

Stephen Brimstone RHI appl no redacted

Non-Domestic RHI Audit Report
RESTRICTED COMMERCIAL

Stephen Brimstone



Non-Domestic RHI Audit Report

Site: Stephen Brimstone
Reference No: Stephen Brimstone RHI appl no redacted
Date: Thursday 30 June 2016
Technology: Solid Biomass

Executive Summary

A site audit was carried out by Ricardo Energy & Environment on 30/06/2016 at the 'Stephen Brimstone' renewable heat installation, Personal information redacted by the RHI Inquiry. The RHI reference number for the installation is Stephen Brimstone RHI appl no redacted. The effective date for this installation is 28/08/2015.

The Renewable Heat Installation comprises a 32kW wood pellet biomass boiler, which provides heating to a house, a home office and an outbuilding. There are no other heat sources stated to be present and none were observed. There are no ineligible heat uses present. There is one section of underground pipework and these losses are assessed using a heat loss assessment. The metering arrangement is complex. There are no other RHI installations on site.

This site has been selected for audit as Ofgem wish to confirm the installation set up on site is as described in the application.

Observations (including non-compliances) are summarised within the following table. Observations are highlighted within the body of the report for emphasis.

Summary of Auditor's Observations (including Non-compliances)

No	Auditors Observations	Does observation constitute non-compliance? [Yes/No]	What remedial work is recommended to rectify this issue?	Reference to DETI Guidance (volume and section)
1	Contradictory information was available on the correct commissioning date. It is 06/08/2015 on the application and on the commissioning certificate and 14/08/2015 on the MCS certificate.	No	Participant to confirm correct commissioning date via RHI.audit@ofgem.gov.uk within 28 days. Ofgem to determine appropriate course of action.	Vol 1, Para 4.26 & 4.27
2	The auditor could find no evidence of the building described as agricultural workshop/storage being used as a workshop or for animal pens as described in the non-domestic questionnaire.	No	Ofgem to investigate.	n/a

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3	Participant not able/aware to provide documentation confirming quantity and type of fuel material used in installation.	Yes	Participant to keep records of fuel/feedstock purchase and use, including invoices.	Regulation 33 (a)
4	No records of meter readings were observed during audits.	No	Participant to keep a written record of periodic meter readings to assist with error checking.	n/a
5	The pipework was arriving in the plant room in 2 separate pipes rather than a single pre-insulated enclosure, however the auditor was not able to see the pre-insulated enclosure as it is buried.	No	Participant to provide evidence that the buried pipework is a single pre-insulated enclosure as described in the heat loss assessment.	n/a
6	Participant not aware of maintenance requirements for heat meters.	No	Participant to undertake appropriate maintenance regime. Maintenance should be undertaken in line with Regulation 34.	Vol 2, Para 2.7 & Regulation 34 (1)(c)

Heat metering for the site was confirmed as having been designed and manufactured to comply with MID Class 2 (or equivalent) standards and no installation issues were noted

The site audit has resulted in an assurance rating of **Satisfactory** on the basis that the audit identified areas of poor practice and/or found the installation was not complying with certain ongoing obligations. These issues are expected to have no impact on the wider scheme and Ofgem.

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Document Control


Date	Description	Name	Signature
08/07/2016	DRAFT Issue 1 report raised	Seámus Rooney	
28/07/2016	Issue 1 reviewed and approved for release to Ofgem	Anna-Liisa Kaar	

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1 Audit Planning and Preparation

1.1 INSTALLATION DETAILS

RHI no. S Brimstone RHI appl no redact	Installation Name Stephen Brimstone	Location Personal information redacted by the RHI Inquiry	Authorised signatory Stephen Brimstone
Technology Type Solid Biomass	Installation Capacity [kW _{th}] 32	Audit Scale [Small/Medium/Large] Small	Metering Classification Complex

1.2 AUDIT PLANNING

Auditor 1 (Name) Seámus Rooney	Auditor 2 (Name) [Optional]	Date Site Notified 21 Jun 2016	Date of Site Visit 30 Jun 2016
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Have Ofgem Audit team advised specific issues to be addressed during the audit? If so detail these below
This site has been selected for audit as Ofgem wish to confirm the installation set up on site is as described in the application.

2 Audit Commencement

2.1 SITE PERSONNEL PRESENT DURING VISIT

[To be completed by Auditor upon Commencement of Audit Visit]

	Name	Position & Organisation	Tel No [Optional]	E-Mail [Optional]
1	Personal information redacted by the RHI Inquiry	Neighbour	Personal information redacted	

The authorised signatory (Stephen Brimstone) **was not** present during the audit visit.

3 Technology Review

Instructions to Auditors

The following checks in Section 3 relate specifically to the eligible plant (e.g. biomass boiler, heat pump, solar thermal panels etc.). The auditor should refer to the documentary evidence contained within the audit pack which may include an Independent Report on Metering Arrangements (IRMA) for multiple installations. **It should be possible for the auditor to complete questions relating to the audit pack and IRMA prior to the audit visit.** The site visit can then confirm whether the situation on the ground matches the documentary evidence.

The auditor should clearly state whenever a discrepancy is identified between the documentary evidence and that encountered during the site visit.

Photographs should be included and referenced in appendices to help support observations where photographic evidence helps validate the point made.

3.1 ALL TECHNOLOGY CHECKS

3.1.1 Plant Overview

Review the information relating to the eligible plant given in the audit pack (including, where applicable, the IRMA) and confirm that various details are consistent throughout the audit pack and that these details match the installation found on site. These checks also investigate the connections of the plant to the heating pipework.

Ref	Check	Comments		
3.1.1.1	Cross-check installation heat capacity. Take photographic evidence of nameplate.	<u>Audit Pack (application – HA120):</u>	<u>Audit Pack (commissioning certificate, MCS Certificate IRMA etc.)</u>	<u>Site visit:</u>
		32kWth	32kWth (from Commissioning Certificate)	32kWth (see photograph A1 in appendix A)
3.1.1.2	Cross-check make and model of generating plant	<u>Audit Pack (application – HK120):</u>	<u>Audit Pack (commissioning certificate, MCS Certificate IRMA etc.)</u>	<u>Site visit:</u>
		Viessmann 32kW	Viessmann Vitoligno 300-P (from Commissioning Certificate)	Viessmann Vitoligno 300-P (see photograph A1 in appendix A)
3.1.1.3	Cross-check serial number(s) of generating plant	<u>Audit Pack (application – HK110):</u>	<u>Audit Pack (commissioning certificate, IRMA etc.)</u>	<u>Site visit:</u>
		7502285501011100	7502285501011102 (from Commissioning Certificate)	7502285501011102 (see photograph A1 in appendix A)

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		Audit Pack (application – HC110):	Audit Pack (commissioning certificate, IRMA etc.)	Site visit:
3.1.1.4	Confirm date of commissioning	06/08/2015	See notes	See notes.
3.1.1.5	Confirm that plant has been suitably installed and commissioned	See notes.		
3.1.1.6	Inspect equipment to confirm installation is being suitably maintained.	See notes.		
3.1.1.7	Inspect installation to confirm that number of plant items match those given in scheme description	Confirmed – one biomass boiler only.		
3.1.1.8	Where installation consists of multiple component plant. Verify that component plants are of the same make and model, or if not, the same technology	n/a – one biomass boiler only		
3.1.1.9	Confirm all generating plant connected to system and referenced as per system schematic	Confirmed. The auditor notes however that he did not have access inside the house as the participant was not present (access to external building and outside of house only). The auditor could therefore not confirm there not being another heat source present that is not described on the audit pack, however no evidence was found of one based on what access was available.		
3.1.1.10	Check for the presence of buffer vessels within the heating system. Advise total capacity (in litres/m ³) of buffer vessels where this can be determined (e.g. from vessel nameplates)	There was one buffer vessel present. The auditor estimates it to be of 1000 litres.		

Notes

3.1.1.4 Confirm date of commissioning

Commissioning date on MCS certificate (photograph A5 in appendix A) on site is 14/08/2015 and not 06/08/2015 as stated in the application, however the commissioning date on the commissioning certificate (photograph A6 in appendix A) on site is 06/08/2015. It is not clear if further works took place after 06/08/2015, but it appears that either of these dates is incorrect.

Observation: Contradictory information was available on the correct commissioning date. It is 06/08/2015 on the application and on the commissioning certificate and 14/08/2015 on the MCS certificate. **Action:** Participant to confirm correct commissioning date via RHI audit@ofgem.gov.uk within 28 days. Ofgem to determine appropriate course of action.

3.1.1.5 Confirm that plant has been suitably installed and commissioned

The boiler appears to have been installed to a good standard. Pipework is insulated and neat. A commissioning certificate was available on site for inspection.

3.1.1.6 Inspect equipment to confirm installation is being suitably maintained.

The participant was not present to describe the maintenance regime. The auditor could find no evidence of lack of maintenance.

3.1.2 Eligible Heat Use

Perform paper-based check and walkdown of the distribution system connecting heat generating plant (eligible and ineligible) to heat users (eligible and ineligible)

Ref	Check	Comments	
3.1.2.1	Identify mediums used to deliver heat to eligible purposes (use ✓ to identify all that apply). Direct hot air heating is not eligible	✓	Low Temperature Hot Water (<95°C, auditor to include notes if not verifiable from boiler nameplate)
			Medium Temperature Hot water (>95°C, auditor to include notes)
			Steam
			Heat Transfer Oil
3.1.2.2		✓	Space heating within a building

	Identify eligible purposes for which heat is used (use ✓ to identify all that apply). Purposes other than those declared to Ofgem in the application (both eligible and ineligible) should be noted below.	✓	Water heating within a building
			Process heating within a building
			Commercial cleaning other than in a building
			Commercial drying other than in a building
3.1.2.3	Where the eligible purpose(s) identified are within a building, confirm that the building(s) in which eligible heat uses occur meet the RHI definition of a building e.g. fully enclosed and permanent. Take photographs of relevant areas where this is not the case.		Confirmed, the auditor confirmed that the two buildings are both fully enclosed and permanent.
3.1.2.4	Where appropriate, confirm through documentation and inspection that the building(s) where heat is used are not single domestic		See notes.
3.1.2.5	Confirm all heat loads, buffer vessels and users connected to system as described on system schematic.		Confirmed.
3.1.2.6	Where the eligible purpose(s) identified are within a building and vents are present, check that the vents can be fully closed. If 'Yes' or 'N/A' (i.e. no vents exist) proceed to section 3.2. If 'No' vents cannot be fully closed answer question below.		N/A
3.1.2.7	Has the participant declared the vents to Ofgem and provided information to Ofgem? If 'Yes', please verify vents information has been correctly provided by completing section 3.1.3. If, 'No', then auditor to take photographic evidence and discuss with the participant what the purpose of the vents is.		
Notes			
3.1.2.4 Where appropriate, confirm through documentation and inspection that the building(s) where heat is used are not single domestic			
There are 2 buildings described on the application: a house and an agricultural building. The auditor found that the building described as being for agricultural purposes has the appearance of a large domestic garage (see photographs A2 and A3 in appendix A) and is located in the grounds of a house. The house is shown on Photograph A4 in appendix A.			
The agricultural building is described in the application as having the following use: <i>"It is used for both machinery & at times animal pens for out farm livestock (namely sheep) that require close monitoring & heat during lambing season. The water heating will also be used to wash the farm & farm areas."</i>			
During the audit the auditor identified that the building accommodated a tractor, some shelving, temporary fencing posts and a number of tools. However there were also childrens toys being stored. There was no sign of animals having been there or any adaption for that purpose. The participant was not present during the audit to provide explanation on the use of the outbuilding or any agricultural activities.			
Observation: The auditor could find limited evidence of the building described as agricultural workshop/storage being used for agricultural purposes. Action: Ofgem to investigate.			

3.1.3 Vents (where applicable)

Prior to the site visit the auditor should confirm that a statement or other information from the participant on the provision of vents in the installation is included in the audit pack.

During the site visit, auditor should check that the information provided by the participant corresponds to the situation found on site.

Ref	Check	Comments	
3.1.3.1	Cross-check description of process being performed that necessitates the inclusion of vents in the building envelope	<u>Audit Pack</u> (Vents Statement):	<u>Site Visit:</u>
3.1.3.2	Cross-check description of the dimensions of the building/structure in question, including the area of each side of the building and the total volume of the building	<u>Audit Pack</u> (Vents Statement):	<u>Site Visit:</u>
3.1.3.3	Cross-check description of the area of the building envelope taken up by vents	<u>Audit Pack</u> (Vents Statement):	<u>Site Visit:</u>

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3.1.3.4	Cross-check description of the percentage of the building envelope taken up by vents	<u>Audit Pack</u> (<i>Vents Statement</i>):	<u>Site Visit:</u>
Notes			

3.2 TECHNOLOGY SPECIFIC CHECKS

3.2.1 Solid Biomass

Ref	Check	Comments	
3.2.1.1	Confirm plant is utilising solid biomass (state fuel(s) used); Cross-check for indications of the use of alternative fuels that have not been declared (especially fossil fuels)	<u>Audit Pack</u> (<i>application – HG140</i>):	<u>Site visit:</u>
		Wood pellets	Wood pellets
3.2.1.2	Confirm participant is maintaining suitable records regarding biomass fuel/feedstock purchase and use (see RHI Guidance Vol 2, Para 4.4)	See notes.	
3.2.1.3	Confirm that participant is aware of Ofgem document <i>Guide to keeping records for participants using 100% biomass fuel</i> (updated June 2014). Note any feedback from the participant as to the usefulness of the guidance in notes section below	The participant was not present to confirm.	
3.2.1.4	For installation with an installed capacity under 45kWth , confirm that the fuel supply is “100% biomass by energy content” by viewing fuel supply contract or letter from supplier (state evidence tabled).	There were no fuel records available for inspection. See 3.2.1.3 notes. The boiler and the fuel handling system are designed for wood pellets.	
3.2.1.5	Does the installation have an FMS questionnaire? If Yes answer questions below, if no, then proceed to <i>Question 3.2.1.8</i>	No.	
3.2.1.6	Check that use of fuel mirrors that given in the FMS questionnaire		
3.2.1.7	Verify that the procedures outlined within the FMS Questionnaire are being followed		
3.2.1.8	Does the installation utilise fossil fuels for permitted ancillary purposes? If Yes answer questions below, if no, then proceed to <i>Question 3.2.1.13</i>	No – there was no evidence of this on site. Starting is done by electric heat gun.	
3.2.1.9	Where use of fossil fuels is identified, confirm that their use is limited to permitted ancillary purposes (see RHI Guidance Vol 2, Para 4.14 onwards)		
3.2.1.10	Check how the quantity and energy content of the fuels used is recorded		
3.2.1.11	Check periodic fuel data submitted to Ofgem for a given period and trace back through site’s own records to confirm data originates from plant		
3.2.1.12	Verify methods used for determining the proportion of fossil fuel used for ancillary purposes relative to total energy input.		
3.2.1.13	Does the installation utilise feedstock contaminated with fossil fuels? If Yes answer questions below, if no, then proceed to <i>Biomass Air Quality Checks</i> below.	No – there was no evidence of this on site. Wood pellets are stored in a wood pellet store, designed for the purpose.	
3.2.1.14	Verify methods used for determining the level of fossil derived contamination in biomass relative to total energy input		
3.2.1.15	Check fuel processing facilities for evidence that contamination is as a result of the deliberate addition of fossil fuel to biomass, which is not permitted under RHI		
Notes			
3.2.1.2 Confirm participant is maintaining suitable records regarding biomass fuel/feedstock purchase and use (see RHI Guidance Vol 2, Para 4.4)			

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The participant was not present to confirm if fuel records are being retained, none were available for inspection.

Non-compliance: Participant not able/aware to provide documentation confirming quantity and type of fuel material used in installation. **Action:** Participant to keep records of fuel/feedstock purchase and use, including invoices.

4 Metering and schematic inspection

This section reviews the overall site schematic, IRMA if applicable and metering equipment. This is applicable to all technologies.

4.1.1 Schematic and metering inspection

The inspection of the schematic should focus on the heat metering components and accuracy of the site schematic

Ref	Check	Comments	
4.1.1.1	Confirm scheme compliant with any user-specified conditions relevant to their accreditation	See notes.	
4.1.1.2	Confirm metering is configured in such a way to allow discrimination between heat from eligible and ineligible installations as well as heat supplied to eligible and ineligible uses	<u>Audit Pack (inc IRMA):</u>	
		Confirmed, there is one heat meter which is located between the biomass boiler and the buffer tank.	
4.1.1.3	Check and confirm location of metering components as per system schematic and IRMA. Confirm that meter components have been installed in accordance with manufacturer's guidelines. <u>If there are any discrepancies take photographic evidence and note whether discrepancy was noted in IRMA.</u>	<u>Site Visit:</u>	
		Confirmed, the heat meter is located as shown on the schematic. The auditor found no evidence of it having been installed incorrectly.	
4.1.1.4	Check proximity of flow meters to pumps. Check pipework diameter and record distance between pump discharge and flow meter. State if not clearly separated by more than 10 pipe diameters. <u>Take photographic evidence where applicable.</u>	<u>Audit Pack (inc IRMA):</u>	<u>Site Visit:</u>
		The schematic does not show the location of pumps.	The heat meter is located upstream of the pump.
4.1.1.5	Check for presence of heat rejection facility. <u>Where heat rejection facility has been identified</u> , confirm purpose of heat rejection facility with site staff	<u>Audit Pack (inc IRMA):</u>	<u>Site Visit:</u>
		n/a – there is no heat rejection facility described.	n/a – there is no heat rejection facility present.
4.1.1.6	<u>Where plant has been claimed to be removed</u> , compare to schematic and IRMA to verify location of removed plant. <u>Take photographic evidence</u>	<u>Audit Pack (inc IRMA):</u>	<u>Site Visit:</u>
		n/a	n/a
4.1.1.7	<u>Where plant has been claimed to be added</u> , confirm presence of new plant. <u>Take Photographic Evidence.</u> <u>Cross check plant serial numbers</u>	<u>Audit Pack (inc IRMA):</u>	<u>Site Visit:</u>
		n/a	n/a

Notes

4.1.1.1 Confirm scheme compliant with any user-specified conditions relevant to their accreditation

There is one user specified condition:

You must inform Ofgem within 28 days of any change affecting the heat loss assessment submitted. In the event of any change having that effect, you must take such steps and within such period of time as we may require for the purpose of obtaining a reliable revised assessment.- In relation to your obligation under the RHI Regulations to submit meter readings, other metering data, and supporting data and calculations required under the Regulations ('metering information') at such regular intervals as we may require, you must provide the output from any agreed heat loss calculations together with this metering information.

The auditor did not find any evidence of any changes having been made which would affect the heat loss assessment submitted.

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4.1.2 Metering Equipment

Heat Meters

Confirm that all heat metering instrumentation has been designed and manufactured to MID Class 2 (or equivalent) accuracy requirements.

Note if the site has a large number of heat meters or it is not practical to take readings from all heat meters please comment on this in the notes section below.

Meter Tag	Description (Application – HI140x-1)	Item Type		Make and Model (Application – HI120x-1)	Serial Number (Application – HI130a-1)	Confirm designed and manufactured for MID Class 2 compliance [Use ✓]*	Last periodic data reading supplied by Ofgem	Audit meter reading	
		Packaged Heat Meter	Heat Meter, Separate Components						
			Calculator						Flow Meter
	Eligible installation	✓			AXIS INDUSTRIES. SKU-03-2-2-3-6-0	17954	✓	27/05/2016	30/06/2016
								45,162kWh	47,334kWh

* NB: Confirmation of this point does not consider whether the meter has been correctly installed. Refer to Check 4.1.1.3 for issues regarding heat meter installation.

Notes: (Detail documentation reviewed to confirm compliance with MID Class 2, include any other heat meter comments)

The auditor confirmed compliance with MID Class2 by visual inspection of the heat meter nameplate.

Ref	Check	Comments	
4.1.2.1	Verify heat meter unit descriptions and serial numbers above against IRMA and situation on site	IRMA:	Site Visit:
		n/a	Confirmed
4.1.2.2	Check meters are capable of continuous operation and operating at the time of the visit	Confirmed.	
4.1.2.3	Check for evidence of tampering or modification of the meters since installation or last calibration	No evidence found.	
Notes:			

4.1.3 Heat meter readings

The auditor should refer to the above table of heat meter records (periodic data and onsite readings) for answering and supporting points made in this section.

Ref	Check	Comments
4.1.3.1	Confirm that participant keeps records of meter readings submitted to Ofgem. Also note any procedures or methods employed by the Participant to confirm that submitted meter readings are not erroneous.	See notes
4.1.3.2	Check whether reported heat output levels vary according to changes in demand (e.g. fall in summer due to less space heat demand). <i>(Comment if different message arises from periodic data to meter readings taken on site.)</i>	Cannot perform check – less than 1 full year PDS readings and no readings on site.
4.1.3.3	Take periodic data reported to Ofgem and trace back through participant’s own records to confirm that data originated from plant.	Cannot perform check – see 4.1.3.1 notes
Notes:		
4.1.3.1 Confirm that participant keeps records of meter readings submitted to Ofgem. Also note any procedures or methods employed by the Participant to confirm that submitted meter readings are not erroneous.		
Observation: No records of meter readings were observed during audits. Action: Participant to keep a written record of periodic meter readings to assist with error checking.		

The auditor should also perform the following assessment to determine whether reported heat generation from the installation is commensurate with the anticipated operating hours given in the application

Ref	Check	Value	
		Start Date	End Date
4.1.3.4	Using periodic data submissions, provide the start and end dates for the quarterly period with the greatest value for <i>heat generated by installation</i> (HGBl) in the last twelve months.	28/08/2015	27/11/2015
4.1.3.5	What was the value for <i>heat generated by installation</i> (HGBl) for this period (in kWh)?	28,825kWh	
4.1.3.6	What was the duration of this period (in days)?	91	
4.1.3.7	Using the following expression, calculate <i>average weekly running hours</i> for the installation during this period: $[Average\ Weekly\ Running\ Hours] = \frac{7x}{cd}$ <p>Where: x is <i>heat generated by the installation</i>, in kWh c is the installation capacity of the installation, in kW_{th} d is the duration of the period, in days</p>	69	
4.1.3.8	Compare the above result with the annual average weekly running hours given in the application or calculate weekly run hours from projected annual generation (question HH130/HH130-1). Are these values similar, having taken into account any seasonal variation?	The audit pack states that the average operating hours are 60, this is similar to the 69 calculated above when seasonal variation is taken into account.	
4.1.3.9	Ask the operator what the average weekly running hours are for the installation during the heating season. Is the operator’s response similar to the value given in the application (question HH130/-1)?	The participant was not present to confirm how the system was operated.	
Notes:			

4.1.4 Heat Loss Calculations

Where metering does not account for heat distribution losses (i.e. metering is not positioned at point of use), participants will be expected to use determine extent of heat loss from external pipework.

Ref	Check	Comments
4.1.4.1.	Identify which situation applies with regards external pipework (use ✓ to identify only one option)	(a) No external pipework is present
		(b) External pipework is present. Heat meters are positioned to account for heat losses from that pipework.
		(c) External pipework is present. Heat meters are not positioned to account for heat losses from that pipework. A heat loss assessment has been submitted to Ofgem (included in audit pack)
		(d) External pipework is present. Heat meters are not positioned to account for heat losses from that pipework. A heat loss assessment has not been submitted to Ofgem.
If options (a) or (b) apply then proceed to Section 4.1.5. If option (c) applies then proceed to Check 4.1.4.2. If option (d) applies then describe and note pipework and/or metering positioning in notes section below. Take photographic evidence.		
Notes:		

Description of Pipe Sections in Heat Loss Assessment

4.1.4.2.	Confirm the number of lengths identified matches the installation as found on site	Confirmed
4.1.4.3.	Confirm that the pipe lengths advised are accurate. Make notes where any pipe lengths are different.	Confirmed, the auditor paced the route of the pipework and this was approximately correct. No access was available to the house to confirm the exact point of entry.
4.1.4.4.	Confirm that the description of the pipe lengths as provided in the heat loss assessment is accurate. Comment against the following parameters: <ul style="list-style-type: none"> • Whether pipework is above ground or buried • Where pipework is pre-insulated, product description (make and size) • Where pipework is not pre-insulated, nominal pipework diameter, insulation type and thickness • Temperature of fluid running through pipes Make it clear which parameters were checked and which could not be checked for practical reasons. Make notes on any discrepancies noted between the heat loss assessment and the installation as found on site.	See notes.
4.1.4.5.	Check that heating system operating hours given in the heat loss assessment are consistent with the results of Check 4.1.3.7.	Confirmed, the average operating hours for the 3 months compared in 4.1.3.4 (69 hours) are similar to the hours for August to November in the application (65 hours per week)
Notes:		
4.1.4.4. Confirm that the description of the pipe lengths as provided in the heat loss assessment is accurate. The auditor found that: <ul style="list-style-type: none"> • The pipework is buried, as described. • The type of insulation could not be observed as pipework is buried. No pre-insulated enclosure was visible but the plastic pipes that were visible in the plant room are consistent with those used in pre-insulated enclosure. It therefore appears 		

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that the insulation has been removed from the pipe for it to be brought through the floor. The separation of the pipes however suggests that there are 2 separate enclosures rather than a single one (see photograph A7 in appendix A).

Observation: The pipework was arriving in the plant room in 2 separate pipes rather than a single pre-insulated enclosure, however the auditor was not able to see the pre-insulated enclosure as it is buried. **Action:** Participant to provide evidence that the buried pipework is a single pre-insulated enclosure as described in the heat loss assessment.

4.1.5 Use of Chemical Additives in Heat transfer fluid

Ref	Check	Comments
4.1.5.1	Is there evidence of the use of chemical additives (e.g. frost/corrosion inhibitors) known to influence the accuracy of heat meters ¹ in sections of pipework where heat meter components are located? If Yes answer questions below, if no, then proceed to next section ² .	No
4.1.5.2	For all meters affected, check that meters components have been appropriately calibrated or configured for the composition of the fluid in the system.	
4.1.5.3	Check with participant whether there is any risk of fluid composition changing over time (e.g. dilution due to addition of top-up water). Check what precautions have been implemented to either i) maintain fluid composition or ii) maintain meter calibration for changing fluid composition.	
Notes:		

4.1.6 Maintenance and Calibration

Discuss with site personnel measures that they have adopted to ensure that the metering equipment has been, and continues to be suitably maintained. Check meter's calibration procedure, schedule and certificates

Ref	Check	Comments
4.1.6.1	Check operator has a maintenance regime in place to ensure meters are routinely calibrated.	See notes.
Notes		
4.1.6.1 Check operator has a maintenance regime in place to ensure meters are routinely calibrated.		
Participant not present to confirm if heat meters are being properly maintained.		
Observation: Participant not aware of maintenance requirements for heat meters. Action: Participant to undertake appropriate maintenance regime. Maintenance should be undertaken in line with Regulation 34.		

¹ At the time of writing, chemicals known to effect meter accuracy are limited to glycol-group compounds (e.g. ethylene glycol or propylene glycol).

² Answering 'Yes' identifies that glycol is present, 'No', that no inhibitor or a known non-glycol based inhibitor is present, 'Unknown' that the participant is not aware of what, if anything is present.

5 Audit visit close-out checklist

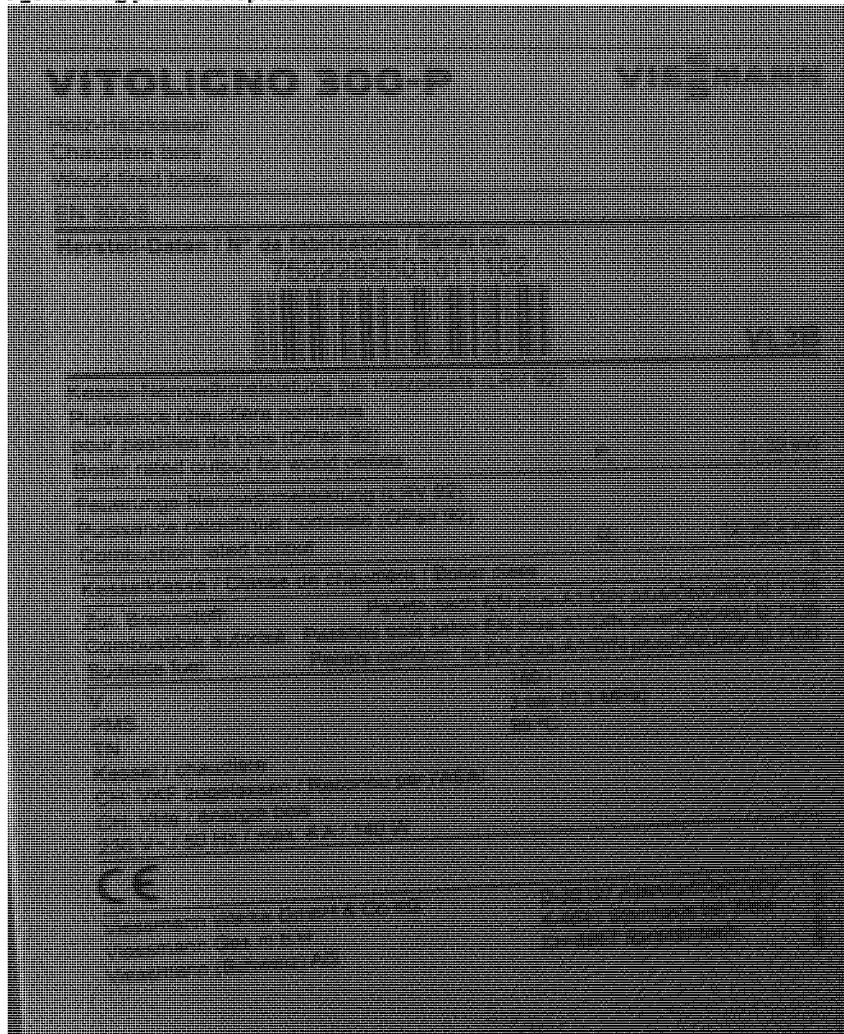
To be completed by Auditor prior to completing audit visit

	Check	Completed [✓/x]
1	Eligible plant and heat specific checks completed (Section 3.1)	✓
2	Technology Specific checks (Section 3.2)	✓
3	Metering and schematic inspection including heat meter readings (Section 4)	✓
4	Specific concerns raised by Ofgem have been addressed in investigations (See Section 1.2)	✓
5	<p>Auditor has all photographic evidence required. Photographic evidence included in the report are:</p> <ul style="list-style-type: none"> • Clarification of any specific issues requested by Ofgem • Nameplates of heat generating plant • Photographic evidence of any observations or non-compliances 	✓

Appendix A

Photographic Evidence

A 1 Eligible generating plant nameplate



S Brimstone RHI appl no redact

Non-Domestic RHI Audit Report
RESTRICTED COMMERCIAL

Stephen Brimstone

A 2 Photograph of agricultural building



A 3 Inside of "agricultural" building



S Brimstone RHI appl no redact

Non-Domestic RHI Audit Report
RESTRICTED COMMERCIAL

Stephen Brimstone



S Brimstone RHI appl no redact

Non-Domestic RHI Audit Report
RESTRICTED COMMERCIAL

Stephen Brimstone

A 4 Photograph of house

Personal information redacted by the RHI Inquiry





Stephen Brimstone RHI appl no redact

Non-Domestic RHI Audit Report
RESTRICTED COMMERCIAL

Stephen Brimstone

A 6 Commissioning document showing date as being 06/08/2015

Viessmann Vitotigno 300-P Commissioning Certificate

<p>Customer Details</p> <p><i>[Redacted]</i></p> <p><i>[Redacted]</i></p> <p><i>[Redacted]</i></p> <p><i>[Redacted]</i></p> <p><i>[Redacted]</i></p>	<p>Boiler type: <u>Viessmann</u></p> <p>Boiler Model: <u>Vitotigno 300-P</u></p> <p>Boiler Serial No: <u>PS02220501011108</u></p> <p>Fuel System: <u>(A) Pellet (B) Gas (C) Oil (D) Biomass</u></p> <p>Fuel Type at time of Commissioning: <u>PELLET</u></p> <p>Date Commissioned: <u>6/8/15</u></p> <p>Chimney Flue Installed? <u>Yes</u></p>
---	--

Residential Address if Different from above

Name: _____

Address: _____

Domestic Install / Commercial Install

Boiler has been commissioned by Treance Cassidy of
 C2 Energy Ltd,
 2 Tullyverry Drive,
 Greysteel,
 Co. Derry,
 BT47 3YG

Hydraulic Diagram completed on CAD? Yes

Any Key features requested by Customers: Yes *Active Sustainability Panel*

(a) Pellets provide 4.2Kw of energy per 1Kg

(b) Boiler Output 32 Kw

(c) Fuel used per hour 6.67 kg

(d) Expected Average Annual Running Hours 1500

(e) Fuel Used per year (c) * (d) 10 Tons

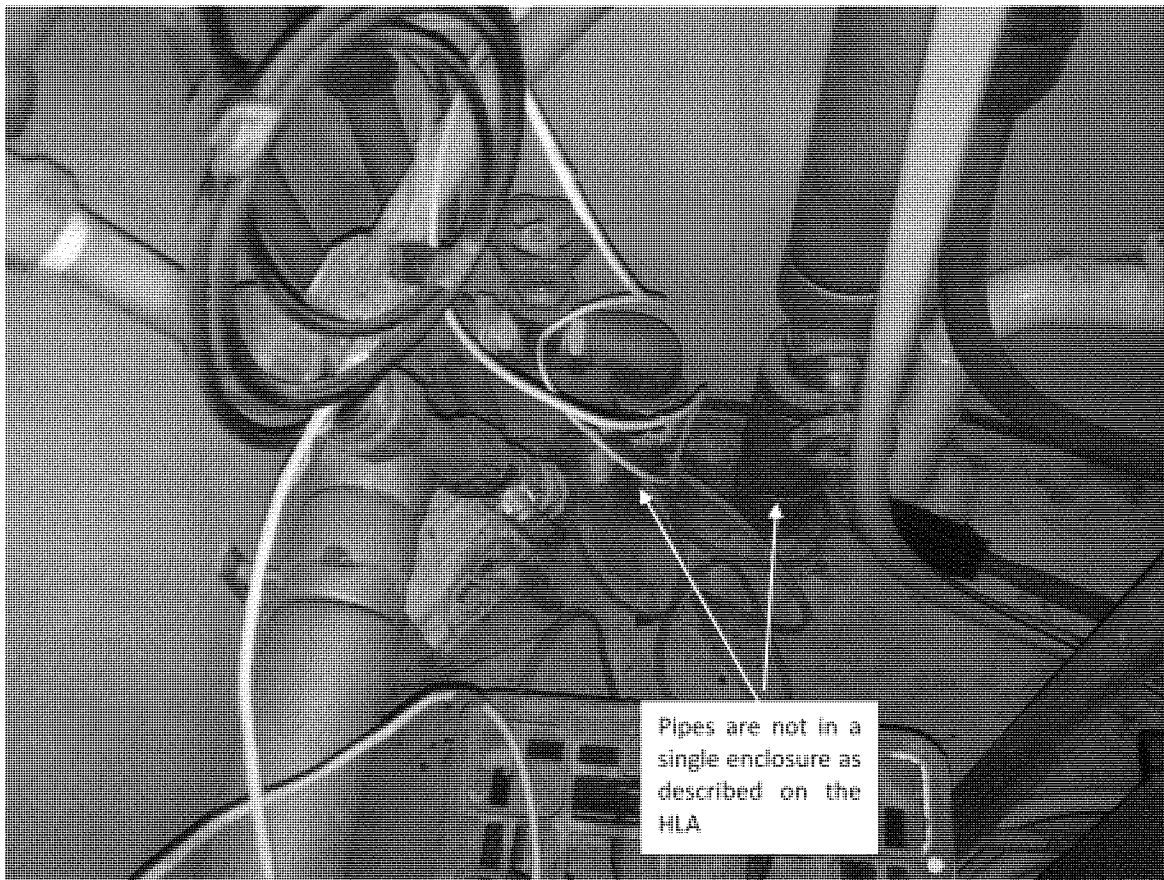
(f) Fuel cost per Kg = 0.21 per 1 Ton / 1000

(g) Annual Fuel cost = (e) * (f) 2100

C2 Energy Ltd are members of the RECC (Renewable Energy Consumer Code) &
 Also members of the MCS (Microgeneration Scheme)

Boiler is warranted and normally energy saving. Must be serviced every 12 months by a qualified engineer. This warranty is void, void with respect to Energy Subsidies and Government Grants, reimbursement of net service charges.

Scanned by CamScanner

A 7 pipework arriving in plant room

END OF REPORT
