



# **White Hill Wind Farm**

# **2010 Annual Emission Reduction Report**

**Version 1**  
**24 January 2011**

**CONFIDENTIAL**



### 3 Emissions generated – 2010 calendar year

The emissions generated have been assessed using the methodology of Schedule 2 – Methodology for Determining Emission Reductions, of the Project Agreement dated 9 May 2005.

This schedule requires that Meridian records the quantities of petrol and diesel used in the construction of the project, and the quantities of cement, iron, steel and aluminium introduced into the project during the construction and operation of the project.

The White Hill wind farm was operational during the 2010 calendar year. Emissions from sources other than cement, iron, steel and aluminium will be reported in Meridian's GHG Inventory which is prepared on a financial year basis.

There were no emissions generated on site at White Hill wind farm in 2010 from cement, iron, steel or aluminium.

<b>Emissions generated – 2010 calendar year (operational emissions)</b>			
<b>Material</b>	<b>Quantity</b>	<b>Emission factor<sup>1</sup></b>	<b>Emissions generated</b>
Diesel	10,802 litres	0.00271 tCO <sub>2</sub> e/litre	Not required to be reported
Petrol	0 litres	0.00232 tCO <sub>2</sub> e/litre	Not required to be reported
Iron and steel imported	15 tonnes	0 tCO <sub>2</sub> e/tonne	0 tCO <sub>2</sub> e
Iron and steel produced in New Zealand	0 tonnes	2.01 tCO <sub>2</sub> e/tonne	0 tCO <sub>2</sub> e
Aluminium imported	0 tonnes	0 tCO <sub>2</sub> e/tonne	0 tCO <sub>2</sub> e
Aluminium produced in New Zealand	0 tonnes	1.62 tCO <sub>2</sub> e/tonne	0 tCO <sub>2</sub> e
Cement	0 tonnes	0.46 tCO <sub>2</sub> e/tonne	0 tCO <sub>2</sub> e
<b>Total operational emissions generated 2010</b>			<b>0 tCO<sub>2</sub>e</b>

### 4 Electricity exported – 2010 calendar year

This table shows the total electricity exported from White Hill wind farm in 2010 as recorded at the Grid Injection Point by NZX Limited.

<b>Revenue Meter</b>	<b>kWh</b>
<b>Total electricity generated (kWh)</b>	182,364,366

<sup>1</sup> Emission factor as prescribed in Schedule 2 of the Project Agreement



Appendix 1 sets out the generation from each turbine and a combined generation total of 193,858,609 kWh. The total electricity output of the Project as measured by the Revenue Meter is 11,494,243 kWh less than this combined total because the revenue meter output incorporates generation losses. Generation losses include wind farm distribution losses (i.e. cables between turbines), transformer losses, and local service supply at the White Hill substation. This is within expected limits.

There is no other generation that is not part of the project that flows through the above meters.

## 5 Emission reductions generated – 2010 calendar year

The table below sets out the emission reduction units generated by the project to date. This is calculated using the methodology prescribed in Schedule 2 of the Project Agreement.

Element	Annual Production	Factor	t CO <sub>2</sub> -e
Total electricity generation (GWh)	182.364366 GWh	625 tCO <sub>2</sub> /GWh	113,977.73
		Less operational emissions	0
Less other generation not part of the project, recorded by the meters (GWh)	0 GWh		0
		<b>Net emission reductions generated for the 2010 calendar year</b>	<b>113,977.73</b>

## 6 Emission units claimed – 2010 calendar year

113,977.73 net emission reductions x 0.89<sup>2</sup> = 101,440 Emission Units claimed.

Meridian claims 101,440 ERUs for the 2010 calendar year.

## 7 How the generation is measured

The total electricity generated is recorded at the Grid Injection Point by NZX Limited.

Appendix 2 contains "a report which verifies the total electricity generated from the Project and injected into the national transmission system in that Year by the person responsible for the reconciliation of electricity injected into and taken from electricity networks in New Zealand or any other person authorised to administer and certify the reconciliation of such data by that person".

<sup>2</sup> Ratio specified as C in clause 5.1 of the Project Agreement



Appendix 3 contains evidence that the metering and recording equipment has been certified as compliant by a reputable, independent quality assurance service provider.

## 8 Statements

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As at 31 December 2010, nothing has, or has the potential, to be an impediment to achieving the agreed emission reductions during the first commitment period.

This report:

- has been prepared using the methodology of Schedule 2 – Methodology for Determining Emission Reductions, of the Project Agreement dated 9 May 2005.
- meets all other requirements of Schedule 4 - Contents for Annual Reports, of the Project Agreement dated 9 May 2005.

Signature:

Name: Stuart Sutherland

Position: Wholesale Services and Compliance Manager

Date: 24 January 2011



## 9 Unit Transfer Details

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1	Project name:	Project White Hill
2	Name of the project developer:	Meridian Energy Limited
3	Project ID:	NZ - 1000002
4	Calendar year for which units are being transferred:	2010
5	Participant's account identifier:	NZ-1024
6	Quantity of units:	101,440
7	Type of units:	ERUs



## Appendix 1

Generation for each turbine – 2010  
(This data is generated by the Vestas Online database)

<b>Park Unit</b>	<b>Actual Output (WTG counter) kWh</b>
WHL12	6,831,915
WHL13	6,675,934
WHL14	6,524,418
WHL15	7,169,400
WHL16	7,276,920
WHL17	7,142,528
WHL21	6,194,878
WHL22	7,062,645
WHL23	6,352,138
WHL24	6,809,892
WHL25	7,375,639
WHL31	6,186,114
WHL32	6,415,412
WHL33	6,060,220
WHL34	5,602,704
WHL41	6,667,685
WHL42	7,032,920
WHL43	7,249,632
WHL44	6,834,570
WHL45	6,747,878
WHL46	6,775,670
WHL47	7,213,740
WHL51	5,567,845
WHL52	6,295,136
WHL53	6,452,976
WHL54	6,428,081
WHL55	7,121,655
WHL56	7,030,867
WHL11	6,759,197
<b>Total</b>	<b>193,858,609</b>



## Appendix 2

Letter from NZX Limited confirming net generation from the White Hill wind farm.



19 January 2011

Amy Cooper  
Meridian Energy Limited  
P O Box 2128  
Christchurch

Dear Amy

**The White Hills generation for the 2010 calendar year**

The reconciliation manager wishes to advise Meridian Energy Limited, that the total generation recorded for the calendar year of 2010 for White Hills was 182,364,366 kWhs. The volume reported is net generation, i.e. injection quantities less any load at White Hills as supplied by Meridian Energy to the reconciliation manager.

If you have any questions regarding this letter please call me on 04 498 0044.

Yours sincerely

Zane Doran  
For and on behalf of  
The reconciliation manager



## Appendix 3

The metering equipment is certified in accordance with the Electricity Governance Rules 2003.

The certificates for the White Hill meters follow.

**TRANSFIELD  
SERVICES**

Meter Test House



### ***CERTIFICATE OF COMPLIANCE***

*(Component Only)*

**Certificate Number:** TSL 101408M

**Reference Number:** 34013

**Installation Name:** White Hills Wind Farm

**Equipment Certified:** METER: Power Measurement / ION 7650

**Serial Number(s):** PJ-0611A329-01

**Calibration Report No.:** CMR12594

**Conditions of Issue:** Nil

*This certifies that the above metering equipment has been calibrated in accordance with the Electricity Governance Rules.*

**Issue Date:** 20/05/2010

**Signatory:**

**Expires:** 20/05/2013

*Malcolm Hoare  
for TSL E&J Meter Test House*

Electronically Created by: Godfrey Dube on 01/07/2010



Meter Test House



### CERTIFICATE OF COMPLIANCE

**Certificate Number:** TSL 101409

**Reference Number:** 34013

**Installation Name:** White Hills Wind Farm

**Equipment Certified:** Metering Installation

**Component Information:**

<u>Component:</u>	<u>Serial No.:</u>	<u>Certification No.</u>
METER	PJ-0611A329-01	TSL 101408M
CT	0693106, 0693105, 0693104	34013C
VT	0690324, 0690325, 0690326	34013V

**Conditions of Issue:** Nil

**Installation Category:** 6

*This certifies that the above metering equipment has been calibrated in accordance with the Electricity Governance Rules.*

**Issue Date:** 20/05/2010

**Expires:** 20/05/2013

**Signatory:**

*Malcolm Hoare  
for TSL E&T Meter Test House*

Electronically Created by: Godfrey Dube on  
01/07/2010

