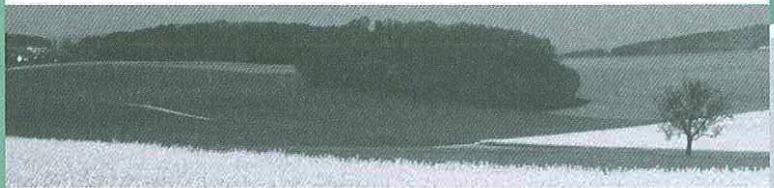


**Ground Gas Protection System
Validation Report:**
Residential Development
Phases 2B, 2C & 2D
Herbert Road
Newport

Prepared for:
Engie

September 2020

Job No:12032




terrafirma

REPORT TITLE : **Ground Gas Protection System Validation Report: Residential Development, Phases 2B, 2C & 2D, Herbert Road, Newport**

REPORT REFERENCE : **TFW_0920_12032_GGVR_V01**

JOB NUMBER : **12032**

DATE : **September 2020**

PREPARED BY :



.....
Mr James Rhys-Williams

APPROVED BY :



.....
Dr Gwyn C Lake

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SECTION 1 Introduction and Proposed Development

1.1 Introduction

Engie (the Client) has developed 195 residential units in three phases (Phase 2B, 2C & 2D) at Herbert Road, Newport.

Terra Firma (Wales) Limited have been commissioned by the Client to prepare a ground gas protection system validation report (Validation Report) for the development.

Validation of the ground gas protection system has been undertaken in general accordance with Terra Firma Wales Ltd Ground Gas Protection System Verification Plan, reference TFW_0219_12032_GGVR_01, dated February 2019.

1.2 Objectives

The objective of the Validation Report is to accurately record the ground gas protection system installation and to confirm its acceptability and compliance with the Verification Plan methodology and remedial objectives at the time of inspection.

1.3 Limitations and Exceptions

This report has been prepared for the sole internal reliance of the Client and its design and construction team. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Terra Firma (Wales) Limited. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill. The report represents the findings and opinions of experienced geo-environmental and geotechnical consultants. Terra Firma (Wales) Limited does not provide legal advice and the advice of lawyers may be required.

This report does not constitute a validation of membrane installation or any other tradespersons work. Terra Firma Wales Ltd cannot accept any liability relating to any aspect of the ground gas protection system installation or its ultimate performance.

1.4 Verification Officer Competency

The principal Verification Officer at Terra Firma (Wales) Ltd is Mr James Rhys-Williams.

Mr Rhys-Williams is currently enrolled on the ABBE Quality Accredited Level 4 NVQ Diploma in Verification of Ground Gas Protection Systems and has previously attended a one-day practical course on membrane installation and verification, conducted by Mr N. Salvidge at Capital Valley Plastics Ltd in 2018. Furthermore, he is a full member of the British Verification Council (BVC) with instant access to industry peers.

Mr Rhys-Williams has extensive experience in brownfield land investigation, risk assessment and site remediation gained while working for various geotechnical and geo-environmental contractors and consultants since 2014.

Mr Rhys-Williams holds a bachelor honours degree in Geology obtained from the University of Bristol in 2010 and is a fellow of the Geological Society of London, maintaining regular industry related continuous professional development.

SECTION 2 Installed Protection Measures

2.1 Structural Barrier

As proposed the structural barrier comprised a beam and block suspended subfloor.

2.2 Ventilation

The open void spaces were recorded to have a height more than 150mm. Similarly, adequate ventilation was maintained beneath beams to allow through flow across the whole plot footprint. Numerous photographs demonstrating adequate void height from across the whole site are appended in **Annex A**.

Telescopic vents and air bricks (Manthorp G930) were typically spaced at 2.0m centres around the full perimeter of the structures and not greater than 4.0m. Photographs showing typical ventilation spacing are appended in **Annex A**.

2.3 Membrane

The membrane was installed by small groundworker team which remained constant throughout the development. Prior to commencement of the membrane installation on phase 2B, groundworkers and site management attended a toolbox talk presented by Terra Firma Wales Ltd, in which the materials to be used and expected installation quality were discussed. In preparation for installation works on phase 2B the quality of work was assessed by the author on phase 2A which did not require formal verification. It was considered that the installation work on phase 2A was indeed satisfactory.

Daily log sheets of membrane installation were not prepared.

As proposed Solshield Ultra Gas Barrier was used throughout the development.

Membrane joints were taped with 50mm double sided butyl tape and suitably overlapped by at least 150mm. Upon completion of plot verification groundworkers promptly installed Solco Foil Lap Tape along all joints.

Prefabricated top-hats were typically used however duct style service entries were often tapped with SOLCO XL Jointing tape. Duct style service entries were sealed by the groundworkers using expanding foam. Photographs showing typical sealing details are appended in **Annex A**.

Due to the phasing of the construction, multiple verification visits were undertaken to acquire all the necessary information to effectively verify the protection system. A thorough visual verification of all plots was undertaken by the author. All joints, pipe penetration etc. were air lanced to ASTM D4437-08:2013. Observations and results are recorded on the verification pro forma, presented in **Annex B**. Photographic evidence of the installation is also presented in **Annex B**.

Upon completion of the Verification process site workers typically commenced placement of reinforcement on elevation blocks followed by screeding within one day. This process was observed by the author regularly and considerable care was taken in its positioning and placement.

2.3.1 Non-Conformances

Typical non-conformances comprised small holes, unstuck joints, or fish-mouths all of which were satisfactorily repaired. Where applicable repairs were made using Solco XL Jointing Tape and extended a minimum of 150mm from damaged area.

Plots 68-69, 102-103 and 106-107 membrane installation was damaged overnight by strong winds. Winds liberated the membrane from the perimeter blocks used to weigh down the membrane, allowing reinforcement bars laid ready for screed to puncture the membrane. The incident was reported to the author and punctures promptly repaired using SOLCO XL Jointing Tape.

Early in the development a systematic non-conformance was noted and relayed to site management. During the screed process damaging was occurring to the perimeter and party wall membrane typically comprising scuffs and small holes from the use of the power float. Solutions comprised aluminium bar edge protection which proved inappropriate for the construction. Alternative screed materials and processes were discussed but dismissed. Upon communication with the screed installers damaged was significantly reduced however minor damage was consistently noted throughout the development.

Site management consulted the gas protection representative at Bluebay Building Products for an affective remedial solution. It was subsequently devised that SOLSEAL Liquid Gas Barrier be used to seal all damage where membranes were unable to be fully replaced. The datasheet for this product is appended **Annex C**. Application of product comprised painting of a 1mm thick layer on all damaged areas. Multiple inspection visits were undertaken by the author to fully verify these remedial works. Verification comprised a full visual inspection of the exposed membrane. Any remaining damage was noted, repaired by the groundworker and re-inspected by the author. Photographic evidence of the remedial repairs is presented in the relevant verification pro forma in **Annex B**.

SECTION 3 Report Conclusion

It is considered that lines of evidence gathered during the verification process confirms ground gas protection measures have been install as per the general requirements of the Verification Plan and satisfy the remedial objectives, severing the pathway between the source and receptor.

Follow on contractors should be made aware of the ground protection system in place. It is essential that the integrity of all gas protection measures is maintained post-verification and not damaged by any subsequent construction works.

Accidental damage to the membrane system post Verification should be reported to the verifier, rectified and re-inspected at a later date.

ANNEX A
Photographic Evidence



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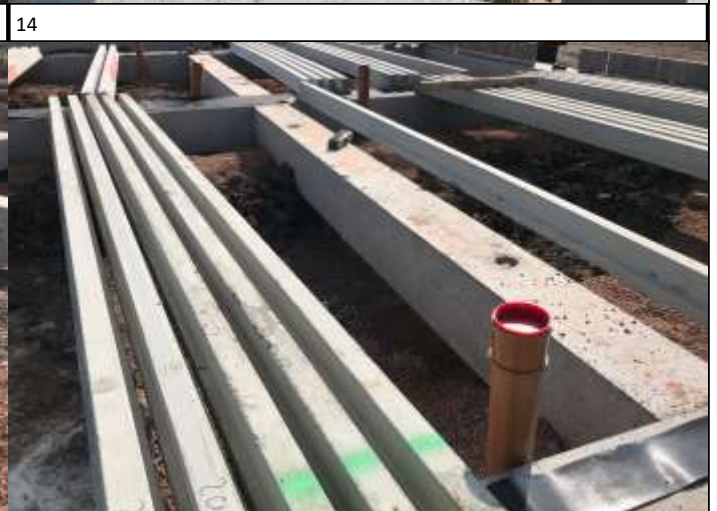
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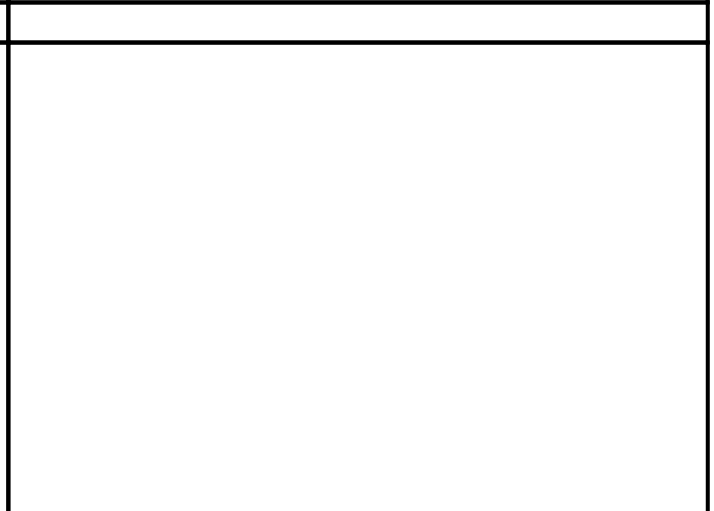
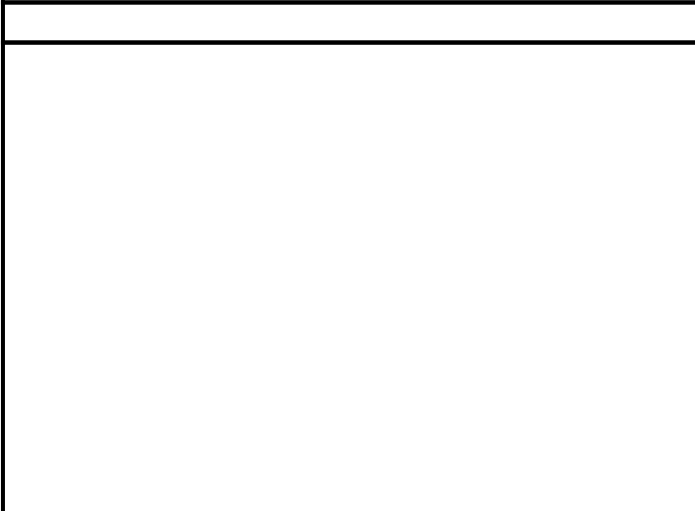
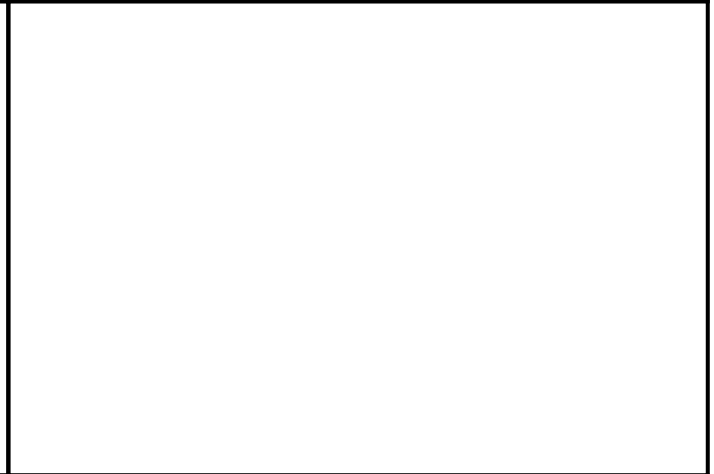
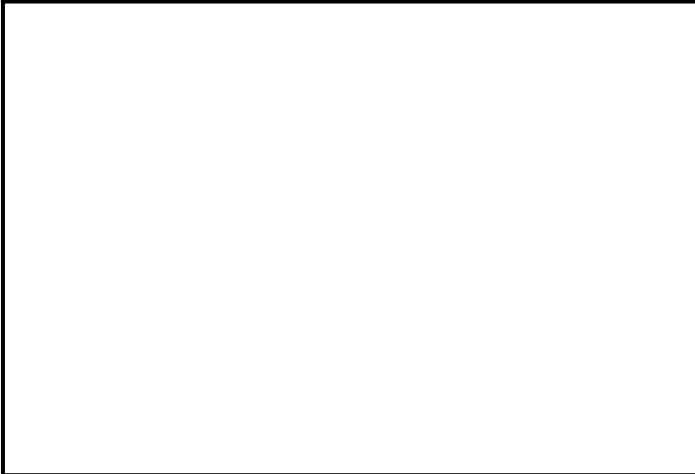
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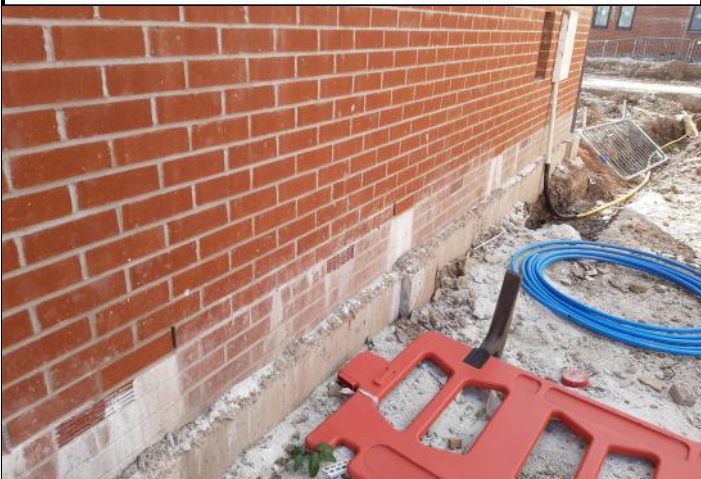
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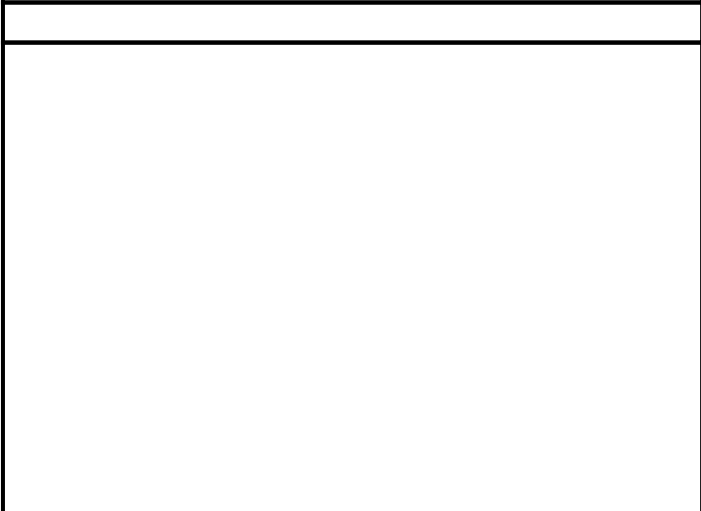
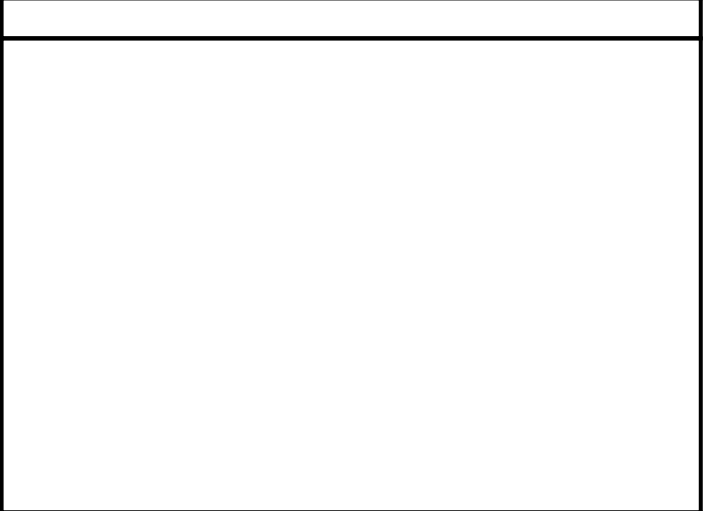
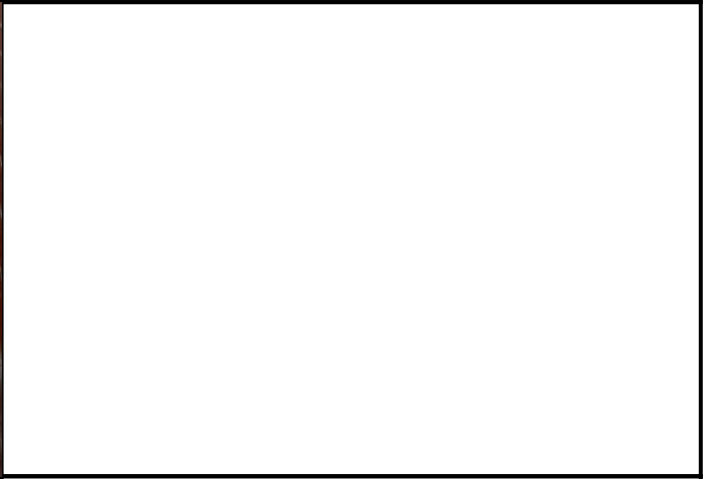
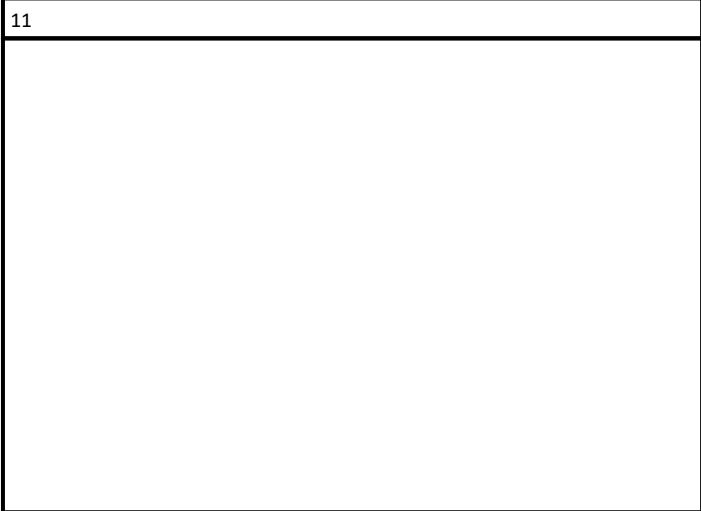
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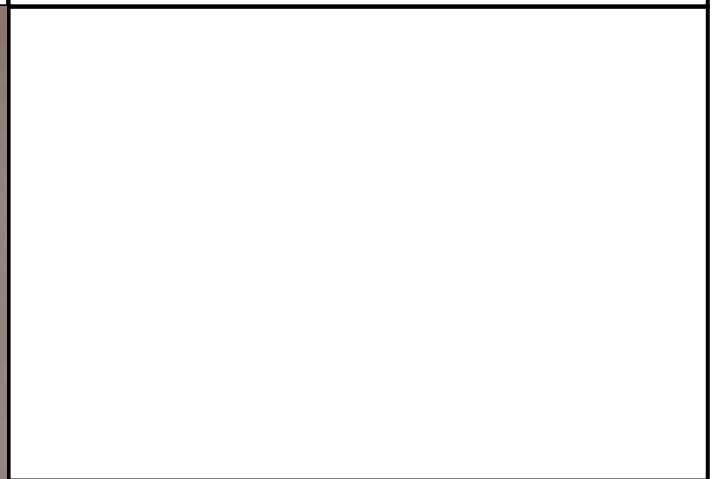
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ANNEX B
Verification Pro Forma & Photographic
Evidence

Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2B
Start Date: 29/4/19	Plot Number: 37-38
End Date: 23/5/19	Housing Style: C/D
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Dry	Gas Protection Type: Passive

Site Visit Dates & Comments
29/4/19 - inspection of membrane installation
1/5/19 - inspection post screeding
23/5/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Good - some loose debris on surface, 3No punctures noted and repaired
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

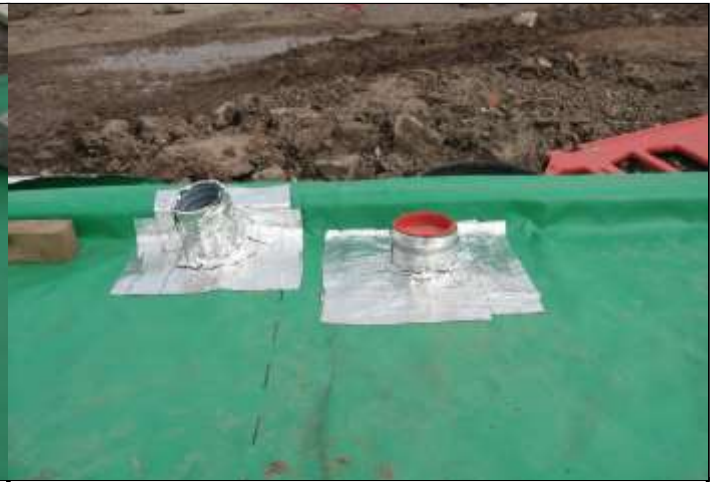
2.2	External wall airbricks	9 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 1/5/19 - damaged occurred to membrane perimeter from screeding process. Asked for membrane to be cleaned off to inspect damage fully. 25/5/19 - inspected repair to damaged perimeter membrane. Membrane either replaced or damage repaired with Solseal liquid gas barrier to manufacture recommendations.</p>		

Photographs	
No.	Description
1	Corner detail
2	Service entries
3	Repaired puncture
4	Repaired puncture
5	Damage post screeding
6	Liquid seal repair
7	Liquid seal repair
8	

Conclusions
<p>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. XX; C - Are not acceptable due to the issues related to item no. XX. B - Sealing of service entry ducts to be completed.</p>



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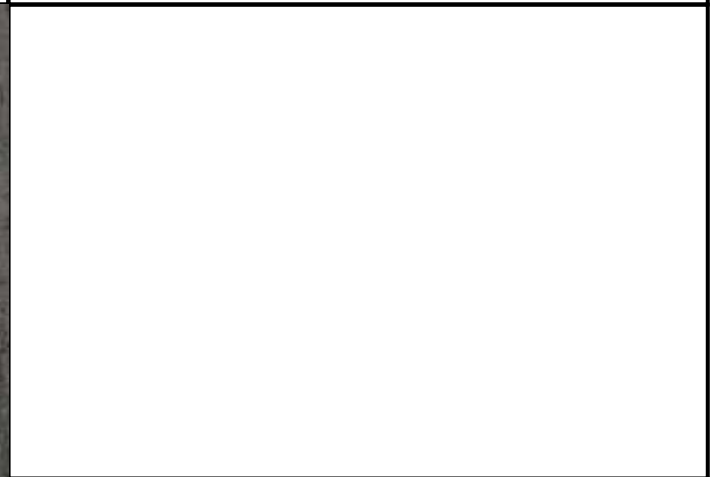
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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2B
Start Date: 01/5/19	Plot Number: 76-81
End Date: 18/6/19	Housing Style: K
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Dry	Gas Protection Type: Passive

Site Visit Dates & Comments
01/5/19 - inspection of membrane installation
10/5/19 - inspection post screeding
29/5/19 - inspection of post screeding damage repair
18/6/19 - 2nd inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Good - no damage
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	14 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 10/5/19 - damaged occurred to membrane perimeter from screeding process. Asked for membrane to be cleaned off to inspect damage fully. 29/5/19 - inspected repair to damaged perimeter membrane. However damage still noted. 18/06/19 - Inspected repair to damaged perimeter membrane. Membrane either replaced or damage repaired with Solseal liquid gas barrier to manufacture recommendations.</p>		

Photographs	
No.	Description
1	Service entries
2	Recess for stair well
3	Corner details
4	Lap tape install
5	Damage post screed
6	Damage post screed
7	Liquid seal repair
8	Liquid seal repair

Conclusions
<p>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. XX; C - Are not acceptable due to the issues related to item no. XX. B - Sealing of service entry ducts to be completed.</p>



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2B
Start Date: 10/5/19	Plot Number: 82-87
End Date: 26/6/19	Housing Style: K
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Dry	Gas Protection Type: Passive

Site Visit Dates & Comments
10/5/19 - inspection of membrane installation
29/5/19 - inspection post screeding
25/6/19 - inspection of post screeding damage repair
26/6/19 - 2nd inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Good - some punctures noted and repaired
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used. 2No. Fish mouths noted and repaired
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	14 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 10/5/19 - minor damaged occurred to membrane perimeter from screeding process. Asked for membrane to be cleaned off to inspect damage fully. 29/5/19 - marked out all damage with crayon for repair. 25/6/19 - inspected repair to damaged perimeter membrane. However damage still noted along party wall. 26/06/19 - Inspected repair to damaged membrane. Membrane either replaced or damage repaired with Solseal liquid gas barrier to manufacture recommendations or XL jointing tape.</p>		

Photographs

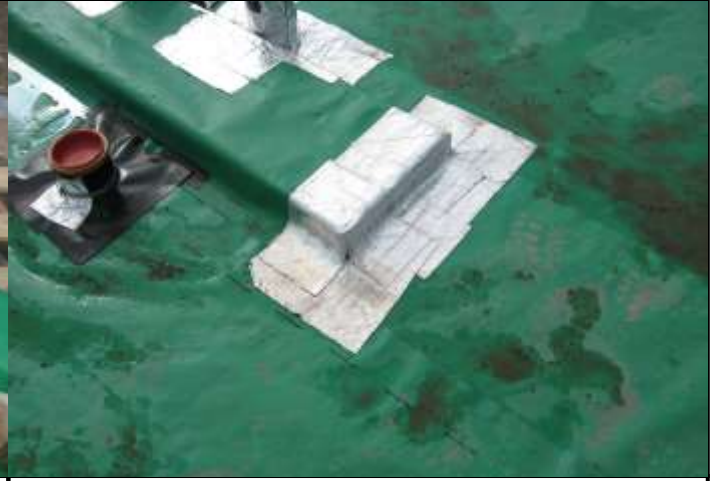
No.	Description
1	Corner detail
2	Corner detail
3	Service entries
4	Puncture repairs
5	Damage post screed
6	Liquid seal repair
7	Liquid seal repair
8	

Conclusions

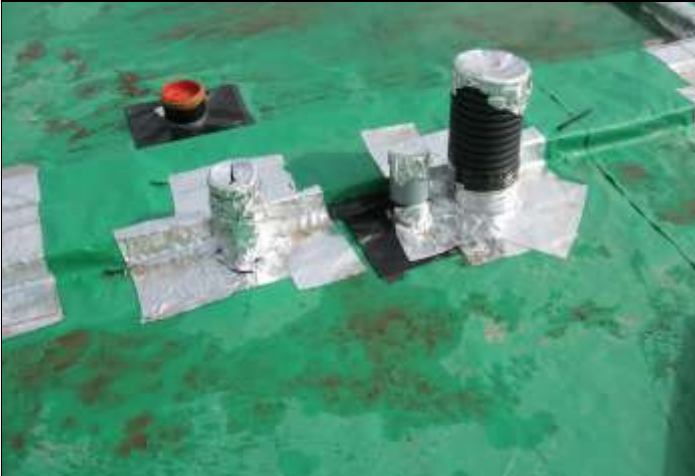
The gas protection measures inspected: A - are acceptable and comply with the specification; B - Are Acceptable but attention is drawn to issues related to item no. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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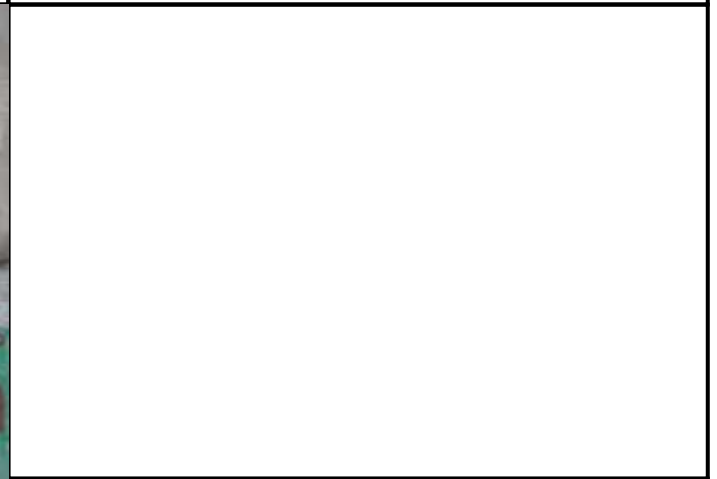
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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2B
Start Date: 16/5/19	Plot Number: 88-93
End Date: 26/6/19	Housing Style: K
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Dry	Gas Protection Type: Passive

Site Visit Dates & Comments
16/5/19 - inspection of membrane installation
22/5/19 - inspection post screeding
25/6/19 - inspection of post screeding damage repair
26/6/19 - 2nd inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Good - some punctures noted and repaired
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used. 2No. Fish mouths noted and repaired
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

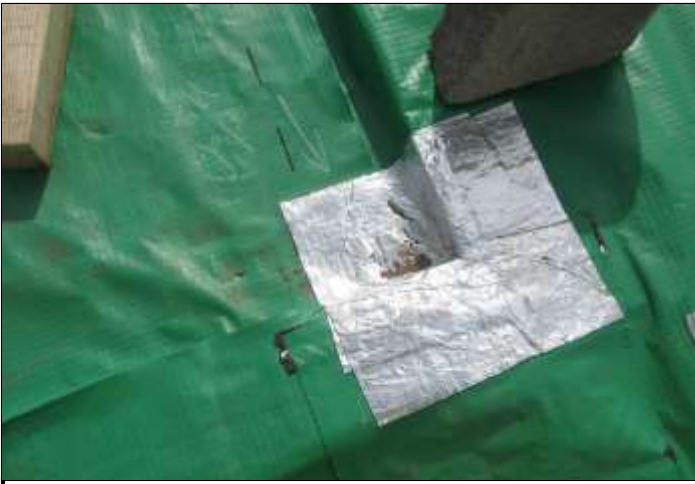
2.2	External wall airbricks	14 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 22/5/19 - minor damaged occurred to membrane perimeter from screeding process. 25/6/19 - inspection post perimeter membrane repair, damage still evident along party wall, one joint unstuck. 26/6/19 - inspected repair to damaged perimeter membrane. Membrane either replaced or damage repaired with Solseal liquid gas barrier to manufacture recommendations or XL jointing tape. Joint stuck down.</p>		

Photographs

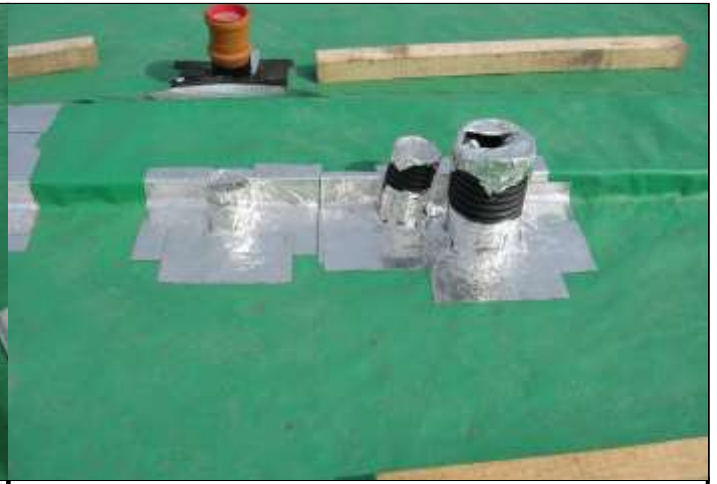
No.	Description
1	Corner detail
2	Service entries
3	Corner detail
4	Puncture repairs
5	Damage post screed
6	Liquid seal repair
7	Liquid seal repair
8	

Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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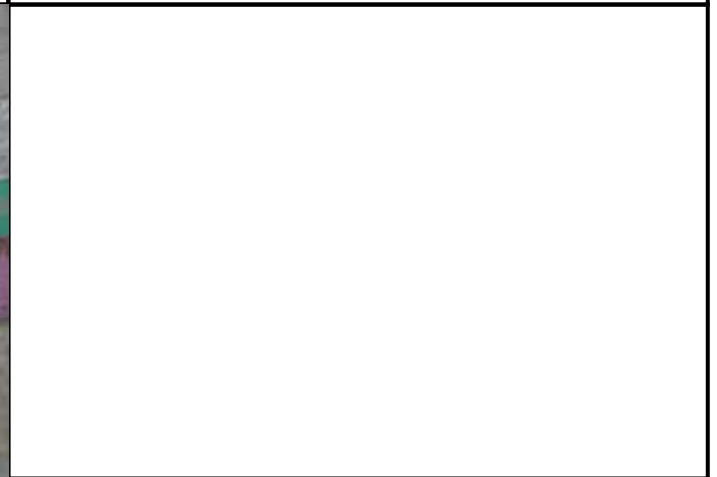
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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2B
Start Date: 16/5/19	Plot Number: 94-99
End Date: 26/6/19	Housing Style: K
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Dry	Gas Protection Type: Passive

Site Visit Dates & Comments
16/5/19 - inspection of membrane installation
22/5/19 - inspection of reinforcement installation
26/5/19 - inspection post screed
25/6/19 - inspection of post screeding damage repair
26/6/19 - 2nd inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Good - 3No installer repairs noted
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	14 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA

Additional Notes: 22/5/19 - reinforcement laid with care, no damage noted. 29/5/19 - inspection post screed, minor damaged noted. 25/6/19 - inspected repair to damaged perimeter membrane, holes still noted, one tear noted, 7No joints need repairing. 26/6/19 - Membrane either replaced or damage repaired with Solseal liquid gas barrier to manufacture recommendations or XL jointing tape. Joints and tear repaired.

Photographs

No.	Description
1	Puncture repairs
2	Corner details
3	Service entries
4	Corner details
5	Reinforcement placement
6	Damage post screed
7	Liquid seal repair
8	Repairs

Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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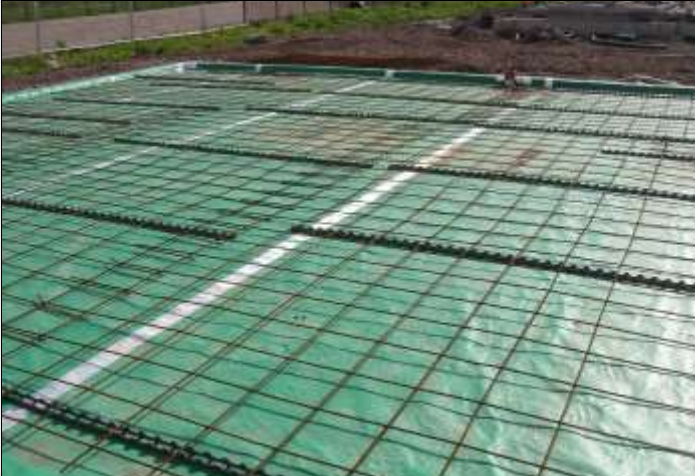
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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2C
Start Date: 22/5/19	Plot Number: 41-42
End Date: 3/7/19	Housing Style: C/C
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Dry	Gas Protection Type: Passive

Site Visit Dates & Comments
22/5/19 - inspection of membrane installation
29/5/19 - inspection post screed
3/7/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Good - 1No installer patch noted
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Some gaps noted and repaired. Finally Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used. 2No service entries required extra detailing tape, all sealed.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	8 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 29/5/19 - inspection post screed, minor damaged noted. 3/7/19 - inspection of membrane repairs, all repaired using Liquid membrane or XL jointing tape.</p>		

Photographs

No.	Description
1	Installer repair
2	Gap in joint, later sealed
3	Service entries
4	Corner details
5	Perimeter repair
6	Party wall repair
7	Perimeter repair
8	Perimeter repair

Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2C
Start Date: 29/5/19	Plot Number: 68-69
End Date: 20/8/19	Housing Style: C/D
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Wet	Gas Protection Type: Passive

Site Visit Dates & Comments
29/5/19 - inspection of membrane installation
5/6/19 - half plot screeded, half with reinforcement placed
20/8/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very Good. Damage seen later post placement of reinforcement steels, damage due to high winds.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	8 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 5/6/19 - inspection post screed, minor damaged noted, also wind damaged noted steels penetrated membrane around perimeter. Repairs made immediately 20/8/19 - inspection of membrane repairs, all repaired using Liquid membrane or XL jointing tape.</p>		

Photographs	
No.	Description
1	Service entries and corner details
2	Corner details
3	Reinforcement placement
4	Reinforcement steel damage
5	Reinforcement steel damage repair
6	Perimeter damage
7	Perimeter repair
8	Perimeter repair

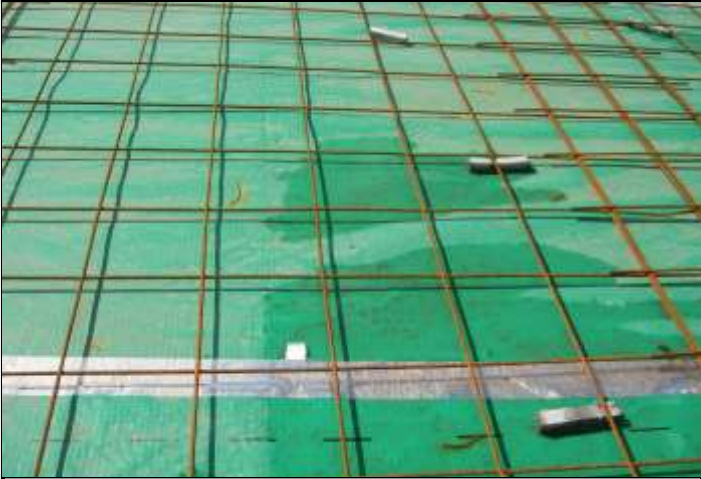
Conclusions
<p>The gas protection measures inspected: A - are acceptable and comply with the specification; B - Are Acceptable but attention is drawn to issues related to item no. XX; C - Are not acceptable due to the issues related to item no. XX. B - Sealing of service entry ducts to be completed.</p>



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2C
Start Date: 29/5/19	Plot Number: 70-71
End Date: 20/8/19	Housing Style: C
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Wet	Gas Protection Type: Passive

Site Visit Dates & Comments
29/5/19 - inspection of membrane installation
5/6/19 - inspection post screed
20/8/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very Good
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. One joint found to be insecure and repaired. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

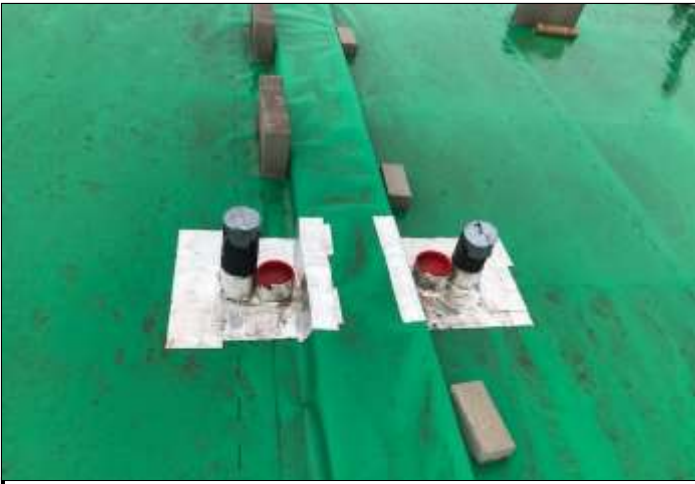
2.2	External wall airbricks	8 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 5/6/19 - inspection post screed, minor damaged noted. 20/8/19 - inspection of membrane repairs, all repaired using Liquid membrane or XL jointing tape.</p>		

Photographs

No.	Description
1	Service entries
2	Corner details
3	Perimeter damage
4	Perimeter damage
5	Perimeter repair
6	Perimeter repair
7	Perimeter repair
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Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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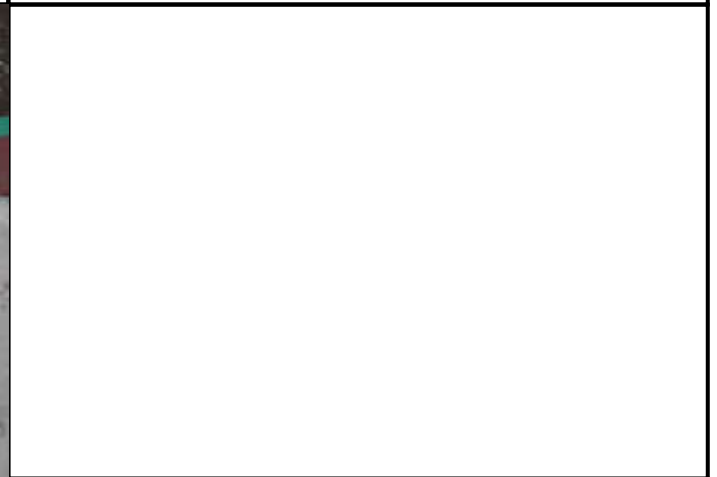
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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2C
Start Date: 22/5/19	Plot Number: 72-73
End Date: 11/7/19	Housing Style: C/C
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Dry	Gas Protection Type: Passive

Site Visit Dates & Comments
22/5/19 - inspection of membrane installation
29/5/19 - inspection post reinforcement placement
11/7/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Good
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	8 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 29/5/19 - inspection post placement of reinforcement, damaged noted and immediately repaired. 11/7/19 - inspection of membrane repairs, a few additional holes noted but repaired immediately, all repaired using Liquid membrane or XL jointing tape.</p>		

Photographs	
No.	Description
1	Installer repair
2	Service entries
3	Corner details
4	Reinforcement placement
5	Reinforcement placement
6	Perimeter repair
7	Perimeter repair
8	Perimeter repair

Conclusions
<p>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. XX; C - Are not acceptable due to the issues related to item no. XX. B - Sealing of service entry ducts to be completed.</p>



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2C
Start Date: 22/5/19	Plot Number: 74-75
End Date: 11/7/19	Housing Style: C/D
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Dry	Gas Protection Type: Passive

Site Visit Dates & Comments
22/5/19 - inspection of membrane installation
29/5/19 - inspection post screed
11/7/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Good - 2No installer patches noted
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification. Overlap insufficient at one corner. Repaired
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	8 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA

Additional Notes: 29/5/19 - inspection post screed, minor damaged noted. 11/7/19 - inspection of membrane repairs, a few additional holes noted but repaired immediately, all repaired using Liquid membrane or XL jointing tape.

Photographs

No.	Description
1	Installer repair
2	Overlap repair
3	Service entries
4	Corner details
5	Perimeter repair
6	Perimeter repair
7	Perimeter repair
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Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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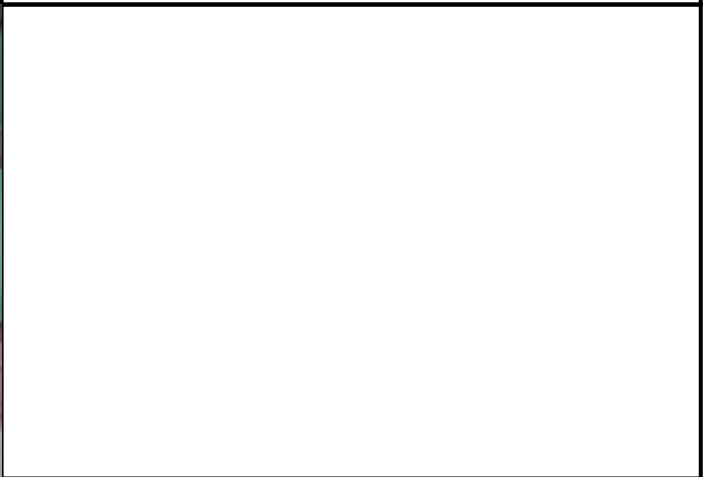
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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2C
Start Date: 5/6/19	Plot Number: 100-101
End Date: 3/9/19	Housing Style: C/D
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Sunny	Gas Protection Type: Passive

Site Visit Dates & Comments
5/6/19 - inspection of membrane installation
18/6/19 - reinforcement placed
3/9/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very Good.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. 3No pockets found at corner details, 1No not secured section of tape, fixed immediately. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	7 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 18/6/19 - inspection of membrane post placement of reinforcement, no damage noted. 3/9/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape.</p>		

Photographs

No.	Description
1	Service entries and corner details
2	Service entries and corner details
3	Corner details repaired pocket
4	Corner details repaired pocket
5	Reinforcement placement
6	Perimeter repair
7	Perimeter repair
8	Perimeter repair

Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2C
Start Date: 5/6/19	Plot Number: 102-103
End Date: 3/9/19	Housing Style: C
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Sunny	Gas Protection Type: Passive

Site Visit Dates & Comments
5/6/19 - inspection of membrane installation
18/6/19 - half plot screed, half plot with reinforcement placed, some minor damage noted
3/9/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very Good. 3No installer patches noted.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. One joint not secure due to being too damp, fixed immediately. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

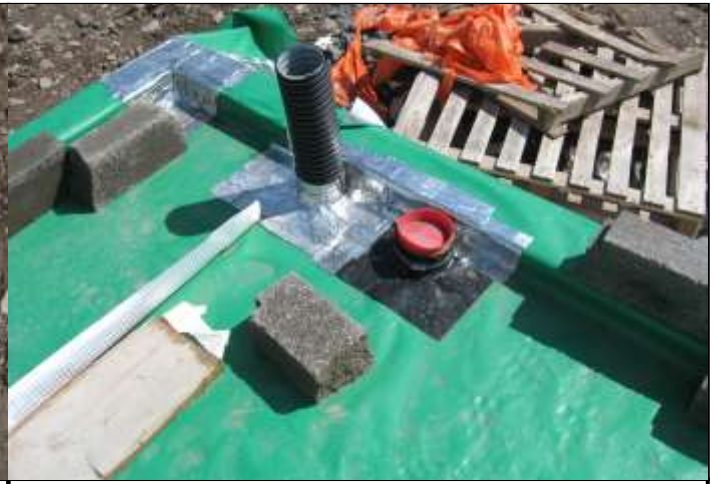
2.2	External wall airbricks	8 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 18/6/19 - inspection of membrane post screed, some minor holes noted around perimeter, part plot with reinforcement placed, some damage noted, likely to be wind damage - repaired immediately. 3/9/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape. Development progressed locally.</p>		

Photographs	
No.	Description
1	Installer repairs
2	Service entries
3	Corner details
4	Reinforcement damage
5	Reinforcement damage repair
6	Reinforcement damage repair
7	Perimeter repair
8	Perimeter repair

Conclusions
<p>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. XX; C - Are not acceptable due to the issues related to item no. XX. B - Sealing of service entry ducts to be completed.</p>



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2C
Start Date: 5/6/19	Plot Number: 104-105
End Date: 20/8/19	Housing Style: C
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Sunny	Gas Protection Type: Passive

Site Visit Dates & Comments
29/5/19 - inspection of membrane installation
18/6/19 - inspection of post screeding, some minor damage noted
20/8/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very Good.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. pocket identified at once corner, sealed immediately. One joint not secure, fixed immediately. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used. Joint not secure at service entry, fixed immediately.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	8 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA

Additional Notes: 18/6/19 - inspection of membrane post screed, some minor holes noted, instructed to repair.
20/8/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape.

Photographs

No.	Description
1	Corner details
2	Service entries
3	Corner details
4	Repaired joint on service entry
5	Perimeter repair
6	Perimeter repair
7	Perimeter repair
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Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2C
Start Date: 29/5/19	Plot Number: 106-107
End Date: 20/8/19	Housing Style: C/D
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Wet	Gas Protection Type: Passive

Site Visit Dates & Comments
29/5/19 - inspection of membrane installation
5/6/19 - reinforcement placed
18/6/19 - inspection of post screeding, some minor damage noted
20/8/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very Good. Damage seen later post placement of reinforcement steels, damage due to high winds.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	9 periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 5/6/19 - inspection post placement of steel reinforcement, wind damaged noted, steels penetrated membrane around perimeter, minor damage in centre from placement. Repairs made immediately 18/6/19 - inspection of membrane post screed, some minor holes noted, instructed to repair. 20/8/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape.</p>		

Photographs	
No.	Description
1	Service entries and corner details
2	Corner details
3	Service entries
4	Reinforcement steel damage repair
5	Reinforcement steel damage repair
6	Perimeter repair
7	Perimeter repair
8	Perimeter repair

Conclusions
<p>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. XX; C - Are not acceptable due to the issues related to item no. XX. B - Sealing of service entry ducts to be completed.</p>



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2D
Start Date: 25/7/19	Plot Number: 108 & 110
End Date: 20/11/19	Housing Style: E/E
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Sunny	Gas Protection Type: Passive

Site Visit Dates & Comments
25/7/19 - inspection of membrane installation
20/11/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very dirty, several holes noted. Repaired immediately.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Joint tape missing frequently, 2No fish mouths, fixed immediately. Passed
1.7	Service entries seals	XL Jointing tape used a bit scruffy but adequate.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	12No. periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 20/11/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape.</p>		

Photographs	
No.	Description
1	2No. fish mouths
2	Hole in membrane
3	Corner details
4	Service entries
5	Fish mouths repaired
6	Holes repaired
7	Perimeter repair
8	Perimeter repair

Conclusions
<p>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. XX; C - Are not acceptable due to the issues related to item no. XX. B - Sealing of service entry ducts to be completed.</p>



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2D
Start Date: 11/7/19	Plot Number: 109 & 111
End Date: 20/11/19	Housing Style: E/E
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Overcast	Gas Protection Type: Passive

Site Visit Dates & Comments
11/7/19 - inspection of membrane installation
25/7/19 - inspection of post screeding damage
20/11/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very good, 4No. Holes/tear noted. Repaired immediately.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. One joint not secure, 2No. fish mouths noted, some details not sealed at laps, fixed immediately. Passed
1.7	Service entries seals	XL Jointing tape used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	12No. periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA

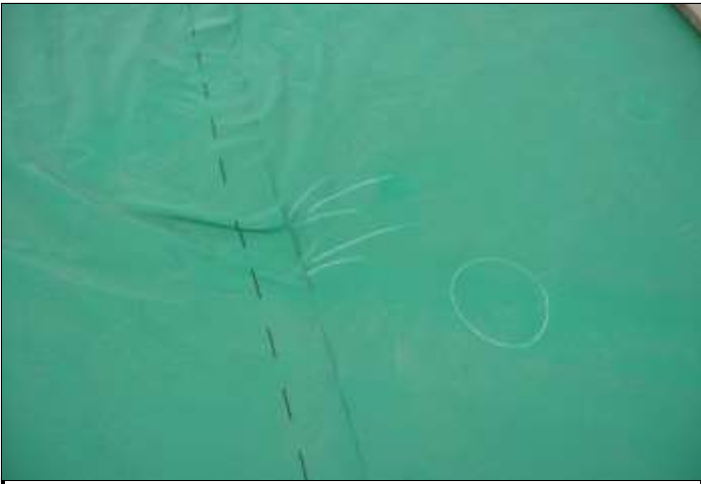
Additional Notes: 25/7/19 - minor damage noted around perimeter post screed. 20/11/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape.

Photographs

No.	Description
1	2No. fish mouths
2	Service entries
3	Service entries and corner details
4	Holes repaired and corner details
5	Perimeter joints repaired
6	Perimeter repair
7	Perimeter repair
8	Perimeter repair

Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2D
Start Date: 25/7/19	Plot Number: 112-114
End Date: 20/11/19	Housing Style: A/A
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Sunny	Gas Protection Type: Passive

Site Visit Dates & Comments
25/7/19 - inspection of membrane installation
20/11/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very dirty, several holes noted. Repaired immediately.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Joint tape missing frequently, fixed immediately. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used. One top hat missing clip, fixed immediately.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	14No. periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
Additional Notes: 20/11/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape.		

Photographs

No.	Description
1	Corner details, hole in membrane
2	Service entries, missing clip
3	Joint not sealed
4	Service entries
5	Repairs using patched
6	Perimeter repair
7	Perimeter repair
8	Perimeter repair

Conclusions

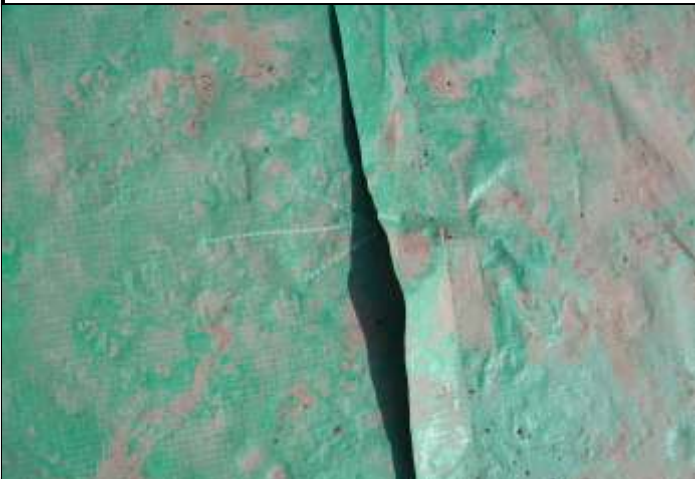
The gas protection measures inspected: A - are acceptable and comply with the specification; B - Are Acceptable but attention is drawn to issues related to item no. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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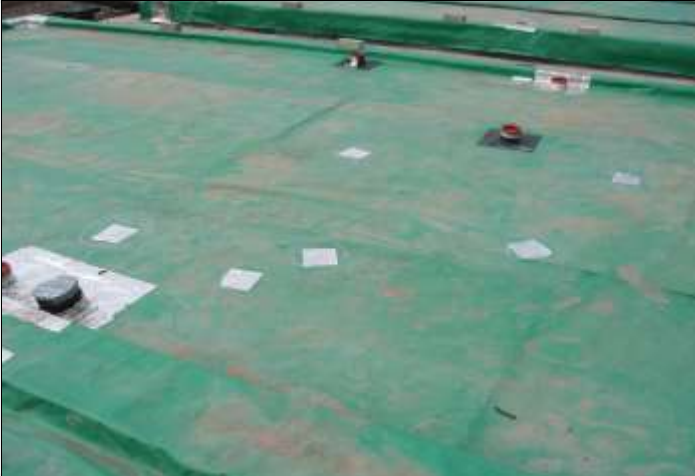
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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2D
Start Date: 11/7/19	Plot Number: 113 & 115
End Date: 20/11/19	Housing Style: C/C
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Sunny	Gas Protection Type: Passive

Site Visit Dates & Comments
11/7/19 - inspection of membrane installation
25/7/19 - inspection of post screeding damage
20/11/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very good, several holes noted. Repaired immediately.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Frequently not sealed around perimeter, one fish mouth noted, some details not sealed at laps, fixed immediately. Passed
1.7	Service entries seals	XL Jointing tape and top hats with clips used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	12No. periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA

Additional Notes: 25/7/19 - minor damage noted around perimeter post screed. 20/11/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape.

Photographs

No.	Description
1	Perimeter joints not sealed
2	Holes in membrane
3	Holes on perimeter edge
4	Holes repaired
5	Joints repaired
6	Service entries and corner detail
7	Perimeter repair
8	Perimeter repair

Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2D
Start Date: 25/7/19	Plot Number: 116-118
End Date: 20/11/19	Housing Style: A/A
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Sunny	Gas Protection Type: Passive

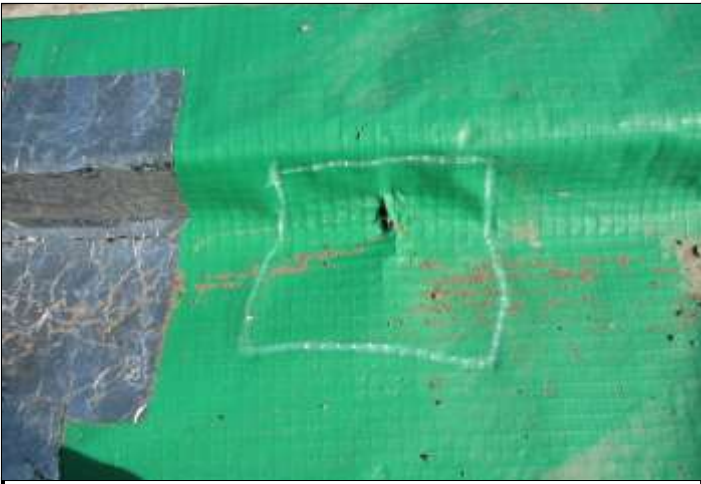
Site Visit Dates & Comments
25/7/19 - inspection of membrane installation
20/11/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very dirty, several holes noted. Repaired immediately.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Joint tape missing frequently, fixed immediately. Passed
1.7	Service entries seals	XL Jointing tape & top-hat covers used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	14No. periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA
<p>Additional Notes: 20/11/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape.</p>		

Photographs	
No.	Description
1	Hole in membrane
2	Holes repaired
3	Corner details
4	Service entries
5	Joints repaired
6	Perimeter repair
7	Perimeter repair
8	Perimeter repair

Conclusions
<p>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. XX; C - Are not acceptable due to the issues related to item no. XX. B - Sealing of service entry ducts to be completed.</p>



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Site Verification Pro Forma



Site Name: Herbert Road	Installer: Groundworker
Job Number: 12032	Phase: 2D
Start Date: 11/7/19	Plot Number: 117 & 119
End Date: 20/11/19	Housing Style: C/C
Verifier: JRW	Foundation Type: Suspended Floor
Weather Conditions: Sunny	Gas Protection Type: Passive

Site Visit Dates & Comments
11/7/19 - inspection of membrane installation
25/7/19 - inspection of post screeding damage
20/11/19 - inspection of post screeding damage repair

No.	Item	Comments
1. Membrane		
1.1	Condition of sub-grade and underside of gas membrane	Insulation boards - Very good condition
1.2	Gas membrane type	Solco Ultra Gas Barrier - green
1.3	Gas membrane condition	Very good, several holes noted. Repaired immediately.
1.4	Joining tape product	50mm double sided butyl tape
1.5	Lapping design	150mm lap. Lap tape to be installed post verification.
1.6	Laps, welds, and joints seals	Taped. All air lanced to ASTM D4437. Paper left on tape in one section of joint, 1No fish mouths, frequently not sealed around perimeter, fixed immediately. Passed
1.7	Service entries seals	XL Jointing tape used.
2. Ventilation		
2.1	Sub-floor void	Seen previously - Clear 150mm void minimum

2.2	External wall airbricks	12No. periscopes installed
2.3	Internal sleeper walls/Beams	Seen previously - Clear 150mm void minimum
2.4	External vents trenches/ducts	NA

Additional Notes: 25/7/19 - minor damage noted around perimeter post screed. 20/11/19 - Inspection of perimeter damage repairs, all repaired using Liquid membrane or XL jointing tape.

Photographs

No.	Description
1	Perimeter joints not sealed
2	Paper left on tape
3	Fish mouth
4	Joints repaired
5	Holes repaired
6	Service entries
7	Perimeter repair
8	Perimeter repair

Conclusions

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. XX; C - Are not acceptable due to the issues related to item no. XX. **B - Sealing of service entry ducts to be completed.**



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ANNEX C
Remedial Product Datasheet

SOLSEAL

Liquid Gas Barrier



SOLSEAL LIQUID GAS BARRIER can be used to protect most building surfaces from the effect of liquid and water vapour, carbonation and as a gas barrier to prevent the ingress of Methane, Carbon Dioxide and Radon. As the product is a barrier to moisture it can be used as a DPM on floors and walls.

Benefits & Features

- Prevents ingress of Methane, Carbon Dioxide & Radon gasses
- Suitable for use as a DPM on floors and walls
- Meets the requirements of BS8485:2015
- Fast drying for rapid installation
- Single component (no primers)
- Can complement or replace sheet membranes



SOLSEAL - Liquid Applied Systems

Last Issue Date 26.06.17

Product Description

SOLSEAL LIQUID GAS BARRIER is a ready for use specialist styrene butadiene latex based liquid applied membrane. It offers a simple, continuous passive gas prevention barrier against the ingress of Methane, Carbon Dioxide, Radon, Ground Gas, VOC, air & Moisture into buildings.

Provided the liquid gas barrier is not in direct contact with the source of contamination; then the liquid gas barrier is suitable for use as a Hydrocarbon/VOC Barrier.'

SOLSEAL LIQUID GAS BARRIER also acts as a waterproofing membrane complying with the requirement C2 and C4 schedule 1 of the Building Regulations 1991 for England and Wales

Compliance

SOLSEAL LIQUID GAS BARRIER complies with the latest codes of practice as published by BR211, CIRIA & BSI (BS8485:2015) test data to EN ISO 15105-1 for Methane. Suitable for use as gas protection for NHBC Green, Amber 1 and Amber 2 site classifications.

Suitable for waterproofing protection when designing Type A structures as classified in BS8102:2009 to grades 1, 2 & 3 constructions.

SOLSEAL LIQUID GAS BARRIER is CE marked and complies to EN13967 – Flexible sheets for waterproofing – Plastic and rubber damp proof sheets including rubber basement tanking sheet characteristics

Recommended For

Suitable for water, gas and damp proofing of the following: -

- Pile Caps & Beam detailing
- Bored Service Penetration Sealant
- Remedial Repairs to Gas Protection Systems
- Concrete floors
- Basements & Lift Pits
- Complex detailing to columns, junctions etc
- Brick and block masonry walls
- Junctions, columns etc

Application

The background surface should be smooth or have a light even texture, and masonry should be flush pointed and defects in the surfaces made good prior to application. The surface should be clean, sound and free of dust, loose material or free surface water. SOLSEAL LIQUID GAS BARRIER should not be applied in wet conditions or where inclement weather is expected before the membrane has dried. The membrane should not be applied in temperatures below 7°C.

Where multiple coats are applied, it is recommended that the coats are applied at right angles to each other. Before application of secondary coats, it is necessary to let the first coat become touch dry.

The time required to reach touch dry condition will vary dependant on site conditions within the working area, but will typically be in the order of 1-2 hours in favourable conditions. It is preferable that secondary coats are applied within 24 hours.

Solseal liquid gas membrane should be covered by a protective layer after installation using either Solco Protection Sheet or Solco Soldrain Double.

SOLSEAL

Liquid Gas Barrier



SOLSEAL - Liquid Applied Systems

Last Issue Date 26.03.18

Coverage

SOLSEAL LIQUID GAS BARRIER may be applied by brush, roller or airless spray. A minimum dry coated thickness of 1.0mm is needed to provide a gas barrier. To achieve 1.0mm thickness, a total of 2kg/m² is required, therefore a 15kg tub will cover an area of 7.5m².

Handling

Material is supplied in tubs of 15kg weight. Appropriate care must be taken with handling. Clean tools with water immediately after use.

Storage

Store tub in conditions between 5°C and 30°C; Shelf life 12 months unopened.

Compatibility

SOLSEAL LIQUID GAS BARRIER is compatible with loose laid membranes supplied by Solco, such as Solshield Ultra, Reinforced, Hydrocarbon and Solsheet GP and GR.

Technical Data			
Characteristic	Test Method	Units	LGB
Physical Properties			
Applied Thickness		mm	>1.0
Form Supplied			Viscous Liquid
Pack Size		KG	15
Colour			Red
Chemical Composition		–	Advanced SBS with specialty additives
Hydraulic Properties			
Water Tightness	EN 1296, EN 1367, EN 1928		PASS
Gas Permeability			
Methane Permeability	BS EN ISO 15105 - 1	ml/m ² /day/atm	<40 (Pass)
Radon Permeability	Saarland University, GER	mm	>1.0mm applied thickness provides a complete barrier to Radon

System Accessories

- Reinforcement Tape for corner detail
- Top Hat Units
- Solco Protection Board
- Soldrain Double (Protection sheet)