Annex

Palmerston North Awapuni Landfill Gas to Electricity Generation Project, 2010 Emission Reduction Units Verification Protocol

(New Zealand Government PRE Project Requirements)

Project verified: *Palmerston North Awapuni Landfill Gas to Electricity Generation Project*
Palmerston North City Council
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Independent verifier: *Noim Uddin*
DNV Australia

Date of verification: *10 March 2011*

Project Information	
Name of Project: Palmerston North Awapuni Landfill Gas to Electricity Generation Project	
Project Site Address: Awapuni Ward, Palmerston North City	
Name of Project Participant: **Palmerston North City Council**	
Name of Project contact: **Philip Burt**	**Telephone:** **64 (0) 6 356 8199**
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Verifier Information	
Name of Company: **DNV Australia**	**Telephone:** **61 (0) 2 9922 1966**
Name of Lead Verifier(s): Ramesh Ramachandran (Verifier and Team Leader) Noim Uddin (on-site audit)	**Fax:** **61 (0) 2 9929 8792**
Email: Noim.uddin@dnv.com	**Date(s) of Verification:** **10/03/2010**
Verification Team Members: Chandrashekara Kumaraswamy Venkata Raman Kakaraparthi (Peer Review)	

1. Introduction

DNV Australia has been engaged by Palmerston North City Council to undertake a verification of the Palmerston North Awapuni Landfill Gas to Electricity Generation Project's 2010 Emission Reduction Units. Palmerston North Awapuni Landfill Gas to Electricity Generation Project is an approved PRE Project by the New Zealand Government. This verification is performed according to the PRE Project Requirements as set by the New Zealand Government. The ERUs verification has been planned and performed in accordance with the Verification Plan of 28/02/2011 and our contract of 21/05/2010.

2. Verification Procedures

Our verification has been conducted in accordance with New Zealand Government PRE Project verification procedure and New Zealand Government JI Track I Procedure in order to provide reasonable assurance that the ERUs as contained in the 2010 Annual Report is free from material misstatement. Accordingly, we have conducted such tests and procedures as we considered appropriate including:

- On-site visit at the PNCC LFG facility at Awapuni Ward, Palmerston North City Council, New Zealand to examine collection and destruction of LFG, generation of electricity from LFG, supply of electricity to the grid, on-site record keeping procedure, consumption of any other fossil fuels and electricity.
- Interviews with operational, management and record keeping personnel responsible for maintenance, operation, management and reporting at the facility.
- Review of key documents, including:
    - Projects to Reduce Emissions Agreement with the Crown dated 13 April 2004.
    - PNCC LFG 2010 Annual Report to be submitted to the Ministry for the Environment, New Zealand.
    - PNCC LFG 2010 Annual Report (ERUs monitoring) to be submitted to the Austrian CDM/JI Program.
- Random sample testing of source data, including:
    - Flow, pressure, temperature and concentration of LFG.
    - Electricity generation, supply and import.
    - Any other fossil fuel consumption (LPG, diesel and petrol).
- Confirmation that the calculation methodology is in compliance with the Schedule 2 of the PRE Project Agreement.
- Observation and review of relevant documentation.

The results of the verification procedures undertaken are set out in the appended Section 3 (Attachment 1 – Verification Checklist).

PNCC personnel have overall responsibility for the project including maintenance and operational data management.

DNV confirms that it is not aware of any actual or perceived conflict of interest in having completed this engagement.

a. Independent Review

DNV has completed an independent review, undertaken by competent personnel who did not participate in the verification, to:

- confirm that all verification activities have been undertaken; and
- conclude whether or not the ERUs are free from material discrepancy.

In making this verification statement, we confirm that:

- DNV is currently accredited as a Designated Operational Entity (DOE) by the Conference of Parties as per PRE Project Requirements and New Zealand Government JI Track I Procedure as set by the New Zealand Government.

- This verification has been conducted in accordance with the requirements of PRE Project Requirements and New Zealand Government JI Track I Procedure as set by the New Zealand Government, and PRE Project ERUs verification protocol as adopted by the New Zealand Government.

- The findings and conclusions documented in this verification protocol are guided by professional judgment and supported by verification records held by us.

b. Inherent Limitations

Because of the inherent limitations in any internal control environment and data management system, it is possible that fraud, error, or non-compliance with the Project Agreement may occur and may not be detected. Further, the verification was not designed to detect all weakness or errors in the internal control environment and data management system so far as they relate to the scope set out above, as the verification has not been performed continuously throughout the period and the procedures performed on the relevant internal information and data management system were on a test basis. Any extrapolation from this verification to future periods is subject to the risk that the procedures may become inadequate because of changes in conditions, or that the degree of compliance with them may deteriorate.

DNV Australia did not conduct any verification procedures with respect to the internal control environment and data management system of the PP as a whole. As such, no assurance is provided on any internal control environment and data management system not associated with the PNCC LFG 2010 ERUs.

The verification opinion expressed in this Report has been formed on the above basis.

c. Verification Opinion

Our opinion on verification of ERUs is attached with this verification protocol.

Name of Lead Verifier(s):	**Noim Uddin**
Position:	**Lead Climate Change Verifier**
Company and Location:	**DNV Australia**
Signature of Lead Verifier:	
Date:	**04 July 2011**
Name of Independent Reviewer(s)	**Venkata Raman Kakaraparthi**
Signature of Independent Reviewer:	
Date:	**21 July 2011**

Attachment 1 – Verification Procedures and Findings Protocol

Attachment 1 is a record of the verification procedures conducted in accordance with PRE Project Requirements and JI Track I Procedure by the New Zealand Government and of the verification findings. The checklist is not a comprehensive description of all the verification procedures performed or all verification evidence obtained during the verification process, but is a fair presentation of the procedures and findings in sufficient detail to enable all findings (both positive and negative) to be verified.

3. Attachment 1 – verification procedures and findings protocol

<table>
<tr><td>Criteria Item 1 verified</td><td colspan="3">The PNCC LFG 2010 Annual Report includes the information detailed in Schedule 4 of the PRE Project Agreement.</td></tr>
<tr><td>Description of requirement</td><td colspan="3">That all of the information detailed in Schedule 4 of the Project Agreement for inclusion in the Annual Report has been included and is fairly stated.</td></tr>
<tr><td rowspan="2">Verification procedures</td><td>Verification item</td><td>Information Source/Evidence</td><td>Comments</td></tr>
<tr><td>Cross check of Annual Report information with the requirements documented in Schedule 4 of the Project Agreement.</td><td>Project Agreement dated 13 April 2004.
Amendment 1 Project Agreement dated 3 March 2005.
Amendment 2 Project Agreement dated 16 February 2010.
PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand.
PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.</td><td>The PNCC LFG 2010 Annual Report is in compliance with Schedule 4 of the Project Agreement.
An alternative method was adopted as a proxy measure to estimate the amount of LFG (as tonnes of methane) combusted for the period 14-31 December 2010.</td></tr>
<tr><td>Findings</td><td colspan="3">The PNCC LFG 2010 Annual Report has been completed according to the Schedule 4 of the Project Agreement. Following items were checked against Schedule 4 of the Project Agreement (Contents of Annual Reports), these being:
total LFG (methane) combusted: 947.77 tonnes
total electricity generated: 4.62 GWh
total electricity imported/purchased: 1,001,737 kWh
An alternative method was adopted to calculate amount of LFG during the period from 14-31 December 2010 as no LFG data was recorded. During this period LFG data was recorded as ‘no data’ in the SCADA system. The adopted calculation method is based on the tested energy conversion efficiency of the Genset using default energy content for methane, is in</td></tr>
</table>

	accordance with Schedule 4 of the PRE Project Agreement and is reasonable. Energy content of methane 37.7 MJ/m3 is sourced from NGA Factors Book from Department of Climate Change and Energy Efficiency and verified to be correct. During 14-31 December 2010 period following electricity data was recorded and amount of methane combusted was estimated: Electricity generated: 195 253.15 kWh Methane combusted: 36.12 tonnes A total emission reduction of 19 462 tonnes CO_2-e has been calculated in accordance to the methodology as per Schedule 2 of the Project Agreement.
Conclusion	All of the information detailed in Schedule 4 of the Project Agreement has been included and is fairly stated.

Criteria Item 2 verified	The recording and calculation of the emission reductions for the year uses the relevant (e.g., electricity) emission factors set out in Schedule 2 (or as otherwise defined).		
Description of requirement	That the emission factors used in the Annual Report are the same as those in Schedule 2 (or as otherwise defined) of the Project Agreement, and that the mathematical calculation of emission reductions using the emission factors and project activity parameters are fairly stated		
Verification procedures	Verification item	Information Source/Evidence	Comments
	Cross check of emission factors used in the emission reduction calculation with the emission factors in Schedule 2 (or as otherwise defined) of the Project Agreement.	Project Agreement dated 13 April 2004. Amendment 1 Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	The relevant emission factors have been correctly applied in accordance with 'Schedule 2 – Measurement of Emission Reductions' of the Project Agreement.
	Emission factors not included in Schedule 2 are from properly authorised sources or are based on test results from properly accredited laboratories.	Not applicable	Not applicable as no emission factors were used other than in Schedule 2.
	Confirmation that the measurement of project activity parameters has	Project operational control documents including:	All project activity parameters are monitored and

	been properly undertaken.	• methane flow and methane percentage data • gas pressure and gas temperature data • auxiliary electricity consumption data • fossil fuel and LPG consumption during operation of the LFG gas-to-electricity	reported. LFG (methane) flow is measured by Instromet gas flow meter. No LFG data was recorded during 14-31 December 2010. During this period LFG data was recorded as 'no data' in the SCADA system. Where original spreadsheet from SCADA system has "no data" entered. This has been substituted with 0 in the ER calculation XL. An alternative method was adopted to calculate amount of LFG during the period from 14-31 December 2010 as no LFG data was recorded. Gas composition is monitored by gas composition meter (Drager meter). During 12/03/2010 to 01/06/2010, a static methane content data (60.4) has been recorded. Alternative database have been acquired via two data sources - iFix and Citect SCADA in order to retrieve missing data. iFix is located at Wastewater Plant. The classic Historian on the iFix system is logging landfill data (This system is the predecessor to the

			GS iHistorian). This second database is queried and data exported to CSV for the required duration and data intervals. Citect SCADA is located at the PNCC LFG and is logging landfill pressure and temperature data at 2 second intervals. This data was exported and then queried for the require duration. Then the data is filtered to obtain only the data points for the 15 min interval as required as per monitoring plan. This has been confirmed by Trevor Kenyon of Manawatu Precision Enterprises Ltd. (dated 14 March 2011), who provides support to PNCC to manage Citect system and data management. An export electricity meter monitors and records total electricity generation from the PNCC LFG Genset facility. An export/import electricity meter monitors and records electricity export to the national grid and electricity import from the grid. Diesel and petrol used during operation of the

			PNCC LFG facility is estimated to be less than 1% of total greenhouse gas emissions, and is in the opinion of the verifier immaterial. Amount of LFG flared via the back-up flare was not measured. Amount of LPG used during operation of back-up flare has not been recorded, and is in the opinion of the verifier reasonable.
	Confirmation that the measured project activity parameters have been accurately transcribed to the Annual Report.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	The measured project activity parameters have been accurately transcribed in the Annual Reports.
	Confirmation by alternate or check calculation that the determination of emission reductions is fairly stated.	Emission Reduction Calc 2010 XL: DMS-#600943-v1-XLS (dated 10 March 2011)	The total emission reductions calculation was checked and found to be fairly stated.

Findings

The emission factors of electricity, diesel and petrol have been correctly applied in accordance with Schedule 2 of PRE Project Agreement – Measurement of Emission Reductions. The emission factors used in the Annual Report are:

- Electricity – 600 tonnes CO_2e/GWh
- Diesel – 0.002617 tonnes CO_2e/litre
- Petrol – 0.002298 tonnes CO_2e/litre
- Amount of methane combusted for electricity generation is monitored and measured. There is no provision for flare as per PRE agreement. Hence flaring has been excluded from the project boundary, which is in accordance with PRE agreement.
- An alternative method was adopted to calculate amount of LFG during the period from 14-31 December 2010 as no LFG data was recorded. During this period LFG data was recorded as 'no data' in the SCADA system. The adopted calculation method based on the tested energy conversion efficiency of the Genset using default energy content for methane is in accordance PRE Project Agreement and is reasonable.
- Alternative database have been acquired via two data sources: iFix and Citect SCADA. This database mirror original database, which in the opinion of verifier reasonable. An email dated 14/03/2011 from Manawatu Precision Enterprises Ltd (Trevor Kenyon) confirmed the data sources.

Following tables summarie the total net emission reduction:

Emission avoided:

Element	**Annual Production**	**Emission factor (Schedule 2)**	**tCO_2e**
Electricity generation	4620.479 MWh	600 tCO_2e/GWh	2 772.287
Methane combustion for electricity generation	947.77 tonnes	21 tCO_2e/tCH_4	19 903.170
Total			**22 675.457**

Emission due to project activities:

Element	Uses	**Emission factor (Schedule 2)**	**tCO_2e**

	Diesel	2 000 litres	0.002617 tonnes CO_2e/litre	5.234
	Petrol	300 litres	0.002298 tonnes CO_2e/litre	0.6894
	Amount of methane combusted for electricity generation	947.77 tonnes	Tonnes of CH_4 multiplied by 44/16	2 606.37
	Electricity purchase	1.001 GWh	600 tCO_2e/GWh	601.0422
	Total			**3 213.3356**

Net Emission Reduction

Total emission avoided	**22 675.457 tCO_2e**
Emission due to project activities	**3 213.3356 tCO_2e**
Total Net Emission Reductions	**19 462.122 tCO_2e**

In summary: the CO_2 emissions avoidance due to electricity generation (gross) is 2772 tonnes CO_2-e.A total of 19 903.17 tonnes CO_2-e of emission avoidance was achieved due to use of methane (947.77 tonnes) for electricity generation.

Conclusion

The recording and calculation of the emission reductions for the year uses the relevant emission factors set out in Schedule 2 of PRE Project Agreement.

A total emission reduction of 19 462 ERUs has been calculated as per PRE Agreement.

Criteria Item 3 verified	The calculation behind the Emission Units claimed for 2010 uses the net emission reduction and the request ratio ("C") set out in clause 5.1 of the Project Agreement.		
Description of requirement	That the calculation of Emission Units properly uses the net emission reduction calculated for the year *2010* taking due account of the request ratio ("C") set in Clause 5.1 of the Project Agreement.		
Verification procedures	Verification item	Information Source/Evidence	Comments
	Confirm that the calculation takes proper account of the request ratio.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	The correct request ratio (C=1) has been used to estimate 2010 emission unit claims.
	Confirm that the calculation of Emission units is based on net emission reductions.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted	The calculation of the emission units is based on net emission reductions.

		Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	
Findings	Request ratio (C=1) has been applied correctly.		
Conclusion	Request ratio (C=1) was used as defined in the Project Agreement.		

Criteria Item 4 verified	If applicable: the construction emissions calculations uses (a) the emission factors set out in Schedule 2 (or as defined elsewhere), and (b) the records of the quantities of materials, fuels, electricity purchased etc. relevant to emissions during construction.		
Description of requirement	That calculation of construction emissions uses the emission factors set out in Schedule 2 (or as defined elsewhere) and measured quantities of construction materials, accurately transcribed to the Annual Report.		
Verification procedures	Verification item	Information Source/Evidence	Comments
	Confirm that the calculation uses the correct emission factors.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	Since the construction and commissioning of the project activity occurred in 2005-2006 not during the 2010 reporting period, emissions from construction are not applicable during this verification.
	Confirmation that all appropriate construction materials have been included.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010	Not applicable as the construction of the project occurred in 2005-2006 and not during the 2010 reporting period.

		PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	
	Review of the record keeping arrangements to confirm that the measured quantities of construction materials are a fair presentation of actual usage.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	Not applicable as the construction of the project occurred in 2005-2006 and not during the 2010 reporting period.
	The exercise of professional judgement in relation to whether the claimed quantity of construction materials was reasonable.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand.	The construction of the project occurred in 2005-2006 and not during the 2010 reporting period.

		PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	
	Alternate calculations and cross checks to confirm that the calculation of construction emissions is fairly presented.	PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	The construction of the project occurred in 2005-2006 and not during the 2010 reporting period.
Findings	By 2010, the year under verification all construction and commissioning activity had been completed and there were no construction emissions.		
Conclusion	This is, in the opinion of the verifier, reasonable for this facility.		

Criteria Item 5 verified	Metering and recording equipment installed has been certified by an independent reputable quality assured service provider.		
Description of requirement	That the metering and recording equipment installed has been certified by an independent reputable quality assured service provider.		
Verification procedures	Verification item	Information Source/Evidence	Comments
	Examination of calibration and maintenance certificates to ensure that they are current.	Site visit during 10 March 2011 Calibration certificates: Export meter (serial no. 334950848) Installation Certificate No. 33815M dated 23 June 2006 (valid until 18 October 2015 by TSL E&T Meter Test House). Export/import electricity meter Installation Certificate No CERT-2007-9 (valid until 30 August 2011) by AccuCal. Gas Composition meter (CH4%) Test Certificate No 12455 dated 3 November 2010 (valid until May 2011) by Drager Service. Gas flow meter Installation Certificate dated 12 April 2006 by Instromet New Zealand Ltd. Gas Flow meter calibration certificate by	Both export meter and export/import electricity meter calibration certificates are maintained and were found valid during the 2010 monitoring period. The gas composition meter certificate was examined and was valid until May 2011. The gas flow meter installation certificate dated 12 April 2006 was examined and it was found that Instromet recommends a routine inspection after two to three years of installation. There has not been any record of routine inspection during first two-three years of operation. The Gas flow meter has been calibrated by Vector on 04 April 2011. This is the first calibration has been performed after the installation of the meter.

		Vector, dated 6 April 2011. Genset DEUTZ TCG 2020 V12 Engine Maintenance Schedule. ENERGEN Solutions Maintenance and Service Confirmation Letter dated 19 April 2011	ENGERGEN as owner of the Genset ensures engine maintenance as per schedule.
	Examination of installed instruments to confirm that the installed instruments are those covered by the calibration certificates.	Site visit during 10 March 2011 Calibration certificates: Export meter (serial no. 334950848) Installation Certificate No. 33815M dated 23 June 2006 (valid until 18 October 2015 by TSL E&T Meter Test House). Export/import electricity meter Installation Certificate No CERT-2007-9 (valid until 30 August 2011) by AccuCal. Gas Composition meter (CH4%) Test Certificate No 12455 dated 3 November 2010 (valid until May 2011) by Drager Service. Gas flow meter: Installation Certificate dated 12 April 2006 by Instromet New Zealand Ltd.	Installed electricity meters were examined and it was found that the installed instruments are covered by the calibration certificates. The gas flow meter installation certificate was examined and it was found that Instromet recommends a routine inspection after two to three years of installation. The Gas flow meter has been calibrated by Vector on 04 April 2011.

		Gas Flow meter calibration certificate by Vector, dated 6 April 2011. Genset DEUTZ TCG 2020 V12 Engine Maintenance Schedule. ENERGEN Solutions Maintenance and Service Confirmation Letter dated 19 April 2011.	
	Confirmation that the calibration agency is appropriately qualified and accredited for the instruments which have been calibrated.	Agency Accreditation scope	TSL E&T Meter Test House is an accredited test house under the Electricity Commission. AccuCal is a registered electricity meter test service provider under the Electricity Commission.
Findings	The metering and recording equipment installed at the PNCC LFG was found to be appropriate for its purpose and appeared to be in good operating conditions.		
Conclusion	Copies of all calibration, maintenance and installation certificates are maintained by PNCC LFG.		

Criteria Item 6 verified	Any other (electricity, heat) generation, not part of the project, that flows through these meters is identified, measured and subtracted from the gross total.		
Description of requirement	That any other (electricity, heat) generation, not part of the project, that flows through these meters is indentified, measured and subtracted fro the gross total and fairly stated.		
Verification procedures	Verification item	Information Source/Evidence	Comments
	Review of the process and instrumentation diagram of the project to confirm the presence or absence of other energy flows through the project metering installation.	Site visit during 10 March 2011. Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. PNCC LFG Project Design Document V6, 8 April 2005. PNCC Landfill Generation and Waste Water Treatment Plant 11kV System Diagram dated 30 January 2009 prepared by Power Distribution Solutions Ltd	PNCC LFG project only uses gases from the Awapuni Landfill. PNCC confirms that there are no supplementary gas supplies for the LFG generator. PNCC LFG gas-to-electricity generation facility generates electricity for on-site consumption (Waste Water Treatment Plant and Recycle Plant) and to supply excess electricity to the national grid. PNCC purchases electricity from the Mighty River Power (which is not part of the project) and flows through the export/import meter and is appropriately accounted for. There is no additional energy (electricity or gas) flow through the project metering installation other than those identified in the

		(PDS). Electricity import statement from Mighty River Power Ltd dated 19 January 2011.	project boundary. The electricity meters are not shared with any other electricity generation facility.
	Consideration of the nature and design of the project.	Site visit during 10 March 2011 PNCC LFG Project Design Documents V6, 8 April 2005. Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program.	PNCC LFG only generates electricity from captured LFG from Awapuni Landfill and supplies excess electricity to the national grid. Although, thermal energy generation is included in the Project Design Document and PRE Project Agreement, at present only electricity is produced from the gas-to-electricity conversion facility and there is no facility for generating thermal energy. Monitoring of total generated and exported electricity is included for the 2010 monitoring and reporting period.
	Review of the record keeping process to confirm that the metered data is accurately measured and recorded.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry	PNCC purchases electricity from the national grid (which is not part of the project) and flows through the export/import meter and is appropriately accounted for. The imported electricity data were cross checked with statement from

		for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. Site visit during 10 March 2011 PNCC LFG Project Design Document V6, 8 April 2005. Electricity import statement from Mighty River Power Ltd. dated 19 January 2011.	Mighty River Power Ltd and was found to be consistent.
	Review of the metering arrangements to confirm that the measurements of other energy flows truly represent those flows.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. Site visit during 10 March 2011 PNCC LFG Project Design Document V6, 8 April 2005. PNCC Landfill Generation and	PNCC purchases electricity from the national grid (which is not part of the project) and flows through the export/import meter and is appropriately accounted for. There is no additional energy flow through the project metering installation other than those identified in the project boundary. Electricity meters are not shared with any other electricity generation facility.

		Waste Water Treatment Plant 11kV System Diagram dated 30 January 2009 by Power Distribution Solutions Ltd (PDS).	
	Review of the energy calculation methodology to confirm that any other energy flows has been correctly subtracted and that the final result truly reflects the net energy flow attributable to the project.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. Site visit during 10 March 2010 PNCC LFG Project Design Document V6, 8 April 2005.	A review of the energy calculation methodology has been performed and confirms that imported electricity has been subtracted. The net electricity export truly reflects the net energy flow attributable to the project activity.
Findings	No additional energy (electricity, heat) requirement not part of the project that flows through the electricity meter was identified. Imported electricity was monitored and recorded correctly via export/import meter. The net electricity export truly reflects the net energy flow attributable to the project activity.		
Conclusion	The energy calculation method was reviewed and import electricity flows due to purchase by PNCC has been subtracted from the total electricity exported to the national grid. The final result truly reflects the net electricity export attributable to the project.		

Criteria Item 7 verified	If applicable, the record of emissions as a result of the operation of the project is fairly stated		
Description of requirement	That the record of emissions as a result of operation of the project is fairly stated.		
Verification procedures	Verification item	Information Source/Evidence	Comments
	Confirm that the calculation uses the correct emission factors.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. PNCC LFG Project Design Document V6, 8 April 2005.	All emissions factors used in the emission reduction calculation are sourced from Schedule 2 of the PRE Project Agreement.
	Confirmation that all appropriate operational activities have been included.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010	Following are the operational activities where monitoring is required as per PRE agreement include: • Methane fraction in the LFG by a gas composition is monitored and data are

		PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. PNCC LFG Project Design Document V6, 8 April 2005. Site visit during 10 March 2011	recorded by gas composition meter. • Amount of LFG used for electricity generation is monitored and data are recorded by gas flow meter. • Amount of electricity generated is monitored and data are recorded by an export meter. • Combustion efficiency is monitored and is maintained by the engine supplier ENERGEN. • LFG temperature and pressure are monitored and recorded by gas composition meter. Following are the operational activities where monitoring is not required as per PRE agreement include: • Amount of LFG collected from the project wells (currently not monitored). • Amount of LFG flared via the back-up flare (currently not monitored).

			• Heat rate of generator (currently not monitored). • Amount of LFG flared (currently not monitored). • Back up flare working hours (currently not monitored). • Flare temperature (currently not monitored). • Engine exhaust gases (currently not monitored). • Diesel and petrol use during the operation of the project is estimated. Amount of LFG flared, flare working hours and flare temperatures are not included in the project boundary, as there is no provision for flare as per PRE agreement. While monitoring and reporting of engine exhaust gases are not required as per PRE Project Agreement. Amount of diesel and petrol used are estimated and account for PRE Project Agreement requirements and found less than 1% of total greenhouse gas emission and in the opinion of the

			verifier is immaterial.
	Review of the record keeping arrangements to confirm that the measured quantities of operational materials are a fair presentation of actual usage.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. Site visit during 10 March 2011 PNCC LFG Project Design Document V6, 8 April 2005. Spreadsheet *Emission Reduction Calc. 2010.xls*	Operational data (LFG consumption for electricity generation and gas composition) are monitored and maintained in a SQL central database. Data are transferred from the PNCC LFG facility to the SQL database located at Waste Water Treatment Plant. Electricity generation data are obtained via an on-line data source SREAM Information linked to the export/import meter. Electricity import data are obtained from export/import meter and are cross checked with statement from the Mighty River Power Ltd. All data are inserted into an emission reduction spreadsheet with active emission reduction calculation algorithm.
	The exercise of professional judgement in relation to whether the claimed quantity of operational materials was reasonable.	PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010	All monitoring data records are kept electronically with a back up in the main server and archived accordingly. In the opinion of the verifier the data is a

		Annual Report prepared for the Austrian CDM/JI Program. Project Design Documents V6, 8 April 2005. Spreadsheet *Emission Reduction Calc 2010.xls* Site visit during 10 March 2011	fair presentation of actual destruction of LFG, generation of electricity and use of other fossil fuels.
	Alternate calculations and cross checks to confirm that the calculation of operation emissions is fairly presented.	PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. PNCC LFG Project Design Documents V6, 8 April 2005. Spreadsheet *Emission Reduction Calc 2010.xls* Site visit during 10 March 2011	Cross checking of sample raw data with the emission reduction calculation spreadsheet was performed. The verifier found that the calculation of emission reduction is fairly presented.
Findings	All operational activities were duly included in the emission reduction calculation. The record keeping arrangement was found to be satisfactory. All exclusions are duly justified.		
Conclusion	The record of emissions as a result of the operation of the project is fairly stated.		

Criteria Item 8 verified	The participant has justified and documented any significant changes to the PRE project and its baseline scenario that lead to material change in the project's emissions, removals and emission reductions since the previous verification, and which affect the projects ability to conform to the principles, and requirements of the PRE project.		
Description of requirement	Identify any additional requirements related to the PRE Project Agreement which require verification and verify those requirements		
Verification procedures	Verification item	Information Source/Evidence	Comments
	Availability of LFG to generate electricity.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. Site visit during 10 March 2011. PNCC LFG Project Design Documents V6, 8 April 2005.	The PNCC LFG facility has been built at the Awapuni Landfill site that does not accept any new waste. Generation of electricity was reduced due to a decline in gas quantity being drawn off the gas field. This is due to insufficient clay capping over part of the closed landfill. No new gas wells were installed since last wells upgrading in 2008. However. PNCC continued strenuous efforts and intensive investigation to regain gas quality and quantity. However, the availability of gas remained intermittent.
Findings	Currently PNCC LFG facility captures and uses landfill gas to generate electricity and the project activity is additional. PNCC failed to generate sufficient ERUs for 2010 to meet		

	agreed target as per ERPA. PNCC has completed installation a biogas-to-electricity generation facility which is a project independent from this project. However, this is not included in the project boundary.
Conclusion	Currently there are no changes to the PRE project and its baseline remains same.

Criteria Item 9 verified	Within the context of verification, any other requirement relating to the PRE project Agreement.		
Description of requirement	Identify any additional requirements related to the PRE Project Agreement which require verification and verify those requirements		
Verification procedures	Verification item	Information Source/Evidence	Comments
	The procedures are to be established by the Verifier based on professional judgement.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. Site visit during 10 March 2011. PNCC LFG Project Design Documents V6, 8 April 2005.	All PRE project Agreement requirements have been met. Currently the project generates electricity for on-site consumption and excess electricity exported to the national grid. Currently no thermal energy (heat) is generated from the facility for on-site use or for export.
Findings	All requirements under the PRE Project Agreement are met.		
Conclusion	There are no other requirements relating to the PRE Project Agreement that have not been met.		

Criteria Item 10 verified	The participant has adequate understanding of the principles and requirements of the PRE programme and is competent to conform to those principles and requirements.		
Description of requirement	Identify any additional requirements related to the PRE Project Agreement which require verification and verify those requirements		
Verification procedures	Verification item	Information Source/Evidence	Comments
	The procedures are to be established by the Verifier based on professional judgement.	Project Agreement dated 13 April 2004. Amendment Project Agreement dated 3 March 2005. Amendment 2 Project Agreement dated 16 February 2010. PNCC LFG 2010 PRE Annual Report submitted Ministry for the Environment, New Zealand. PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program. Site visit during 10 March 2011. PNCC LFG Project Design Documents V6, 8 April 2005.	During the on-site visit interviews were held with • Phillip Burt, Water & Waste Services Engineer, PNCC • Chris Pepper, Water & Waste Services Manager, PNCC • Natasha Simmons, Water & Waste Planning Engineer, PNCC Mr. Burt has been responsible for the operation, maintenance and monitoring of the Project since its inception in 2005. He has a very good understanding of LFG management and the gas-to-electricity facility. Mr. Pepper has been responsible for the project establishment since 2004. He has a comprehensive understanding of LFG management. Ms Simmons has been responsible for ensuring compliance

			to the requirements of local and regional governments. All project personnel are competent to conform to the PRE requirements.
Findings	Project personnel and monitoring personnel have a deep understanding of the PRE project and its requirements.		
Conclusion	It is the opinion of the verifier that the participant has an adequate understanding of the principles and requirements of the PRE program and is competent to conform to those principles and requirements.		

Criteria Item 11 verified	Compliance with the regulatory requirements of local and central government agencies.		
Description of requirement	That nothing came to the notice of the verifier to indicate that the project was not compliant with the regulatory requirements of local and central government agencies.		
Verification procedures	Verification item	Information Source/Evidence	Comments
	Review compliance conditions made within the Resource Consent or other regulatory approvals.	Resource Consent Nos 103661 and 103790 – Discharge Permits – PNCC LFG, dated 19 July 2006. Maintenance Clarification Certificate, PNCC LFG Facility, Energen, 19 April, 2011.	Resource Consent has been granted to PNCC with a term of 25 years Discharge Permits 103661 and 103790. The following conditions were the basis for issuing a Resource Consent that: • The activities will have minor actual or potential adverse effects on the environment. • The activities are not contrary to any relevant plans or policies. • The activities are consistent with purpose and principles of the Resource Management Act 1991. PNCC personnel have confirmed that the Project meets all the requirements as specified under the Decision Clauses 1, 2, 3, and 4. According to the Resource Consent requirements as

			specified under the Decision Clause 5, 6, and 10: • The gas combustion engine shall be tuned at least once annually in the period between 1 July and 30 June of each year commencing 1 July 2006 – 30 June 2007. • PNCC shall submit an annual report including operational efficiency for energy generation and emissions by 30 July of each year, commencing 30 July 2007. • The Permit Holder shall ensure that the opacity of the emission from the discharge from the gas-to-electricity (cogeneration plant) is not darker than the Ringelmann Shade 1 as determined in accordance with the New Zealand standard NZS 5201:1973. It is found that the gas combustion engine has not been tuned since installation. However, ENERGEN, the gas combustion engine supplier confirmed that ENERGEN maintains the engine

			according to the Engine Maintenance Schedule and OEM Standards and recommendations. PNCC is yet to submit an annual report including operational efficiency for energy generation and emissions. Currently PNCC does not monitor engine exhaust emissions. According to the Resource Consent requirements as specified under the Decision Clause 11: • The Manawatu-Wanganui Regional Council, under section 128 of the Act, may initiate a review of all conditions of the permit in the month of August 2007, 2008, 2009, 2010, 2015, 2020, 2025, and 2030. It was informed by PNCC that no such initiative has been taken by the Manawatu-Wanganui Regional Council.
	Review correspondence between the local authorities and the project operator to evaluate compliance with requirements.	Resource Consent Nos 103661 and 103790 – Discharge Permits – PNCC LFG, dated 19 July 2006. Maintenance	PNCC personnel have confirmed that it meets all the requirements as specified under The Decision Clauses 1, 2, 3, and 4. It is found that the gas combustion

		Clarification Certificate, PNCC LFG Facility, Energen, 19 April, 2011.	engine has not been tuned since installation. However, ENERGEN, the gas combustion engine supplier confirmed that ENERGEN maintains the engine according to the Engine Maintenance Schedule and OEM Standards and recommendations.
	Review the activities at the site to confirm that the project arrangements are generally compliant with regulatory requirements.	Resource Consent Nos 103661 and 103790 – Discharge Permits – PNCC LFG, dated 19 July 2006. Site visit during 10 March 2011.	No issues have been identified in 2010 Annual Report or during the on-site visit that would lead to a material change in consent compliance requirements as specified in Resource Consent Decision 1, 2, 3, 4, 8, and 9.ssued by Manawatu-Wanganui Regional Council. PNCC is yet to conform to the requirements as specified in the Resource Consent Decision 5, 6, 10 and 11.
	Confirm that project monitoring includes relevant regulatory and compliance conditions.	Resource Consent Nos 103661 and 103790 – Discharge Permits – PNCC LFG, dated 19 July 2006. Site visit during 10 March 2011.	PNCC is yet to conform to the requirements as specified in the Resource Consent The Decision 5, 6 and 11.

Findings	No issues have been identified in 2010 Annual Report or during the on-site visit that would lead to a material change in consent compliance requirements as specified in Resource Consent Decision 1, 2, 3, 4, 8, and 9.ssued by Manawatu-Wanganui Regional Council. PNCC is yet to conform to the requirements as specified in the Resource Consent the Decision 5, 6, 10 and 11.
Conclusion	No issues have been identified in 2010 Annual Report or during the on-site visit that would lead to a material change in consent compliance requirements as specified in Resource Consent Decision 1, 2, 3, 4, 8, and 9 issued by Manawatu-Wanganui Regional Council. PNCC is yet to conform to the requirements as specified in the Resource Consent The Decision 5, 6, 10 and 11.

4. Documents Reviewed	5. Please include author, date prepared and date reviewed by Verifier
PNCC LFG 2010 Annual Report prepared for the Ministry for the Environment	Phil Burt, prepared in February 2011, verified in March 2011
PNCC LFG 2010 Annual Report prepared for the Austrian CDM/JI Program	Phil Burt, prepared in February 2011, verified in March 2011
PRE Project Agreement	The Crown, dated 13 April 2004, verified in June 2010
Amendment PRE Project Agreement	The Crown, dated 3 March 2005, verified in June 2010
Amendment 2 PRE Project Agreement	The Crown, dated 16 February 2010, verified in June 2010
Project Design Document Version 6	PNCC, dated 8 April 2005, verified in April 2009
Electricity import statement from Mighty River Power Ltd	Mighty River Power, prepared in January 2011, verified in March 2011
Spreadsheet *Emission Reduction Calc 2010.xls*	Phil Burt, prepared in March 2011, verified in March 2011

6. Site Visit location	7. Address, date of visit, personnel interviewed
Palmerston North City Council and Awanpuni Landfill Site	Address: The Square, Palmerston North, New Zealand Date of visit: 10 March 2011 Personnel interviewed: • Phil Burt, Water & Waste Services Engineer, PNCC • Chris Pepper, Water & Waste Services Manager, PNCC • Natasha Simmons, Water & Waste Planning Engineer, PNCC