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# VERIFICATION REPORT

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## Meridian Te Apiti Windfarm

### Verification of Annual Eligible Generation for 2007

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## Verification of Eligible Generation

**Project Number:** CCP.VOL0259

**Date:** 5<sup>th</sup> March 2008

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Verification of Annual Eligible Generation for 2007	SGS Climate Change Programme
Revision Number:	Client:
01	Ministry for the Environment Government of New Zealand
<p><b>Summary:</b></p> <p>SGS United Kingdom Limited through its affiliate SGS New Zealand has performed a verification of the Meridian Te Apiti Windfarm Annual Eligible Generation for the calendar year 2007. The verification includes confirming the implementation of the monitoring plan of the Project Agreement with the Crown dated 17th December 2003 and the application of the monitoring methodology as per the Project Agreement. A site visit was conducted to verify the data submitted in the monitoring report.</p> <p>The purpose of the project activity is to generate electricity from the wind farm with a capacity of 90 MW. The wind farm is situated across 1150 ha of farmland owned by four separate land owners including Meridian. There are 55 turbines in the wind farm, each having a capacity of 1.65 MW. The electricity generated by the wind farm will be supplied directly to the national grid.</p> <p>SGS confirms that the project is implemented in accordance with the Project Agreement for Eligible Generation. The monitoring system is in place and the annual Eligible Generation is reported without material misstatements. Our opinion relates to the project's Eligible Generation and excludes emission reduction assertions and clause 7.1(b)vi of the Project Agreement with the Crown. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 337,450,300 kWh electricity generation on site and 327,761,275kWh at Grid Injection Point during period 01/01/2007 to 31/12/2007.</p> <p>This report presents the findings of the assessment and provides justification for the verification process and the verification and certification opinion.</p>	
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Voluntary Verification	
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## Abbreviations

CAR	Corrective Action Request
CO <sub>2</sub>	Carbon dioxide
ERU	Emissions Reduction Unit
DNA	Designated National Authority
DOE	Designated Operational Entity
GHG	Green House Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
KV	Kilovolt
KWh	Kilowatt hour
MfE	Ministry for the Environment
MP	Monitoring Plan
NG	Natural gas
NIR	New Information Requests
PRE	Projects to Reduce Emissions
SCADA	Supervisory Control And Data Acquisition
SGS	SGS United Kingdom Ltd
VCUs	Voluntary Carbon Units
UNFCCC	United Nations Framework Convention on Climate Change
WTG	Wind Turbine Generator

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## 1. Introduction

SGS United Kingdom Ltd was contracted by the Ministry for the Environment of New Zealand to perform an independent verification of the Meridian Te Apiti Annual Eligible Generation. This report presents the findings of the assessment and provides justification for the verification process and the verification and certification opinion.

### 1.1 Objective

SGS United Kingdom Limited has been contracted by the Ministry for the Environment of New Zealand to perform an independent verification of the Meridian Te Apiti Annual Eligible Generation. The verification is necessary in order for the Ministry to issue Assigned Amount Units (AAU's) to Meridian Te Apiti in the form of Emissions Reduction Units (ERUs) for the calendar year 2007.

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The monitoring report conforms with the requirements of the monitoring plan in the Project Agreement with the Crown; and
- The data reported is complete and transparent.

### 1.2 Scope

The scope of the verification is the independent and objective review and ex post determination of the monitored Eligible Generation in electricity at the Te Apiti site. The verification is based on the Project Agreement and the monitoring report. The project is assessed against the requirements of the Kyoto Protocol and related rules and guidance.

SGS has, based on the recommendations in the Validation and Verification Manual, employed a risk-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

### 1.3 Description of the Project Activity

Project Parties:	Meridian Te Apiti
Title of project activity:	Verification of Annual Eligible Generation for 2007
Project Entity:	Meridian Te Apiti
Location of the project activity:	Saddle Road (north of the Manawatu Gorge) Palmerston North, New Zealand

The Meridian Te Apiti Windfarm consists of 55 WTGs with a capacity of 1.65 MW each to generate approximately 90MW electricity. The project received its resource consent in September 2003 and started production in December 2004. The electricity generated is fed into an underground network of 22KV cables which lead to the on-farm substation, to convert to 110KV, for transportation into Transpower's Woodville substation, which is then fed into the national grid. The project was one of the early Projects to Reduce Emissions (PRE) and its Project Agreement reflects this in terms of the verification of Eligible Generation and the omission of emissions reduction verification. However, it should be noted that, Meridian Te Apiti has been monitoring emissions and emission reductions for the calendar year 2007.

## 2. Methodology

The verification process is a two-stage process.

In the first stage, SGS completed a strategic review and risk assessment of projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

At the end of this stage, SGS produced:

- A Periodic Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the periodic verification protocol.
- Corrective Action Requests and New Information Requests, if necessary.

In the second stage, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question, using the Periodic Verification Checklist. This involved site visit and a desk review of the monitoring report.

At the end of this stage, SGS produced this verification report which will form the basis of verification statement.

### 2.1 Verification Team

The verification team considered of the following personnel:

Name	Role	SGS Office
Nikunj Agarwal	Lead Assessor	SGS India Pvt. Ltd
Sanjeev Kumar	Assessor	SGS India Pvt. Ltd
Woody Naicker	Local Assessor	SGS New Zealand Ltd

### 2.2 Duration of Verification

Preparation: 11-02-2008  
 On-site verification: 20-02-2008  
 Reporting: From 22-02-2008 to 04-03-2008

### 2.3 Review of Documentation

The Project Agreement and the monitoring report submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is attached in section 6 of this report.

## 2.4 Site Visits

Woody Naicker visited the site at Meridian Te Apiti Windfarm on 20-02-08. During the site visit, the following personnel was interviewed or participated in the interview:

Name	Position /Organization
Mr. Mike Goldsworthy	Asset Manager – Wind
Ms. Anna Broadhurst	Manager-Climate Change
Ms. Judy Ryan	Climate Change Advisor
Mr. Mike Ohs	Site Manager – Te Apiti

## 2.5 Assessment

The parameters and values presented in the monitoring report were assessed through review of detailed project documentation and generation records, interviews with personnel at the site, Collection of measurements, observations of established practices and testing of the accuracy of monitoring equipment.

Information which was not available during site visit was reported as New Information Request (NIR), following submission of additional information, monitoring and operational records, and the reconsolidation of all reported data was assessed again.

## 2.6 Reporting of Findings

As an outcome of the verification process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a New Information Request (NIR) specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- I. mistakes have been made with a direct influence on project results;
- II. validation protocol requirements have not been met; or
- III. there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be verified.

The verification process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification actors. These have no impact upon the completion of the verification activity.

### 3. Verification Findings

S. No.	Months	Reported Value(kWh)	Verified Value (kWh)
1	1 <sup>st</sup> January 2007 – 31 <sup>st</sup> December 2007	On-site: 337,450,300 kWh At Grid Injection Point: 327,761,275 kWh	On-site: 337,450,300 kWh At Grid Injection Point: 327,761,275 kWh

CAR 1 was raised to request supporting documents to prove that the Te Apiti Wind Farm is Meridian's first New Zealand Wind Farm. In response to this CAR the following documents were provided:

- Annual Report 2005 Commentary Page 23 lists the Meridian Windfarm milestones;
- Annual Report June 2003 Pages 14 & 15 shows Te Apiti as the only wind farm as a proposed project. All the other New Zealand projects are hydro.

The same was confirmed from the above mentioned reports; hence CAR 1 was closed out.

NIR 2 was raised to request purchase receipt and the specification of the turbines installed. In response to this NIR the Purchase and 5 Year Maintenance Agreement with Vestas and Machine Files were provided and checked by the local assessor during site visit, hence NIR 2 was closed out.

NIR 3 was raised to request supporting documents for the commissioning date of the project activity. In response to this NIR the commissioning documents of the equipments were provided and verified by the local assessor during the site visit, hence NIR 3 was closed out.

CAR 4 was raised as Section 10 on page 8 of the monitoring report was not clear.

The details of page 8 section 10 have been clarified and confirmed during site visit by the local assessor with Meridian Energy as the transfer details that would be used by the Ministry for the Environment and that the units required to be issued are 120,000 ERUs. CAR 4 was closed out.

CAR 5 was raised to request the calibration certificates of the energy meters. Certificate for energy meter from Transfield Services for calibration and from Electrix for compliance of installation have been provided and were checked for validity. CAR 5 was closed out.

NIR 6 was raised to request the Power Purchase Agreement (PPA) between the project proponent and electricity board. In response to this NIR the project proponent replied that the industry is governed by the regulations of the Electricity Commission. There is a Connection Agreement with Transpower (government transmission company) that stipulates that all power produced is sent into the grid owned and managed by Transpower.

The same has been confirmed by checking the Electricity Commission website: <http://www.electricitycommission.govt.nz/rulesandregs>. Hence NIR 6 was closed out.

CAR 7 was raised to request the NOC from local authorities to run the Wind Farm. In response to this CAR the letter from Tararua District Council approving the Resource Consent was provided. The letter from Tararua District Council was found satisfactory, hence CAR 7 was closed out.

CAR 8 was raised to confirm that Meridian Energy is aware of any or potential material impediments to delivery of Eligible Generation from the Project during the Commitment Period. In response to this CAR project proponent replied that there is no impediments to the system of Meridian Energy and production of electricity units. The same was confirmed during the discussion by local assessor during site visit. CAR 8 was closed out.

CAR9 was raised to request confirmation that there are no other generation sources feeding into the revenue meters. In response to this NIR project proponent replied that no bypass or other cables lead into the revenue meter. The electrical reticulation diagram shows generation sources. The same was checked by the



local assessor during the site visit and was confirmed by the Electrical reticulation diagram. CAR9 was closed out.

### **3.1 Remaining Issues, CARs, NIRs from Previous Validation or Verification**

No outstanding or remaining issues.

### **3.2 Project Implementation**

The project was implemented and equipment installed as described in the Project Agreement and completed in 2004.

### **3.3 Completeness of Monitoring**

The reporting procedures reflect the content of the monitoring plan. The monitoring mechanism is effective and reliable.

### **3.4 Accuracy of Eligible Generation**

The statement of Eligible Generation per WTG was found to be correct. Nine CARs/NIRs were raised. Responses to CARs/NIRs were satisfactory and all CARs/NIRs were closed. The details of the reported and verified values for all parameters are:

The revenue meter has been tested and certified for compliance before installation and for measuring electricity in accordance with the Electrical Governance Rules. All data are electronically captured and there is no manual interference for data collection. There are quality control measures in place and an annual operations audit is conducted by an independent auditor.

Data recorded by the SCADA system matched the monitoring report for 2007. The output from each WTG was checked and verified as follows:

WTG	Reported kWh	Verified kWh
TAP01	6,537,072	6,537,072
TAP02	5,491,379	5,491,379
TAP03	6,424,360	6,424,360
TAP04	5,659,688	5,659,688
TAP05	6,261,455	6,261,455
TAP06	7,066,452	7,066,452
TAP07	6,898,919	6,898,919
TAP08	5,727,097	5,727,097
TAP09	6,171,545	6,171,545
TAP10	6,266,538	6,266,538
TAP11	6,812,621	6,812,621
TAP12	6,721,887	6,721,887
TAP13	6,813,767	6,813,767
TAP14	6,191,830	6,191,830
TAP15	6,620,499	6,620,499
TAP16	6,324,878	6,324,878
TAP17	6,730,549	6,730,549
TAP18	6,511,430	6,511,430
TAP19	6,256,228	6,256,228
TAP20	7,769,206	7,769,206
TAP21	5,204,649	5,204,649
TAP22	5,235,430	5,235,430
TAP23	4,725,513	4,725,513
TAP24	5,122,367	5,122,367
TAP25	6,100,470	6,100,470
TAP26	5,933,084	5,933,084
TAP27	5,547,494	5,547,494

WTG	Reported kWh	Verified kWh
TAP28	5,808,717	5,808,717
TAP29	5,577,324	5,577,324
TAP30	5,764,820	5,764,820
TAP31	6,793,195	6,793,195
TAP32	6,650,921	6,650,921
TAP33	6,703,687	6,703,687
TAP34	6,503,835	6,503,835
TAP35	7,576,228	7,576,228
TAP36	7,257,914	7,257,914
TAP37	7,473,463	7,473,463
TAP38	6,134,324	6,134,324
TAP39	5,620,492	5,620,492
TAP40	5,421,945	5,421,945
TAP41	4,998,644	4,998,644
TAP42	5,656,429	5,656,429
TAP43	6,202,344	6,202,344
TAP44	5,937,028	5,937,028
TAP45	6,117,677	6,117,677
TAP46	6,586,783	6,586,783
TAP47	6,139,595	6,139,595
TAP48	6,392,849	6,392,849
TAP49	6,473,244	6,473,244
TAP50	5,831,730	5,831,730
TAP51	5,681,759	5,681,759
TAP52	5,783,880	5,783,880
TAP53	5,463,920	5,463,920
TAP54	5,618,609	5,618,609
TAP55	4,152,537	4,152,537
<b>Total</b>	<b>337,450,300</b>	<b>337,450,300</b>

### 3.5 *Quality of Evidence to Determine Eligible Generations*

Critical parameters used for the determination of the Eligible Generation are discussed in section 3.2 above. All data recorded are in compliance with the monitoring report.

### 3.6 *Management System and Quality Assurance*

The company has a quality audit as part of the independent operations audit.

In order to verify data quality, the company has data software that maintains the integrity of the data capture system.

### 3.7 *Additionality*

N/A

#### 4. Testing on ISO 14064-3 Verification CRITERIA

#	Criterion	Finding/Conclusion
1	<b>Project Category</b>	Project Agreement (signed and dated 17th December 2003), And the approved Electricity Governance Rules.
2	<b>Geographic Location</b>	In conformity with the description in the Annual Report.
3	<b>Eligible GHGs</b>	Carbon dioxide
4	<b>Project Start Date</b>	The project was implemented and equipment installed as described in the Project Agreement and completed in 2004.
5	<b>Eligible Generation start date</b>	Eligible Generation start date is 1 <sup>st</sup> January 2007.
6	<b>Public Funding and Grants</b>	As per the discussion on the site visit there is no indication that project has employed Public Funding, grants or Official Development Assistance (“ODA”) for construction or running operations in the geographic location of the Project Activity
7	<b>Project Boundary/GHG Assessment Boundary</b>	The project boundary was verified during the site visit.
8	<b>Calculation Methodology</b>	The calculation was verified as described in the Project Agreement (signed and dated 17th December 2003), And the approved Electricity Governance Rules.
9	<b>Secondary Effects</b>	No significant secondary effects are foreseen.
10	<b>Project Additionality</b>	N/A
11	<b>Quality of Generation</b>	Relevant permits have been obtained by project owner. Project’s implementation has been carried out in compliance with all relevant local and national environmental and social legislation in New Zealand.
12	<b>Monitoring Process</b>	Sustaining records were sufficient to enable verification of Eligible Generations.

## 5. Verification Statement

**Reporting Period:** From 1-January-2007 to 31-December-2007

Verified Generation in the above reporting period:

**Eligible Generations:** On Site: 337,450,300 kWh  
At Grid Injection Point: 327,761,275 kWh

### Verification Statement

#### Introduction

SGS United Kingdom Ltd. has been engaged by the Ministry for the Environment of New Zealand to perform the verification of the Eligible Generation reported in the monitoring report of the Meridian Te Apiti Windfarm for the period 01/01/2007 to 31/12/2007.

#### Responsibilities of the Ministry for the Environment of New Zealand and SGS United Kingdom Ltd.

The management of the Meridian Te Apiti Windfarm is responsible for the preparation of the Eligible Generation data as set out within the project Monitoring Report of 30/01/2008. The development and maintenance of records and reporting procedures are in accordance with the monitoring report, including the calculation and determination of Eligible Generation from the project is the responsibility of the management of the Meridian Te Apiti Windfarm.

It is our responsibility to express an independent verification opinion on the Eligible Generation from the project for the year ended 31/12/2007.

#### Basis of GHG Verification Opinion

Our verification approach was based on the requirements as defined in section I of Decision 3/CMP.1, and relevant decisions of the JI SC and CoP/MoP.

Our approach is risk-based, drawing on an understanding of the risks associated with reporting generation data and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project's Eligible generation for the period mentioned above.

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of Eligible generations for the period mentioned above, prepared on the basis of the Monitoring report, are fairly stated.

We conducted our verification with regard to the client's GHG projects and Monitoring Report which included Eligible Generation reported in the monitoring report of the Meridian Te Apiti Windfarm for the period 01/01/2007 to 31/12/2007.

This assessment included:

- a) Collection of evidence supporting the reported data
- b) Checking whether the provisions of the Monitoring Report, were consistently and appropriately applied

We have verified whether the information included in the monitoring report representing the project baseline is current and has been correctly extracted from the project site and the emissions reduction achieved has been determined by correctly subtracting emissions for the monitoring period from the baseline figure for the comparable period.

#### Opinion

Based on an understanding of the risks associated with reporting Eligible Generation data and the controls in

place to mitigate these, SGS planned and performed the work to obtain the information and explanations that was considered necessary to provide sufficient evidence for SGS to give reasonable assurance that this reported amount of Eligible Generation for the period is fairly stated.

SGS confirms that the project is implemented as described in the Project Agreement except for the exclusion of clause 7.1(b)vi. The latter was requested by the MfE not to be verified

**SGS United Kingdom Limited**Spijkenisse, 07<sup>th</sup> April 2008

Irma Lubrecht

**SGS India Pvt. Ltd.**Gurgaon, 07<sup>th</sup> April 2008

Nikunj Agarwal

## 6. References

- /1/ Operations Audit dated 03.09.2007
- /2/ Connection Agreement with Transpower-02.07.2004
- /3/ Meridian Standards Document
- /4/ Operating Procedures Manual
- /5/ Annual Report 2005 Commentary
- /6/ Annual Report June 2003
- /7/ Purchase & 5 year Maintenance Agreement with Vestas
- /8/ Resource Consent
- /9/ Electrical Reticulation Diagram
- /10/ Machine Files
- /11/ Maintenance Files
- /12/ Revenue Meter Certificate of Compliance – Electrix
- /13/ Revenue Meter Certificate of Compliance – Transfield Services
- /14/ Scada System
- /15/ Communication from Reconciliation Manager
- /16/ Te Apiti Windfarm – Turbine Cable Connections
- /17/ ERU Application Letter
- /18/ Signed Resource Consent
- /19/ Corroboration of Meridian's "no impediments" assertion

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