



meridian

Te Apiti Wind Farm

2011 Annual Emission Reduction Report

Version 1
25 January 2012

CONFIDENTIAL

Te Apiti Wind Farm 2011 Annual Emission Reduction Report

1 Background

This report fulfils the reporting obligations set out in the 2003 Project Agreement between Meridian and the Crown.

2 The project

The 90 MW Te Apiti wind farm is located on Saddle Road north of the Manawatu Gorge. It is situated across 1,150 ha of farmland owned by four separate land owners including Meridian. The 55 turbines each have a capacity of 1.65 MW. The generation output is fed directly into the national grid. The electricity generated from the site is sufficient to generate electricity for approximately 45,000 average homes.



Key dates during the development and construction of Te Apiti Wind Farm	
Project announced and public consultation commenced	8 May 2003
Resource consent applications lodged	20 June 2003
Resource consents granted with no appeals	4 September 2003
Karakia and construction commencement ceremonies	7 November 2003
First turbine erected	27 May 2004
First power	July 2004
Full power	November 2004
Official opening by Prime Minister	9 December 2004



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 PRE 2 Project Agreements.

Emissions generated on-site at Te Apiti Wind Farm in 2011 comprise 14.6661 tCO₂e from diesel and petrol used in vehicles for site operation and maintenance.

Emissions generated – 2011 calendar year (operational emissions)			
Material	Quantity	Emission factor¹	Emissions generated
Diesel	4,590 litres	0.00271 tCO ₂ e/litre	12.4389 tCO ₂ e
Petrol	960 litres	0.00232 tCO ₂ e/litre	2.2272 tCO ₂ e
Iron and steel imported	79 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			14.6661 tCO₂e

4 Electricity exported – 2011 calendar year

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

Revenue Meter	kWh
Total electricity exported 2011 (kWh)	292,387,157
Total eligible generation 2011² (kWh)	292,387,157
Total eligible generation 2010² (kWh)	272,824,901
Total eligible generation 2009² (kWh)	317,892,555
Total eligible generation 2008² (kWh)	305,114,802
Total eligible generation to date over the commitment period (kWh)²	1,188,219,415

¹ Emission factor as prescribed in Schedule 2

² As required in Section 7.1 b i of the Project Agreement.



Appendix 1 sets out the generation from each turbine and a combined generation total of 301,628,099 kWh. The total electricity output of the Project as measured by the Revenue Meter is 9,240,942 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, transmission losses, and local service supply at the Te Apiti substation. This is within expected limits.

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

Meridian expects to generate the full amount of Eligible Generation during the commitment period.

5 Emission reductions generated – 2011 calendar year

The table below sets out the emission reductions generated by the project for the 2011 calendar year.

Element	Annual Production	Factor	t CO ₂ -e
Total electricity generation (GWh)	292.387157 GWh	440 tCO ₂ /GWh ³	128,650.35
		Less operational emissions	14.6661
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	128,635.68

Appendix 2 shows the emission reductions that will be reported to the Dutch Government based on the emission reduction calculation methodologies of the ERUPT 3 Contract.

6 Emission Units claimed

Meridian claimed 120,000 ERUs for the 2010 calendar year in January 2011 as set out in clause 6.1 of the Project Agreement. These have been transferred to Meridian Energy via the New Zealand Emission Unit Register.

Meridian claims 120,000 ERUs for the 2011 calendar year as set out in clause 6.1 of the Project Agreement.

³ Crown's risk weighted emission factor



How the generation is measured

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

Appendix 3 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”.

Appendix 4 contains evidence that the metering and recording equipment has been certified as compliant by a reputable, independent quality assurance service provider.

7 Purchasers of Emission Reduction Units (ERUs)

As required in the Project Agreement⁴, a summary of all sales contracts for Kyoto Compliant Emission Units and the rights to any additional emissions abatements that Meridian has entered into since the Effective Date and up to the end of 2011 relating to the emissions abatement brought about by the Te Apiti wind farm during the commitment period follows.

Summary of sales contracts			
Vintage Year	Purchaser	Type and number of units	Delivery schedule
2008 - 2012	SenterNovem through ERUPT3 (delivery address TBA)	530,000 ERUs	5 equal tranches of 106,000 units from 2009 - 2013

⁴ Project Agreement Section 7.1 b vi



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 in accordance with the Project Agreement dated 17 December 2003.
- Has been prepared using the methodology of Schedule 2 – Measurement of Emission Reductions (except where detailed in this report) of the Projects to Reduce Emissions Project Agreements.

Signature: 

Name: Stuart Sutherland

Position: Wholesale Services Manager

Date: 25 January 2012



9 Unit Transfer Details

1	Project name:	Te Apiti Wind Farm
2	Name of the project developer:	Meridian Energy Limited
3	Project ID:	NZ - 1000001
4	Calendar year for which units are being transferred:	2011
5	Participant's account identifier:	NZ-1024
6	Quantity of units:	120,000
7	Type of units:	ERUs



Appendix 1

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

Park Unit	Actual Output (WTG counter) kWh	Park Unit	Actual Output (WTG counter) kWh
TAP01	5,978,707	TAP29	5,350,363
TAP02	6,279,631	TAP30	5,049,193
TAP03	6,067,538	TAP31	5,846,698
TAP04	5,068,714	TAP32	5,911,628
TAP05	5,400,984	TAP33	5,477,490
TAP06	6,236,539	TAP34	5,124,723
TAP07	6,187,101	TAP35	6,846,956
TAP08	4,909,662	TAP36	5,864,546
TAP09	5,502,259	TAP37	6,779,102
TAP10	5,580,641	TAP38	5,441,200
TAP11	5,549,198	TAP39	4,697,846
TAP12	6,370,374	TAP40	4,682,188
TAP13	5,829,854	TAP41	4,311,654
TAP14	5,965,431	TAP42	5,032,022
TAP15	5,712,999	TAP43	5,572,912
TAP16	5,435,504	TAP44	5,569,488
TAP17	5,894,346	TAP45	5,915,293
TAP18	5,206,904	TAP46	5,950,706
TAP19	6,790,982	TAP47	5,503,701
TAP20	7,105,520	TAP48	5,230,594
TAP21	5,485,499	TAP49	5,691,764
TAP22	4,552,151	TAP50	5,594,828
TAP23	3,768,366	TAP51	4,878,075
TAP24	4,080,740	TAP52	5,185,491
TAP25	5,416,202	TAP53	4,277,228
TAP26	5,446,173	TAP54	4,171,301
TAP27	5,046,016	TAP55	5,174,072
TAP28	5,629,002	Total	301,628,099



Appendix 2

Emission Reduction Calculations for ERUPT.

Electricity and emission reduction units generated based on Electricity Emission Factor as per validated PDD	
2011 calendar year	
Total electricity generation	292.387157 GWh
2011 Electricity Emission Factor as per the validated PDD	591 tCO ₂ /GWh
Gross emission reductions generated	172,800.810 tCO ₂
Less total emissions	14.6661 tCO ₂
Total emission reductions generated	172,786 tCO₂
Emission reduction units claimed from New Zealand Government for 2011 calendar year	120,000 ERUs



Appendix 3

Report from NZX Limited confirming net generation from Te Apiti wind farm.



12 January 2012

Stuart Sutherland
Meridian Energy Limited
P O Box 2128
Christchurch

Dear Stuart

The Te Apiti 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 Te Apiti was 292,387,157 kWhs. The volume reported is net generation, i.e. injection quantities less any load at Te Apiti 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

A handwritten signature in black ink that reads "Zane Doran".

Zane Doran
For and on behalf of
The reconciliation manager



Appendix 4

Metering equipment certification

**TRANSFIELD
SERVICES**
Meter Test House



CERTIFICATE OF COMPLIANCE

(Component Only)

Certificate Number: TSL 101434M

Reference Number: 14971

Installation Name: **Te Apiti Wind Farm**
Meridian's Te Apiti Wind Farm
Palmerston North

Equipment Certified: METER: Ion; 7600

Serial Number(s): PL-0402A137-01

Calibration Report No.: CMR12653

Conditions of Issue: Nil

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

Issue Date: 21/07/2010

Signatory:

Expires: 21/07/2013

Malcolm Hoare
for TSL E&T Meter Test House

Electronically Created by: Godfrey Dube on
22/07/2010



Meter Test House



CERTIFICATE OF COMPLIANCE

Certificate Number: TSL 101435

Reference Number: 14971

Installation Name: **Te Apiti Wind Farm**
Meridian's Te Apiti Wind Farm
Palmerston North

Equipment Certified: Metering Installation

Component Information:

<u>Component:</u>	<u>Serial No.:</u>	<u>Certification No.</u>
METER	PL-0402A137-01	TSL 101434M
CT	709960, 1, 2.	14971C
VT	404520, 21, 22.	14971V

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: 21/07/2010

Signatory:

Expires: 21/07/2013

Malcolm Hoare
for TSL E&T Meter Test House

Electronically Created by: Godfrey Dube on 22/07/2010