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Our Ref: E19/7612/JF/001A

15th January 2024

FAO Rachel Savage
Persimmon Homes West Yorkshire
3 Hepton Court
York Road
Leeds
LS9 6PW

Dear Madam,

Re: Development at Cumberworth Road, Skelmanthorpe

Further to your request we have attended the above site to undertake an inspection of the gas membrane to confirm that the quality of the installation is satisfactory in plots 1-7 at the above site.

Following completion of the gas monitoring on site, and the ground gas risk assessment by Sirius Geotechnical (reference C7844/RC/9060), the report recommends that **Amber 1** gas protection measures are installed. This corresponds to 3.5 points, in accordance with BS8485:2015.

In addition, when consulting BS 8485:2015 Table 2 the site can be characterised as CS2 for Type A buildings. Consulting tables 5 - 7 we recommended the following to achieve a score of 4.5:

- Fully vented minimum 150mm deep void below suspended slab. To be increased to 250mm where the proximity of trees affects the foundation construction. — 2.5 Points
- Continuous membrane across the cavity/party walls. — 0 Points
- Cavity tray in the external walls. — 0 Points
- Fully sealed service entries and ducts to manufactures specification. — 0 Points
- Beam and block floor slab — 0 Points
- A Visqueen Gas Barrier meeting all of the following criteria: — 2.0 Points

    - Sufficiently impervious to gasses with a methane gas Transmission rate <40.0ml/day/m2/atm (average) for sheets and joints (tested in accordance with BS ISO 15105-1 manometric method).
    - Sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas Emissions.
    - Sufficiently strong to withstand in-service stresses (eg. Settlement if placed below a flood slab).

- Sufficiently strong to withstand the installation process And following trades until covered (eg. Penetrations From steel fibres in fibre reinforced concrete, Penetration from reinforcement ties, tearing due to Working above it, dropping tools etc.)

- Capable, after installation, of providing a complete Barrier to the entry of the relevant gas.

- Verified in accordance with CIRIA C735 [N1]

Total **4.5 Points**

Installation

In accordance with NHBC requirements, prior to work commencing on site it was agreed with the developer that the gas membrane installation would be carried out in a single stage process by a professional installer, in accordance with the manufacturer's specification, and the standard foundation details.

The installation process is as follows:

Construct the property up to DPC level and install the membrane across the whole footprint of the building, including cavity and party walls. Following inspection, the floor is to be immediately insulated and screed poured to prevent potential damage to the membrane.

Inspection Procedure

Prior to works commencing on site it was agreed between all parties that Haigh Huddleston Associates would inspect the first 10 properties to ensure a suitable level of workmanship could be achieved.

Once all parties were familiar with the procedures and a good level of workmanship established, Haigh Huddleston Associates would inspect every 5th plot for the remainder of the development. The developer should photograph interim plots as evidence of the membrane installation.

In the event that the membrane installers change, or the level of workmanship is noted to drop then further inspections may be required until a level of confidence is regained.

Inspection of the membrane was undertaken in a single stage process to suit the installation of the membrane. The property was inspected at DPC level once the full floor membrane has been laid and sealed prior to the insulation being laid. Air brick spacing and sub-floor void were also inspected.

Each plot was inspected against the 'Visual Inspection Checklist' in the appendix. In addition, pick testing was carried out to each plot to ensure the integrity of the welded and taped joints.

Validation

Plots 1-7 at the above development have been inspected in accordance with the above procedure. Initial inspections on site found the membrane installation to be satisfactory, with only minor repair works being required on a number of plots.

We can therefore confirm that the installation of the gas membrane is satisfactory to comply with NHBC Amber 1 conditions for residential properties.

I trust that the above is satisfactory, should you have any queries please do not hesitate to contact me direct.

Enclosures

Yours faithfully,

James Farrar

Appendix

Inspection Checklist

Site name: Cumberworth Road, Skelmanthorpe			Gas characteristic situation: Amber 1
Job number: E19/7621			Type of development and building/block checked: Residential
Date: 16.11.21			Building description: Plots 1-7
Visit by: JM			Foundation type: Beam & Block
Weather at time of inspection: Cloudy			Gas protection type: passive
No	Item	Comments	
1. Gas membrane			
1.1	Condition of sub-grade and underside of gas membrane	Good	
1.2	Gas membrane type	Juta GP1 Gas Barrier	
1.3	Gas membrane condition	Good	
1.4	Joining tape product	N/A	
1.5	Lapping design	In accordance with manufacturers details. 225mm sump in party walls. 100mm Min overlap between floor and cavity membranes.	
1.6	Laps, welds and joints seals	Good. Joints heat welded.	
1.7	Service entries seals	Top hats present. Sealing good.	
2. Passive venting			
2.1	Sub-floor void	Min 150mm achieved. Void unobstructed.	
2.2	External wall airbricks	Present. No more than 2m spacings	
2.3	Internal sleeper walls	Vents present in line with air bricks in accordance with foundation drawings.	
2.4	External vent trenches/ducts	N/A	
3. Active venting			
3.1	System details	N/A	
Additional notes:			
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. xxx	
		C are not acceptable due to the issues related to item no. xxx	

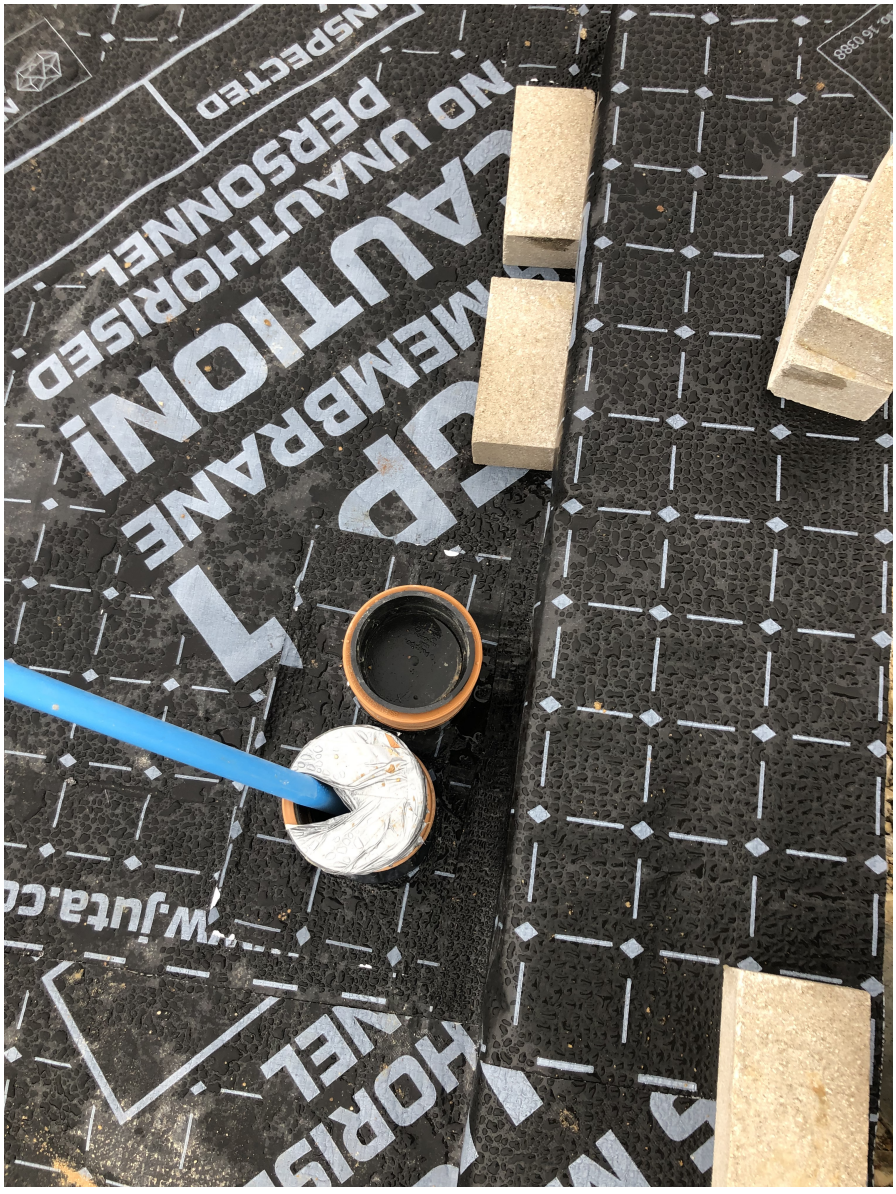
Name: James Farrar Signature: Date: 16.11.21

Photographs

Plot 1 – Overall membrane layout

Plots 2, 3 & 4 – Overall membrane layout

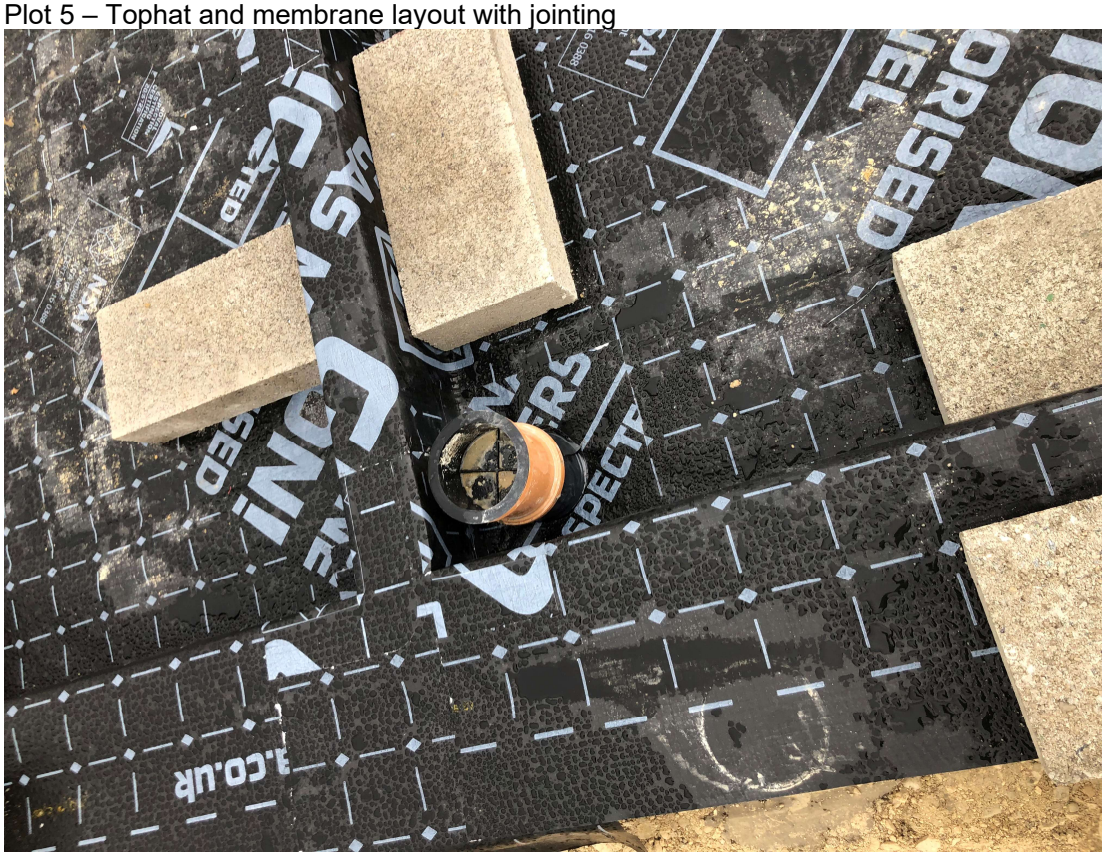
Plot 3 – Tophat & membrane layout with jointing



Plots 3 & 4 – Overall membrane layout

Plot 5 - Overall membrane layout

Plot 5 – Tophat and membrane layout with jointing



Plots 6 & 7 – Overall membrane layout