association with the health of the estuarine system;
    - Comparisons of monitoring results over time and what this indicates in regards to the health of the estuarine system in each particular monitoring location and as a whole system; and
    - Details of any particular characteristics that were noted during monitoring that may influence the results e.g. activities or incidents occurring in the Makara Catchment.

- c) How often the reports required above will be submitted to the Manager, Environmental Regulation, Wellington Regional Council.

*Note: For the purposes of this condition “stabilised” in relation to any site or area means inherently resistant to erosion or rendered resistant, such as by using indurated rock or by the application of basecourse, colluvium, grassing, mulch, or another method to the reasonable satisfaction of the Manager, Environmental Regulation, Wellington Regional Council and as specified in Wellington Regional Council’s Erosion and Sediment Control Guidelines for the Wellington Region, September 2002. Where seeding or grassing is used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once, on reasonable visual inspection by the Manager, Environmental Regulation, Wellington Regional Council, an 80% vegetative cover has been established.*

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### **Amendments and Implementation to the approved Makara Estuary Baseline and Construction Monitoring Plan**

10. Any amendments to the **MEBCMP** shall be approved to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

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The consent must be exercised in general accordance with the approved **MEBCMP** and any subsequent amendments.

### **Environmental Management Plan**

11. The permit holder shall prepare and submit an **Environmental Management Plan (“the EMP”)** for all construction activities related to the project to the Manager, Environmental Regulation, Wellington Regional Council, for approval, at least 20 working days prior moving any machinery onsite to commence bulk earthworks.

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No bulk earthworks shall commence until the EMP is approved.

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The EMP shall include, but not be limited to:

- a) roles and responsibilities, including appointment of a representative to be the primary contact person in regard to matters relating to this consent;
- b) construction timetable for all works and the sequencing of the works;
- c) identification of who the contractor(s) is for each phase of the works;
- d) identification of experienced person(s) to manage the environmental issues on site and identification of a representative to be the primary contact person in regard to matters relating to this permit;

### **Bunds/cleaning/refuelling/spills**

- a) details of how machinery will be thoroughly cleaned of unwanted vegetation (e.g. weeds), seeds or contaminants prior to coming onto the site;
- b) details of how re-fuelling areas will be banded or contained in such a manner so as to prevent the discharge of contaminants;
- c) details to ensure that no machinery is cleaned, stored or refuelled within 50 metres of any intermittent or permanent watercourse;

- d) requirements to ensure that all mobile fuel tankers carry spill kits and that spill kits are stored at bulk storage tank locations at all times;
- e) details of a spill prevention and response procedure specifying those trained in spill response, how spills will be contained, remedied and any material used disposed of. Contents of proposed spill kits, including absorbent pads, booms, pillow and socks and appropriate pegs/rope to hold the absorbent material in place should also be included in this procedure.
- f) details of an internal and external notification procedure in the event of a spill (e.g GW Environmental Protection Team for external notification).

**Environmental incidents**

- a) procedures for notifying WRC of incidents, including who is responsible and the timeframes;
- b) procedures for recording details of incidents and responses to those incidents;

**Public complaints**

- a) procedures for keeping records of public complaints and any action taken to rectify the cause to the complaint;
- b) Works shall not commence until this EMP has been approved by the Manager, Environmental Regulation, Wellington Regional Council and this permit shall be exercised in accordance with the approved EMP.

Any amendments to the approved EMP shall be to the satisfaction of the Manager, Environmental Regulation

**Design specifications for sediment retention ponds**

12. If sediment retention ponds are determined to be appropriate through the SEMP process (refer to condition 13) they shall be constructed in accordance with the following provisions;

- a) Sediment ponds where appropriate within Hawkins Catchment shall have a main bay capacity of 450m<sup>3</sup> per hectare of exposed earthwork area;
- b) Sediment ponds where appropriate within Mill Creek and Ohariu catchments shall have a main bay capacity of 300m<sup>3</sup> per hectare of exposed earthwork area;
- c) Sediment ponds where appropriate within the Spicer Forest Catchment shall have a main bay capacity of 300m<sup>3</sup> per hectare of exposed earthwork area;
- d) If the SEMP process determines that a chemical flocculation system is appropriate for any given sediment pond(s), then, such sediment retention ponds shall be fitted with rainfall activated flocculation systems in full compliance with section 5.2 of the GWECG, however the low flow outlet pipe shall be fitted to dose the pond after 10 mm of rainfall;
- e) All ponds shall be constructed with a forebay to a capacity at least equal to 10% of the ponds total design capacity;
- f) All ponds shall have a stabilised level spreader installed across the full width of the pond;

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**Deleted:** <#>For the purposes of clarity all bulk earthworks in the Hawkins Catchment catchment includes Roads E, F, G, H, K, L and their associated turbines platforms, laydown areas and fill disposal sites.¶

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- g) All discharges from the sediment retention ponds shall, where practical, be directed to rank grass or other stabilised outlet.
- h) All sediment retention ponds shall be designed and constructed in full accordance with section 5.1 of the Greater Wellington Erosion and Sediment Control Guidelines (GWECG) September 2002, subject to the suggested deviations below:
  - That concrete may be used to stabilise the batter surfaces of the level spreader between the main bay and fore bay, however a level timber weir of that specified in the guideline must be fitted;
  - That the float design may be incorporated into the decant pipe through the use of upturned pipes on PVC elbow joints at either end;
  - That waratahs are placed on either side of the decant structure, at either end of the decant structure, not the pipe leading from the riser to the decant;
  - That the flexible fitting between the manhole and the riser may be totally flexible non punched nova coil, sealed at every fitting;

Note: For the purposes of clarity all bulk earthworks in the Hawkins Catchment catchment includes Roads E, F, G, H, K, L and their associated turbines platforms, laydown areas and fill disposal sites.

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Note: For the purposes of clarity all bulk earthworks in the Mill Creek and Ohariu catchments includes Roads A, B, C, D, J and their associated turbine laydown areas and fill disposal sites, substation and service building and site office.

### Supplementary Environmental Management Plans

13. The permit holder shall prepare and submit for approval a **Supplementary Environmental Management Plan (“the SEMP”)** for each of the SEMP areas described in the application, or as agreed by the Manager, Environmental Regulation, Wellington Regional Council. A suitably qualified ecologist and environmental management specialist shall assist in the preparation of the SEMP.

The SEMP shall be submitted at least 20 working days prior to bulk earthworks commencing in each plan area.

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No bulk earthworks shall commence in any SEMP area until the SEMP for that area is approved, and such works shall be undertaken in accordance with the approved SEMP.

#### Sediment retention ponds

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If a sediment retention pond(s) is proposed in any SEMP area the following information shall be included in the relevant SEMP:

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- a) Identification of the sediment retention ponds which are proposed to have a chemical flocculation system i.e. areas with high traffic volumes, areas close to a watercourse(s), steep sites or highly weathered sites.

- b) the expected commencement dates for the construction of sediment retention pond(s) in each SEMP area;
- c) details of measures to be used to treat any runoff from the down slope batter of the pond(s) (e.g. super silt fences);
- d) the expected date for the commencement of bulk earthworks in the area following construction of the sediment retention pond and the installation of the flocculation treatment system;
- e) specific location of any sediment retention pond, showing contours at suitable intervals, cut and fill operations and catchment boundaries for the sediment controls;
- f) the location of ponds should take into consideration ease of location for maintenance purposes. All practical steps to be taken to avoid scouring of water directed to all sediment control treatment measures;
- g) design calculations to confirm that, where required, sediment retention ponds are designed and sized to meet condition 12 of this permit;
- h) details of how each sediment retention pond will be marked or numbered on site, so they can be clearly identified;
- i) details of how outlets or discharge points will be marked or numbered on site, so they can be clearly identified;
- j) confirmation of the outlets or discharge points from all sediment treatment measures including the discharge path to gullies and streams;
- k) details of measures to ensure that sediment deposition within the ponds can be measured (e.g. markers on the risers and gauge levels within the pond);
- l) identification of any roads that are likely to be subject to high construction traffic movements and details of the specific erosion control measures that will be implemented in these areas;
- m) detailed maintenance and inspection programme for assessing and removing sediment accumulated in the ponds;
- n) detail of where disposed sediment will be placed onsite to ensure that it does not enter water (e.g. in a bunded area)
- o) Details of how the discharge from the outlet of any sediment retention pond will be dispersed over areas of rank grass. Rank grass is defined as grass at least 25 cm high.

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### Fill disposal sites

- a) Design details of clear water diversions to the implemented and stabilisation methods;
- b) Identification of all fill disposal sites, which must not be within the following areas:
  - Sites with slope gradients equal to or greater than 28 degrees (defined as erosion prone in The Regional Soil Plan for the Wellington Region);
  - Sites that are unstable and/or areas where fill cannot be contained to remain stable;

- Areas that contain intermittent or permanent watercourses;
- Areas of native vegetation with high ecological values, or any regenerating wetland areas with high ecological values;
- Archaeological and iwi sites;
- The 'No Go' areas shown in *Sheet 81 Rev 1*; and
- Protected natural areas (reserves and covenants).

c) details of benching and contour drains for fill areas;

d) details of how the fill will be track rolled or compacted during placement;

e) a programme for progressive rehabilitation of fill areas, including specific timeframes;

f) method of stabilisation to be used in winter months on the fill site such as the application of straw mulch and requirement that this measure implemented from 1st June prior to winter months (winter months are defined as June, July and August);

#### Erosion control measures

- a) Details and specific erosion control methods to be installed progressively (e.g. scour protection to be installed on water tables susceptible to scouring as soon as practical);
- b) Additional measure to implement for mitigating effects prior to any rainfall following prolonged dry periods;
- c) details, areas and methodologies for straw mulching or other appropriate erosion sediment control methods.

#### Monitoring and maintenance schedules

- a) monitoring and maintenance schedules for all erosion and sediment control measures on a set frequency (at least weekly), or an inspection is undertaken as soon as practical following a rainstorm event that is likely to impair the function or performance of the sediment control and treatment measures, and that maintenance of structures be undertaken as soon as safe access is available;
- b) details of how the results of the monitoring will be submitted to the Manager, Environmental Regulation on a two weekly basis.

Any amendments to an approved SEMP shall be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

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#### Flocculation management plan

14. In any SEMP area in which the use of chemical flocculation is proposed the permit holder shall prepare and submit a **Flocculation Management Plan ("the FMP")** to the Manager, Environmental Regulation, Wellington Regional Council for approval, at least 10 working days prior to any bulk earthworks commencing in an approved SEMP areas.

No flocculation in any SEMP area shall commence until the FMP for that area is approved.

The FMP shall include, but not be limited to:

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- a) details of optimum dosage rate calculated from the soils in the ponds catchment including details of the calculation (e.g. bench testing);
- b) procedures for the storage of flocculation chemical(s) onsite;
- c) design details of the flocculation shed bund;
- d) a flocculation chemical spill contingency plan; and
- e) methods and responsibilities for monitoring and maintenance of the system;
- f) details of how the system will be actively managed including a template sheet for recording weekly after each rainfall event the following:
  - how much flocculant was used;
  - percentage that header tank is full
  - the water depth in the displacement tank;
  - volume of flocculant added;
  - pond fore bay and main bay clarity
  - pond pH

A suitably qualified and experienced person must be identified and their specific responsibilities confirmed for ensuring the operation, monitoring and maintenance of the chemical flocculation system to ensure that each sediment retention pond is operated as outlined in the FMP.

Bulk earthworks shall not commence in any SEMP until the requirements of the FMP have been implemented. The flocculation of any sediment retention pond shall be exercised in accordance with the approved FMP.

Any amendments to approved FMP shall be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

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#### Notification of commencement of bulk earthworks

15. The consent holder shall provide written notification of the works commencing in each SEMP areas described the application to the Manager, Environmental Regulation, Wellington Regional Council, at least five working days prior to works commencing in each area.

16. The consent holder shall provide a copy of this consent and all documents referred to in this consent to any operator or contractor undertaking works authorised by this consent, prior to the works commencing.

#### Sediment control certification and as built plans

17. Prior to bulk earthworks commencing in each SEMP area, the consent holder shall provide the Manager, Environmental Regulation Wellington Regional Council, a certificate and as built plans prepared by an appropriately qualified and experienced engineer to certify that any sediment retention ponds and where fitted, flocculation units, have been constructed and installed in accordance with conditions 12 and 14 of this permit.

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#### General discharge conditions

18. The consent holder shall ensure that all sediment-laden discharges from the site are treated by sediment treatment measures as approved in the relevant SEMP, prior to discharge.

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19. All erosion and sediment control measures shall remain the responsibility of the consent holder, and be installed, operated and maintained efficiently and in accordance with Wellington Regional Council's Erosion and Sediment Control Guidelines for the Wellington Region (dated September 2002), and any plans approved under the conditions of this permit and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

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20. The consent holder shall ensure that:

- a) all fill material is placed and compacted so as to minimise any erosion and/or instability of the fill material;
- b) fill material is restricted to natural rock and soil;
- c) final disposal site slope profiles are contoured to merge in with the existing slope, as far as practicable, to minimise erosion and hydrological changes; and
- d) long-term stockpiles of topsoil and excavated material are suitably stabilised to minimise erosion potential.

21. The works authorised by this consent shall remain the responsibility of the permit holder and shall be maintained to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

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#### Reporting and auditing of the erosion and sediment treatment measures

22. The consent holder shall ensure that the site is audited by an appropriately qualified person on a weekly basis during the bulk earthworks phase to ensure that the sediment and erosion control methods are being maintained in accordance with approved SEMP for each area.

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The audits of the site shall include the following information:

- a) Date;
- b) Name of auditor;
- c) Site condition;
- d) Sediment Management (identification of areas of potential sediment generation and review of sediment suppression activities);
- e) Runoff control (check of diversion channels and check silt retention ponds);
- f) Condition of sediment control measures including bunds, silt fences and sediment retention ponds and flocculation units;
- g) Maintenance required; and
- h) General comments.

23. The results of the audit required by condition 22, shall be forwarded to the Manager, Environmental Regulation, Wellington Regional Council every two weeks.

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#### Monitoring of flocculated sediment retention ponds



24. The permit holder shall monitor and record the following parameters for all flocculated sediment retention ponds and flocculant systems.

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On a weekly basis:

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- a) flocculant level;
- b) percentage that header tank is full;
- c) the water depth in the displacement tank;
- d) volume of flocculant added (after any rainfall events);
- e) pond forebay and main bay clarity

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During rainfall events:

- a) pH \_\_\_\_\_ (Inflow/Pond/Outflow)
- b) Temperature (°C) \_\_\_\_\_ (Pond)
- c) Turbidity (NTU) \_\_\_\_\_ (Inflow/Outflow/Pond)
- d) Dissolved aluminium (g/m<sup>3</sup>) \_\_\_\_\_ (Inflow/Outflow/Pond)
- e) Suspended solids (g/m<sup>3</sup>) \_\_\_\_\_ (Inflow/Outflow/Pond)

Monitoring shall commence when earthworks commence in the catchment of each of the sediment retention ponds. Monitoring shall cease on any sediment retention pond when its catchment has been completely stabilised. 'Stabilised' shall have the same meaning as described in condition 28.

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25. All monitoring results shall be recorded and maintained in a log on site and shall be submitted to Wellington Regional Council on request and be available for inspection during normal office hours. Records shall be kept to show where monitoring is not possible due to dry conditions or where no pond inflow or outflow exists.

26. Should the monitoring results recorded in accordance with condition 24 indicate that the pH of the pond outflow is at or below 5.5, the dosing of the pond with Polyaluminium Chloride flocculant shall cease immediately. In this event the Manager, Environmental Regulation, Wellington Regional Council shall be notified as soon as practicable, and within 5 (five) working days. The consent holder shall then liaise with the Manager, Environmental Regulation, Wellington Regional Council on an appropriate course of action to take.

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#### **Decommissioning and removal of sediment treatment devices**

27. The consent holder shall submit a plan for the decommissioning of any chemically flocculated sediment pond, which states how material removed from the pond will be disposed of.

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28. The consent holder shall ensure that no sediment retention ponds, chemical flocculation systems or perimeter controls are to be removed or decommissioned unless the removal or decommissioning is to satisfaction of the Manager, Environmental Regulation, Wellington Regional Council, and the entire area is stabilised - unless such removal and decommissioning is in accordance with the requirements of the SEMP.

*Note: For the purposes of this condition 'stabilised' means inherently resistant to erosion or rendered resistant, such as by using indurated rock or by the application*

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*of basecourse, colluvium, grassing, mulch, or another method to the reasonable satisfaction of the Manager, Environmental Regulation, Wellington Regional Council and as specified in Erosion and Sediment Control Guidelines in the Wellington Region. Where seeding or grassing is used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once, on reasonable visual inspection by the Manager, Environmental Regulation, Wellington Regional Council, 80% vegetative ground cover has been established.*

### Re vegetation

29. The consent holder shall ensure that all areas exposed by earthworks are re-grassed or re-vegetated within 20 working days or as soon as practicable upon completion of the earthworks in each SEMP area.

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30. The plant species used shall be consistent with the species in the immediate vicinity of the exposed area, replacing "like with like".

The following rehabilitation principles should be expressly adopted:

- a) Where practical, to shape the finished cuts to allow the deposition of soil in key areas so that tall shrubs can rapidly establish helping to break up the face. This can include benching, and bunding the toe of the cut when turbine erection has been completed.
- b) To vegetate cuts with plants equivalent to the slopes above and below the cut, where practicable.

### Water Supply

31. The consent holder shall identify the location of any domestic water supply sources (if any) within each of the SEMP areas described in the application prior to the works commencing and confirm the works will not interfere with that water supply.

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32. If any domestic water supply is interfered with by the consent holder during the exercise of this consent, the consent holder at its cost must ensure that a sufficient supply of water, consistent in quality, is provided to the affected property owner until either the original supply is restored or a suitable replacement is established.

### Discovery of Artefacts

33. At least 20 working days prior to bulk earthworks commencing the consent holder, in consultation with the Wellington Tenth Trust, Te Runanga o Toa Rangatira Inc, an approved representative of Ngati Tama; and the New Zealand Historic Places Trust, shall prepare an accidental discovery protocol to be implemented in the event of discovery of cultural or archaeological material. This protocol shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council.

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The protocol shall include, but not be limited to:

- a) training procedures for all contractors regarding the possible presence of cultural or archaeological sites or material, what these sites or material may look like, and the relevant provisions of the Historic Places Act 1993 if any sites or material is discovered;

- b) parties to be notified in the event of an accidental discovery (these shall include, but not be limited to the Wellington Tenth Trust, Te Runanga o Toa Rangatira Inc, an approved representative of Ngati Tama; the New Zealand Historic Places Trust, the Wellington Regional Council, Wellington City Council and the New Zealand Police, if necessary);
- c) procedures to be undertaken in the event of an accidental discovery (these shall include immediate ceasing of all works in the vicinity); and
- d) procedures to be undertaken before works may recommence in the vicinity (these shall include allowance for appropriate tikanga (protocols), recording of sites and material, recovery, and obtaining approval of the Wellington Tenth Trust, Te Runanga o Toa Rangatira Inc, an approved representative of Ngati Tama; and the New Zealand Historic Places Trust prior to recommencing works).

#### Review condition

34. The Manager, Environmental Regulation, Wellington Regional Council, may review any or all conditions of this consent by giving notice of its intention to do so pursuant to Section 128 of the Resource Management Act 1991, at any time for any of the following purposes;

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- a) To deal with any adverse effects on the environment arising from the exercise of this consent, which are not foreseen given the conditions of consent or which it is appropriate to deal with at a later stage; and/or
- b) To review the adequacy of any erosion control and treatment measures following the analysis of any monitoring results so as to incorporate additional erosion control and treatment measures;
- c) To require further monitoring or other requirements which may become necessary to deal with any adverse effects on the environment arising from the exercise of this consent.
- d) To review the need for remediation or mitigation measures in response to any monitoring results.

#### Duration of consent

35. In accordance with section 123(d) of the Resource Management Act 1991, this consent shall expire seven (7) years from the date of commencement.

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#### Lapse of consent

36. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

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## Schedule 9

Land use consent [27388] to pipe and reclaim sections of ephemeral stream beds in association with the placement of fill disposal sites.

### Environmental Enhancement Plan

1. The consent holder shall register a covenant in favour of Wellington Regional Council for the purpose of enhancing the ecological values of the Makara Stream and Estuary, by undertaking riparian planting. The covenant shall relate to 5.79 hectares of land contained within Certificate of Title WN7D/340 (Lot 1 DP 30935).

*Note - As a part of enhancing this land the consent holder intends to consult with stakeholders who are interested in improving the ecological values along the Makara Stream and Estuary.*

Mitigation planting shall be carried out in general accordance with Greater Wellington's *Mind the Stream – A guide to looking after urban and rural streams in the Wellington Region 2004*.

The consent holder shall provide the following information to the Manager, Environmental Regulation, Wellington Regional Council, once consultation with stakeholders has been completed:

- The location and extent of where riparian planting will be undertaken on Certificate of Title WN7D/340(Lot 1 DP 30935);
- The species proposed to be planted and the density of planting. These species shall be suitable for the environment, including the soil type and surrounding land use;
- The method(s) that will be used to protect the planting;
- Details of how the site will be maintained and how often, including the ongoing replacement of plants that do not survive, details of any irrigation and fertilization that will be provided, and eradication of invasive weeds from the planting site(s) to ensure adequate growth; and
- A timeline for registering the covenant and completing the planting.

### **General conditions**

2. The location, design, implementation and operation of the works shall be in general accordance with the:
- a) consent application and its associated plans and documents, lodged with the Wellington Regional Council on 12 March 2008; and

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<#>The consent holder shall engage an appropriately qualified and experienced ecologist to prepare and submit an Environmental Compensation Plan to mitigate for the adverse effects to aquatic ecosystems that will occur as a result of the development of the Mill Creek wind farm, ¶  
The **Environmental Compensation Plan** (“the ECP”) relates to all of the following consents/permits:¶  
<#>WGN080368 [27383] Land use consent to place pipe and rock protection structures in the beds of the Ohariu Stream and Mill Creek;¶  
<#>WGN080368 [27384] Land use consent to pipe and reclaim sections of ephemeral and intermittent stream beds within the Core Site and Spicer Forest;¶  
<#>WGN080368 [27388] Land use consent to pipe and reclaim sections of ephemeral streams within the Core Site in association with placing fill; and¶  
<#>WGN080368 [27385] Discharge permit to discharge sediment-laden water to land where it may enter water and directly to water.¶  
The ECP shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council for approval.¶  
The ECP shall include, but not be limited to, the following:¶  
<#>A scaled design plan(s) clearly showing:¶  
<#>The location(s) and extent of 10,000 m<sup>2</sup> of riparian planting within the 5.79 hectares of land north of the intersection of Makara Road and Opau Road contained within the Cert[... [4]

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- b) further information and amendments received by the Wellington Regional Council on 17 April 2008, 15 July 2008, 16 July 2008 and 18 July 2008.
- c) information that is approved by the Wellington Regional Council in accordance with the conditions of this consent.

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

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*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

- 3. The consent holder shall advise the Manager, Environmental Regulation, Wellington Regional Council, in writing at least 48 hours prior to the works commencing in each location.
- 4. The consent holder shall provide a copy of this consent, including any relevant site plans and attachments, to the contractor undertaking the works authorised by this consent, prior to the works commencing.
- 5. If kōiwi (skeletal remains), wahi tapu, taonga (treasures), or other artefact material is discovered in any area, all works in the vicinity are to cease immediately. The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council; the Wellington Tenth Trust; Te Runanga o Toa Rangatira Inc.; an approved representative of Ngati Tama; the Historic Places Trust; and if necessary, the New Zealand Police. Works in the vicinity shall not re-commence until a site inspection has been undertaken by the representatives of these parties, appropriate tikanga (protocols) have occurred, and the artefacts have either been recovered or the appropriate approval to continue is given.
- 6. All works affecting the streams, including tidy up on completion of the works, shall be completed to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

#### **Fill disposal site selection criteria conditions**

- 7. Fill disposal sites shall not be located in areas with the following characteristics:
  - a) Sites with slope gradients equal to or greater than 28 degrees;
  - b) Sites that are unstable and/or areas where fill cannot be contained to remain stable;
  - c) Areas that contain intermittent or permanent watercourses;
  - d) Areas of native vegetation with high ecological values, or any regenerating wetland areas with high ecological values;
  - e) Archaeological and iwi sites;
  - f) The 'No Go' areas shown in Sheet 81 Rev 1; and
  - g) Areas within a 250 metre radius of turbines F13, F14 and K03.

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8. The consent holder shall prepare, submit and implement a **Supplementary Environmental Management Plan** ("the **SEMP**") for each of the SEMP areas described in the application, or as agreed by the Manager, Environmental Regulation, Wellington Regional Council. The SEMP shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council, for approval at least 20 working days prior to works commencing in each plan area. A suitably qualified ecologist and environmental management specialist shall assist in the preparation of the SEMP.
9. The purpose of the plan is to indicate how the conditions of this consent will be complied within each proposed fill disposal site in each SEMP area. The SEMP shall include, but not be limited to:
  - a) The specific location and extent of each proposed fill site;
  - b) The lengths of any piping/subsoil drainage required for each location; and
  - c) Details of the characteristics and ecological values of any watercourse where fill is proposed to be placed.

*Note 3: A site visit will be undertaken as part of the approval process required from the Manager, Environmental Regulation, Wellington Regional Council. The purpose of the site visits are to assess the appropriateness of the proposed fill locations and/or discuss alternative options that may be put forward in a revised SEMP.*

No piping and or reclamation in association with fill disposal sites in any SEMP area shall commence until the SEMP for that area has been approved.

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#### Contamination prevention conditions

10. The consent holder shall ensure that:

- all contaminant storage or re-fuelling areas are bunded or contained in such a manner as to prevent the discharge of contaminants;
- all machinery is thoroughly cleaned of vegetation and contaminants prior to entering the site;
- all machinery is regularly maintained in such a manner so as to minimise the potential for leakage of contaminants; and
- no machinery is cleaned, stored or refuelled within 50 metres of any intermittent or permanent watercourse.

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11. The consent holder shall take all practicable steps to minimise sedimentation and disturbance of any watercourses during the construction and implementation of the works, including:

- a) completing all works in the minimum time practicable;
- b) minimising the area of disturbance at all times;
- c) avoiding placement of excavated material in the wetted channels;
- d) separating construction activities from the wetted channels i.e. by temporarily diverting the flow around the area of works and/or bunding the works area;
- e) minimising time spent by machinery in the wetted channels, including the number of vehicle crossings; and

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f) immediately removing any excess material from the bed and banks of the streams on completion of the works.

12. The consent holder shall ensure that appropriate erosion and sediment control measures are installed prior to, and during, all construction works.

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13. Any sediment-laden water which pools within the areas of works shall be dewatered by pumping it to land (where it is unable to enter surface water) or by other such method to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

14. All fill material placed in the stream beds shall be restricted to natural material, such as clay, soil and rock, shall accord with the Ministry for Environment "cleanfill" definition as detailed in 'A guide to the management of Cleanfills, 2002' and all such fill material shall be placed and compacted so as to minimise its erosion and instability.

15. The works shall remain the responsibility of the consent holder and be maintained so that any erosion, scour or instability of the stream bed or banks that is attributable to the works carried out as part of this consent is remedied by the consent holder.

#### Duration of consent

16. In accordance with section 123(d) of the Resource Management Act 1991, this consent shall expire thirty five (35) years from the date of commencement.

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#### Lapse of consent

17. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within seven (7) years of the date of commencement.

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## APPENDIX 1 – Summary of submissions made and evidence heard

### **The Applicant – Andrew Beatson – Legal Counsel**

In opening submissions Mr Beatson characterised the positive effects of the proposal as:

#### Local and Regional Benefits:

- Making use of an abundant natural resource – commitment to sustainability
- Capacity to provide power to the equivalent of 35,000 homes in the region
- Economic benefits i.e. employment and sourcing of local machinery and resources
- Additional revenue for landowners
- Establishment of a sustainable community fund
- Proposal will ensure the rural character will be maintained, rather than subdivided into lifestyle blocks
- Road improvements, which will enhance safety - especially along the northern section of Ohariu Road

#### National Benefits:

- Proposal will contribute toward meeting NZ's growing demand for electricity
- Proposal is a viable alternative to undesirable methods of energy generation and developments
- Positive effects reflect many of the provisions in the statutory instruments, and wider policy documents, which promote the benefits of renewable energy.

#### Wind Generation

- Project Mill Creek will have an overall capacity of 71.3MW and will be generating electricity for 90% of the time. The energy produced by Mill Creek will make a substantial contribution towards meeting demand growth
- He also summarised positive effects of wind energy from the *Awhitu* decision (pages 15-17)
  - (i) *Electricity is a vital resource for New Zealand. There can be no sustainable management of natural and physical resources without energy, of which electricity is a major component.*
  - (ii) *New Zealand needs a more diverse electricity generation base, to avoid for example over-reliance on hydro which is susceptible to dry years; in any event new large hydro options are limited.*
  - (iii) *More thermal generation will have adverse effects, including contributing to climate change and depleting fossil fuels.*
  - (iv) *As a matter of national energy policy set in accordance with relevant legislation, New Zealand is pursuing options for renewable energy.*
  - (v) *Wind is a source of renewable energy which is plentiful but which is best able to be utilised only in certain locations.*

Mr Beatson submitted that the evidence showed that:



### Electricity Generation

- On a national scale, the project site is particularly suited to wind energy generation.

### Erosion and Sediment control

- In relation to assessing the effects of construction at West Wind and success in mitigating unexpected sediment discharge, the existing environment at West Wind included considerable sedimentation in waterways prior to the construction period.
- Sediment entering natural waterways is a natural geological occurrence
- Aquatic ecosystems are well equipped to deal with sedimentation pulses
- To date, there has not been a significant adverse effect on Makara Estuary from the construction of West Wind

### Noise and Vibration

- Noise levels emitted from Mill Creek will be acceptable and consistent with the Environment Court decision relating to West Wind
- Meridian proposes to meet the sub-6808 condition, as well as the NZS6808
- In general terms NZS6808 is consistent with the international approach to the assessment and control of noise from wind turbines.
- Low frequency acoustic energy will fall well below recognised perception thresholds for such a noise source (both airborne and ground borne surfaces)
- Construction noise will meet the requirements of NZS6803:1999
- Although traffic noise associated with construction will have an impact on a number of properties, the levels will comply with the relevant standard.
- When considering cumulative effects regarding noise - based on operational noise predictions, the combined noise associated with the operation of both Mill Creek and West Wind will meet the requirements of NZS6808.

### Ecological Effects

- Meridian disagrees with the assumption by WRC that it is inevitable that adverse effects will occur in relation to ecology.
- The site is highly degraded in that it is used for pastoral farming. As such, there are no outstanding or rare indigenous plant communities that will be affected. The project foot print avoids small remnants of native forest in and around the area.
- Although small areas of regenerating native shrubland may be affected, these areas are abundant and the species commonly found on the Wellington coast.
- There is no suitable habitat for rare indigenous native fauna.
- The effects on avi-fauna is negligible, as there are no rare or threatened native species at risk by the proposal.
- Four streams flow through the subject site.
- Installation/replacement of culverts may affect the migratory passage of some fish species; however, through appropriate design and construction this can be avoided.

- Earthworks and associated sedimentation have the potential to cause adverse effects on the surrounding environment – esp. the stream catchments and the Makara Estuary. However, best practice management of sediment and contaminants are proposed, and lessons have been learnt from project West Wind. Effects will be able to be appropriately mitigated.
- Evidence by Mr Fuller and Keesing outlines how the effects can be appropriately mitigated and that the character and magnitude of potential ecological effects associated with the wind farm are no more than minor. Additional measures will be put in place in order to mitigate effects.

#### Traffic and Rooding Effects

- Most traffic generation associated with the proposal will occur during construction (large traffic particularly in the first 2 months of construction).
- Construction traffic will be restricted to certain hours to minimise effects on residents
- Operational traffic over the long term will be minimal and generally confined to routine maintenance as and when required.
- Spicer access road will be a private road and no through access will be permitted, aside from vehicles associated with the construction phase.
- The TIA details a comprehensive list of recommendations, including a traffic management plan.

#### Construction Effects

- EMPs together with detailed SEMP's will be prepared to manage construction effects. Meridian prefers this form of method of assessment to that proposed by WRC, which recommends the use of "mixing zones". (Furthermore, Mr Beatson argued that EMPs and SEMP's ensure requirements are clearly specified, and mitigation measures can be monitored).
- The project will result in visible cuttings, soil disturbance, and minor vegetation clearance as well as discharges to the environment. Due to the temporary nature of the construction phase and with mitigation measures in place, any potential adverse effects will be acceptable.

Mr Beatson further submitted that the permitted baseline brought the following activities into play:

#### **Smaller Components of the Activity**

The permitted baseline could be use as part of the assessment for some of the smaller components of the development such as operations buildings, site offices, security offices, signs, etc.

#### **Visual Outlook Effects - Turbines**

It is a Permitted Activity to change the pastoral land use on the Mill Creek site, to another rural land use such as forestry, which would alter views of the site. Compared views of turbines at a distance to closer views of permitted rural accessory buildings and commented that "while the visual effects would not be the same it is important to note that both turbines and rural buildings can impact on private views of pastoral farmland."

#### **Ecological Effects**

Forestry and intensive rural land uses such as dairying are Permitted Activities within the Rural Area. These could have similar effects in terms of the potential for loss of ecological habitat. The width of the culvert crossing was also argued to fit within permitted baseline

And therefore these activities required no further assessment.

### **Adam Muldoon – National Electricity Scene**

Mr Muldoon provided the hearing with an overview of the electricity scene within New Zealand and Meridians role in that wider sector. Mr Muldoon discussed the supply and demand pressures facing the electricity sector and the role renewable energy has to play in that. Mr Muldoon noted that Meridian has significant involvement in wind generation projects nationwide, and stated that experience gained through other wind generation projects would be beneficial to the Mill Creek project. The natural wind resource at the Mill Creek site and proximity to existing infrastructure makes this a practical location for establishing a commercially viable wind farm.

Mr Muldoon also commented on the potential removal of turbines from the proposal. He stated that removal of some turbines may render the project economically unviable, for little gain, such as reduced visual effects. He noted that the deletion of turbines would unbalance the projected cost of infrastructure as a smaller number of turbines would have to meet these costs. He noted that through initial project shaping several turbines had been removed and the remaining turbines were necessary in terms of optimum viability. Mr Muldoon also discussed the method in arriving at the optimum number of turbines in relation to construction costs.

### **Alan McKinney – Project Overview**

Mr McKinney provided an overview of Project Mill Creek, including a discussion on the formation of Windcorp, description of the site and the proposed type of turbine technology to be used. Mr McKinney addressed the proposed order of construction and detailed the proposed site access arrangements including a discussion on the proposed Spicer Forest access route.

It was clarified during Mr McKinney's evidence how many turbines were removed from the original concept (5-7 from SW corner of subject site and ridgeline along Ohariu Road) – due to effects on the costal landscape, and associated visual and noise effects.

Mr McKinney explained how experiences from similar projects have enabled continuous improvements to be made in the design and proposed roll-out of Project Mill Creek. Such improvements include:

- Photo simulations – including the use of the time lapse simulation technology
- Construction, including cut to fill techniques, laying turbine foundations and the selection of fill sites
- Appointment of environmental manager responsible for ensuring compliance with conditions
- Improved sediment control structures – use of the sucker truck (which also aids in the dampening down of dusty roads)
- The use of materials such as straw mulch
- Reduction in sediment discharge from fill areas
- Improving communications between contracting companies and their workers
- Monitoring (e.g. surface water quality)

- Best practice
- Internal roading design (reducing the extent of cut/fill necessary)

Mr McKinney also discussed the process of project design in order to build a technically feasible project while ensuring various stakeholders are appropriately consulted.

#### **Dr David Black – Public Health**

Dr Black addressed the issue of potential health effects relating from the Project Mill Creek, in doing so he identified the main areas of concern from submitters and discussed each point of concern in detail. In particular Dr Black

Dr Black accepted that there would be some degree of perceptible sound but concluded that this was an amenity effect rather than a health effect. He did not accept that visual flicker would be significant as the essential causal elements of amplitude, frequency, colour and area of visual field did not exist. With respect to low frequency noise and vibration, Dr Black submitted that there would be no low frequency vibration above levels routinely encountered in everyday life. Dr Black noted that, in the absence of a clearly identifiable source of energy, the corollary condition known as vibro-acoustic disease (“VAD”) could not occur. He stated that the levels of energy received from the turbines were many orders of magnitude below those speculated to cause VAD.

Dr Black accepted that the perceived affects could manifest into anxiety and distress, and cautioned the approach of reliance upon inadequate scientific data and studies. He did, however, endorse the submission from Dr Palmer of Regional Public Health, and noted that the “indirect consequences of asserted misinformation and community division are a significant risk and these need to be dealt with by ongoing community involvement in which RHP has a continuing role”. Dr Black’s overall conclusion on health-related matters was that no significant impact on the community would arise from the proposal.

#### **Paul Botha - Wind assessment & turbines**

Mr Botha gave evidence on wind energy, including:

- The background of wind speed and wind energy in a national framework – and in particular the local wind environment in Wellington. Project Mill Creek will have a net capacity factor of 43% which is almost double the global avg.
- Modelling of the wind flow across the subject site – taking particular care to examine the local topography, surface roughness, wind speed data and mapping obstacles on the subject site.
- Wind speed and its correlation to wind energy through the turbines i.e. the wind speed distribution is combined with the wind turbine power and results in energy output.
- The varying factors that culminate in high wind – such as distance from the coast and elevation level at the site.
- The wind turbine technology, including the features of controlling varying modes of operation and particular characteristics of the selected turbine for use in Project Mill Creek (Siemens SWT2.3-82)
- Detail regarding the proposed turbine placement on the subject site in order to optimise energy output and still create an acceptable environment for those who live nearby.

- Background into separation distance of turbines to residential dwellings. The separation distances proposed are not dissimilar to those seen at other wind farms developments around the world.
- The likelihood of shadow flicker and blade glint occurring (even a conservative calculation has the possible effects below the globally accepted level)

### **Anna Broadhurst – Climate change**

Ms Broadhurst discussed the issue of climate change and Meridians proactive response to this global issue. She also discussed in detail the policy framework (both at a national and international level) surrounding climate change and greenhouse gas reduction strategies.

### **Len Wiles (Civil Engineer) – Project design and construction**

Mr Wiles described the process undertaken to ensure the proposed turbine placements were feasible when taking into account the need for access roads etc – through a robust process called micro-siting – some turbines were relocated to avoid watercourses, ecological areas, impractical access etc.

Ensured sound design in order to minimise the volume of cut required, which reduces the potential for slope instability and erosion.

Site topographic and geotechnical considerations were paid particular attention to in formulating the best route alignment for the proposed access roads within the site. Sites in the Wellington region that exhibit similar significant cuts were analysed and taken into account when designing the proposed access routes and slope batter design.

The subject site is within an area of high seismicity – the turbines and substation complex will be located at least 20m from active faults, as recommended by the MFE guidelines.

Alternative access options to the site – including the following:

- Access through a new road at Spicer Forest and along OVR & BRR (preferred)
- Access by sea using Wharehou Bay as a landing point
- Access from West Wind
- Access along Takarau Gorge Road

The proposed Spicer Forest and along OVR & BRR route is preferred, as it requires the least upgrade works and less road user disruption. (Detailed discussion of access route covered in Mr Wiles' evidence).

Excess excavated material will be placed at clearly defined fill sites. The majority of earthworks will be required to create access roads and turbine platforms. Fill sites have been identified near turbine positions and along access roads throughout the site (confirmation of site suitability will be based on strict criteria and undertaken as part of the EMP process)

Discussed consultation with stakeholders and how changes to the proposed development have been made following consultation. Changes include

- relocation of culverts,
- extra level of care when considering erosion and sediment control measures with the Hawkins Gully catchment (proximity to Makara Estuary)

- Widening the northern end of OVR
- Maintaining existing road frontages along the eastern side of OVR – widening the western side (while staying within the road reserve)

The estimated level of earthworks within the core site is 643,000m<sup>3</sup> (conservative estimate). This is approximately 33,000m<sup>3</sup> per/km, which is not overly significant when compared with other large scale projects. Earthworks will be managed on a logical section by section basis, with appropriate erosion and sediment controls established prior to site clearance in any section,

Mr Wiles discussed the process of access road formation and turbine platform construction – including details on the level of excavation required, proposed management of associated fill, and rehabilitation of turbine platforms once built.

In less detail, Mr Wiles also discussed the construction methods required for the substation, concrete batching plant and the realignment of the HVDC earth line.

Stormwater runoff will be managed using a variety of techniques including rip-rap energy dissipation devices, re-vegetation measure, maintenance of road surfacing, cut off channels or sump pits at 100-200m intervals, discharge to dry gullies and areas where land has remained in-situ (i.e. no fill etc).

In his evidence, Mr Wiles detailed mitigation strategies and measures that would be necessary due to the large level of proposed earthworks etc. Mr Wiles addressed mitigation measures relating to:

- Slope stability and route alignment
- The use of a robust Environmental Management Plan (EMP)
- Re-vegetation
- Detailed fill site selection
- Concrete batching process and aggregates
- Permanent stormwater and road maintenance
- Stream crossings and realignment
- Hydrological catchment areas that feed directly into the Makara Estuary

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In response to matters raised in the Officer's report, Mr Wiles discussed the following:

- Revised access road proposed to turbine F14 in response to ecological concerns raised by Dr Blaschke
- In response to issues raised over the potential ecological impact on the hydrological area around F13 & F14, Mr Wiles clarified that the level of earthworks in this area is on par with those in any other area of the subject site (i.e. 33,000m<sup>3</sup> per/km. In addition, no fill sites are proposed for material excavated in the area (therefore the construction footprint is only the turbine platform and the associated access road formation. Approx 50% of the potential construction footprint has been removed from this area in response to concerns relating to sediment generation).
- Disagreed with WRC Officer's that the culvert width only has to be as wide as the maximum width of the vehicle. Also stated that the culvert must be a minimum distance below the road surface to retain structural integrity.

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- In light of WRC concerns the following culverts will be sized to accommodate a 1 in 100 year event: - A3, A4, C2, C5a, and F1.
- WRC was not satisfied that Ohariu Stream and Mill Creek culverts were designed to accommodate a 1 in 10 year event, therefore they have been redesigned to accommodate a 1 in 20 year event

Particular points that have been learnt during the construction phase at West Wind:

- Understanding the extent of cut heights
- Formulating exceptional fill sites
- Geotechnical considerations – Geotech team did not encounter any surprises that weren't anticipated prior to the construction management plan.
- Indication of the batter slopes required and the degree of angle

In response to issues raised by Mr Barraclough, Mr Wiles clarified that the access options suggested by Mr Barraclough had been assessed, and were found to be inadequate due to additional environmental and construction effects. Mr Wiles also addressed the calculations relating to the anticipated volume of earthworks, and stated that the estimate was conservative (even when taking into account the additional 100,000m<sup>3</sup> of basecourse material as raised by Mr Barraclough. Mr Wiles remained confident that the on-site water requirements could be catered for from watercourses within the site.

### **Ed Breese – Environmental Management**

Mr Breese described environmental management techniques at Mill Creek and how these will be modified based on past experiences at the Te Apati, White Hill, and West Wind projects. A robust EMP is a key element in ensuring best environmental management practices are adhered to by all who work on the site.

Mr Breese outlined the process involved in formulating the EMP, and in particular the SEMP (using SEMP 5 as an example where modifications were made in response to Council concerns, particularly in relation to the Hawkins Stream tributary realignment of access track to turbine F14, relocation of culverts, use of silt fences and topsoil bunds around turbine platforms etc)

Mr Breese explained how experiences gained working on the West Wind project would be invaluable in the construction of the Mill Creek project. Such experiences show have developed a better understanding of the way large fill areas should be constructed in order to allow progressive rehabilitation of the fill area and reduce the overland flow. Another example is the use of straw mulch on fill areas where there is a delay in revegetation – the straw mulch help reduce the surface run off and aid revegetation.

Key differences between the West Wind site and the Mill Creek that will throw up different challenges are:

- West Wind presents a wide variety of slopes and vegetation cover, as well as a diverse geological base. Mill Creek is much more uniform, which will aid construction methodology and works
- At Mill Creek, the material will be more weathered, which may pose a few problems. However, there will be more topsoil, which will aid revegetation efforts.
- Less traffic impact at Mill Creek, compared to that of West Wind

- The construction period at Mill Creek will be significantly shorter at Mill Creek
- Approx ½ the earthworks will be required at Mill Creek , compared with West Wind

Mr Breese noted that many submitters were concerned that the sediment run off from the Mill Creek site would have a catastrophic effect on the Makara Estuary, Makara Stream, Mill Creek and the Hawkins Stream, following discharge events resulting from works at Project West Wind. He stated that sediment discharges are a natural feature of Makara Stream, and was a natural occurrence prior to the commencement of Project West Wind.

Section 3 of the draft EMP identifies the potential adverse effects on the Makara Estuary and Stream resulting from significant erosion and sediment discharge. To avoid the generation of sediment Mr Breese proposed the following actions:

- Site area must be pegged out by the site supervisor prior to commencement on earthworks to avoid unnecessary soil disturbance
- Staging earthworks to minimise the area of land disturbed at any one time
- Reinstate areas of disturbance as soon as practicable
- Installation of cut-off drains to divert water from disturbed areas
- Installation of flumes to carry water over areas of potential erosion
- Installation of energy dissipation devices in water tables and around outlets from sediment ponds to prevent erosion (rock armour).

For larger areas of disturbance (fill sites, structural fills, water tables and road excavations), the following techniques were proposed

- Sediment ponds (where practical, the size of sediment ponds in the Hawkins Stream catchment will be increased in capacity by 50%.
- Grit traps
- Sediment fences, or filter socks as an alternative method
- Buffer of retired pasture (10-13m wide) – rank grass
- Regular inspection and maintenance of sediment control measures
- Prompt action when measures are not performing to required standards. Additional measures might involve the use of flocculation blocks, enlarging the structures and reducing the load. Regular inspections (weekly and fortnightly) will monitor the situation). An appropriate trigger for the use of flocculation blocks would be two standard deviations from the mean.

Mr Breese rejected claims by the Makara Ohariu Community Board that a number of significant sediment runoff events had discharged into private property and local catchments.

Mr Breese disagreed with Dr Blaschke's assessment that there is a high probability (higher than 50%) that enough sediment to cause significant adverse effects would reach the receiving environment. Mr Breese went on to explain the amendments that had been made to the original proposal to address concerns raised about the receiving environment around Turbines F13 & F14.

Mr Breese clarified points raised by the WRC Officers, including matters relating to appropriate monitoring levels after significant rainfall events and response rates in implementing successful improvements. Mr Breese stated that it is not until the following rainfall event that it becomes clear



whether or not measures taken were successful. Mr Breese provided example of an improved system where the run-off from road surfaces was much higher than initially anticipated, and the practical solution was to create an increase in the number of grit traps in the vicinity of the problem areas.

Cumulative construction effects from both Project West Wind and Project Mill Creek should not be considered as being a significant problem, as the construction phase of West Wind will be over by the time construction at Mill Creek commences.

Mr Breese concluded by saying that potential adverse effects relating to sediment discharge can be adequately avoided and mitigated through commitment to the proposed measures outlined in the EMP and associated SEMP's.

In terms of monitoring, Mr Breese was cautious about the method of monitoring deposited sediment, and stated that it would have to be a system that allowed rigorous interpretation

### **Stephen Fuller – Ecology**

Mr Fuller outlined the characteristics of the site area – e.g. pastoral area with no significant vegetation within the project footprint; with 6 freshwater streams that could potentially be affected by the proposal. He noted that of these streams, four discharge into the Makara Estuary. Overall, the types of stream habitat that occur within the project footprint were considered representative of similar rural streams in the Wellington region.

Mr Fuller discussed lessons learnt at Project West Wind, which need to be put into practice at Project Mill Creek, in particular improved preparation for the first autumn rain following droughts, increased sampling in headwaters, increased emphasis on vegetative treatment of overland flows, and improved sediment management in close proximity to the two stream crossings. Mr Fuller endorsed the proposal by Meridian to increase the size of the sediment ponds at Mill Creek by 50%, thereby exceeding the requirements of the Regional Council guidelines.

Mr Fuller recommended to Meridian that permanent turbidity monitoring would assist in establishing baseline levels prior to construction subject to appropriate siting, installation and monitoring to ensure accurate operational performance.

With regard to recommending measures to avoid, remedy or mitigate effects, Mr Fuller discussed the concept of "No Go zones" in the form of a no go map to be used in the EMP and SEMP's. Adherence to the No Go map will ensure indigenous wetland and remnants of vegetation will be avoided, thus negating the need for mitigation measures in these areas. With regard to protection of streams, wetlands and estuaries, based on experience at Te Apati and Project West Wind, it was Mr Fuller's opinion that with best practice management of sediment and erosion, effects would be short term and minor, and no mitigation would be required.

Furthermore, Mr Fuller stated that stream crossings could be easily designed to avoid effects on fish passage and provide continuous stream bed habitat.

Mr Fuller refuted claims made by submitters that all the sediment seen in Makara Stream is a direct result of sediment discharge from Project West Wind, and instead stated that a number of activities in the local area contributed to the overall degradation of the stream

In response to concerns raised by WRC Officer's and Dr Blaschke Mr Fuller detailed how the original proposal has been amended, resulting in three key changes:

- Mill Creek crossing moved to avoid a slightly higher value section of stream and reduce the length of culvert

- Move a stream crossing near turbine F14 (culvert F1) 300m north to minimise effects on the intermittent tributary of Hawkins Stream
- Modified design of a small diversion below culvert Boom 019 to better maintain habitat quality

In response to concerns raised by submitters, particularly Mr Beccard and Mrs Niven, Mr Fuller explained the methodology in assessing impact upon avian fauna (particularly the falcon), and concluded that the potential effects would be less than minor. He also tabled a statement of evidence from Kevin Stafford, which related to the impact of wind turbines in relation to horses and was submitted as part of the Environment Court hearing for Project West Wind. He concluded that the typical noises associated with turbines are unlikely to cause any significant response in horses nearby.

#### **Dr Vaughan Keesing – Fresh water ecology**

Dr Keesing explained his research methodology for determining the existing environment relating to fish abundance, habitat and water quality.

The greatest risk to the aquatic ecology lies with the lower Hawkins Gully, Smith's Gully and the condition of lower Makara River and Estuary. The potential adverse effects solely lie with potential significant sediment discharge.

Dr Keesing explained the process of sedimentation and the effect it would have on the local environment. He went on to say that the risk of sedimentation effects resulting from a sediment breach/discharge is very low, and as such does not need mitigation strategies in place. Remedial actions for such an occurrence should be developed in the SEMP.

Dr Keesing did not consider mixing zones in ephemeral systems to be appropriate or practical. He did, however, concur that mixing zones of the main streams (perennial) would be appropriate and stated that a 70m zone would be appropriate. For the Smiths, Hawkins and Mitchell Systems, Dr Keesing stated that a 40m mixing zone would be sufficient.

It was Dr Keesing's opinion that the existing environment is not pristine, nor does it contain sensitive indigenous communities. On the contrary, Dr Keesing explained that the stream systems are dominated by tolerant species, and that the environment has undergone decade of degradation due to the nature of the pastoral activities.

In response to Dr Mike Joy's submission, Dr Keesing asserted that there is no evidence to show that the ecological environment is stretched to its limit. Furthermore, he reiterated that should minor sediment discharges occur the aquatic communities were resilient enough to withstand the sediment pulse.

#### **Dr Tim Haggitt – Marine ecology**

Dr Haggitt was commissioned by Meridian in 2004/2005 to undertake an ecological and physical process assessment of Ohau Bay and Oteranga Bay as part of initial investigations into the construction of landing wharfs for Project West Wind. Dr Haggitt returned to the site in Sept 2008 in order to assess the impact the construction period has had on the tidal marine life (i.e. the impact the additional sediment load has had on the area). Dr Haggitt stated that there is no evidence to show that there has been change to the inshore ecological community. Furthermore, Dr Haggitt explained the rough tidal action and strong currents in the area would aid with sediment disbursement.

With regard to the Makara Estuary and Bay, Dr Haggitt noted that the estuary would be prone to silt load, due to the calmer nature of the environment. However, he also noted that the existing environment would contribute significantly to the sediment and silt loading in the estuary (particularly the eroding stream banks, which are grazed by farm animals).

### **Tony Coggan – Truescape Images**

Mr Coggan explained the technology behind the Truescape images and how they were developed. He discussed in detail the primary human field of view and how this is captured in the Truescape images using a 28mm lens.

As part of his evidence, Mr Coggan showed a Truescape photo simulation of a point at Project White prior to construction and showed a photo of the same view post construction with the turbines in place. The photo simulation was identical to the constructed wind farm – both in turbine placement and scale.

### **Peter Rough – Landscape**

Mr Rough discussed the legislative and policy framework with which his assessment was relevant to. He then detailed the character and features of the local environment, including a discussion on the natural character of the coastal environment and outstanding natural features and landscapes (or the lack thereof). He also discussed the existing character of the area in terms of its open, rural nature.

Mr Rough concurred with Mr Hudson's assessment that turbines represent the most obvious visual effect resulting from the proposed wind farm, due to the distribution and size of the turbines. Mr Rough also stated that the visual effects relating to earthworks resulting from the core site access roads, turbine platforms, fill sites etc will not be as significant, as they will be mostly concealed from public view and will be subject to remedial work. Ancillary structures in Mr Rough's view could be adequately placed to avoid significant effects.

Mr Rough explained that due to the sheer size of the turbines, the most obvious and effective form of mitigation with regard to visual effects, would be to exclude turbines at the planning stage. He detailed how the process had already gone through a robust assessment phase, where several turbines were removed from the south-west corner of the subject site as a result of his advice to Meridian concerning the landscape and visual effects these turbines would have on Makara Beach and the surrounding environs.

It Mr Rough disputed the statement by Mr Hudson that the neighbour West Wind site was more suited for a wind farm and instead he argued that the Mill Creek site was more appropriate for wind farm development, as the rolling nature of the landscape allows for simpler engineering and as a result, less landscape and visual effects. He also noted that the Mill Creek site does not contain the rugged nature and remoteness, as seen in the West Wind site. Mr Rough stated that the "scenic aesthetic" approach taken by Mr Hudson resulted in him [Hudson] arriving at an ill-founded conclusion regarding the placement of turbines on the Mill Creek landscape.

With regard to cumulative effects in relation to the proximity of Project West Wind to Mill Creek, Mr Rough explained that the separation of the two wind farms would be apparent to the viewer; the exception being in a couple of identified points such as Colonial Knob and in offshore views in the vicinity of Ohau Point. In other locations where both wind farms will be visible, the developments will be viewed as separate entities (primarily due to the clustered nature of Mill Creek in contrast with the more spread out nature of West Wind). Mr Rough states that the cumulative visual effects will be slight, and therefore acceptable.

With the assistance of 22 “TrueView” photo simulations, Mr Rough was of the opinion that a reasonable assessment of potential landscape and visual effects of the proposed wind farm, including effects from residential locations was able to be made. In addition, a further 76 “TrueViews” were prepared from viewpoints located at various residential properties. Attempts to visit a number of these photopoint locations were frustrated, so an in depth on-site assessment in conjunction with all of the “TrueViews” was unable to be carried out.

The following conclusions were made from the residential “Trueview” photo simulations:

- 22 views from photopoints on 20 properties no turbines visible
- 16 views from 16 photopoints will have negligible to slight effect on visual amenity
- 13 views from 9 photopoints would have a moderate effect on visual amenity
- 18 views from 16 photopoints might have substantial effects on visual amenity

#### Response to John Hudson’s assessment of visual amenity effects – private houses

- The visual effects of turbines suggested for removal are not so adverse so as to warrant their removal
- Turbine G04 is the most problematic turbine that Mr Hudson recommended for approval, however mitigation options or relocation should be considered before removal is recommended
- Even though the house site at 1000 Makara Road is in close proximity to three turbines (F11, F13 & F14), there will not be any direct views from the proposed dwelling into the subject site

In discussing the significant natural features, Mr Rough disagreed with Mr Hudson that the whole of Mill Creek’s coastal environment is an outstanding natural landscape

In his assessment of Sec 6 matters, Mr Rough discussed the definition of the coastal environment. Mr Rough argued that neither the subject site, nor the site’s coastal environment can be considered to be an outstanding natural landscape at either the regional or district levels. Within the site’s coastal environment is a section of Wellington’s distinctive coastal escarpment, which is the only listed landscape feature of significance on the Mill Creek site. Mr Rough stated that the feature could be accorded status as an outstanding natural feature. He emphasised that no turbines would be located on this feature but from some coastal locations, such as on the shoreline and in coastal waters close to the shoreline, some turbines will have localised minor to moderate effects on the coastal escarpment where they appear to be located at the top of the escarpment.

Mr Rough explained that the proposed wind farm would have some unavoidable effects on the quality of the environment, but the layout and design of the wind farm has resulted in a proposal that minimises adverse effects on the quality of the environment where such effects are unavoidable.

In response to a request by the Chair, Mr Rough produced a tabulated summary where he provided analysis of the TrueViews and the effect the individual turbines would have on visual amenity etc. He also raised concerns about the methodology employed by Ms Steven in her “scoring” of turbines visual effects.

Mr Rough disputed the coastal environment as delineated by Ms Steven in her evidence, and instead argued that his delineation was based on the same methodology as that which formed the basis of the coastal environment for the West Wind Project – and was accepted by four landscape professionals at the time.

In his reply, Mr Rough also addressed concerns raised by a number of submitters. One particular key concern was that of Ralph Jorgensen, who was sceptical of the Truescape photo simulations and the accuracy these portrayed of the existing landscape. Mr Rough disagreed with the lens argument put forward by Mr Jorgensen, and stated that the current lens technology used is accepted in the Environment Court and produces the best visual representation.

### **David Dunlop – Transport**

Mr Dunlop described the alternative routes considered and identified access through Porirua and Spicer Road as the preferred route

His discussion regarding anticipated traffic generation included:

- Overweight and over dimension loads (approx 2-3 inbound vehicles per day over a 5 month period)
- Heavy construction vehicles (maximum of 29 inbound vehicles per day over an 18 month period)
- Construction workers (maximum of 58 inbound vehicles per day over an 18 month period)
- Operational employees and servicing post-construction (maximum of 6 inbound vehicles per day)

The northern section of OVR (between BRR and its northern end) is to be upgraded to a sealed width of 6.5m where possible; comprising a 5.5m carriageway with two 0.5m sealed shoulders on either side and improvements to a number of curves in the road. Where 6.5m is not possible, a minimum width of 6m will be achieved.

Widening of OVR will avoid all the residential property frontages located on the eastern side of OVR and will only affect the one shared access way for the 4 residents that live on the Western side of OVR. Mr Dunlop was of the opinion that the current speed limit of 60km would be ok. He noted that he was unaware of conditions in other projects where particular road users were further restricted in speed.

In response to concerns raised by submitters and following a meeting with Mr Kong, Manager of the Councils transport Network, Mr Dunlop clarified matters relating to the anticipated waiting times and presented an amended design showing a 180m passing area at the mid-point of OVR north with an overall road width of 10m. Additional project modifications also included access design modifications at BRR and site access to improve geometric design and safety.

### **Mary O'Callahan – Planning**

Ms O'Callahan discussed the statutory and policy framework under which the application could be considered and assessed.

In terms of permitted baselines – Ms O'Callahan discussed intensive rural activities such as forestry and dairy farming having similar ecological effects and with regard to forestry could dramatically alter the existing landscape. She also referred to the permitted level of vegetation clearance (up to 1ha) and its associated effects. Ms O'Callahan also discussed the smaller built components by discussing the permitted level of in terms of accessory buildings and their possible visual effects.

Ms O'Callahan expressed concern about the number of residential properties being established in the local vicinity without Meridian being considered an affected party. She went on to say that in terms of potential noise effects, Meridian was facing ever-changing goal posts. As such, Ms

O'Callahan suggested the condition requiring compliance with the noise standards at residential properties be amended to reflect the date of the application lodgement (being 12 March 2008).

In her evidence, Ms O'Callahan explored the various potential effects of the proposal, and discussed possible mitigation options. She is satisfied that the adverse effects of the proposal *can* be avoided, mitigated or remedied to an extent that is reasonably practicable in the context of the proposal. Furthermore, she does not believe any turbines warrant removal.

### **Malcolm Hayes – Acoustics**

Mr Hayes discussed the different types of noise associated with the operation of wind turbines. He elaborated on the assessment methodology of the measurement of background noise and predicted noise levels at each of the receptor locations (initially two, then an additional six were added). He provided tables outlining what the background noise level was when it was below 20dB LA95 and the local wind speed was less than 1.5 m/s at 10m agl.

Based on these predictions, he stated that the proposed Mill Creek wind farm can operate in accordance with the requirement of NZS6808:1998 and even the "sub-6808" noise conditions. The closest residential site in proximity to the turbines would be the proposed house site at 1000 Makara Road. Mr Hayes noted that this location is also likely to comply with the requirements of NZS6808:1998 even in a southerly wind direction. In terms of cumulative noise effects, Mr Hayes stated that both West Wind and Mill Creek could be operated to meet the requirements of NZS6808:1998.

Mr Hayes refuted the issue of VAD and stated that infrasound and low frequency noise emitted through the turbines will not be of sufficient level to cause health effects. He also disagreed with the notion that ground induced vibrations resulting from the turbines would cause adverse health effects following a study that explored the level of ground vibration resulting from turbines.

In terms of internal noise levels and with respect to potential for sleep disturbance, Mr Hayes stated that the predicted model was based on all turbines operating in the same noise mode and at the same wind speed. He noted that the southern turbines, experience lower wind speeds than those experienced at the monitoring mast (located at turbine L01). He cautioned that without taking into account the reduction in wind speed seen by the nearest wind turbines to a receptor location, an over prediction of the incident noise at that receptor will occur.

There was some discussion between Dr Trevathan and Mr Hayes re the ground level measurement of G=0.5. The predictions were based on G=0.5, if predicted using G=0 then there could be an increase of 2dBA. However, he noted the prediction model was very conservative and output prediction levels were likely based 2-3dBA too high anyway.

In his reply, Mr Hayes provided written rebuttal to issues raised by submitters. The most significant being those raised by Dr Trevathan. He did not change the opinions made or conclusions reached in his primary evidence-in-chief. In particular he refuted Dr Trevathan's comments relating to source sound power levels noting a very degree of consistency across wind turbines within the same farm as empirically measured.

He also provided some more detail as to the percentage time that conditions described as "sub-6808" might occur for different wind speed categories. His tables detail the percentage time of the noise survey that the following conditions were met: a background noise level at or below 25 dB LA95 and a wind speed measured at 10m agl at the noise measurement position that is below 1.5, 2.5 and 3.5 m.s-1.

In rebuttal, Mr Hayes noted that the microphone windscreens effect artefacts commented on by Mr James would need to exist for 95% of the measurement time period in order to be "recognised"

under an L95 index. Similarly for any noise events measured with respect to the ambient background noise. Occasional traffic or animal noises are not “counted”. Mr Hayes argued that the average is in fact the appropriate measure as this is representative of the noise environment across a range of wind speeds. To base everything on the lowest noise background noise recorded would be artificial.

Mr Hayes also submitted compliance reports regarding the monitoring of noise at two operational wind farms and the correlation between predicted noise levels, and actual noise levels. These demonstrated compliance with the conditions of consent, and also that the operational noise levels were at or below those predicted (with one minor exception). Mr Hayes noted that there was in fact a general tendency to slightly over-predict the audible output.

### **Paul Wilson – Construction**

Mr Wilson outlined the approach undertaken by Meridian with regard to constructing an operational wind farm. The team is constantly looking at ways of effective process improvement, both in an environmental sense (physical and community) and cost effectiveness. Mr Wilson stated that lessons are constantly learnt through other projects, which aids an innovative and dynamic planning and construction phase. Examples of this are the new position of Environmental Manager at West Wind and the use of straw mulch.

Project managers foster a culture where the workers on site have an enhanced understanding of health, safety and environmental performance, which ensures the best outcome. Strong relationships are maintained between contractors and the Project Archaeologist, which ensures the accidental discovery protocol is effective. Mr Wilson also discussed the establishment of the 0800 number for inquiries from the community regarding the construction of West Wind – he noted that this seems to have been working well.

In terms of traffic management, Mr Wilson noted that Project Mill Creek has some unique aspects of the project that will mitigate the issue around contractors operating outside predetermined hours and utilising non-specified routes. All construction related traffic will enter the site from the Spicer Road access – including construction workers etc. Particular attention will be paid to reducing the impact of project related traffic on local road users along OVR North.

### **Morrie Love – Maori cultural**

Mr Love addressed the Maori cultural values associated with the site. He noted that the Kumuhore cultivation site (M7) is located in an area that has been extensively disturbed through pastoral activities. He stated that the cultivation areas probably did not contain urupā (burial sites), Pā (fortified villages), kāinga (villages) or other significant Maori structures and so were unlikely to include tapu sites.

Mr Love explained that the manawhenua of the project area today are those who held ahi kā being Te Atiawa / Taranaki whanui represented by the Wellington Tenth Trust and the Port Nicholson Block Claim Team. Ngati Toa maintained ahi kā north of Makara and from time to time used this coast for fishing and transited the area when travelling to the South Island.

In response to the submission/evidence from the Ngati Tama group, Mr Love sought to clarify the position of the Ngati Tama group and their affiliation to the area by stating the following:

*“It is acknowledged that Ngati Tama were resident in the Ohariu area from around the late 1820s. Many Ngati Tama leaders were consulted on Project Mill Creek during the drafting of the Cultural Impact Report and through the project. The people consulted included Mr Neville Baker, Ngati Tama kaumatua who is a Wellington Tenth Trustee and Kevin Amohia from the*

*Port Nicholson Block Team. Mr Atawhai (Archie) Taiaroa who is an administrator for the closest Maori-owned block known as Makaka 37 and 39A in Opau Road, was also consulted, as was Waitangi Tribunal claimant Mr David Churton, among many others of Ngati Tama. Waitangi Tribunal claimants, Te Puoho Katene and Taku Parai also representing Ngati Tama have also been involved in the Port Nicholson Block Claim Team. There has also been consultation and a site visit with the group which appeared at the Project Mill Creek hearing representing the Ngati Wai Hapu. Meridian Energy and Wellington Tenth's Trust have been and will continue to be involved with consultation with various Ngati Tama groups and people over Project Mill Creek. It is noted that in many of the early works Te Atiawa (or Ngati Awa) was often used to refer to the hapu of Northern Taranaki including Te Atiawa, Ngati Mutunga and Ngati Tama."*

Furthermore, Mr Love noted that the evidence of the Ngati Tama group did not identify sites of cultural significance within the project boundaries.

### **Mary O'Keefe – Archaeology**

Ms O'Keefe discussed the effects of the project on archaeological and historic sites. She noted that while there are eight archaeological sites recorded in the vicinity of the proposed wind farm, they are all outside the project boundaries.

However, there is potential for unrecorded sites to be located within the project site – such as possible gardening sites of Maori origin along the F and G roads. Evidence for the existence of these sites can be found in the historic survey plan SO 11034 and a plan compiled by the Wellington Tenth's Trust, which also shows cultivation areas in the same location. Furthermore, this area equates with the Kumuhore cultivations, site M7 in the Wellington District Plan.

These potential archaeological sites are of some archaeological interest, but are unlikely to be of high significance. They would add to the body of knowledge as to subsistence activities in this area of Wellington, but would not substantially add to or change the understanding of the archaeological landscape. Ms O'Keefe suggested recommended mitigation measures, such as an accidental discovery protocol as part of the CMP and the availability of an archaeologist on site.

### **Lynley Fletcher – Community Consultation**

Ms Fletcher discussed the extent of consultation undertaken with the Ohariu/Makara community. Although not a mandatory requirement to consult, it is Meridian's policy to consult with the community where the project will be located. She discussed the process whereby Meridian undertook significant planning stages of the project in order to be informed when discussing potential issues with key stakeholders such as DOC and the local community.

Consultation with the community was undertaken in several ways:

- 4 woolshed meetings
- 2 open days
- Undertaking 76 Truescape visual simulations
- Replying to a large number of enquiries
- CD Rom containing RC app as lodged and then a second CD of the RC app as notified
- Attended a Makara/Ohariu Community Board meeting
- Requested that the submission period to for the consent be doubled



Ms Fletcher also discussed the submissions received both in support and opposition to the application. Significant changes to the proposal as a result of effective consultation included changes to the access road and road alignment to avoid the disturbance of road frontage of properties. In addition, responses to the Councils Sec 92 requests for further info on behalf of the community. Ms Fletcher stated that the consultation process was robust and went over and above any consultation undertaken for any other projects preceding Mill Creek.

The Community Liaison Group as established as a condition of the West Wind decision has been a very useful forum from Meridians perspective. Discussions are still on-going to establish the best way forward in creating a similar forum for Project Mill Creek that is user friendly for the community representatives.

### **Major Submitters:**

#### **John Third – Independent submission**

Mr Third made a significant submission to the hearing that covered many aspects of the proposal. The following will summarise the main concerns and points emanating from these concerns.

#### **Information Process**

Mr Third discussed the level of consultation the community had received from Meridian. He expressed dissatisfaction with the approach employed and noted that the release of information was largely staged and selective. Mr Third was unconvinced that Meridian was providing the public with the “full picture” and failed to address the concerns of many residents. As an example, Mr Third recounted his experience of receiving a photo simulation of his property. He stated that the process was overly complicated and the end result not entirely accurate.

#### **Visual Amenity**

Mr Third provided a thorough description of the various attributes residents of Ohariu Valley enjoy about their surroundings. He noted that the size of the proposed turbines is of concern, especially given their location along the Ohariu Valley ridgelines. Mr Third noted his concern regarding the visual impact the proposed turbines would have upon the Ohariu Valley, and stated that the proposal was not in accordance with the Ohariu Valley Community Plan, nor the objectives and policies of the Wellington City Council District Plan. He remained adamant that the “industrial structures” will be out of context in the rural area and would not fit in with Ohariu Valley’s rural character and environment.

Mr Third discussed the use of a 28mm lens by Truescape when creating the individual photo simulations, and noted that the accepted industry standard was in fact to use a 50mm lens camera. He went on express doubt over the accuracy of the visual effects by Meridian (in particular Mr Rough) given an incorrect lens type was used in the production of the photo simulations.

#### **Noise**

Mr Third stated that the NZS6808 is out of date and should not be relied upon as a standard for noise emissions from wind farms. Coupled with this, Mr Third expressed doubt over Mr Hayes’ noise projections and use of base data. Mr Third was concerned about Meridian’s apparent dismissal over the issue of ILFN and its association with VAD. He noted that many in the community were concerned about the lack of substantive information regarding the true impact of noise effects post build. Mr Third cited accounts from residents who live nearby wind farms overseas, where they chronicled their experiences dealing with the effects from wind farms. As such, it was suggested that if anything, the proposal should be delayed in order to fully ascertain

the effects of noise and level of vibration emanating from the turbines which will be constructed as part of Project West Wind.

#### Health

Mr Third primarily focused upon the possibility of occupants of nearby dwellings being exposed to high levels of ILFN and concern of the resulting phenomenon known as “Vibro-Acoustic Disease”, VAD. Mr Third expressed concern about the lack of research undertaken by Meridian into VAD prior to the proposed construction and the impact this would have on the community. As with the other concerns noted, Mr Third requested a 3km buffer zone to counter these effects.

#### Use of Wind Power for Electricity Generation

In terms of generating electricity, Mr Third claimed that wind power is unpredictable and as such, not suited to contributing as a critical generator into the national power grid. He provided an overview of the electricity sector and the process involved in supplying power. In doing so, he highlighted the risk of relying upon wind generation within the market, and stated that to do so would invariably create gaps and increases system risk overall. He discussed the relationship between wind power and hydro generation, but emphasised that this pairing would not reduce the risk in shortfall, as dry periods and calm periods were often in coexistence. He declared that the cost involved with establishing Project Mill Creek would outweigh the output gained. Mr Third also expressed a general disbelief in the greenhouse warming theory – underpinning the resolve for more renewable energy.

Overall, if not declined in its entirety, Mr Third requested that the Panel impose a minimum 3km set back from properties.

#### **Ohariu Preservation Society:**

##### **Morgan Slyfield – Legal Counsel**

#### Landscape Amenities

Mr Slyfield discussed the merits of whether the site is an outstanding Natural Landscape in light of evidence from Mr Rough and Mr Hudson.

It is the view of OPS that Mr Rough was unable to undertake a thorough site visit of the affected properties and as such, his assessment cannot be considered to be complete. In contrast, Anne Steven was able to undertake an extensive site visit of the wider area, and from that formulate a matrix of effects each individual turbine has on the surrounding area (in terms of their contribution to visual effects).

With regard to the ridgelines and hill tops overlay introduced under PC33, Mr Slyfield noted that Meridian’s approach to this was not substantial, given Mr Rough confirmed that he gave no weight to the overlay. Instead, he concurred with Ms Anderson’s opening statement and noted that the ridgeline and hilltops overlay should be given some weight under PC33. He also discussed the lack of cumulative effects assessment provided by Mr Rough, claiming it oversimplified the matter.

Mr Slyfield also raised concerns about Meridian’s project shaping process, stating that the project team has put forward a proposal where little shaping is now available, therefore an assertion that they have already “got it right”. This is refuted by OPS.

#### Noise

Mr Slyfield challenged the validity of the NZS6808:1998 standard and Meridian’s use of it. He stated that the standard is outdated in relation to the advance in turbine technology over the past

10 years. He also noted how recent decisions have shown a departure from the standard, notably conditions imposed in the West Wind and Motorimu consent decisions.

With regard to the phenomenon of Vibro-Acoustic Disease (VAD) Mr Slyfield stated that the Commissioners must pay particular regard to Section 3 of the Act, and accordingly, possible VAD related effects must be weighed alongside all other noise effects.

#### Traffic and Construction:

Mr Slyfield stated that OPS has concerns that Meridian has understated and possibly ignored some of the actual and potential traffic effects relating to the proposal. OPS are particularly concerned that the proposal will result in a serious loss of amenity to other road users.

#### Part Two Analysis:

- Mr Slyfield argues that Sections 6(a) and (b) are relevant as discussed by Mr Hudson and Ms Stevens. The maintenance and enhancement of amenity values under section 7(c) is also relevant.
- OPS submits that Mr Third's and Mr Leyland's evidence in combination cast significant doubt on the contribution that Mill Creek would make to the economic wellbeing of the community, or the desire to increase the nation's stores of renewable energy.
- The costs of Mill Creek are simply too high relative to any benefits.

#### **Mariana Alves-Pereira – Vibro-Acoustic Disease**

By teleconference, Ms Alves-Perreira discussed how:

- VAD may have an effect whether the sound energy is audible or inaudible
- Short and occasional exposure will not lead to the pathology; but long term and continuous or intermittent exposure will lead to the pathology
- Research has not yet established scientifically valid dose-responses for in-home infrasound and Low Frequency Noise exposure
- At this stage there is no scientific basis for minimum separation distance or noise separation – although occupiers of homes within 2km do exhibit signs of VAD
- Control studies have not yet been undertaken

#### **Jim Mikož – Ecology (Marine and Intertidal)**

Mr Mikož discussed the value of the Makara Estuary as an intertidal zone – demonstrating his point using the yellow eyed mullet as a case study. He stated that very little research had been undertaken relating to intertidal zones in New Zealand and the plant life that sustains the marine ecology in that area.

The Yellow eyed Mullet feeds off the grasswort plant, which does not have the structure to support mud and high levels of sedimentation. The Makara Estuary provides an important environment for spawning yellow eyed mullet due to the intertidal nature. If the estuary is degraded to such an extent that it can no longer support the required plant growth necessary to sustain the yellow eyed mullet, then there will be knock on effects to other species that feed off the yellow eyed mullet – one being the endangered Hector Dolphin.

Mr Mikoz also discussed the effect on other species in the local Makara Estuary environment, such as sand hoppers, mysid shrimp and kelp flies. In conclusion, Mr Mikoz stated that if there is a large scale sediment discharge from Mill Creek into the Makara Estuary, the natural ecosystem of the valuable intertidal zone will be lost.

### **Dr Daniel Shepherd – Psychoacoustics**

Dr Shepherd discussed how wind turbine technology and the impact on the local community is a new area of research – the health effects of wind turbines are only beginning to be understood.

Particular points to note regarding the impact of turbines on residents health:

- Impact on sleep – causing additional stress
- Impact on psychological health – a feeling the turbine noise is intrusive
- Increased annoyance
- Residents feel a loss of control

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Dr Shepherd discussed the use of NZS6808 – his view was that the standard is inadequate and outdated, and should not be relied upon for ensuring the safety and wellbeing of residents with regard to noise effects. He claimed that the status of the standard (the fact that it is under review) meant that it shouldn't be relied upon and that by nature standards lag behind relevant research. Furthermore, Dr Shepherd stated that NZS6808 is not a noise standard that correlates to a person's health, but rather just controls noise output. He claimed that standards built upon dose-response curves are not appropriate yardsticks for the measurement, control, or prediction of psychological responses to wind turbine noise.

Dr Shepherd did not believe Meridian has provided enough evidence to show that there will be no effects on health resulting from the proximity of the turbines and the resulting noise.

### **Bryan Leyland – Energy**

Mr Leyland argued that the generation of energy through wind is not a cost effective option. Mr Leyland claimed that other sources such as hydropower, geothermal and coal and gas fired stations can generate power at approx half the cost to that of an average wind farm. He noted that wind farms to date have not contributed as much to the national power supply as originally anticipated. Mr Leyland does not believe wind power should be considered as a viable energy source, as the motivating factor behind it (global warming) is a sham.

### **Dr Rick James – Acoustics**

Dr James discussed how dBA and dBC limits should be set for wind farms in an effort to further protect public health of the surrounding residents.

He did not believe the NZS6808 standard is robust in terms of acoustical measurement and awareness of instrumentation limitations. Mr James is also concerned about the method used in ascertaining background noise levels by Malcolm Hayes. Mr James argued that wind artefacts have contaminated the study's test results. He stated that this is a significant flaw, as it would permit data contaminated with artefacts to be used in decisions related to appropriate siting of turbines.

Dr James stated that the commissioners should restrict turbines within 2km of residential dwellings from operating during night time hours. He also provided alternative background sound levels to account for modelling uncertainties in Mr Hayes original modelling.

### **Colin Knowles – K2Vi 3D modelling software**

Mr Knowles discussed an alternative method for portraying the visual impact of the proposed wind farm through the use of 3D modelling on a system known as K2Vi. Mr Knowles provided detailed background on how the 3D model worked and discussed the methodology behind the digital modelling of landscapes. The K2Vi technology is an alternative method for assessing the potential visual impact of the proposed Windfarm on the landscape compared with the Truescape simulations provided by Meridian.

The K2Vi software allowed a “layering effect” where various landscape features could be incorporated into the digital model such as vegetation and existing buildings/structures and the proposed turbines and wind farm features could be toggled where necessary. The software shows the 39.4 degree horizontal view angle equivalent to the use of a 35mm camera with a 50mm lens.

Mr Knowles presented the model – simulating “fly-overs” of various viewpoints in and around the subject site. The software also includes a measuring tool to allow 3D measurements to be taken, as well as horizontal and vertical measurements.

### **Anne Steven – Landscape**

Ms Steven discussed the concept of the landscape in context and the varying landscape areas in the general vicinity. She agreed with the assessment’s of Mr Hudson and Mr Rough, who described the context landscape as having a rural or essentially rural character with two factors – openness and pastoral landuse – being notable contributors to the perceived landscape.

Ms Steven discussed the appropriate policy framework and planning instruments, and agreed that some weight should be given to Plan Changes 32 & 33.

She also discussed the coastal environment as defined by Mr Rough and Mr Hudson. In general she was in agreement with the model, but extended the boundary further inland by an additional ridgeline (which resulted in 6 additional turbines being included in the coastal environment). She also considers the coastal escarpment to be an Outstanding Natural Feature.

Drawing on the photo-simulations, K2Vi and observations made during site visit(s), Ms Steven discussed the impact the proposed turbines would have on the surrounding residences and viewpoints.

Overall, Ms Steven does not consider the landscape assessment of Mr Rough to be stringent enough, stating that he placed too much emphasis on vegetation within private sites providing mitigation screening, and underestimates the dominance of the turbines on the surrounding landscape and properties. Ms Steven seemed more inclined to accept the assessment of Mr Hudson, although she stated that it too fell short of a robust assessment – particularly with regard to setting the standard for amenity.

When discussing the Truescape, Ms Steven stated that the images do not accurately represent the true visual perception when comparing the landscape with the Truescape Sims. Ms Stevens also argued that the awkward size of the simulations would’ve resulted in people not viewing them in the correct manner. She also raised concern about the restricted locations where the TrueViews were taken, and suggested that in some cases the choice of location seemed to be a deliberate downplay of the presence of turbines. Overall, however, Ms Stevens conceded that the TrueViews remained an important and useful tool when assessing the visual impact.

Ms Steven concluded that:

- The proposed activity will have significant adverse effects on the natural coastal environment;

- The proposed activity will have potentially significant adverse effects on the outstanding natural feature of the coastal escarpment;
- The proposed activity will have significant adverse effects on the existing rural character and visual amenity of the Ohariu Valley;
- The proposed activity will have significant cumulative effects on landscape values when considered in conjunction with Project West Wind; and,
- The proposed activity has no positive effects in terms of landscape.

#### **Dr Jeremy Trevathan – Acoustics**

Dr Trevathan reviewed the methodology used by Mr Hayes in developing noise models which in turn informed Mr Hayes' assessment of potential noise effects. Dr Trevathan found that Mr Hayes had not undertaken an "uncertainty analysis", something determined as "not only advisable, but almost a necessity" by technical reviewers of NZS6808, nor appropriately considered ground absorption or meteorological condition variables.

Dr Trevathan provided a separate analysis applying these uncertainties and variables, and effectively concluded that, in the conditions compared, expected noise levels are between 4 dBA and 8 dBA higher than those provided by Mr Hayes.

Dr Trevathan concluded that there is reasonable doubt that:

- The effects of the proposal, if established as proposed and operated in compliance with the conditions rules, would be minor.
- The proposal could operate unmodified in compliance with the proposed 'sub-6808' condition.
- The proposal could operate unmodified in compliance with the night time condition proposed.
- In terms of suggested alterations to the proposal, Dr Trevathan was of the opinion that, based on his calculations, in order to provide some degree of certainty that the noise effects associated with the unrestricted operation of the wind farm would be reasonable, turbines

In terms of suggested alterations to the proposal, Dr Trevathan was of the opinion that, based on his calculations, in order to provide some degree of certainty that the noise effects associated with the unrestricted operation of the wind farm would be reasonable, turbines K01-03 and F08-HI would need to be removed in addition to the six already recommended for removal by the WCC/PCC Officers Report (being G01-G04, and F13 & F14).

#### **Kerry Geange – Planning**

Mr Geange questioned whether the road widening works associated with OVR and BRR fall under Rule 15.1.7. Rule 15.1.7 which states that "any activity relating to the upgrade and maintenance of existing formed roads and accessways except for the construction of new legal road is a Permitted Activity"

In response to the proposed construction period, Mr Geange urged the hearing panel to limit construction to a window of 24 months, thereby taking into account Meridians anticipated 18 month construction phase while factoring in a buffer of 6 months. He claimed that this would bring a level of comfort to residents about certainty of the construction phase and associated effects.

He also questioned (along with a number of other submitters) whether the lease agreements associated with the turbine platforms which are for a period of at least 40 year should require subdivision consent under section 218 of the Resource Management Act (thereby making the application non-complying).

He also stated that in terms of visual amenity and landscape effects, there is not a suitable permitted baseline argument that can be applied.

Based on the assessments provided by Mr Hudson, Ms Steven, and Mr Rough, Mr Geange stated that it is clear that the proposed activity will have a significant adverse effect on the landscape values of the site, the coastal environment and the outstanding natural feature.

Mr Geange reviewed an extensive amount of material and produced a table at 9.5 of his evidence that, in his opinion, listed the "most offensive turbines" in relation to their "effect category" (e.g. relating to noise, visual amenity, and landscape effects). The 13 turbines recommended for removal were the G-Series, K-Series, and turbines F8-11 and F13 & F14. There may be an opportunity to relocate some of these within the site. Obviously the effects of any relocation would need careful consideration.

### **Bob Barraclough – Traffic engineering**

Mr Barraclough discussed the Traffic Impact report and the flaws he considered were present in that document.

- Understates how many properties will be affected by the construction traffic
- Incorrect summation of traffic flows and assessment of safety impact
- Various inaccuracies and contradictions
- Lack of detail and understanding of the speed and time taken for overweight and over dimension vehicles to navigate the roads
- Haven't factored in the number of businesses operating from the general locality and their servicing requirements etc

Mr Barraclough was concerned that various reports fail to identify how much material will need to be brought in from external quarries, and as a result the knock-on traffic effects have not been adequately considered and assessed. In addition, Mr Barraclough was concerned that the level of water extraction/taking had not been adequately accounted for in the assessment.

To avoid undue traffic effects on the southern part of OVR, Mr Barraclough stated that the road through Spicer Forest should be undertaken prior to the widening of the northern section of OVR.

It was noted by Mr Barraclough that many of the residents in Ohariu Valley collect their drinking water from their roof. He stated that the road widening phase would create a dust nuisance and taint drinking water supplies.

### **Makara Guardians**

#### **Residents from Ashhurst**

Several residents from the Manawatu appeared at the hearing in as witnesses for the Makara Guardians submission. The witnesses were: Harvey Scott Jones, Martin Murray, and Wendy Brock. Although the visual effects were a real concern, the primary concern that the residents emphasised was the audible impact the turbines were having on their lifestyles due to their close proximity to the

wind farms. Mr Martin in particular found that his sleep was significantly disrupted due to the noise and low frequency vibrations experienced within his house.

### **Molly Melhuish – Energy**

Ms Melhuish discussed the energy generation climate within New Zealand and how the proposed Mill Creek project would fit into that context. Although an advocate of diversification in energy generation, Ms Melhuish was sceptical about the correlation between energy generated through wind and hydro means. She agreed with Dr Leyland, who concluded that wind energy tends to be low at the same time as hydro levels are low.

She was also concerned that Project Mill Creek would not add diversity within the wind farm energy generation, as this needed to be more focused outside of Wellington and the Manawatu. The economic cost was also discussed by Ms Melhuish. She concluded that the national benefits of such a proposal did not outweigh the other costs – and stated that Meridian was advocating for out-dated generalities in a time of rapid change.

### **Ian Leary – Planning**

Mr Leary discussed in detail the proposal and its potential cumulative impact when measured against Project West Wind. Mr Leary focused on the cumulative effects that specifically relating to construction, visual effects and natural character, effects on rural character and amenity, recreational effects and noise effects.

With regard to construction effects, Mr Leary considered the primary effect to be that resulting from large scale earthworks and resulting sedimentation. His particular concern regarding possible sedimentation events related to the ecology of the Makara Estuary. In terms of the visual effects, Mr Leary discussed the concept of the proposed wind farm reading as an extended operation of Project West Wind. He stated that it was acknowledged in the consenting of West Wind that there would be significant effects on the natural character of the area, and that Project Mill Creek would further exacerbate these impacts.

Mr Leary was concerned that the proposal would tarnish the rural landscape of the Makara and Ohariu area, (which he argued was the area that exhibited the most rural characteristics in Wellington), and that there would no longer be Rural Areas within Wellington that were not tainted by development and built structures. He argued that this effect could not be mitigated through conditions.

### **Jenny Jorgensen – President of Makara Guardians**

Mrs Jorgensen coordinated the Makara Guardians submission and facilitated the various witnesses. Mrs Jorgensen is concerned about the proximity of the proposed turbines to residential houses – especially when considered in cumulative terms in that many of the same houses that will be affected by West Wind and Mill Creek.

In relation to potential noise emitted from the proposed turbines, Mrs Jorgensen is concerned that the Siemens model does not have a warranty that provides the manufacturers guaranteed sound power level that relates to the maximum noise a turbine can make. Based on this concern, Mrs Jorgensen was not convinced that the noise modelling by Mr Hayes would accurately reflect the true output levels. Furthermore, Mrs Jorgensen stated that the NZS6808:1998 standard was not best practice and did not protect residents. In an effort to ensure residents are adequately protected, Mrs Jorgensen suggested a buffer distance of 3km. She also discussed the merits of having a buffer zone from private property boundaries to the proposed turbines (2km), in that way residents would be able to utilise their entire site how they please.



Due to dominance and cumulative visual effects and noise effects, Mrs Jorgensen submitted that the following turbines should be removed from the proposal: F07, F08, F09, F10, F11, F13, F14, L01, L02, E01, K01, K02, K03, G01, G02, G03 and G04.

In terms of the potential impact the proposal will have on the coastal environment and Makara Estuary, Mrs Jorgensen stated that the following turbines should be removed: All of the F turbines, all of the H turbines and J01, E06, E07, and E05.

In her personal submission, Mrs Jorgensen undertook a comprehensive analysis of the West Wind decision making process - especially the Environment Court hearing process and associated conditions. Particular regard was paid to the potential noise effects and traffic management conditions to mitigate construction traffic effects.

### **Paul Hughes – Makara Guardians Open Space analyst**

Mr Hughes discussed the possible impact of the proposal on the coastal open space environment, particularly in relation to the Makara Beach vicinity and area referred to as the Makara Promenade (the area in which most people use for walking recreation). Mr Hughes stated that the Makara Promenade has outstanding natural character and amenity value in the lower North Island and that many people are drawn to the area due to its outstanding natural character. A particular concern Mr Hughes expressed was the possible effect the proposal will have on the seaward coastal and seascape views. The visual complexity of the turbines (each spinning out of sync) will exacerbate the effects upon the coastal skyline.

Mr Hughes disagreed with the approach taken by Mr Rough in terms of the split of the visual coastal environment and discussed Mr Rough's delineation of dominance and influence zones. Mr Hughes stated that valuable views should be taken account of even though they lie behind the "dominance zones" as demarcated by Mr Rough. He further stated that it is inappropriate to ignore what dominates the landscape/seascape, particularly the skyline. Mr Hughes generally agreed with Mr Hudson's assessment. Mr Hughes expressed the view that it is inappropriate to develop the coastal environment for wind generation purposes, especially as there are other areas nationally that could be developed for wind generation without affecting the coastal environment. He concluded that it is inappropriate to grant consent to turbines that do not preserve the natural character of coastal environment viewed from the shorelines south of Makara on the Makara Promenade. In terms of visual mitigation, Mr Hughes noted that the F series and L01 should be removed from the project.

### **Marieke Hilhorst (Chairperson) - Makaracarpas Society Inc**

Marieke Hilhorst coordinated the submission by the Makaracarpas. She discussed the planning and statutory framework relevant to the group's ecological concerns. Particular concerns relate to the possibility of high rates of sediment discharge, which would adversely affect the Makara Estuary. Makaracarpas were particularly concerned about the potential effect sedimentation discharges from F13 & F14 could have on the Hawkins Gully and catchment areas feeding into the Makara Estuary.

Concerns were raised about Meridians past record at West Wind and the perceived issues there have been with regard to sediment run and degradation of the Makara Estuary and catchment areas since construction started. Furthermore, the Makaracarpas were frustrated about the lack of available data and background levels relating to sediment levels in the Makara Estuary – they do not feel that Meridian has taken a responsible approach to the ongoing monitoring of the sediment disposal in the estuary.

Ms Hilhorst, on behalf of the Makaracarpas, strongly endorsed the concept of riparian planting along the Makara Stream and other catchment areas in order to mitigate the effects of erosion and sediment and to improve the existing situation in the estuary. She also discussed the idea of monetary compensation if the sediment measures failed.

The Makaracarpas dispute Dr Keesing's notion that NTU trigger limits should not be set at a level that breaches consent. Makaracarpas would like to see this happen so that further enforcement from the respective Councils can be initiated if NTU limits are too high.

### **Dr Mike Joy - Ecology**

Dr Joy was concerned that there would not be enough monitoring of sediment deposition resulting from the proposal. He discussed the difference between suspended sediment and deposited sediment and the effect each has on waterways. He suggested that meaningful monitoring is required in the levels of deposited sediment including continuous monitoring and also discussed the various measures that can be taken in monitoring sediment. He noted that the waterways in the subject site represent some of the best remaining fish habitat in the Wellington region outside conservation land. Dr Joy stated that sediment would be one of the most important adverse influences on the health of a natural ecosystem.

Dr Joy also discussed concerns relating to permanently piping sections of the waterways. Particular concerns related to the loss of fish habitat, interruption in fish passage/migration, and the creation of bottlenecks where fish could be targeted by predators.

In terms of flocculation, Dr Joy emphasised that a cautious approach must be taken. He warned that overuse of flocculants may adversely impact on the health of the fish and stream invertebrates. He suggested that the sediment ponds be oversized to withstand any expected rainfall to ensure excessive amounts of flocculants are not deposited in the waterways and ultimately the estuary.

In general Dr Joy disputed much of Dr Keesing's findings. In particular, Dr Joy stated that fish communities are not adapted to high sediment flows as such events would rarely occur naturally. As such, Dr Joy concluded that it would be incorrect to assume these communities will tolerate occasional failures, as these would be on top of the degradation already present and could therefore cause total collapse of the ecosystem.

### **Councils' response**

#### **John Hudson – Landscape**

Mr Hudson agreed with Mr Rough concerning the delineation of the coastal environment - with the inland extent running along the ridgeline on which the F series are located. He disagreed with Ms Steven's assessment that the inland extent lies along the next ridge (this would place some of the E series and H series in the coastal environment).

In terms of the outstanding natural landscape – both Mr Rough and Ms Steven's agree that this includes the coastal escarpment, but does not extend further inland. While Mr Hudson agrees that the outstanding natural landscape is confined to the coastal escarpment, he stated that this is part of a larger outstanding natural landscape. In essence, the outstanding natural landscape is the coastal escarpments, but the coastal environment extends further inland (to the F series ridge).

With regard to visual amenity Mr Hudson disputes the notion put forward by Mr Rough that mitigation in the form of vegetation planting could be used to counter the visual effects of the turbines at 7 different properties – instead he raises the issue of "appropriateness". Mr Hudson did

not find Mr Rough's visibility analysis schedule to be overly useful – in that it did not include a robust evaluation of visual effects.

While Mr Hudson accepted the visual effects matrix that Ms Stevens devised, he did not consider the analysis to be overly useful, as it did not lead to an evaluated outcome and determine a clear threshold of acceptability vs. unacceptability. Mr Hudson found Mr Geange's model more useful, and noted that he came to the same conclusion, with the exception that he includes F8-F11 for removal for noise mitigation.

Mr Hudson questioned the relevance of comparison of Ms O'Callahan's permitted baseline argument. Furthermore, he stated that rural character was reduced and he rejected the notion that the rural character was maintained because rural activities would still be carried out on the subject site.

He differentiated between rural character and visual amenity – stating that the concept of visual amenity to submitters related to their individual properties, while rural character was more a matter of the rural landscape in general (used the placement of turbines on the coast as an example). Mr Hudson also stated that the current rural character would not be preserved if there was a reversion to native woodland.

Mr Hudson noted that the TrueView simulations did seem to portray distant items smaller than what they appear in reality. Mr Hudson, did however, reiterate that the TrueView simulations were an important tool in assessing the potential visual effects.

With respect to the house site at 1000 Makara Road, Mr Hudson found the K2Vi model to be useful when assessing the visual impact of turbines F09, F10 and F11. Mr Hudson recommended removal of F11 due to its proximity and visibility to this house site. In total, due to visual effects, Mr Hudson's final recommendation was for the removal of the G series, K series, F11, F13 and F14.

### **Soon Teck Kong – Traffic engineering**

Mr Kong was satisfied that a road width of 5.5m with an additional 0.5m buffer on either side would be sufficient to enable safe passage of the proposed loads. He did not accept the argument put forward by OPS that the road width should be at least 7.5m, as he stated that this would not create a safer road network for vulnerable users as vehicular traffic would be faster etc. He recommended passing bays prior to sections of the road that could not be widened to 6.5m total. Mr Tong also stated that local widening at tight bends would be required to enable passage of the HCV units.

In terms of operating speed, Mr Tong was of the opinion that 40km would be optimum, as the current speed limit of 60km would not be conducive to safety for all road users. Mr Tong elaborated on the various points where he considered the recommended speed limit of 40km would enhance safety. He also stated that a 2 minute delay was considered a maximum acceptable delay by road users.

Mr Tong also discussed the proposed conditions that related to traffic matters. In this discussion, he disagreed with the Applicant removing some of the proposed conditions and incorporating them into TMPs, as he did not consider the TMP process to have as many enforcement options.

### **Dr Paul Blaschke - Ecology**

With regard to the sedimentation levels in the Makara Estuary presently and anticipated in the future, Dr Blaschke noted that a precautionary approach to sedimentation should be taken, while bearing in mind the scale of present and likely future disturbances, compared with those in the past. Dr Blaschke strongly recommend baseline and trend monitoring of the Makara Estuary as a

condition of consent, along with more fundamental studies of estuary biota and processes by Greater Wellington.

Initially Dr Blaschke did not support the proposed locations of turbines F13 & F14 unless Applicant demonstrate that it could successfully adapt erosion control to these particular sites to achieve an exceptional performance standard of erosion and sediment control. Dr Blaschke considered the Applicant to have shown this additional information, and as such he was satisfied that adverse ecological effects from these two turbine locations can be managed to acceptable levels, and proportionate or less than effects from some other proposed turbine locations.

The evidence that was presented that lead Dr Blaschke's change in opinion can be summarised as follows:

- The access track to F14 has been realigned to relocate culvert F1 upstream and reduce its impacts on the Hawkins Stream tributary.
- The volume of earthworks now required is estimated at 36,000m<sup>3</sup> (Mr Breese EIC, at 10.2). This is still a significant volume (about 5.6% of the total volume), but the bulk of that volume would come from road cuts along the whole length of road, rather than from the immediate vicinity of the turbines, which is the closest position to the Hawkins Stream.
- These two turbine locations are at the end of a road and traffic movements on this part of the road will be relatively light during construction and very light after construction.
- Rank grass buffer strips are proposed to catch sediment overtopping grit traps or sediment ponds at the sites of the two turbines (see Sheet 142, Revision RO, Indicative SEMP Details, Turbines F13 and F14, presented as additional information by Mr Breese on about 15 August 2008). The two grass "strips" proposed in these locations are in fact irregular polygons which are at least 40m wide at the narrowest width, rather than the 5 or 10 metres suggested by Mr Fuller to be adequate. Dr Blaschke considered that the size and dimensions of the grass areas shown on Sheet 142 are appropriate, whereas 5 or 10 meter strips would not be.

Dr Blaschke originally had reservations about the widespread use of flocculation methods to treat sediment – however after hearing all of the evidence he stated that all sedimentation ponds should be managed with the use of flocculation methods due to the clear improvement of sediment retention efficiencies through the use of flocculation. In terms of mitigation for any sediment discharge events, Dr Blaschke considered a minimum of 1000m of riparian restoration to be necessary. He also recommended the Applicant consider off site mitigation measures in addition to this.

### **Nigel Lloyd – Acoustics**

Mr Lloyd discussed in detail the proposed conditions relating to noise and stated that they were based on the West Wind conditions which resulted from intensive caucusing during the Environment Court hearing.

In his assessment of background noise measured at various residences, Mr Lloyd stated that the data demonstrates that some dwellings would be more appropriately protected by increasing the critical quiet background sound cut-off wind speed from 1.5m/s to 3.5m/s (particularly at the Bruce and Third households).

Mr Lloyd did not agree with Jeremy Trevathan that in the case of wind farms that the building will reduce outside noise by only 5dB. He went on to state that an outside wind farm noise level that

complies with 40dBA L95 should readily comply with the internal recommended WHO level of 30dBA Leq.

In terms of the proposed conditions, Mr Lloyd provided background to the various conditions and responded to questions raised by submitters and Commissioners as to why they are suitable, how they work and proposed amendments corrections to be made.

### **Sean Lisle – WRC Compliance Officer**

There have been a number of issues regarding sediment discharges and control at the West Wind site. Other aspects such as construction methodology are also addressed. These are responded to through observations made during site visits and as a result of complaints received. With regard to erosion and sediment control issues, the key is to address these as quickly as possible.

In an effort to ensure these issues are dealt with as quickly as possible “on the ground” advisory notices are issued (non-statutory enforcement tool issued on site there and then. Meridian has 1 week to remedy the situation – 9 advisory notices issued). These notices detail what has been observed and outline actions that need to be undertaken to get the issue under control. Primarily relate to erosion sediment control issues.

In addition, there is a “please explain” letter – these are for more significant issues and can have consequences regarding enforcement. These require Meridian to detail what was happening at the time of the failure e.g. Level of rainfalls, why there have been failures, what has been done to remedy/mitigate situation and what will be done to improve the situation. (Meridian has 15 working days to respond to this process – 2 issued so far). So far no enforcement action has been taken to date (enforcement actions would be those set out under the Act)

Issues resulting from on-site discharges are being worked into the discharge conditions. Mr Lisle has been involved in the formulation of proposed conditions. Agree that the Applicant has been striving for continuous improvement regarding site construction methodology. Meridian has notified WRC of any incidences.

Mr Lisle has been involved in monitoring and approval of SEMP's. There was a requirement by the Court to have SEMP's approved by WRC. Monitoring was initially weekly due to the rapid construction activity on site. Once the entire site was opened up and erosion sediment controls all set up the monitoring was cut back to fortnightly (prior to Autumn/Winter rainfall).

Mr Lisle explained that complaints are generally received through the 0800 number. WRC responds with a site visit and tries to identify the source of the sediment breach. These complaints relate mainly to sedimentation of water courses/water quality at Makara Estuary.

Primary reason for increased sedimentation is generally related to the effectiveness of the erosion sediment controls - the size/area of catchment and also maintenance issues. Monitoring points need to reflect the discharge points i.e. proximity to discharge site. Would be preferable if disposal sites are not too steep – note that Meridian has opted for the more gentle slopes where possible.

### **Jeremy Rusbatch & Ange Lenz – WRC Reporting Officers**

Mr Rusbatch, WRC's Senior Resource Advisor, introduced the position of WRC and the issues of contention. Mr Rusbatch noted that all consents required from WRC relate to the construction phase of the project. The principal consents are those related to discharge of sediment laden water to streams, and pipe structures placed in beds of streams.

Ms Lenz discussed stream works and recommendations regarding these proposed works. It was recommended that the land use consents required to undertake stream works within OVR and BRR

be granted. However, a null recommendation was recommended for the piping and associated reclamation works in the core site and Spicer Forest.

Ms Lenz expressed concern about the lack of information provided by the Applicant to show how the effects upon the loss of fish habitat and stream functions could be mitigated. She noted that as mitigation had not been adequately provided by the Applicant, the works were not consistent with the RFP, RPS and the Act. Likewise, Ms Lenz noted that additional information should be provided by the Applicant at the Hearing to address issues relating to the proposed size of the Ohariu Stream and Mill Creek culverts (A1 & C6). She stated that the proposal catered for a 1 in 10 year return period flood event, which was not adequate and highlighted a number of adverse effects that may arise as a result.

Mr Rusbatch discussed the consents relating to discharges to water. He noted that the consent required to discharge sediment laden water from the concrete batching plant be granted, and made a null recommendation for other consents to discharge sediment laden water to land. Mr Rusbatch explained that the WRC had recently moved away from its previous approach to the management and control of sediment based on a management plan regime. Instead it now preferred one of input controls based on setting a qualitative/quantitative limit on the receiving stream environment pursuant to section 107. Mr Rusbatch acknowledged that the issues arising during the construction of Project West Wind partly contributed to this shift. However, he advised that the WRC remained open-minded on the issues and the type of information Meridian might produce during the Hearing to address the concerns and the null recommendation.

In response to matters raised throughout the Hearing WRC subsequently stated that they had amended their original recommendation and recommended that the hearing panel grant the resource consents subject to the recommended conditions of consent. The Officer's stressed that a number of the consent conditions were critical to this revised favourable recommendation, particularly those conditions relating to mitigation being undertaken within the core site and best practice being applied to the treatment of sediment laden water.

One of the key measures of the conditions was a requirement to flocculate all sediment retention ponds. In light of the proposed new conditions, WRC indicated that it was then satisfied that the SEMP management plan process, with approval by WRC, would be satisfactory in outlining how the intent of the conditions would be met. WRC maintained throughout the Hearing the need for monitoring the effects of an earthworks site of this scale, noting that there would be at least 10 sediment retention ponds, or 1 pond for every kilometre of road as well as discharges from sediment retention ponds associated with fill sites in the catchments.

Furthermore, WRC considered that, despite the imposition of conditions, significant adverse effects were likely as a result of the Applicant's proposal (given the nature of the terrain and the climate of the area), and recommended a requirement to undertake mitigation for the anticipated adverse effects of sediment discharges (and the stream works) in the form of riparian planting.

### **Rachel Pawson and Lisa Hayes – WCC (and PCC) Reporting Officers**

Ms Pawson, WCC's Senior Planner, introduced the position of Wellington City Council and Porirua City Council and summarised the main issues of the proposal and the City Councils' conclusion. The Planning Report, prepared by Ms Pawson and Ms Hayes, having been circulated to all parties prior to the hearing was taken as read.

Ms Pawson summarised the main issues being those related to operational noise effects, traffic effects associated with construction, the visual amenity effects on neighbouring properties, the impact on the natural character of the coastal environment and the effects from sedimentation and erosion associated with the proposed earthworks. Ms Pawson noted that in a large part, Wellington

City Council deferred consideration of the sedimentation and erosion effects to WRC due to their increased level of expertise in this area.

Ms Pawson recommended approval of Project Mill Creek, subject to removal of the entire G series and F13 and F14 turbines. This recommendation was based particularly on grounds of visual amenity and ecological effects. In discussion, Ms Pawson explained that the F series along the edge of the coastal environment and area identified by Mr Hudson as an outstanding natural landscape underwent a robust assessment in terms of appropriateness in terms of section 6(a) and 6(b). She noted that the appropriateness of the development in this instance would take precedence over the preservation of the natural character, of the coastal environment and outstanding natural landscape.

In terms of weighting of relevant District Plan Changes, Ms Pawson noted that Plan Changes 32 and 33 should be accorded significant weight, as they had progressed significantly through the appeal process. She noted that Plan Change 65 should however only be accorded little weight, as it is only early stage of the process. Ms Pawson also stated that the Ohariu Valley Community Plan and Makara Community Plan were guiding documents, which have no statutory weight.

In response to matters raised throughout the Hearing Ms Pawson discussed various points of clarification, which had been raised by submitters, the Applicant and Commissioners. In particular, Ms Pawson discussed the receiving environment and reiterated that Wellington City Council's view, as supported by Legal Counsel, as being "*only properties with all relevant resource consents can be considered as part of the receiving environment*". Ms Pawson clarified the Wellington City Council's position on the weighting of Plan Changes 32 & 33 – PC32 should be accorded significant weight, while PC33 should be accorded some weight, but not significant or overriding weight. Again, Ms Pawson noted that this was advised by Wellington City Council's Legal Counsel. Ms Pawson also covered jurisdictional matters and sought to clarify the process of obtaining approval for subdivision and construction of dwellings in the Rural Area. She also discussed the role of the existing Community Liaison Group currently operating.

Based on information provided throughout the hearing and as advised by Mr Hudson, Ms Pawson also presented a change in recommendation. In addition to the original recommendation by Wellington City Council, Ms Pawson stated that further additional turbines were recommended for removal, based purely on visual effects, and it was these effects that warranted their removal. The additional turbines recommended for removal consisted of the K series and F11. Subject to the recommended turbines removal, Ms Pawson noted that Project Mill Creek meets the objectives and policies of the Wellington City Council and Porirua City Council District Plans and Part 2 of the Act. In addition, Ms Pawson submitted revised recommended conditions of consent.

The consent holder shall engage an appropriately qualified and experienced ecologist to prepare and submit an Environmental Compensation Plan to mitigate for the adverse effects to aquatic ecosystems that will occur as a result of the development of the Mill Creek wind farm,

The **Environmental Compensation Plan ("the ECP")** relates to all of the following consents/permits:

WGN080368 [27383] Land use consent to place pipe and rock protection structures in the beds of the Ohariu Stream and Mill Creek;

WGN080368 [27384] Land use consent to pipe and reclaim sections of ephemeral and intermittent stream beds within the Core Site and Spicer Forest;

WGN080368 [27388] Land use consent to pipe and reclaim sections of ephemeral streams within the Core Site in association with placing fill; and

WGN080368 [27385] Discharge permit to discharge sediment-laden water to land where it may enter water and directly to water.

The ECP shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council for approval.

The ECP shall include, but not be limited to, the following:

A scaled design plan(s) clearly showing:

The location(s) and extent of 10,000 m<sup>2</sup> of riparian planting within the 5.79 hectares of land north of the intersection of Makara Road and Opau Road contained within the Certificate of Title WN7D/340;

Details of the varieties of native species to be planted and the density of planting. These species shall be suitable for the environment, including the soil type and surrounding land use; and

Method(s) to be used to protect the planting from stock (e.g. fencing) and other pests (e.g. rabbits and possums) and where it will be placed in regards to the planting, taking into account topographical constraints.

Note: The planting shall be designing in general accordance with Greater Wellington's publication '*Mind that Stream*' – a guide to looking after urban streams in the Wellington Region' (2004).

Details and documentation of a covenant in the favour of the Wellington Regional Council for the long term protection of the land parcel identified in (a).

**A Monitoring and Maintenance Plan** including, but not be limited to, the following:

Details of how plants will be irrigated during their establishment;

Details of how the site(s) will be maintained and how often, including the ongoing replacement of plants that do not survive and eradication of all invasive weeds from the planting site to ensure adequate growth; and

Details of how the stock and pest control methods will be maintained and how often.

The consent holder shall complete the planting and associated works in accordance with the approved ECP prior to bulk earthworks or stream bed. The planting and associated works shall be maintained in accordance with the approved ECP until the Manager, Environmental Regulation, Wellington Regional Council certifies in writing that the plants are established.

*Note: This consent condition is common to consents WGN080368 [27383]; [27384]; [27388] and [27385]. No duplication of these works is anticipated.*



If the consent holder wishes to exercise the consents WGN080368 [27383]; [27384]; [27388] or [27385] relating to bulk earthworks (discharges) or stream bed works within the Core Site, after the approval of the ECP, but prior to the planting commencing, the consent holder must enter into a bond in the favour of the Wellington Regional Council. The purpose of the bond is to ensure planting work are completed in accordance with the approved ECP should the consent holder be unable to complete these works.

The bond shall be for 150% of the estimated value of the environmental compensation works as provided in the approved ECP. The estimated value shall be based on a quote from an independent contractor engaged by the applicant and approved by the Manager, Environmental Regulation, Wellington Regional Council.

The bond shall be in the form of a surety bond and the consent holder shall provide all associated bond documents

The consent holder's liability is not limited to the amount of the bond, should the necessary work exceed the bond figure. The form of the bond shall be as specified by the Manager, Environmental Regulation, Wellington Regional Council.

The bond shall be held until the expiry of this consent, or until works associated with environmental compensation works as described in the approved ECP are deemed completed by the Manager, Environmental Regulation, Wellington Regional Council.

*Note: For the purposes of this condition, the Core Project Site refers to the site located in the area between approximate map references NZMS 260:R27; 2663060.6004198, NZMS 260:R27; 2660360.6001451, NZMS 260:R27; 2656060.6001287, NZMS 260:R27; 2654441.5997772, NZMS 260:R27; 2655487.5997004 and NZMS 260:R27; 2656960.5997151.*

## Environmental Compensation Plan

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Details of the varieties of native species to be planted and the density of planting. These species shall be suitable for the environment, including the soil type and surrounding land use; and

Method(s) to be used to protect the planting from stock (e.g. fencing) and other pests (e.g. rabbits and possums) and where it will be placed in regards to the planting, taking into account topographical constraints.

Note: The planting shall be designed in general accordance with Greater Wellington's publication *'Mind that Stream' – a guide to looking after urban streams in the Wellington Region* (2004).

Details and documentation of a covenant in the favour of the Wellington Regional Council for the long term protection of the land parcel identified in (a).

A **Monitoring and Maintenance Plan** including, but not be limited to, the following:

Details of how plants will be irrigated during their establishment;

Details of how the site(s) will be maintained and how often, including the ongoing replacement of plants that do not survive and eradication of all invasive weeds from the planting site to ensure adequate growth; and

Details of how the stock and pest control methods will be maintained and how often.

The consent holder shall complete the planting and associated works in accordance with the approved ECP prior to bulk earthworks or stream bed. The planting and associated works shall be maintained in accordance with the approved ECP until the Manager, Environmental Regulation, Wellington Regional Council certifies in writing that the plants are established.

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If the consent holder wishes to exercise the consents WGN080368 [27383]; [27384]; [27388] or [27385] relating to bulk earthworks (discharges) or stream bed works within the Core Site, after the approval of the ECP, but prior to the planting commencing, the consent holder must enter into a bond in the favour of the Wellington Regional Council. The purpose of the bond is to ensure planting work are completed in accordance with the approved ECP should the consent holder be unable to complete these works.

The bond shall be for 150% of the estimated value of the environmental compensation works as provided in the approved ECP. The estimated value shall be based on a quote from an independent contractor engaged by the

applicant and approved by the Manager, Environmental Regulation, Wellington Regional Council.

The bond shall be in the form of a surety bond and the consent holder shall provide all associated bond documents

The consent holder's liability is not limited to the amount of the bond, should the necessary work exceed the bond figure. The form of the bond shall be as specified by the Manager, Environmental Regulation, Wellington Regional Council.

The bond shall be held until the expiry of this consent, or until works associated with environmental compensation works as described in the approved ECP are deemed completed by the Manager, Environmental Regulation, Wellington Regional Council.

*Note: For the purposes of this condition, the Core Project Site refers to the site located in the area between approximate map references NZMS 260:R27; 2663060.6004198, NZMS 260:R27; 2660360.6001451, NZMS 260:R27; 2656060.6001287, NZMS 260:R27; 2654441.5997772, NZMS 260:R27; 2655487.5997004 and NZMS 260:R27; 2656960.5997151.*

### General conditions

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### Environmental Compensation Plan

The consent holder shall engage an appropriately qualified and experienced ecologist to prepare and submit an Environmental Compensation Plan to mitigate for the adverse effects to aquatic ecosystems that will occur as a result of the development of the Mill Creek wind farm,

The **Environmental Compensation Plan ("the ECP")** relates to all of the following consents/permits:

WGN080368 [27383] Land use consent to place pipe and rock protection structures in the beds of the Ohariu Stream and Mill Creek;

WGN080368 [27384] Land use consent to pipe and reclaim sections of ephemeral and intermittent stream beds within the Core Site and Spicer Forest;

WGN080368 [27388] Land use consent to pipe and reclaim sections of ephemeral streams within the Core Site in association with placing fill; and

WGN080368 [27385] Discharge permit to discharge sediment-laden water to land where it may enter water and directly to water.

The ECP shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council for approval.

The ECP shall include, but not be limited to, the following:

A scaled design plan(s) clearly showing:

The location(s) and extent of at least 10,000 m<sup>2</sup> of riparian planting along the banks of the Makara Stream which flows through the 5.79 hectares of land north of the intersection of Makara Road

and Opau Road contained within the Certificate of Title WN7D/340, Legal Description Lot 1 DP 30935.

Details of the varieties of native species to be planted and the density of planting. These species shall be suitable for the environment, including the soil type and surrounding land use; and

Method(s) to be used to protect the planting from stock (e.g. fencing) and other pests (e.g. rabbits and possums) and where it will be placed in regards to the planting, taking into account topographical constraints.

*Note: The planting shall be designed in general accordance with Greater Wellington's publication 'Mind that Stream' – a guide to looking after urban streams in the Wellington Region' (2004).*

Details and documentation of a covenant in the favour of the Wellington Regional Council for the long term protection of the land parcel identified in (a).

**A Monitoring and Maintenance Plan** including, but not be limited to, the following:

Details of how plants will be irrigated during their establishment;

Details of how the site(s) will be maintained and how often, including the ongoing replacement of plants that do not survive and eradication of all invasive weeds from the planting site to ensure adequate growth; and

Details of how the stock and pest control methods will be maintained and how often.

The consent holder shall complete the planting and associated works in accordance with the approved ECP prior to bulk earthworks or stream bed works commencing on the Core Site (subject to condition 3).

The planting and associated works shall be maintained in accordance with the approved ECP until the Manager, Environmental Regulation, Wellington Regional Council certifies in writing that the plants are established.

*Note: The works required under this consent condition is common to consents WGN080368 [27383]; [27384]; [27388] and [27385]. No duplication of these works is anticipated.*

If the consent holder wishes to exercise the consents WGN080368 [27383]; [27384]; [27388] or [27385] relating to bulk earthworks (discharges) or stream bed works within the Core Site, after the approval of the ECP, but prior to the planting commencing, the consent holder must enter into a bond in the favour of the Wellington Regional Council. The purpose of the bond is to ensure planting work are completed in accordance with the approved ECP should the consent holder be unable to complete these works.

The bond shall be for 150% of the estimated value of the environmental compensation works as provided in the approved ECP. The estimated value shall be based on a quote from an independent contractor engaged by the applicant and approved by the Manager, Environmental Regulation, Wellington Regional Council.

The bond shall be in the form of a surety bond and the consent holder shall provide all associated bond documents

The consent holder's liability is not limited to the amount of the bond, should the necessary work exceed the bond figure. The form of the bond shall be as specified by the Manager, Environmental Regulation, Wellington Regional Council.

The bond shall be held until the expiry of this consent, or until works associated with environmental compensation works as described in the approved ECP are deemed completed by the Manager, Environmental Regulation, Wellington Regional Council.

*Note: For the purposes of this condition, the Core Project Site refers to the site located in the area between approximate map references NZMS 260:R27; 2663060.6004198, NZMS 260:R27; 2660360.6001451, NZMS 260:R27; 2656060.6001287, NZMS 260:R27; 2654441.5997772, NZMS 260:R27; 2655487.5997004 and NZMS 260:R27; 2656960.5997151.*

### **Environmental Compensation Plan**

The consent holder shall engage an appropriately qualified and experienced ecologist to prepare and submit an Environmental Compensation Plan to mitigate for the adverse effects to aquatic ecosystems that will occur as a result of the development of the Mill Creek wind farm,

The **Environmental Compensation Plan ("the ECP")** relates to all of the following consents/permits:

WGN080368 [27383] Land use consent to place pipe and rock protection structures in the beds of the Ohariu Stream and Mill Creek;

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WGN080368 [27388] Land use consent to pipe and reclaim sections of ephemeral streams within the Core Site in association with placing fill; and

WGN080368 [27385] Discharge permit to discharge sediment-laden water to land where it may enter water and directly to water.

The ECP shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council for approval.

The ECP shall include, but not be limited to, the following:

A scaled design plan(s) clearly showing:

The location(s) and extent of 10,000 m<sup>2</sup> of riparian planting within the 5.79 hectares of land north of the intersection of Makara Road and Opau Road contained within the Certificate of Title WN7D/340;

Details of the varieties of native species to be planted and the density of planting. These species shall be suitable for the

environment, including the soil type and surrounding land use;  
and

Method(s) to be used to protect the planting from stock (e.g. fencing) and other pests (e.g. rabbits and possums) and where it will be placed in regards to the planting, taking into account topographical constraints.

Note: The planting shall be designing in general accordance with Greater Wellington's publication '*Mind that Stream*' – a guide to looking after urban streams in the Wellington Region' (2004).

Details and documentation of a covenant in the favour of the Wellington Regional Council for the long term protection of the land parcel identified in (a).

**A Monitoring and Maintenance Plan** including, but not be limited to, the following:

Details of how plants will be irrigated during their establishment;

Details of how the site(s) will be maintained and how often, including the ongoing replacement of plants that do not survive and eradication of all invasive weeds from the planting site to ensure adequate growth; and

Details of how the stock and pest control methods will be maintained and how often.

The consent holder shall complete the planting and associated works in accordance with the approved ECP prior to bulk earthworks or stream bed. The planting and associated works shall be maintained in accordance with the approved ECP until the Manager, Environmental Regulation, Wellington Regional Council certifies in writing that the plants are established.

*Note: This consent condition is common to consents WGN080368 [27383]; [27384]; [27388] and [27385]. No duplication of these works is anticipated.*

If the consent holder wishes to exercise the consents WGN080368 [27383]; [27384]; [27388] or [27385] relating to bulk earthworks (discharges) or stream bed works within the Core Site, after the approval of the ECP, but prior to the planting commencing, the consent holder must enter into a bond in the favour of the Wellington Regional Council. The purpose of the bond is to ensure planting work are completed in accordance with the approved ECP should the consent holder be unable to complete these works.

The bond shall be for 150% of the estimated value of the environmental compensation works as provided in the approved ECP. The estimated value shall be based on a quote from an independent contractor engaged by the applicant and approved by the Manager, Environmental Regulation, Wellington Regional Council.

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