

ANNUAL REPORT TEMPLATE FOR GEOTHERMAL PROJECTS (PRE1)

Project Title: Rotokawa Geothermal Project (Nga Awa Purua)

Description of Project: Geothermal Power Generation

Company: Mighty River Power Limited

Year Reported on: 1 January to 31 December 2011

- 1) (a) For PRE 1 projects: break down and total of emissions generated during construction using the emission factors listed in Schedule 2 (if applicable to the year being reported on).

CONSTRUCTION EMISSIONS			
Element	Usage	Embodied emission factors	tCO₂-e
Diesel	N/A	0.002617 tonnes CO ₂ -e per litre	N/A
Petrol	N/A	0.002298 tonnes CO ₂ -e per litre	N/A
Electricity purchased	N/A	600 ¹ tonnes CO ₂ -e per GWh	N/A
Steel	N/A	1.95 tonnes CO ₂ -e per tonne	N/A
Aluminium	N/A	1.74 tonnes CO ₂ -e per tonne	N/A
Cement	N/A	0.48 tonnes CO ₂ -e per tonne	N/A
Any other elements	N/A		N/A
			Total

- 2) (a) For PRE 1 projects: break down and total of emissions from the operation of your project, once emission reductions have commenced.

OPERATIONAL EMISSIONS			
Element	Annual Usage	Factor	tCO₂-e
Diesel ²	105,851.12	0.002617 tonnes CO ₂ -e per litre	-277.01
Petrol	663.28	0.002298 tonnes CO ₂ -e per litre	-1.52
Electricity purchased	0.08	600 ¹ tonnes CO ₂ -e per GWh	-48.00
Steel and iron ³	1.0	1.95 tonnes CO ₂ -e per tonne	-1.95
Aluminium	N/A	1.74 tonnes CO ₂ -e per tonne	N/A
Cement	N/A	0.48 tonnes CO ₂ -e per tonne	N/A
			Total
			-328.49

Reminder: Emission Reductions cannot exist until after the requirements of Clause 4.4 of the Project Agreement have been met.

¹ The emissions factor will be 600 if project was in the PRE1 tender round or 625 if in the PRE2 tender round.

² The Diesel includes diesel used on site (24,669.34 litres) and in the steamfield (81,181.78 litres) for the period.

³ Steel was used for condensate line replacements.

- 3) **Record of the quantity of electricity exported by the project during the year.** (How this is to be metered and recorded is listed in Schedule 2 of the Project Agreement).

Element and Measure	Total
Electricity (GWh)	1,186.93

- 4) **Record of any other generation that is not part of the project that flows through the meters.** (This generation is to be subtracted from the metered generation to determine the electricity output of the project).

Element and Measure	Total
Electricity (GWh)	N/A

- 5) **A record and calculation of the CO₂ content of the geothermal steam measured at a reasonable frequency, measured and recorded at the input side of the turbine(s).** Please append raw data and calculations.

Measure	Total
Tonnes	-154,275.06 ⁴

- 6) (a) **A record of the Emission Reductions resulting from the Project during the year determined by the relevant emission factors as per Schedule 2 of the Project Agreement.** The construction emissions should be subtracted from this total. Once emission reductions have commenced the total of any operational emissions should also be subtracted. The tCO₂-e contained in the geothermal steam used in the project and not re-injected into the field should also be subtracted.

Element	Annual Production	Factor	t CO ₂ -e
Electricity (GWh) (3)	1,186.93	600 tonnes per GWh	712,158.00
		Less construction emissions and/or other project emissions (1), (2)	-328.49
Less other generation not part of the project, recorded by the meters (GWh) (4)	0	600 tonnes per GWh	0
		Less tCO ₂ contained in the geothermal steam used and not re-injected into the field	-154,275.06
		Net Emission Reductions for the year	557,554.45

⁴ This figure has been calculated on the actual emission factor for the year, which is 130.22 T/GWh or 0.01945 tCO₂e/ t steam.

- (b) **If another measure is used as a proxy to determine Emission Reductions this should be stated and the amount of that measure should also be included in this section together with supporting information.**

No proxy calculation has been used to calculate Net Emissions Reductions.

- 7) **Emission Units claimed for the year using the emission ratio "C" set out in Clause 5.1 of the Project Agreement.**

790,923 (Max. contract amount) - 409,991 (Delivered in 2011) = 380,932 x 1.0 = 380,932

- 8) (a) **Advice on the location of the meters.** For example: at the turbines, the revenue meter point of entry into the lines network, or the national grid. (Metering is to take place as close as possible to the point where the electricity is injected into the lines network or national grid, as the case may be).

Documentation outlining the location of revenue meters is attached.

- 8) (b) **Advice on the quantity of electricity generated or exported.** (Attach a relevant statement (or statements) from the Reconciliation Manager or an Electricity Commission Approved Half Hour Data Administrator identifying the volume of electricity used in determining the net emission reductions in section 6).

See attachment from Mighty River Power's Reconciliation Manager for electricity volumes.

- 9) **Evidence that the metering and recording equipment has been certified by a reputable, independent quality assurance service provider.** (Attach copies of relevant certificate(s) of compliance for meters/metering installations for the full 12 months of the report year.)

See attached calibration certificates for confirmation of revenue meter calibration.

- 10) **A statement detailing anything that has, or has the potential, to be an impediment to achieving the agreed emission reductions during commitment period one.** (This should include circumstances where the final milestone is achieved later than the final milestone date.)

Nothing has been identified that could have the potential to be an impediment to achieving the agreed emission reductions during commitment period one.

11) A statement identifying if you have commissioned a verification report for this Annual Report.

Mighty River Power has not commissioned a verification report for the 2011 Annual Report. However, MfE commissioned a verification report for the 2010 Annual Report. We believe the outcome of that verification was favourable. There has been no significant change in process since the 2010 Annual Report.

12) Checklist: Information and Documents to be provided.

Section	Supporting information	Tick if included / attached	File name(s)
1	For construction emissions (eg fuel usage documentation)		N/A
2	For emissions from operation (eg fuel usage documentation)		NAP RJV diesel and petrol usage 2011_resp.msg
3	For quantity of electricity exported (eg raw data, calculations, explanatory notes):		NAP & KAW 2011.pdf
4	For other generation		N/A
5	For CO2 content of the geothermal steam (eg raw data, calculations):		Rotokawa CY11 Emissions Calculation.xlsx
8(b)	Metering - Electricity Market Reconciliation Manager statement or similar		NAP & KAW 2011.pdf
9	Certificate(s) of compliance for meters/metering installations for the full 12 months of the reporting year.		NAP-FE-ER-DG-1001-R7 NAP Metering CT locations.pdf NAP 2011 Revenue Meter Calibration Certificates.pdf
	Verification report		N/A
14	All Unit Transfer details		See Below
	Hard Copy of Annual Report dated and signed		Rotokawa Geothermal Project Annual Report 2011 – Signed.pdf

- 13) This report has been prepared using the methodology of Schedule 2 – “Methodology for Determining Emissions Reductions” and meets all the other requirements of Schedule 4 – Contents for Annual Reports of the Project Agreement 29 March 2004 including Project Agreement Amendment 1 and 2.

We note that the maximum PRE units available under the Project Agreement is 790,923. In February 2011, 409,991 units were delivered to Mighty River Power.

The Net Emission Reductions for 2011 will exceed the Project Agreement maximum. For this reason the Net Emission Reductions have been adjusted down to ensure Mighty River Power does not apply for units exceeding the Project maximum. (790,923 - 409,991 = 380,932)

Signature:



Name:

Phil Gibson

Position:

Wholesale Markets Manager

Date:

7 March 2013

(14) Unit Transfer Details

Please Note: To obtain the emission reduction units you will need a NZEUR account to transfer the agreed/allowed Emission Units.

1	Project name:	Rotokawa Geothermal Project
2	Date of project agreement:	29 March 2004 subsequent amendments on 10 June 2005 and 18 February 2008
3	Name of the project developer/company:	Mighty River Power Limited
4	Project ID:	NZ-1001-INT
5	Calendar year for which units are being transferred:	2011
6	Account identifier:	NZ-1194
7	Project Participant (investor) ⁵	
8	Quantity of units (refer to section 7 of this report):	790,923 – 409,991 = 380,932
9	Type of units (AAUs or ERUs)	NZ-AAUs

⁵ Project Participant (investor) is the party you have an agreement with to transfer Emission Reduction Units (ERUs)

