

Title: Existing concealed room-sealed fanned-draught boiler chimney/flue systems in domestic premises

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Note: This version of Technical Bulletin (TB) 008 Edition 3 replaces version 2.1 originally published 2 April 2012, which is now withdrawn. This version has been reviewed and where appropriate revised to ensure it remains current and relevant.

This Technical Bulletin provides guidance to gas engineers to assist them in meeting the requirements of Regulations when working on existing concealed room-sealed fanned-draught boiler chimney/flue systems in domestic premises

Note 1: *Document Status: The advice contained in this TB has a status of guidance. Following this guidance is not compulsory and registered engineers are free to take other action. But if registered engineers follow the guidance they will be complying with the law. Enforcing Authorities seek to secure compliance with the law and may refer to this guidance as industry practice.*

Introduction

The Gas Safety (Installation and Use) Regulations 1998⁽¹⁾ (GSIUR) place a legal duty on registered engineers to immediately examine and confirm the effectiveness of the flue whenever they undertake work on flued appliance(s) (Regulation 26(9)). This requirement is particularly difficult for a registered engineer to fulfil where a concealed chimney/flue system is encountered, for example those concealed in ceiling voids etc, as installed in many existing developments (predominantly flat/apartment type developments) built between approximately 2000 and 2007.

Note 2: *Similar requirements apply in other geographical areas covered by Gas Safe Register. For details of current gas safety legislation, building legislation and industry standards for the geographical areas covered by Gas Safe Register, see the [Gas Safe Register LNIDL^{\(2\)}](https://engineers.gassaferegister.co.uk) at: <https://engineers.gassaferegister.co.uk> - login and visit the Technical Information area.*

From 1 January 2013, as part of phased change over two years that was introduced via Edition 2 of this guidance in December 2010, any concealed room-sealed fan-draught boiler chimney/flue system installation being worked on, where the effectiveness of the chimney/flue system cannot be confirmed should be classified as 'At Risk' and with the responsible person's permission, turned off in accordance with the Gas Industry Unsafe Situations Procedure (GIUSP⁽³⁾(TB 001)). In such circumstances customers are at liberty to refuse the gas engineer permission to turn off their 'At Risk' boiler, however, the customer should be asked to sign paperwork to confirm they accept responsibility for a situation which could result in a serious incident. In the case of an 'Immediately Dangerous' situation where permission to disconnect the boiler has not been given, the registered engineer should contact the Gas Emergency Contact Centre.

Scope of this Guidance

This guidance is provided for registered businesses/engineers and describes how to manage the risks arising from concealed chimney/flue system installations and how to satisfy the requirements of the GSIUR⁽¹⁾ in domestic premises.

For the purpose of this guidance, the term 'concealed' primarily encompasses situations where the chimney/ flue system passes through, for example:-

- ceiling voids
- floor voids
- or behind false walls etc

But does **not** apply to chimney/flue systems incorporating: -

- 'vertical condensing flexible room-sealed fanned-draught chimney/flues systems' installed in enclosures, such as constructional chimneys etc., (see **Note 3** and **TB 139⁽⁴⁾**), which are so sealed that any leakage of products of combustion cannot pass from the enclosure to any room or internal space;
- short chimney/flue systems e.g. which are connected directly from an appliance to outside air through an external wall (*also see 'Exception' section*).

Air inlet pipes of twin pipe chimney/flue systems are also excluded from this guidance.

In situations where the entire chimney/flue system can be examined, i.e. the chimney/flue system does not pass through a concealed void; the guidance in this Technical Bulletin is not relevant.

Note 3: A 'constructional chimney' is considered to be an existing construction designed and built to operate as a chimney, in accordance with the Building Regulations in place at the time of construction of the dwelling concerned.

Preferred Industry Options

The gas industry guidance on how to deal with an existing concealed room-sealed fanned draught boiler chimney/flue system, when encountered and in order of preference is as follows:

1. The installation of appropriately specified and located inspection hatches, room monitoring carbon monoxide (CO) alarms and regular service/maintenance by a registered engineer.

To address situations where concealed chimney/flue systems cannot be visually examined and confirmed as being complete/intact and effective, appropriately located and installed inspection hatches are considered the most effective way of allowing the chimney/flue system integrity etc to be examined. This form of examination, along with the other operational safety checks necessary to confirm safe operation of the boiler as specified by GSIUR⁽¹⁾ 26(9) and the installation of room monitoring CO alarms throughout the length of the flue route, will ensure as far as is reasonably practicable that the boiler and chimney/flue system is safe for continued use. Inspection hatches should allow the overall integrity of chimney/flue system to be confirmed. During examination other chimney/flue system installation defects may be identified and these defects will also need to be considered in determining if the chimney/flue system is safe for continued use.

Where the chimney/flue system can be confirmed as being complete/intact and effective, provided any identified installation defect(s) do not constitute an increased risk of chimney/flue system failure, the engineer can consider the chimney/flue system safe for continued use. Examples of installation defects which may contribute to an increased risk of chimney/flue system failure include:

- Inadequate gradient/fall of the chimney/flue system back to the boiler liable to trap condensate, putting excessive strain on the chimney/flue system joints or supports
- Incorrect/inadequate chimney/flue system support, constituting significant risk of chimney/flue system failure
- Signs of condensate/water leakage at chimney/flue system joints
- Incorrect flue material/joints other than specified by the appliance manufacturer etc.

2. The installation of a CO void monitoring safety shut-off system (COSSVM) and regular service/maintenance by a registered engineer.

In exceptional circumstances the installation of inspection hatches may not always offer the best, nor a practical option to allow confirmation that a chimney/flue system is complete/intact and effective, e.g. the enclosure around the chimney/flue may be too small to allow effective examination of the whole chimney/flue system, or situations where the installation of inspection hatches could affect existing fire protection measures of the building etc. Systems capable of monitoring a void containing a concealed chimney/flue system for the presence of CO which, on activation will shut down the faulty boiler, may be considered as a method of providing an additional level of protection for property occupiers that do not have, nor agree to have inspection hatches installed. (See Appendix 1.)

This form of protection, along with the operational safety checks to confirm safe operation of the boiler as specified by GSIUR⁽¹⁾ 26(9), as a minimum, will ensure, as far as is reasonably practicable, that the boiler and chimney/flue system is safe for continued use.

Note 4: *These systems will not be acceptable as a substitute for inspection hatches for new or replacement installations which will need to meet the requirements of relevant Building Regulations/Standards. Therefore, when installing such systems consumers will need to understand that when their boiler needs replacing, ceiling hatches will need to be fitted at the same time as the complete chimney/flue system is replaced. A void monitoring system (COSSVM) alone will not satisfy the requirements of the Building Regulations/Standards.*

In situations where neither of the above situations exist, the registered engineer should continue to undertake regular service/maintenance on the boiler and recommend the installation of CO alarms whilst also applying an At Risk classification in accordance with the GIUSP⁽³⁾ (TB 001) (See Appendix 1.).

Note 5: *It is recognised that methods of confirming the integrity of a concealed chimney/flue system other than those described in this TB may be considered, such as the use of endoscopes or CO monitoring of ducts/voids through which a concealed chimney/flue is routed. However, registered businesses/engineers should ensure that where methods other than described in this guidance are used they will meet the requirements of the Gas Safety (Installation and Use) Regulations 1998.*

Boiler Operational Safety and other Checks

When working on a boiler served by a concealed chimney/flue system, in addition to confirming the effectiveness of the chimney/flue; the supply of combustion air, the operating pressure and/or the heat input (gas rate), registered engineers must verify the following requirements in order to ensure the boilers safe functioning:

- that the combustion performance of the appliance is correct in all modes of operation e.g. in both high and low fire rates and complies with the manufacturers instructions or in their absence the guidance offered in TB 126⁽⁵⁾ as appropriate;
- where manufacturers provide an air inlet sampling point, that any specified O₂ levels are in accordance with the manufacturers instructions;
- plume/heat discharge is evident from the chimney/flue termination with the boiler in operation;
- there is no evidence of distress on the enclosure or ceiling along the complete length of the chimney/flue system, likely to arise from system integrity issues e.g. surface staining in the vicinity of the likely chimney/flue system route and which cannot be attributed to other causes (e.g. water leaks) (See 'Adjacent property' later in this bulletin).
- there is no knowledge of previous history issues relating to the property, or other properties in the same development, that could be related to concealed chimney/flue

systems issues that have not been corrected/rectified before e.g. enquire with responsible person

The registered engineer should also recommend to the responsible person for the installation that CO alarms conforming to BS EN 50291⁽⁶⁾; are installed/located in accordance with the manufacturer's instructions or industry guidance (see **Note 6** below) and; work when tested (See **Appendix 2** for process flowchart)

Note 6: Further information on the installation and maintenance of carbon monoxide alarms, based on the requirements of BS EN 50291⁽⁶⁾ are available on the Gas Safe Register customer web site at: http://www.gassaferegister.co.uk/advice/flues_in_voids.aspx

Exception

Where it is identified that a short chimney/flue system is concealed within a void e.g. a vertical chimney/flue system passing through a flat or pitched roof extension, or similar, with no means of access to allow inspection and the following factors can be confirmed (see example in Figure 1);

- there are no changes in chimney/flue direction;
- there are no signs of distress likely to indicate a chimney/flue issue exists **and**;
- the chimney/flue length does not exceed the maximum single chimney/flue system component length supplied by the manufacturer (It would be then a reasonable assumption that it is unlikely that any chimney/flue joint will have been concealed) **or**;
- documented confirmation exists from the installation business stating that no chimney/flue joint are within the concealment;

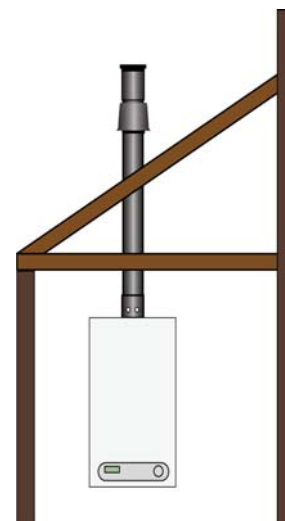


Figure 1.

the installation can be considered acceptable.

It is recommended that registered engineers records that the above criteria has been applied on their job documentation, a copy of which is given to the customer for future reference and for any subsequent registered engineer and a copy retained for their own records.

The requirements for RIDDOR reporting

'Immediately Dangerous' situations relating to these types of chimney systems should be reported under the RIDDOR 6(2) reporting requirements for 'dangerous gas fittings'. For further guidance on the requirements for reporting under RIDDOR, see the relevant version of **TB 002**⁽⁷⁾

Note 7: For guidance on the installation and inspection requirements for communal room-sealed fanned-draught chimney systems connected to communal chimney systems, reference should be made to **IGEM/UP/17**⁽⁸⁾.

Adjacent property

Experience has shown that contrary to current requirements and good design practice, engineers may encounter scenarios where chimney/flue systems are also routed through adjacent property, even though this installation practice is no longer permitted. In these situations and on the basis of checks of the boiler and the chimney/flue system in the property containing the boiler are all satisfactory, **reasonable steps** need to be taken to ensure overall chimney/flue system integrity (see Appendix 1 of GSIUR Approved Code of Practice L56⁽⁹⁾). Gaining access to adjacent property will normally require the full assistance and co-operation of others to achieve e.g. Housing Associations, Social Landlords and neighbours etc. Reasonable steps may be demonstrated by taking the following actions as a minimum:

- making enquires with the all parties and requesting to see evidence of reports of examinations made by them, or on their behalf.
- making enquiries with the occupants of those other adjacent properties in order to gain access
- Leaving documentation with the occupier(s) of adjacent property, explaining the requirement and seeking arrangements for access.

- providing relevant information to the Flues in Voids database hosted by Gas Safe Register and accessed by using the following link:
<https://engineers.gassaferegister.co.uk/FluesInVoids.aspx>

It is recommended that the steps taken should be suitably documented on the engineer's work record and by the Landlord, Housing Association etc, as appropriate.

Where access to adjacent property cannot be achieved, despite having taken reasonable steps, and there is no evidence to indicate that any chimney/flueing problems exist (i.e. based on evidence from the checks undertaken in the property where the boiler is located), the boiler and chimney/flue system can be left operational. If, however, there are good reasons to suspect chimney/flueing problems e.g. previous known issues with chimney/flue system failures in similar properties within the development etc, it remains essential to check the complete length of the chimney/flue system (including parts of the chimney/flue system routed through adjacent property) and until access to the adjacent property has been gained, the At Risk classification should be applied in accordance with GIUSP⁽³⁾. (See **Appendix 2** for process flowchart).

Questions and Answers

A number of commonly asked questions and answers on concealed chimney/flues have been included within **Appendix 1** of this Technical Bulletin.

Additional guidance from Gas Safe Register

An On-Line learning package is available at:

<https://engineers.gassaferegister.co.uk/Registered/OnDemandLearning.aspx>

Further information for consumers, including Frequently Asked Questions (FAQs) can be found at http://www.gassaferegister.co.uk/advice/flues_in_voids.aspx

Note 6: For general information about the process behind the development of Gas Safe Register Technical Bulletins and the expectations for all Stakeholders, see *TB 1000*⁽¹⁰⁾.

Bibliography

- (1) *The Gas Safety (Installation and Use) Regulations 1998*
- (2) *LNIDL - Gas Safe Register Legislative, Normative & Informative Document List*
- (3) *TB 001 - Gas Industry Unsafe Situation Procedure*
- (4) *TB 139 – Room Sealed, Fanned-Draught Vertical Condensing Flexible Flues Concealed Within Voids*
- (5) *TB 126 – Combustion performance information for condensing boilers incorporating air/gas ratio control valve technology*
- (6) *BS EN 50291: 2010 + A1: 2012 - Electrical apparatus for the detection of carbon monoxide in domestic premises. Test methods and performance requirements*
- (7) *TB 002 (A), (B), (C), (D) (as appropriate) – Reporting of dangerous gas fittings – Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)*
- (8) *IGEM/UP/17 – Shared chimney and flue systems for domestic gas appliances*
- (9) *Safety in the installation and use of gas systems and appliances L56*
- (10) *TB 1000 – An introduction to Gas Safe Register Technical Bulletins*
- (11) *Approved Document J (ADJ) – Combustion appliances and fuel storage systems*
- (12) *The Building (Scotland) Regulations 2004 – Technical Handbook – Section 3 (Environment)*
- (13) *BS 5440-1: 2008 – Flueing and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases) – Part 1: Specification for installation of gas appliances to chimneys and for maintenance of chimneys*

Note: Gas Safe Register Technical Bulletins and the Legislative, Normative & Informative Document List can be viewed at: <https://engineers.gassaferegister.co.uk> - login and visit the Technical Information area

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APPENDIX 1. Frequently asked questions

1. Has the law changed in relation to the need to visually inspect the chimney/flue; are there new gas safety legislation/regulations?

No, there is no new legislation or regulations. The legal duties to ensure chimneys/flues are safe under the Gas Safety (Installation and Use) Regulations ⁽¹⁾ (GSIUR) applicable to each geographical area covered by Gas Safe Register have not changed since the Regulations came into force. Industry has however worked hard to ensure that relevant British Standards, building standards, industry guidance and manufacturer's instructions are consistent with these existing legal duties. It is these standards/guidance and not the Regulations which have changed.

Approved Document J ⁽¹¹⁾ (ADJ) to the Building Regulations in England has however been amended. New guidance has been included in relation to the provision of means of access to visually check any chimney/flue routed through a void for appliances installed **after** 1 October 2010. The purpose of this is to ensure that chimney/flues can be properly inspected, as required by GSIUR, both when an appliance is first commissioned and subsequently serviced.

Note 1: *The application of the requirements of ADJ ⁽¹¹⁾ is seen by all health and safety enforcement bodies as 'best practice' in other geographical areas when dealing with new installations. It is recommended that reference is made to appropriate guidance e.g. in Scotland; The Technical Handbook (Section 3 – Environment) ⁽¹²⁾.*

2. Do the required inspection hatches need to allow for the ability to carry out physical maintenance or replacement of the flue system?

Inspection hatches are required to specifically allow room-sealed fan-draught chimneys/flue systems to be visually checked whenever work is carried out on the boiler.

Once installed, correctly located inspection hatches should allow the identification of installation or design faults relating to the chimney/flue assembly. These issues will need to be dealt with and will sometimes necessitate remedial building works to be carried out to rectify them. The occupier should be advised to seek professional advice to ensure that the work is correct and will not compromise other building safety considerations e.g. fire protection. Further assistance may be available from the original builder of the property or the warranty provider. (For further information visit:

http://www.gassaferegister.co.uk/advice/flues_in_voids.aspx)

3. The boiler chimney/flue connects to a shared communal chimney/flue; will this come under the same requirement for inspection hatches?

Many existing shared or communal chimney/flue systems are designed for natural draught room-sealed appliances e.g. 'SE' ducts and 'U' ducts and in these situations the guidance in this Bulletin does not apply, but there are also some more up-to-date communal chimney/flue systems (CFS) which are designed for room-sealed fan-assisted boilers, including condensing boilers. If the boiler uses one of these CFS systems, both the connecting chimney/flue pipe (and where applicable the separate air supply pipe) assembly from the boiler and the main communal chimney/flue will need to have a facility to allow inspection to ensure it is safe. Although similar obligations remain the same for the common part of the chimney/flue section, further guidance can be found in IGEM/UP/17 ⁽⁸⁾

4. The room-sealed fan-assisted boiler chimney/flue is 'boxed-in' rather than in the ceiling void will it need inspection hatches?

Yes, the need to be able to examine the chimney/flue system in this situation is the same. It is accepted that inspection hatches of the recommended 300mm x 300mm (ADJ ⁽¹¹⁾) dimensions may not always be able to be fitted due to the size, configuration and design of any boxing or ducting. In these situations, a degree of 'common sense' and 'practicality' will be necessary and each situation assessed on a case-by-case basis.

Provided that chimney/flue system can be examined to confirm it is complete/intact and effective, the objective of the guidance will have been met. This may mean that any 'boxing' will need to be altered so that it is removable or has removable panels. However, where it is possible to see through or down a short section of duct sufficiently to examine the chimney/flue system and confirm it is intact/complete and effective, this will alleviate the need to alter the boxing or add removal panels. In situations where it is considered necessary to deviate from the published guidance, it is recommended that any deviation and the reasons for the deviation are recorded by the registered engineer making the assessment. A copy of this should be left with the consumer and a copy retained for the registered businesses' own records.

Installations that have taken place since 1 October 2010 in England & Wales incorporating a concealed chimney/flue system should be fully compliant with the Building Regulations and already have adequate inspection hatches installed ([See Note 1](#)).

5. The chimney/flue is routed through a roof-space that has no access to allow for the inspection of the chimney/flue. Does the guidance in TB 008 (Edition 3) still apply?

Yes, even though the chimney/flue system is not within a ceiling void the legal obligation to be able to examine the chimney/flue system still exists and therefore the guidance offered in this TB is still generally relevant and should be followed.

6. What should I do when concealed chimney/flue systems which have been insulated?

Some chimney/flue systems installed in accordance with manufacturer's guidance have been fabricated with an insulation material surrounding the system making it difficult to confirm the safety and examine the chimney/flue system. It is recognised that it would be impractical and almost impossible to remove any insulation through inspection hatches, to allow examination and then replace the insulation. In such circumstances a best endeavours approach should be used to risk assess the chimney/flue system. The assessment should also include looking for signs of:

- staining or condensate (water) damage on the ceiling within the void area beneath the likely chimney/flue pipe run
- chimney/flue pipes running out of alignment (kinked)
- evidence of staining or condensate (water) on the insulation material etc.

Where such observations give rise to further concern, it is essential to check the complete length of the chimney/flue and rectify any deficiencies. Any associated appliance must not be used unless or until this is done.

7. Do lined chimneys/flues come under the same requirements for inspection hatches?

Boilers served by lined chimney/flues are normally open-flued and not of the room-sealed fan-draught type, so it is unlikely that the requirement for inspection hatches will apply. This is because open-flues can be checked in ways that a room-sealed boiler cannot e.g. visual, flue flow and spillage testing to verify they are safe and working satisfactorily.

However, there are some modern boilers e.g. those designed as replacements for traditional gas fire back boilers which are room-sealed and utilise the existing brick or block built chimney for the flue outlet pipe and often using the chimney as the air inlet route. These installations are normally designed so that the flue pipe is appropriately supported, continuous in length and that any joints in the chimney/flue system are exposed or accessible for examination. If in doubt, this aspect should be checked with the appliance manufacturer, because designs in which any joint between the connection to the appliance or flue termination is enclosed will be subject to the guidance and the need to visually inspect these joints.

Although the guidance in this TB is specifically designed to assist registered engineers deal with concealed room-sealed fan-draught boiler chimney/flue system, engineers should be mindful of existing guidance relating to the checking of flues in general as given in

Section 3 - Appendix 1 of the Approved Code of Practice and Guidance to GSIUR 1998⁽³⁾ applicable to Great Britain and Northern Ireland.

The GSIUR ACoP⁽⁹⁾ is freely available to download in pdf format from the following website: <http://www.hse.gov.uk/pubns/priced/l56.pdf>

8. What am I expected to do if called to repair or service a boiler in a property with no inspection hatches installed on or after 01.01.2013? Do I carry out the work and then classify the installation as At Risk or do I not work on the boiler and then classify it as At Risk it?

Wherever possible you should carry out any requested works, ensuring that the boiler is appropriately safety checked as far as is reasonably possible. If there is no means of examining the chimney/flue system to confirm it is complete/intact and effective this situation should be assessed against the guidance in this TB and classified in accordance with the GIUSP. The priority in terms of gas safety is to ensure that the boiler is left as safe as possible in these circumstances, irrespective of whether or not the customer gives permission for the boiler to be turned off or not. In AR situations in owner-occupied properties the decision as to whether to allow continued use of the boiler rests with the responsible person (not the engineer). You should explain your opinion as to the risk and it is recommended that you obtain a signature from the person to confirm that you have explained the risks, and that they do not want the appliance turned off.

9. Does this guidance apply to shared chimney/flue systems such as SE, U Ducts etc?

No, specific guidance on all types of shared chimney/flue systems can be found in Institution of Gas Engineers and Managers standard IGEM/UP/17⁽⁸⁾. Under no circumstances should inspection hatches be installed into a SE or U duct shared chimney/flue system.

10. Do new installations have to have inspection hatches fitted?

Changes to building legislation guidance in England and Wales which came into effect on 1 October 2010, specifically outline requirements that must be followed for new installations when routing room-sealed fanned-draught chimney systems within voids. Other geographical Building legislation may also be relevant and should be referenced e.g. Scottish Building Standards. (See Note 1).

Clause 10.2.4 of BS 5440-1⁽¹³⁾ states: "Where chimneys are enclosed, e.g. within ceiling voids, they shall be installed in accordance with appliance manufacturer's instructions and provision made for visual inspection".

Single room-sealed fanned-draught chimney/flue systems should not be installed or commissioned where they pass through other properties, either horizontally or vertically, because access for inspection may not always be available either to the property or to the chimney system running through the property.

If a boiler replacement is undertaken where previously inspection hatches have not been installed, it will be necessary as part of the replacement boiler installation to install inspection hatches so as to make the installation compliant with the current Building Regulations. It will not be acceptable to alternatively adopt the alternative approach of fitting a CO void monitoring safety shut-off system, although this could be adopted as an additional safeguard.

11. If my customer does not wish to have inspection hatches installed but is willing to install a CO void monitoring safety shut-off system, what criteria should it satisfy?

Industry has agreed a minimum set of criteria that any such system should satisfy. Where used any monitoring system should: -

- incorporate detectors certified and marked to show compliance with BS EN 50291⁽⁶⁾.
- be a permanent installation for continuous monitoring for chimney/flue failure.

- Be designed to ensure shutdown of the boiler in the event of an alert being triggered and can only be re-instated once an appropriately qualified Registered Engineer has been called to investigate the cause of the activation.
- Alert the occupier by both visual and audible means on the detection of a chimney/flue failure condition.
- Be able to monitor the entire chimney/flue system route
- Be able to fail to safety (i.e. shutting down the boiler) in the event of failure of any component of the monitoring system
- Be supplied with clear instructions for the user to follow in the case of appliance shutdown.

Additional guidance from Gas Safe Register for consumers

Further information for consumers, including consumer focused frequently asked questions (FAQ's) can be found at http://www.gassaferegister.co.uk/advice/flues_in_voids.aspx

Gas Safe Register has also published a 'Gas Safe Factsheet' on this topic, designed to help Gas Safe registered businesses communicate the information provided in this TB to consumers. Gas Safe Register 'Gas Safe Factsheets' can be viewed and downloaded at: http://www.gassaferegister.co.uk/learn/gas_safe_fact_sheets.aspx

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APPENDIX 2

Concealed Room-sealed fan-draught boiler Assessment Process Flowchart

Key:
 COSSVM = Carbon monoxide Safety Shut-Off Void monitoring System
 FIV = Flues in voids
 GIUSP = Gas Industry Unsafe Situations Procedure
 RP = Responsible Person
 RIDDOR = Reporting of Injuries, Diseases and Dangerous Occurrences Regulation

