



Te Apiti Wind Farm

2010 Annual Emission Reduction Report

Version 1
24 January 2011

CONFIDENTIAL



Te Apiti Wind Farm 2010 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 – 2010 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 2010 comprise 19.3544 tCO₂e from diesel and petrol used in vehicles for site operation and maintenance.

Emissions generated – 2010 calendar year (operational emissions)			
Material	Quantity	Emission factor¹	Emissions generated
Diesel	6,320 litres	0.00271 tCO ₂ e/litre	17.1272 tCO ₂ e
Petrol	960 litres	0.00232 tCO ₂ e/litre	2.2272 tCO ₂ e
Iron and steel imported	53 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 2010			19.3544 tCO₂e

4 Electricity exported – 2010 calendar year

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

Revenue Meter	kWh
Total electricity exported 2010 (kWh)	272,824,901
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	895,832,258

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 281,391,809 kWh. The total electricity output of the Project as measured by the Revenue Meter is 8,566,908 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 – 2010 calendar year

The table below sets out the emission reductions generated by the project for the 2010 calendar year.

Element	Annual Production	Factor	t CO ₂ -e
Total electricity generation (GWh)	272.824901 GWh	440 tCO ₂ /GWh ³	120,042.96
		Less operational emissions	19.3544
Less other generation not part of the project, recorded by the meters (GWh)	0 GWh		0
		Net emission reductions generated for the 2010 calendar year	120,023.60

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 2010 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



7 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.

8 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 2010 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



9 Statements

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 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 and Compliance Manager

Date: 24 January 2011



10 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:	2010
5	Participant's account identifier:	NZ-1024
6	Quantity of units:	120,000
7	Type of units:	ERUs



Appendix 1

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

Park Unit	Actual Output (WTG counter) kWh	Park Unit	Actual Output (WTG counter) kWh
TAP01	4,366,544	TAP29	5,044,929
TAP02	5,384,259	TAP30	4,601,886
TAP03	5,190,032	TAP31	5,598,658
TAP04	4,538,858	TAP32	5,498,320
TAP05	4,401,898	TAP33	5,464,944
TAP06	5,963,065	TAP34	5,119,092
TAP07	5,561,353	TAP35	6,237,108
TAP08	4,457,896	TAP36	6,126,132
TAP09	5,078,708	TAP37	6,597,863
TAP10	5,036,202	TAP38	5,137,603
TAP11	5,301,826	TAP39	4,636,181
TAP12	5,900,547	TAP40	4,341,866
TAP13	5,757,199	TAP41	4,121,403
TAP14	5,611,854	TAP42	4,391,841
TAP15	5,293,437	TAP43	5,375,247
TAP16	5,389,236	TAP44	5,004,792
TAP17	5,545,068	TAP45	5,359,762
TAP18	4,899,458	TAP46	5,495,268
TAP19	6,111,140	TAP47	4,872,531
TAP20	6,587,359	TAP48	5,400,608
TAP21	4,904,248	TAP49	5,333,560
TAP22	4,117,231	TAP50	5,243,489
TAP23	4,104,838	TAP51	4,670,868
TAP24	3,806,724	TAP52	4,665,425
TAP25	4,932,216	TAP53	4,518,363
TAP26	4,767,290	TAP54	4,539,810
TAP27	4,728,457	TAP55	4,771,936
TAP28	5,485,381	Total	281,391,809



Appendix 2

Emission Reduction Calculations for ERUPT.

Electricity and emission reduction units generated based on Electricity Emission Factor as per validated PDD	
2010 calendar year	
Total electricity generation	272.824901 GWh
2010 Electricity Emission Factor as per the validated PDD	591 tCO ₂ /GWh
Gross emission reductions generated	161,239.516 tCO ₂
Less total emissions	19.3544 tCO ₂
Total emission reductions generated	161,220 tCO₂
Emission reduction units claimed from New Zealand Government for 2010 calendar year	120,000 ERUs



Appendix 3

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



19 January 2011

Amy Cooper
Meridian Energy Limited
P O Box 2128
Christchurch

Dear Amy

The Te Apiti 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 Te Apiti was 272,824,901 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

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

