

# Independent Report on Metering Arrangements

**Renewable Heat Incentive**

**Cade Capital Ltd**

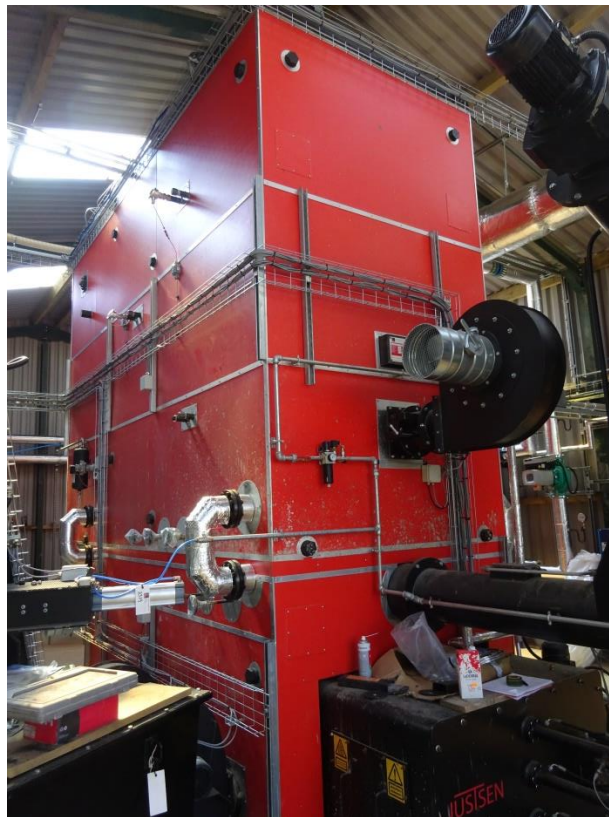
**Bucks Recycling**

**Building 214**

**Westcott Venture Park**

**Aylesbury**

**HP18 OXB**



FEC Energy

**01 May 2018**

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## Independent Report on Metering Arrangements

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Declarations

## 1. Executive Summary & Checklist

Relevant Report Sections	Topic	Item	Summary ['...' indicates values can be selected from a list of options, or entered as free text]	Exception raised (and exception report #)
2	Details of Visit	Date of visit:	18/04/2018	<input type="checkbox"/> #:
3	Installation Details	Technology:	Solid biomass	<input type="checkbox"/> #:
		Installed capacity (kW):	1000	
		Postcode:	HP18 OXB	
4.1, 4.3,4.4	Eligible heat uses	Number of buildings:	Total separate buildings: 2 Buildings with eligible uses: 1	<input type="checkbox"/> #:
		Building type:	Boiler House and Workshop	
4.2	Ineligible heat uses	Ineligible heat use types:	external pipework	<input type="checkbox"/> #:
5.1, 5.2	Heat transfer medium	Heat transfer medium:	water	<input type="checkbox"/> #:
		Any additives present:	anti-freeze	
5.3	Standard/multiple metering	Metering designation:	multiple	<input type="checkbox"/> #:
5.4	Heat Metering	Number of heat meters	1	<input type="checkbox"/> #:
		Meters eligible	yes	
5.5	Steam Metering	Number of heat meters	0	<input type="checkbox"/> #:
		Meters eligible	...	
5.7	Meter Installation	All Meters are appropriately installed	yes	<input type="checkbox"/> #:
5.8-5.14	Metering	Any other exceptions relating to metering:	No	<input type="checkbox"/> #:
6	Meter Locations	Meters are installed appropriately to provide required heat output data	Yes	<input type="checkbox"/> #:
7	Schematic Diagram	Schematic is accurate and appropriate:	Yes	<input type="checkbox"/> #:

## 2. Details of Visit

Date of visit:	18/04/2018
Start time of visit:	10:30
End time of visit:	12:30

Personnel present during visit:

Name	Status/responsibility	Contact details
Mr Edward Shuldham	IRMA Assessor (FEC Energy)	02476 698887

## 3. Details of installation and other plant on the heating system

### 3.1 Location details

Prospective participant name:	Mike Wall
Contact address (inc post code):	101 Station Road, Fern Hill Heath, Worcester, WR3 7UW
Contact telephone:	07545788196
Contact email:	wallmike@icloud.com
Installation Name:	Bucks Recycling Biomass (FEC)
Installation Address (inc post code) if different from above:	Building 214, Westcott Venture Park, Aylesbury HP18 OXB

### 3.2 Technical details – RHI-eligible installation

Plant number / identifier	Technology type	Serial number, manufacturer and model	Total installed peak heat output capacity (kWth)	Fully functioning at time of visit? If no, please explain why not
Biomass Boiler 1	WID Biomass	Justsen WID 1,0MW S/N:17-1670	1000	No- Not commissioned at time of visit

### 3.3 Supporting Evidence – capacity of installation

Picture: Boiler Nameplate



### 3.4 Technical details – other plant providing heat to the system

Plant number / identifier on schematic	Technology type	Serial number, manufacturer and model	Total installed peak heat output capacity (kWth)	Fully functioning at time of visit? If no, please explain why not
N/A				

### 3.5 Additional Comments

#### 4. Heat Use

##### 4.1 Eligible heat uses

Does the heating system of which the installation forms part supply heat:	Yes/No
- To heat a space?	No
- To heat water?	No
- Heat used otherwise than in a building to carry out a process used for cleaning or drying on a commercial basis?	Yes
- For carrying out a process (other than generating electricity), i.e. to supply process heat?	Yes
- For any other purpose than those listed above?	No
- Is all the heat generated and used in the same building?	No

##### 4.2 Ineligible heat uses

Does the heating system of which the installation forms part supply heat used to:	Yes / No	If yes, please provide details of the use and describe how the metering arrangement ensures that heat used for this purpose is not included in the figures submitted to Ofgem (with reference to the schematic diagram if appropriate)
Generate electricity?	<b>No</b>	
Reject heat directly to the atmosphere, e.g. heat dissipation circuit, heat rejection facility?	<b>No</b>	
Transfer heat between buildings, via any external piping*?	<b>Yes</b>	<b><i>Some External pipework is used to transfer heat from the boiler to the heat exchanger. The boiler house is also non enclosed</i></b>
Heat any outdoor space or structures that are not buildings as defined in the RHI regulations?	<b>No</b>	
Any other use that is not eligible for RHI support?	<b>No</b>	

##### 4.3 Description of building(s) in which heat is used

Enter the <b>number</b> of buildings separated by external piping:	Number:
- In total on the heating system	2
- In which heat is generated, by any plant listed in section 3.4? [e.g. boiler rooms, plant rooms]	0
- In which heat is used for an eligible purpose? [e.g. office buildings]	1

For all buildings where heat is being used for an eligible purpose, comment on:	Yes/No [If No, please complete exception report at Section 9]:
- Is the building permanent or long lasting?	Yes
- Is the building wholly enclosed?	Yes

#### 4.4 Supporting Evidence – heat uses are within buildings

Fully enclosed workshop (Door open as staff working on large machinery)



Non-Enclosed Boiler House







Dryer Fan and Heat Exchanger Behind Fully Enclosed Boiler house



Ducting for Air Pipework into Hook Bins (Note: Hook bins not fitted at time of visit)

#### 4.5 Additional comments on heat uses

Heat is generated by a Justsen WID 1,0MW biomass boiler the boiler uses fossil fuels to heat the exhaust gasses in order to be WID compliant. The heat from the fossil fuel cannot be transferred to the water in the lower part of the boiler. The boiler house is non-enclosed, all of the pipework inside the boiler house is insulated with 30mm Rockwool, pipework outside the boiler house is insulated with 50mm Rockwool, pipework runs through a fully enclosed workshop, the workshop will be heated using the system and pipework provision has been made although no heaters are currently fitted. From the

workshop the pipework runs back outside to a water/air heat exchanger, the heated air is ducted into drying bins where commercial and domestic waste is dried.

The heat is metered at the boiler by a Sontex Superstatic 440 flow meter and a Sontex Supercal 531, a heat loss assessment has been carried out on all of the pipework not inside the fully enclosed workshop. The QHLF from the heat loss assessment will be deducted from the periodic submissions.

## 5. Metering Arrangements

### 5.1 Heat Transfer Medium

Please enter the heat transfer medium used by the heating system to which the eligible installation delivers heat (e.g. water, steam, heating oil)	Water
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### 5.2 Additives to the Heat Transfer Medium

Does the heat transfer fluid of which the installation forms part contain:	Yes / No	If yes, please provide details of the additive and describe: <ul style="list-style-type: none"> <li>• how the metering arrangement ensures that this has been accounted for in any heating measurements that would be submitted to Ofgem (with reference to the schematic diagram if appropriate)</li> <li>• what sampling, maintenance or operating regimes are in place to control the composition of the heat transfer medium over time</li> <li>• how you have verified that meters are appropriately calibrated for this additive and composition?</li> </ul>
Any <b>additives</b> (e.g. corrosion inhibitors)?	<b>No</b>	Yes – Meter Calibrated for Additive
Any mixtures with frost prevention or heat transfer fluids (such as glycol/'antifreeze')	<b>No</b>	<b>Yes – Meter has been calibrated for Thermox DTX at 25%</b>

### 5.3 Standard / Multiple metering arrangements

#### 5.3.1 Defining the level of insulation of external piping

External piping between different buildings						
	PL1	PL2	PL3	PL4	PL5	Total
Length of External Piping						-
Properly Insulated <sup>1</sup> (Y/N)						-
Annual Heat loss calculation for <b>properly insulated</b> piping <sup>2</sup> (kWth)						
Annual Heat loss calculation for <b>Non properly insulated</b> piping <sup>3</sup> (kWth)						
					Projected annual output of the plant (KWth)	

For Pipework details and heat loss, see heat loss assessment and schematic

Summary of heat loss assessment	Y/N
Are any piping lengths <i>not</i> properly insulated?	Yes
Is the total annual heat loss calculation of all properly insulated piping (with lengths >10 meters) greater than 3% of the projected annual output of the plant (kWth)?	No

#### 5.3.2 Defining Standard or Multiple metering arrangement for RHI Payment Purposes

Standard	<input type="checkbox"/> :
Multiple	<input checked="" type="checkbox"/> :

#### 5.4 Heat meters

Table 1 – heat meter details

Label on schematic	'Compact' meter or separate components	Meter / component serial number	Describe what is being measured by this meter	Make & Model	Installed in accordance with manufacturer's instructions?	Year of manufacture	Select eligibility category [if **, further details are required below]
HM1	Separate components	Flow meter: 21975602  Digital integrator: 22081491  Temperature sensors: 21337356	Measures heat generated by biomass boiler 1	Flow meter: Sontex Superstatic 440  Digital integrator: Sontex Supercal 531  Temperature sensors: Sontex Pt 500	Yes  Yes  Yes	2017	"MID"-stamped, "Class 2"-labelled flow sensor and "MID"-stamped digital integrator

**Table 2 – heat meter calibration details and operating ranges**

Label on schematic	Meter Serial number (use flow meter serial number if not an integrated meter)	Date of most recent system calibration and result	Date of most recent digital integrator calibration and result	Date of most recent flow meter calibration and result	Date of most recent calibration of temperature sensors and result	Nominal flow rate (m <sup>3</sup> /hr)	Maximum flow rate (m <sup>3</sup> /hr)	Minimum flow rate (m <sup>3</sup> /hr)	Temperature range (°C)
HM1	21975602	2017– Passed	N/A	N/A	N/A	60	120	1.2	5 - 130

**5.6 Meter readings**

**Table 6 - start and end meter readings**

Label on schematic	Meter Serial number (use flow meter serial number if not an integrated meter)	Time START	Time END	HEAT METERS	HEAT METERS	STEAM METERS	STEAM METERS	STEAM METERS	STEAM METERS
				Cumulative reading (kWhth/MWhth) START	Cumulative reading (kWhth/MWhth) END	Cumulative reading (MWh / tonnes) START	Cumulative reading (MWh / tonnes) END	Temperature (Degrees Centigrade)	Pressure (Bar)
HM1	21975602	10:00	11:00	1070 kWhth	1760 kWhth	N/A	N/A	N/A	N/A

**5.7 All meters: meter installation/operation**

Are you satisfied with the installation of the RHI-relevant meters listed above? If no, please explain why not.	Yes
Are the RHI-relevant meters listed above operating correctly to the best of your knowledge? If no, please explain why not.	Yes
Please describe the extent to which meters have been appropriately sealed or tamper-proofed.	The temperature sensors and integrator have been sealed up, the flow meter is factory sealed.
(Steam systems only) Are you content that the fluid returned from the eligible use(s) is consistent with the type of meter measuring the energy in this fluid?	N/A

**5.8 Plant which are not being metered**

Plant number / identifier on schematic	Technology type (e.g. oil boiler/ immersion heater)	Total installed peak heat output capacity (kWth)	Describe how the configuration of the system will ensure that this cannot provide heat that could be registered by any RHI-relevant meter including a detailed control description of the system
N/A	N/A	N/A	N/A

**5.9 Shared Meters – heat generated**

N/A
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**5.10 Shared Meters – heat used for eligible purposes in more than one building**

N/A
-----

**5.11 Additional requirements for reversible heat pumps**

N/A
-----

**5.12 Additional requirements for biogas installations**

N/A

**5.13 Steam traps, safety release valves and other devices**

A safety release valve was observed on the plant, such valves are fitted as standard practice.

**5.14 Trace heating**

N/A

**5.15 Additional comments on metering arrangements**

N/A



**6. Measurement details**

**Complete one section only:**  
**Standard metering installations**

<i>Metering Quantity for RHI Purposes</i>	<i>Combination of Meter labels as per schematic</i>
<b>Eligible Heat Output (EHO)</b>	N/A

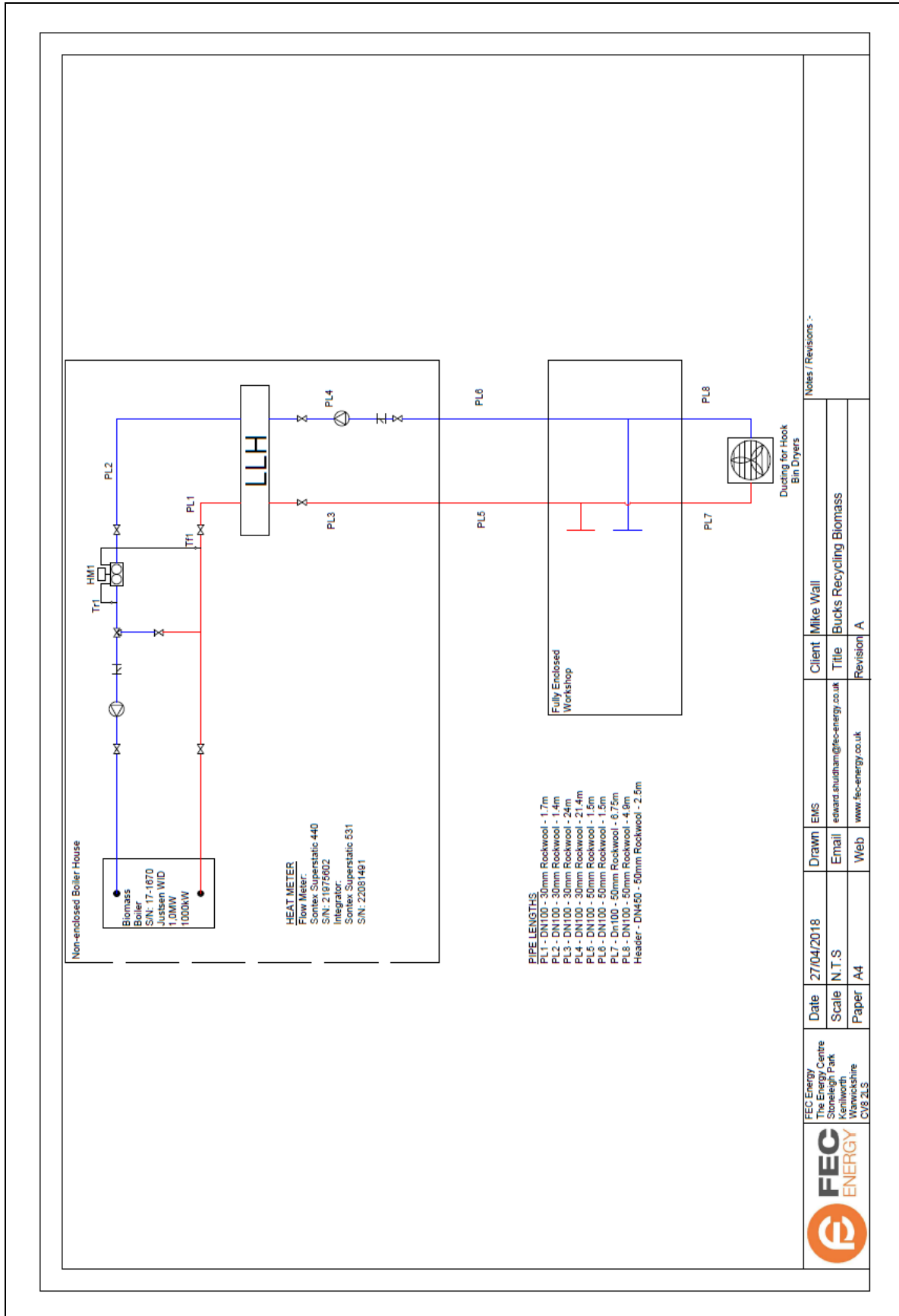
**Multiple metering installations**

<i>Periodic support payment formula component ('quantity')</i>	<i>Meter labels as per schematic</i>
<ul style="list-style-type: none"> <li><b>Eligible Heat Generated</b></li> </ul>	HM1
<b>AND</b>	
<ul style="list-style-type: none"> <li><b>Eligible Heat Used</b></li> </ul>	HM1-hla
<b>AND EITHER:</b>	
<ul style="list-style-type: none"> <li><i>Total Heat Generated</i></li> </ul>	HM1
<b>OR:</b>	
<ul style="list-style-type: none"> <li><i>Total Heat Used</i></li> </ul>	

Which gives the overall formula for calculating the Eligible Heat Output (EHO) as:

Eligible Heat Output (EHO)	HM1-hla
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## 7. Schematic Diagram



## 8. Documentation Review

### Reviewed:

The following documents have been reviewed. For documents outlined in the assessment guidance that have not been reviewed, an explanation of why this was the case is given.

- Manufacturer's certification relating to the meter and components;

The manufacturer's certification relating to the meters and their components was obtained through the meter supplier. This was verified by checking the model number of the installed meter and components, and also checking the stated EEC approval (see photos)

- Declaration that the meter conforms to the requirements as set out in the RHI guidance;

This was reviewed by again looking at the certification obtained from the supplier, and verifying the matching specifications on the meter and component itself, and cross checking against the RHI documentation regarding it meets the relevant criteria.

- Installation design;

Installation design from the installer was reviewed, and flow characteristics and temperatures of the boiler were confirmed to be within the range of the meter tolerance. Flow conditions were also double-checked against meter specifications.

- Specifications of installed meters and sensors;

The specifications of the installed meters were checked from the relevant data sheet to be in line with the RHI regulations.

- Most recent calibration certificates

The most recent calibration certificates were checked and found to be within the required accuracies. There are no relevant commissioning reports for the meters so these have been omitted from the review process.

- No historical calibration records exist, as the installation is new, however, calibration certificates have been supplied with the meters when new.

- No maintenance records exist as the installation is new.

- No records of any repair work carried out exist as the installation is new.

- Operational inspections and corrective action taken as well as functional checks on the meter are logged by the site along with the meter readings on a weekly basis. These records are kept alongside the meter location. No corrective actions have been required to date.

### 9. Exception Report

<b>Exception #</b>	
<b>Relevant Section of Metering Report</b>	
<b>Detailed description of issue</b>	
<b>Evidence provided [paste here or upload to Additional Evidence, Section 10]</b>	
<b>Recommended actions to achieve RHI Eligibility on this point</b>	

<b>Exception #</b>	
<b>Relevant Section of Metering Report</b>	
<b>Detailed description of issue</b>	
<b>Evidence provided [paste here or upload to Additional Evidence, Section 10]</b>	
<b>Recommended actions to achieve RHI Eligibility on this point</b>	

**10. Additional Evidence**

<b>Exception #</b>	
<b>Relevant Section of Metering Report</b>	
<b>Detailed description of evidence, and what it supports</b>	
<b>Evidence provided [paste photographs or scans here]</b>	

## Declarations

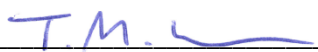
### Signed Declaration

I **Thomas Wilkins** of **FEC Energy**, confirm that, to the best of my knowledge and belief, I meet Competency Criteria 1 to 5 above and am a competent person as defined by Ofgem in relation to the completion of this report. I agree to provide, at Ofgem's request, evidence which is sufficient to satisfy Ofgem that I meet the competency criteria and am a competent person as so defined. I have confirmed to the applicant that I meet the Author Requirements listed above as author statements (a) to (e). I confirm that I am not the owner of the installation.

I can confirm that the installation has met the RHI eligibility requirements as set out in the RHI Guidance documents and the RHI Scheme Regulations 2011 and as subsequently amended. This includes confirmation that:

- Meters and sensors are correctly positioned and any other defects or system configurations which could adversely affect the meter's ability to accurately measure heat production have been identified;
- Meters and sensors are installed in accordance with the manufacturer's instructions;
- Meters are compliant with the MID Class 2 accuracy requirements;
- Meters and sensors meet the scheme technical requirements as set out in the Guidance and Regulations;
- The author has checked the classification of the site under Volume 1 of the RHI Guidance document and confirmed that it is classed as standard or multiple; and the schematic diagram is an accurate representation of the installation, showing details of the heating system of which the eligible installation forms part, including all plants generating and supplying heat to that heating system, all purposes for which heat supplied by that heating system is used, the location of meters and associated components and such other details as may be specified by Ofgem.

I certify at the behest of **Mike Wall** that the **Biomass Boiler** installation at **Building 214, Westcott Venture Park, Buckinghamshire HP18 0XB** has been commissioned and that appropriate RHI-relevant meters have been installed in a manner that meets the metering requirements of the RHI scheme. I confirm that I have read the Ofgem RHI Guidance and Regulations, and that all information and statements contained in this report are accurate to the best of my knowledge and belief. I acknowledge that Ofgem is entitled to rely on this report in considering an application for accreditation under the RHI scheme in respect of the above installation.



Signature

Date 30/04/2018

THOMAS WILKINS

FEC Energy

Print Name

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**Author training and assessment record**

Training provider/trade body name:	CIBSE
Contact address (inc post code):	The Chartered Institution of Building Services Engineers 222 Balham High Road London SW12 9BS
Brief description of training/assessment courses (including dates attended/assessed)	PL197 Metering Requirements, RHI – London 30 Apr 2014
Contact telephone:	020 8675 5211

