



White Hill Wind Farm

2011 Annual Emission Reduction Report

Version 1
25 January 2012

CONFIDENTIAL

White Hill Wind Farm 2011 Annual Emission Reduction Report

1 Background

This report fulfils the reporting obligations set out in the Project Agreement between Meridian and the Crown dated 9 May 2005.

2 The Project

White Hill is located six kilometres south-east of Mossburn in Southland and is sited on an area of mostly forestry land approximately eight kilometres by three kilometres.

It was fully commissioned in October 2007. Twenty-nine 2MW turbines at White Hill generate enough electricity for 30,000 average homes and the wind farm connects directly to the local area network owned by The Power Company and operated by PowerNet.



Key dates during the development and construction of White Hill Wind Farm	
Project announced and public consultation commenced	September 2004
Resource consents granted	December 2004
Karakia and construction commencement ceremonies	March 2006
Emission reductions and electricity generation commence	8 June 2007
Official opening by Prime Minister	8 June 2007
Wind farm fully commissioned	1 October 2007



3 Emissions generated – 2011 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 2011 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.

Emissions generated – 2011 calendar year (operational emissions)			
Material	Quantity	Emission factor¹	Emissions generated
Diesel	7,272 litres	0.00271 tCO ₂ e/litre	Not required to be reported
Petrol	0 litres	0.00232 tCO ₂ e/litre	Not required to be reported
Iron and steel imported	29 tonnes	0 tCO ₂ e/tonne	0 tCO ₂ e
Iron and steel produced in New Zealand	0 tonnes	2.01 tCO ₂ e/tonne	0 tCO ₂ e
Aluminium imported	0 tonnes	0 tCO ₂ e/tonne	0 tCO ₂ e
Aluminium produced in New Zealand	0 tonnes	1.62 tCO ₂ e/tonne	0 tCO ₂ e
Cement	0 tonnes	0.46 tCO ₂ e/tonne	0 tCO ₂ e
Total operational emissions generated 2011			0 tCO₂e

4 Electricity exported – 2011 calendar year

This table shows the total electricity exported from White Hill wind farm in 2011 as recorded at the Grid Injection Point by NZX Limited.

Revenue Meter	kWh
Total electricity generated (kWh)	171,958,874

¹ 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 183,529,467 kWh. The total electricity output of the Project as measured by the Revenue Meter is 11,570,593 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 – 2011 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 ₂ -e
Total electricity generation (GWh)	171.958874 GWh	625 tCO ₂ /GWh	107,474.30
		Less operational emissions	0
Less other generation not part of the project, recorded by the meters (GWh)	0 GWh		0
		Net emission reductions generated for the 2011 calendar year	107,474.30

6 Emission units claimed – 2011 calendar year

107,474.30 net emission reductions x 0.89² = 95,652 Emission Units claimed.

Meridian claims 95,652 ERUs for the 2011 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”.

² 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

As at 31 December 2011, 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 Manager

Date: 25 January 2012



9 Unit Transfer Detail

1	Project name:	Project White Hill
2	Date of project agreement:	9 May 2005
3	Name of the project developer/company:	Meridian Energy Limited
4	Project ID:	NZ - 1000002
5	Calendar year for which units are being transferred:	2011
6	Account identifier:	NZ-1024
7	Project Participant (investor): ³	Climate Cent Foundation
8	Quantity of units (refer to section 7 of this report):	95,652
9	Type of units:	ERUs

³ Project Participant (investor) is the party that you have an agreement with to transfer emission reduction units (ERUs).



Appendix 1

Generation for each turbine – 2011
(This data is generated by the Vestas Online database)

Park Unit	Actual Output (WTG counter) kWh
WHL11	6,385,288
WHL12	6,538,380
WHL13	6,355,729
WHL14	6,279,716
WHL15	6,823,448
WHL16	5,647,669
WHL17	6,766,681
WHL21	5,950,203
WHL22	6,805,107
WHL23	6,042,073
WHL24	6,536,628
WHL25	7,086,254
WHL31	5,944,519
WHL32	5,316,515
WHL33	5,770,211
WHL34	5,406,243
WHL41	5,853,247
WHL42	6,778,252
WHL43	6,892,813
WHL44	6,597,503
WHL45	6,598,548
WHL46	6,588,122
WHL47	7,136,159
WHL51	5,258,778
WHL52	6,018,117
WHL53	6,230,956
WHL54	5,984,477
WHL55	7,051,057
WHL56	6,886,774
Total	183,529,467



Appendix 2

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



16 January 2012

Stuart Sutherland
Meridian Energy Limited
P O Box 2128
Christchurch

Dear Stuart

The White Hills generation for the 2011 calendar year

The reconciliation manager wishes to advise Meridian Energy Limited, that the total generation recorded for the calendar year of 2011 for White Hills was 171,958,874 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&J Meter Test House*

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