



Remediation and Verification Strategy

Proposed 2 No. Houses at
Brownieside Cottage Site, Plains
ML6 8NP

PROPOSED 2 NO. HOUSES AT BROWNIESIDE COTTAGE SITE, PLAINS ML6 8NP
REMEDICATION AND VERIFICATION STRATEGY

1.0 GENERAL

1.1 The development comprises the construction of two detached bungalows on a vacant site at Brownieside Cottage, Plains ML6 8NP. The primary objective is to install ground gas protection measures, on a precautionary basis, as part of the foundation/floor. The proposed foundations are to be well reinforced concrete rafts. The proposed ground gas protection measures shall comprise a well reinforced ground bearing concrete raft on a Visqueen gas membrane installed to the manufacturers requirements, on a 50mm(max) sand blinding layer on a geotextile layer, and on a 300mm deep single size 20mm no fines gravel ventilation layer.

2.0 WATCHING BRIEF / UNEXPECTED CONTAMINATION /TOPSOIL

- 2.1 Evidence from the desk top study, including trial pit logs, has resulted in the risk from possible soil contamination being classed as very low, however a watching brief will be implemented during ground works, including by the Engineer. In the event of unexpected, suspected contamination being encountered works will cease, the Local Authority will be contacted, and further testing will be undertaken. Any contaminative materials will be removed and disposed to a waste disposal facility licensed to receive the type of waste materials encountered.
- 2.2 Much of the development site has no topsoil, importation will therefore be required, and suitability of the imported material will be demonstrated by provision of certification from a reputable topsoil supplier or by sampling and analytical testing of the imported soil and submission of an analyst's report with comparison against the Soil Code (MAFF 1998) screening criteria.

3.0 INSTALLATION OF PRECAUTIONARY GROUND GAS PROTECTION

- 3.1 The foundation/floor specification shall include a Visqueen "Gas Barrier" (blue/silver) gas membrane having a minimum 0.4mm thickness(equivalent to 370g/m³ for polyethylene) reinforced membrane (virgin polymer) which meets the performance criteria of BS8485:2015 + A1:2019 Table 7 and installed (blue side up), with venting, to CIRIA Characteristic Situation 2 standard and in accordance with the manufacturers guidance.
- 3.2 Using the BS8485:2015+A1:2019 figure 5 Flow Chart – for CS2 and a Type A building - Table 4 states that a minimum gas protection score of 3.5 points is required. This will be achieved with protection elements to the building comprising; 1. A well reinforced cast in situ concrete ground bearing raft/slab with minimum penetrations; 2. A methane and CO₂ gas resistant Visqueen "Gas Barrier" membrane in accordance with the requirements in Table 7 of BS8485:2015 + A1:2019; and 3. a 20mm no fines virgin washed gravel/aggregate passive ventilation layer 300mm deep and with side vents at 6m max centres on opposite sides and having a venting area equivalent to 1500mm²/run of wall; and providing 1.5, 2.0 and 0.5 points respectively and a total gas protection score of 4.0 points.
- 3.3 The house will be built by experienced and reputable builders, with certification and supervision of works by a Chartered Architect/SER Engineer, who will have good experience, knowledge and professional skills relating to gas membrane protection works including installations within new houses. Validation will be on the basis of visual

inspections (CIRIA 735 form refers), and with photographic evidence provided to North Lanarkshire Council.

- 3.4 The critical elements necessary for the successful installation of a gas membrane are good housekeeping combined with very careful preparation and installation; and membrane protection measures being installed promptly to prevent unnecessary exposure of the membrane to possible damage, such as from other tradesmen. Lancing provides a “snapshot” assurance at the time at which it is undertaken, and not thereafter, and integrity testing is not proposed.

4.0 VERIFICATION PLAN

- 4.1 Independent verification by way of submission of a post works Validation Report including a completed CIRIA C735 Inspection Form and photographs shall be provided to the Local Authority to demonstrate all the remediation work has been carried out in accordance with the remediation strategy. The gas membrane inspection work will comprise visual inspection below the gas membrane; checking the specification, appropriateness, and condition; ensuring correct jointing materials, workmanship and any service entries are satisfactory; checking the ventilation specification and work is satisfactory; ensuring the integrity of the gas membrane and that it is protected; and recording the installation details as identified within the C735 verification form.

Verification Form – CIRIA C735 refers

VISUAL INSPECTION OF GAS PROTECTION MEASURES

Site name:	Gas characteristic situation:
Job reference:	Type of development (residential/commercial/other)
Date:	Building description:
Inspected by:	Foundation type: (suspended floor/raft/other)
Weather:	Gas protection type: passive/active

No.	Item	Comments (see notes)
1	Gas membrane	
1.1	Condition of sub-grade and underside of gas membrane	
1.2	Gas membrane type	
1.3	Gas membrane condition	
1.4	Jointing tape product	
1.5	Lapping design	
1.6	Laps, welds and joint seals	
1.7	Service entries seals	
2	Passive Venting	
2.1	Sub-floor void	
2.2	External wall airbricks	
2.3	Internal sleeper walls	
2.4	External vent <i>trenches/ducts</i>	

3	Active Venting	
3.1	System details	

Additional Notes:

Photographs

No	Description

The gas protection measures inspected:

- a. Are acceptable and comply with the specification
- b. Are acceptable but attention is drawn to issues related to item no.
- c. Are not acceptable due to the issues related to item no.

Name:

Signature:

Date:

VISUAL INSPECTION OF GAS PROTECTION MEASURES

Inspection Checklist Notes:

1.1	Underside of gas membrane	Check that the sub grade does not contain rough/uneven surfaces, is appropriately clean and that there are no hard/sharp objects. That protective sand blinding or geotextile (if specified is present and meets the design criteria.
1.2	Gas membrane type	Manufacturer and product specification, gauge, colour, brand/name, material batch/roll numbers, storage arrangements (protected from dirt/damage?)
1.3	Gas membrane condition	Open punctures, tears, rips, stretching? Excessive footprints/evidence of traffic? Presence of debris? Repairs? Signs of weakness such as raised or sunken indentations? Protection plan in place to restrict access to lain gas membrane?
1.4	Jointing tape product	Product type, brand, thickness, material, width, colour? Use of double sided tape?
1.5	Lapping design	Joints lapped and sealed in accordance with manufacturer's requirements/specification? Minimum overlap provided? Sections taped twice?
1.6	Laps and joints sealed	Welds complete? Appropriate jointing/double sided tape used?
1.7	Service entries sealed	Top hats seal arrangements fixed around service entries? Use of Jubilee clips?
2.1	Sub-floor void	Is a check possible? Void former? Gravel (type/specification)? Height of void space? Is it clear?
2.2	External wall bricks	Numbers, size, positions as design drawing?
2.3	Internal sleeper walls	Ventilation holes (honeycomb brickwork/pipe crossings?) – size, spacing, location in accordance with design?
2.4	External vent trenches/ducts	Located and constructed in accordance with design drawings? If open-topped gravel – gravel type/presence of fines? If pipe or other vent, check position and construction for functionality and absence of blockages. Ability of void former to withstand bearing of the superstructure?
3.1	Active venting	Type of air supply: mechanical, natural, combined? Location/condition/number of fans and vents? Location and size of inlets? Provision of air-cleaning devices and air heaters? Supply and exhaust ductwork? Alarm provision/installation? Gas monitoring system in under-floor void?

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Version 1.1 06/2016