



GeoShield Verification Plan



PROJECT DESCRIPTION

GEO104735
WDL Contracting
Ringland Regeneration
Phase 2
Newport
NP19 9HG

The project requiring gas protection measures comprises of 42 residential dwellings plus two number mixed use apartment blocks/retail areas and associated landscaped areas.

In accordance with BS8485:2015 + A1 2019, the two building types comprising of residential dwellings (Type A building) and two mixed use apartment blocks (Type B building) must conform to a Characteristic Specification (CS) rating of 2, so mitigation will need to be 3.5 points.

Geoshield have adopted the highest design and verification principles associated with BS8485:2015 + A1 2019, BR 211, Public Health England, NHBC Technical Extra April 2016 and CIRIA 735.

This pre-verification plan reviews the design to ensure it is compliant with the developer and planning authority requirements and in conjunction with the relevant investigation report in accordance with BS8485:2015 +A1 2019.

In summary, the design does achieve a required level of attention to detail with its robust specific gas membrane design, the structural barrier of raft slab.

The pre-verification plan confirms how the installation will be tested in accordance with CIRIA735. The verification visits will be documented in verification reports during the project that are suitable for submission to the local planning authority in order to satisfy and discharge planning consent.

All faults identified during inspection and the verification site visit of the ground gas system will be itemised as remediations which will need to be signed off in the remediation log for the proposed building.



GeoShield Verification Plan



PROJECT DESCRIPTION

Pre-Verification Plan

GeoShield are appointed by the Client to carry out independent validation, verification and integrity testing of the ground gas protection system on site. The Pre-Verification plan sets out the requirements and procedures that GeoShield will adopt to ensure that the installation is in line with the proposed design, relevant UK standards and guidance.

GeoShield take no responsibility for any warranties to third parties for the design of the system or the installation.

Limitations

The Pre-Verification plan prepared by GeoShield Limited is limited to the proposed ground gas protection measures installed. The Pre-Verification plan has been prepared in line with the relevance UK Standards and Guidance (BS8485:2015+A1:2019 & CIRIA 735) alongside the information made available to GeoShield by the Client. The conclusions made in the report are considered to be correct at the time of writing, but additional information provided/discovered may require amendments to the Plan. GeoShield recognises that changes to relevant standard and guidance may occur at any time which may cause the conclusions made to be incorrect - GeoShield do not accept any responsibility or liability for the implications of such changes.

The Pre-Verification plan does not in itself constitute verification that the membrane has been installed in accordance with this document. Validation and verification of the installed membrane will be covered in separate verification reports following physical inspection of the gas barrier and will include photographic evidence of the installation.

Waterproofing elements (where applicable) do not fall into the remit of this Pre-Verification plan or future inspections. GeoShield will provide the opinion on membrane's suitability for ground gas protection purposes – no liability is offered or implied for the waterproofing element which should be checked by others.



GeoShield Verification Plan



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GeoShield Verification Plan



PROJECT REFERENCE: GEO104735

PROJECT: Ringland Regeneration

PROJECT ADDRESS: Phase 2,

Newport,

NP19 9HG

SPECIFICATION: Verified in accordance CIRIA 735.

Design in accordance with BS8485 2015 + 2019 for Methane and Carbon Dioxide.

Substrate prepared in accordance with manufacturers instructions.

JUTA GP5 Gas Barrier

JUTA GP Self Adhesive Membrane



GeoShield Verification Plan



NAME OF SURVEYOR:

Paul Colbeck

VERIFICATION COMPANY:

GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER:

07462 546 926

EMAIL ADDRESS:

pcolbeck@geoshield.co.uk

ORDER NUMBER:

To be confirmed

PER VISIT:

YES:

☐

NO:

☐

PROJECT:

YES:

☐

NO:

☐



GeoShield Verification Plan



INFORMATION INCLUDED

Extract - Integral Geotechnique - Project Summary

Curtins-Phase 2 Ground Investigation extracts:-

>. Front Cover

>. Protection measures for both Methane & Carbon Dioxide

>. Advisable protection for Hydrocarbons

>. Required 3.5 Points in accordance with BS 8485: 2015+A1:2019

Material Specification Technical Data Sheets

Information presented to at the pre-verification stage assumed correct

Any change client will let GeoShield know or this Pre-verification Plan will be void.

SPECIFICATION

RINGLAND REGENERATION, NEWPORT

14049/GNS/22/ORS REV A

1.0 INTRODUCTION

1.1 GENERAL

Intégral Géotechnique (Wales) Limited (IG) have been appointed as Geotechnical and Geoenvironmental Consultants by Lovell Partnerships to prepare a remediation strategy for the redevelopment of a site in Ringland, Newport to a standard suitable for proposed mixed commercial and residential end use.

The proposed scheme includes the demolition of an existing retail development, followed by the construction of several mixed-use retail/apartment blocks (referenced Block A to E, Block R1 to R3) and 42 No. residential dwellings (referenced Plot 1 to 42).

The following reports are available for the site:

- Curtins report titled: Ringland, Newport, Phase 1 Preliminary Site Assessment, Ref: B065384.000-CUR-00-XX-RP-GE-001-V03 dated 24 July 2017
- Curtins report titled: Ringland, Newport, Phase 2 Ground Investigation Report, Ref: 066799-CUR-00-XX-RP-GE-002-V01, dated 16 March 2020.

The above reports have been relied upon as part of this remediation strategy and should be read in conjunction with this report.

The purpose of this report is to provide a remediation strategy for the delivery of the site to a standard suitable for the proposed mixed commercial and residential end use and details how the remediation works will be supervised and validated.

This report (including all appendices to it and any subsequent addendums or correspondence) has been prepared for the sole benefit, use and information of Lovell Partnerships and no third party is entitled or permitted to rely on it. This report may not be used, reproduced or circulated (in whole or part) for any purpose without the written consent of Intégral Géotechnique (Wales) Limited. Intégral Géotechnique (Wales) Limited shall not be liable to any third party who does not have such express written permission to rely on the report for any losses they may suffer.

1.2 PROPOSED DEVELOPMENT

The proposed scheme includes the demolition of an existing retail development, followed by the construction of several mixed-use retail/apartment blocks (referenced Block A to E, Block R1 to R3) and 42 No. residential dwellings (referenced Plot 1 to 42).

Title Reference & Description:

Extract - Integral Geotechnique

Proposed Development Summary

BGA
British Geomembrane Association

GeoShield Verification Plan



SPECIFICATION



Ringland, Newport

Phase 2 Ground Investigation

Curtins Ref: 066799-CUR-00-XX-RP-GE-002-V01

Revision: 01

Issue Date: 16 March 2020

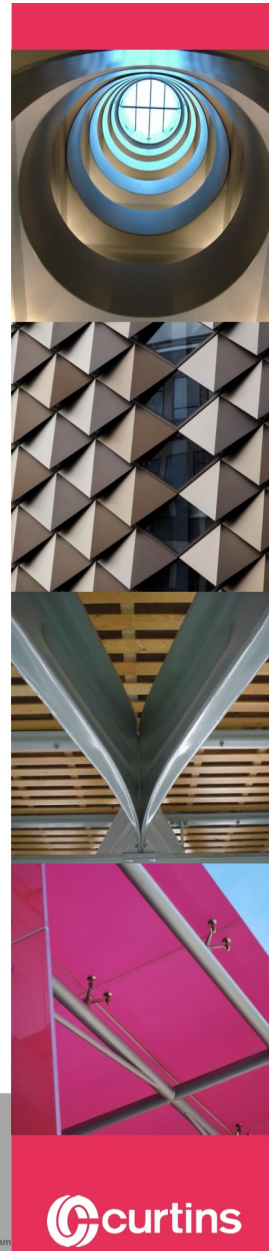
Client Name: Newport City Homes

Client Address: Nexus House, Mission Court, Newport, South Wales NP20 2DW

Site Address: Ringland, Newport, NP19 9JR

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curtins

Title Reference & Description:

Phase 2 Ground Investigation

Front Cover

SPECIFICATION

066799-CUR-00-XX-RP-GE-002-V01

Phase 2 Ground Investigation



Executive Summary

Appointment	In December 2019 Curtins were instructed by Newport City Homes to undertake a Phase 2 Intrusive Investigation in the town of Ringland. The site is centred on NGR 335730, 18882 and covers an area of approximately 3.0 Ha. This investigation addresses recommendations as presented in the Phase 1 report with the aim of the Phase 2 works to characterise geo-environmental conditions prior to redevelopment involving demolition of some buildings currently in existence at the site and the construction of a new housing estate with a range of apartments blocks, houses and small retail area. The houses are likely to have gardens while the apartments and retail areas will be communal soft landscaping.
Current Site Status	The site is set in a mixed residential and retail area of Ringland town centre. The site consists of a shopping centre/public space surrounded by shops and retail units, with residential housing comprising a multiple storey block (Milton Court) and six bungalows. There are also car parking and soft landscaped areas beyond two blocks of housing in the eastern and northern portions of the site have recently been demolished.
Summary of Phase 1	The site was set in open fields and agricultural land until the 1970s when the buildings currently in existence were constructed. There has been some demolition and construction of buildings in the intervening period with two large housing blocks on the site demolished in 2016. A garage and possible fuel station occupied the northeast corner of the site and was replaced by six residential bungalows in the 1990's The site is indicated to be underlain by the Mercia Mudstone Group with no superficial deposits indicated to be present. The site is underlain by a Secondary B Aquifer and there are no groundwater abstractions from this aquifer recorded in proximity to the site. There are no recorded mining hazards associated with the site.
Fieldworks Undertaken	Fieldworks were carried out in December 2019 and comprised four dynamic sampling/rotary boreholes advanced to a depth of up to 15.50m bgl and fifteen window sample boreholes advanced up to 4.50 m bgl. Eight trial pits were advanced up to 2.50 m bgl. Including two soakaway tests as well as four California Bearing Ratio tests. Land gas and groundwater monitoring standpipes were installed in selected boreholes with six return land gas monitoring visits undertaken. In addition, a number of structural investigations were undertaken involving hand trial pitting and breaking out of concrete and brickwork.
Encountered Ground Conditions	Made Ground was encountered across the site and comprised macadam and concrete hardstanding, reworked natural topsoil, and reworked natural clay with anthropogenic components of clinker, brick, limestone aggregate, concrete and timber. The Made Ground was underlain by the Mercia Mudstone Group. This was encountered as a firm to stiff becoming very stiff to hard with mudstone lithorelicts.
Environmental Laboratory Testing and Land Gas Monitoring Results	The majority of the site shows very low levels of contaminants. Asbestos described as Chrysotile and loose fibres was identified in WS05. Further quantification testing to determine the percentage weight of Asbestos was conducted and recorded Asbestos quantification of <0.001%. One sample from WS09 at 0.40m showed exceedance of the Poly Aromatic Hydrocarbons; Benzo(a)pyrene, Benzo(b)fluoranthene and Dibenzo(ah)anthracene. A single elevated sulphate occurrence was found in one of the eleven groundwater samples. Six gas monitoring visits have been undertaken, with a maximum carbon dioxide concentration of 3.8% v/v and a maximum flow of 2.5 l/hr recorded. Evaluation of the 'worst possible' scenario records a gas screening value of 0.0950 l/hr for carbon dioxide.
Ground Contamination and	The chronic health risk posed to site end users by on site sources of contamination via direct contact, ingestion, inhalation is assessed as Moderate/Low in the vicinity of WS05. The remainder of the site can be considered Low risk. Risks to controlled waters have been assessed as Low to Very Low.

Title Reference & Description:

Phase 2 Ground Investigation

Elevated Hydrocarbons
Carbon Dioxide protection measures required.

SPECIFICATION

066799-CUR-00-XX-RP-GE-002-V01

Phase 2 Ground Investigation



Ground Gas Assessment	The carbon dioxide gas screening value indicates a Gas Characteristic Situation 2 (CS2) gas regime, requiring CS2 gas protection measures for the proposed new development.
Geotechnical Assessment	It is recommended that shallow foundations could be adopted at the site, founding beneath any topsoil and made ground within the underlying Mercia Mudstone Formation at a minimum depth of 0.90mbgl. Due to the depth of Made Ground in the landscaped area in the north of the site, it is likely that the foundations in that area would have to be placed at depths up to 2.50m below ground level. For the remaining site locations, it is estimated that a strip foundation of 0.60m width founded at 1.00mbgl within the firm Clay would provide an allowable bearing pressure in the region of 130kPa increasing to 200kPa within the stiff Clay which would provide an adequate factor of safety against shear failure and limit settlements to within 25mm. Should greater bearing be required, it may be more economical to adopt a piled foundation solution. CBR testing for the design of hardstanding suggested that a subgrade CBR value of 5% should be adopted for design purposes. Material at the site may be assigned a Design Sulphate Class of DS-1 and the site given an ACEC class of AC-1.
Recommendations	- This report should be forwarded to the designer to advise foundation and structural design. - In the location of the Asbestos detection it is recommended that upon conformation of the development plans, consideration is given to basic remedial measures such as capping by building and hardstanding or clean cover soils. Another option would be to undertake further trial pitting and shallow soil sampling to establish the extent of the impacted soils. - The employment of CS2 gas protection measures are recommended for the site. - Further investigation should be considered in currently inaccessible areas to further support the structural design. - It is recommended this report is forwarded to the relevant local authority environmental officer for comment prior to undertaking further work.

Title Reference & Description:

Phase 2 Ground Investigation

Methane protection measures required.

Required Points in accordance with BS 8485: 2015+A1:2019

SPECIFICATION

066799-CUR-00-XX-RP-GE-002-V01

Phase 2 Ground Investigation



2.3.5 Other Pertinent Geological Existing Geological Records

The Envirocheck report (2) included within Curtins Phase 1 (1) reporting confirms that there is a low to no hazard from the following ground stability hazards on the site; collapsible, compressible, dissolution, landslide, running sand, and shrinking or swelling clay.

UK **Radon** Mapping confirms the site is situated in an area where less than 1% of homes are above the radon action level. Where the new development incorporates a basement, further monitoring may be required.

2.4 Hydrogeology and Hydrology

Environment Agency data (5) indicates that the site, corresponding with the underlying bedrock geology, overlies a Secondary B Aquifer. These are;

Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.

There are no groundwater abstractions recorded within 500m of the site boundary and the site is not situated within a designated Source Protection Zone (SPZ). Groundwater vulnerability is considered unlikely due to the negligible permeability of the underlying deposits.

The nearest surface water feature is 97m north-west of the site, an inland river positioned north to south-west. There is no water quality data available for this feature.

There are no surface water abstractions recorded within 500m of the site boundary.

There are no discharge consents associated with the site.

The site is not located within an Environment Agency designated flood zone.

2.5 Landfill

There are no current operating or historical landfills located within 250m of the site boundary.

2.6 Unexploded Ordnance (UXO) Risk Assessment

The Curtins Phase 1 (1) reporting assesses the UXO risk to the site as generally **Low**. Regional UXO risk mapping for Monmouthshire (6) records 87 bombs as having been dropped on Newport during the war. Thus, the low risk rating should not be taken to mean that there is no potential for UXO at the site. Bombs were often dropped far from their targets by bombers which were off course or were unloading their bombs.

Title Reference & Description:

Phase 2 Ground Investigation

No radon protection measures are required.



GP®5

GP®5 gas barrier is a multi-layer composite of virgin polyethylene (PE) giving exceptional resistance to the passage of ground gas and organic vapours. It also acts as a high performance DPM.

Thickness	0.4 mm
Width	Various m
Length	Various m
Weight	400 g/m ²

TITANTECH®

For developers of brownfield and contaminated sites the TITANTECH® family of products represent a major step forward in safeguarding projects against gaseous and chemical contamination.

GP®5 is suitable for the following applications:

- Carbon dioxide and methane affected sites in accordance with BS 8485:2015 + A1:2019 & NHBC
- Radon affected sites in accordance with BRE211:2015
- Damp protection in accordance with Building Regulations Part C
- Low level VOC contaminated sites (site specific assessment required)

Handling

Roll weights can be in excess of 20kg and hence appropriate care and equipment is required for unloading and handling.

Installation

GP®5 should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015.

Certifications



Please
Scan



Rev 2024



Feature	Characteristics	Test Method	GP [®] 5
Physical Properties	Thickness	EN 1849-2	0.4 mm
	Width	EN 1849-2	Various m
	Length	EN 1849-2	Various m
	Weight	EN 1849-2	400 g/m ²
Hydraulic Press	Resistance to Water Penetration	EN 1928 (A)	Pass
Mechanical Properties	Resistance to Static Load	EN 12730	> 20 kg
	Tensile Strength (MD)	EN 12311-2 (A)	> 300 N/50mm
	Tensile Strength (CMD)	EN 12311-2 (A)	> 300 N/50mm
	Resistance to Tearing (Nail Shank) MD	EN 12310-1	> 230 N
	Resistance to Tearing (Nail Shank) CMD	EN 12310-1	> 230 N
	Impact Resistance	EN 12691-B	500 mm
	Puncture Resistance	ASTM D 4833	> 160 N
	Puncture Resistance	EN 12236	1.60 kN
	Reaction to Fire	EN 13501-1	E
Vapour Permeability	Methane Permeability	BS EN ISO 15105-1	0.12 ml/m ² /day/atm
	Carbon Dioxide Permeability	BS EN ISO 15105-1	1.53 ml/m ² /day/atm
	Hydrogen Permeability	BS EN ISO 15105-1	68.7 ml/m ² /day/atm
	Benzene Permeability	BS EN ISO 15105-2	0.41 ml/m ² /day
	Oxygen Permeability	BS EN ISO 15105-2	<3 ml/m ² /day
	Radon Permeability	K124/02/95	1.0 x 10 ⁻¹² m ² /s
	Hydrogen Sulphide Permeability	BS EN ISO 15105-1	<0.68 ml/m ² /day/atm
Fuel Vapour Permeability	Petrol	BS EN ISO 15105-2	(ave.) 3.4 x 10 ⁻¹³ /mol/(m ² .s.Pa)
	Diesel	BS EN ISO 15105-2	(ave.) 3.4 x 10 ⁻¹³ /mol/(m ² .s.Pa)
Durability	Durability Watertightness After Artificial Ageing	EN 1928	Pass
	Durability Watertightness Against Chemicals	EN 1928	Pass
Compliance and Certification	CE Mark - EN 13967:2012		
	NHBC Standards Compliant		
	BS 8485:2015 + A1 2019 Accordant		

JUTA UK

Please contact JUTA UK Directly for more information on GP[®]5

Storage

Rolls of GP[®]5 should be stored on stable/level ground and stacked not more than five rolls high, with no other material stacked on top. The rolls can be stored outdoors when packaged, but should be protected from exposure to UV.



JUTA UK

Please contact JUTA
UK Directly for more
information on GP®5

Jointing and Sealing

It is recommended GP®5 can be heat welded where possible, with welding carried out by competent personnel with suitable qualifications in accordance with best practice, and guidance contained within BS 8485:2015. GP®5 should be overlapped by at least 100mm. If taping joints, only suitable tape must be used, ensuring application with a silicone roller to remove trapped air. JUTA pre-formed details, or self adhesive gas membrane are available for sealing around protuberances.

Accessory Products

- GP® DPC
- GP® Tape
- GP® Self Adhesive Membrane (SAM)
- GP® Primer
- GP® Top Hats and Preformed Corners
- GP® Protection Fleece
- GP® Void Vent (24/40mm)



GP® SAM

GP® SAM, gas protection self adhesive membrane, is a bituminous gas proof and water proof sheet, composed of self-adhesive SBS polymer modified bitumen incorporating GP® 1 with an upper surface finish of black reinforced LDPE, and a lower surface finish of siliconized release film. GP® SAM is used for the gas/waterproofing of underground structures where harmful ground gasses are anticipated, and as a self adhesive accessory to GP® 1.

Thickness	1.2 mm
Width	0.9 m or 0.3 m
Length	20 m
Weight	1100 g/m ²

TITANTECH®

For developers of brownfield and contaminated sites the TITANTECH® family of products represent a major step forward in safeguarding projects against gaseous and chemical contamination.

Handling

Roll weights can be in excess of 20 kg (approx 33 kg/roll) and hence appropriate care and equipment is required for unloading and handling. This product is non-toxic nor flammable.

Storage

Rolls of GP® SAM should be stored on in a cool, dry place, and be protected from exposure to rain, sun, heat and cold temperatures prior to installation. Exposure to sunlight for extended period of time could cause difficulty with removal of the release film.





Feature	Characteristics	Test Method	GP® SAM
Physical Properties	Thickness	EN 1849-2	1.2 mm
	Width	EN 1849-2	0.9 or 0.3 m
	Length	EN 1849-2	20 m
	Weight	EN 1849-2	1100 g/m ²
Hydraulic Press	Water Tightness	EN 1928	Pass
	Water Vapour Transmission	EN 1931	0.013 g/m ² /day
Mechanical Properties	Tensile Strength (MD/CMD)	EN 12311-2 (A)	500 N/50mm
	Elongation (MD/CMD)	EN 12311-2 (A)	> 12 %
	Resistance to Static Load	EN 12370	20 kg
	Joint Strength	EN 12317-2	> 30 N
	Durability and Water Tightness (Ageing and Chemicals) 60 kPa	EN 1847	Pass
	Resistance to Nail Tear (MD/CMD)	EN 12310-1	> 300 N
	Resistance to Fire	EN 13501	F Euro Class
Gas Permeability	Methane Permeability	EN ISO 15105-1	< 0.68 ml/m ² /day/atm
	Carbon Dioxide Permeability	EN ISO 15105-1	< 2.81 ml/m ² /day/atm
	Radon Permeability	K124/02/95	8.0 x 10 ⁻¹⁵ m ² /S
Compliance and Certification	CE Mark - EN13967:2012 + A1:2017 Type (A/T)		
	BS 8485:2015 Compliant (Methane and Carbon Dioxide Barrier)		

JUTA UK

Please contact JUTA UK Directly for more information on GP® SAM

Installation

GP® SAM should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015, and/or BS 8102:2009.

It is recommended that GP® SAM is not applied in temperatures below 10°C, in colder weather the material can be warmed slightly to aid adhesion.

Accessory Products

- GP® Primer
- GP® Protection Board
- GP® Protection Fleece



GeoShield Verification Plan



CLIENT DETAILS

CLIENT CONTACT:	Daniel Bridges
CONTACTS ROLE:	
MOBILE PHONE:	07970 227704
EMAIL ADDRESS:	Dbridges@wdlewisaberdare.co.uk



CLIENT CONTACT:	
CONTACTS ROLE:	
MOBILE PHONE:	
EMAIL ADDRESS	
NOTES:	



GeoShield Verification Plan



APPLICATOR'S DETAILS

APPLICATOR NAME: TBC

COMPANY: MB Membranes

APPLICATOR TEL: 07889 255366 (Steve Benson - Director)

APPLICATOR EMAIL: steve@mbmembranes.co.uk (Steve Benson - Director)

APPLICATOR NAME: TBC

COMPANY: MB Membranes

APPLICATOR TEL:

APPLICATOR EMAIL:

NOTES: The name of the installers are unknown at this point so the installers will either be identified at the pre-verification meeting or the first site visit.

At least one member from each installation team possesses a level 2 NVQ in gas membrane installation.



GeoShield Verification Plan



HEALTH AND SAFETY

INDUCTION: ☒ ☒

INDUCTION TIME:

CSCS CARD: ☒ ☐

CSCS CARD NUMBER:

METHOD STATEMENT: ☒ ☐

RISK ASSESSMENT: ☒ ☐

COSHH: ☒ ☐

SITE SPECIFIC HAZARDS:



GeoShield Verification Plan



APPLICATOR'S DETAILS

TRAINING LEVEL:

SPECIALIST CONTRACTOR:	YES	☒	NO	☐
NVQ LEVEL 2:	YES	☒	NO	☐
COMPETENT APPLICATOR:	YES	☒	NO	☐
TOOLBOX BY GEOSHIELD:	YES	☐	NO	☒

REASON FOR VISIT:

DURING INSTALLATION:	☒	UNDERSLAB VENTILATION	☐
PRE - POUR:	☐	DPC MEMBRANE CONNECTION	☐
TESTING:	☒	OTHER (PLEASE SPECIFY):	☐

NOTIFICATION:

24 HOURS:	YES	☒	48 HOURS:	YES	☒
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NOTES:

It will deemed that these applicators are at an appropriate skill level for

the job of installing the ground gas protection measures.



GeoShield Verification Plan



Residential Dwellings

In accordance with guidance from
CIRIA 735 & CIRIA C748.

Radon gas protection measures
specify to the guidance from the
BR 211 document:

VOC/Hydrocarbons

☐

RADON BASIC

☐

RADON FULL

☐

Characteristic Specification (CS) Rating

CS2

Building Type:

TYPE A

POINTS REQUIRED UNDER BS8485:2019

3.5 POINTS

POINTS GAINED FROM BS8485:2019

Score for Structural Barrier:

1.5 POINTS

Grade 2 Basement:

N/A

Grade 3 Basement:

N/A

Score for Venting:

N/A

Car Park:

N/A

Score for Membrane:

2.0 POINTS

POINTS ACHIEVED UNDER BS8485 2019:

3.5 POINTS



GeoShield Verification Plan



Apartment/Retail Blocks

In accordance with guidance from
CIRIA 735 & CIRIA C748.

Radon gas protection measures
specify to the guidance from the
BR 211 document:

VOC/Hydrocarbons

☐

RADON BASIC

☐

RADON FULL

☐

Characteristic Specification (CS) Rating

CS2

Building Type:

TYPE B

POINTS REQUIRED UNDER BS8485:2019

3.5 POINTS

POINTS GAINED FROM BS8485:2019

Score for Structural Barrier:

1.5 POINTS

Grade 2 Basement:

N/A

Grade 3 Basement:

N/A

Score for Venting:

N/A

Car Park:

N/A

Score for Membrane:

2.0 POINTS

POINTS ACHIEVED UNDER BS8485 2019:

3.5 POINTS



GeoShield Verification Plan



TESTING PROCEDURES

VISUAL: PICK & PROBE/MECHANICAL POINT STRESS TEST:



NON-DESTRUCTIVE COMPRESSED AIR LANCE TEST:



NON-DESTRUCTIVE SMOKE TEST:



DESTRUCTIVE JOINT TESTING:



NON-DESTRUCTIVE TRACER GAS TESTING:



DIELECTRIC POROSITY TEST:



PUMP TEST FOR "Twinny" WELD



NOTES: From the risk assessment GeoShield will initially conduct a visual

NOTES: and pick and probe testing regime for this project.

NOTES: Air lance testing will be conducted to test the installed membrane in

NOTES: accordance with CIRIA 735.

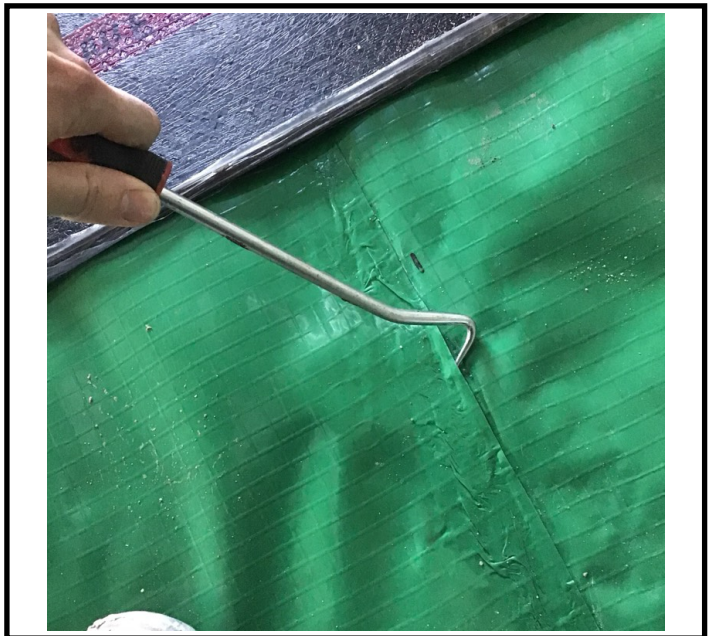
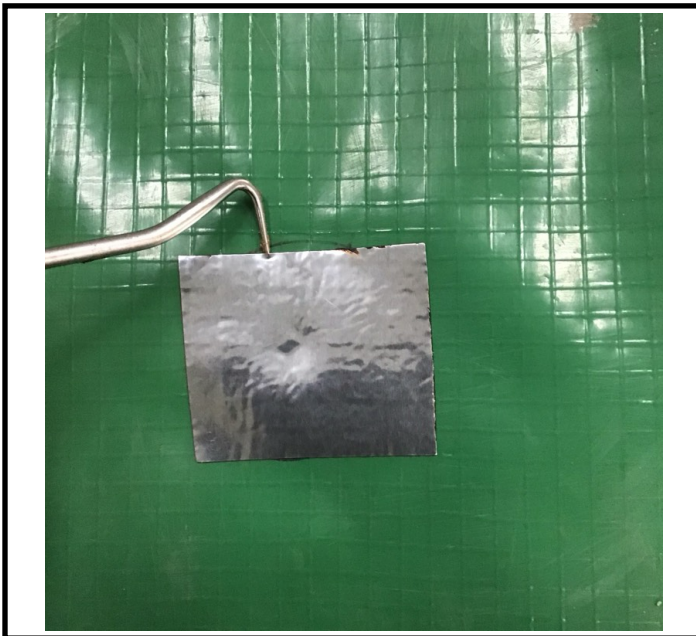
NOTES:

NOTES: Only if the application falls below the accepted standard will other testing

NOTES: be used.

SPECIFICATION

Mechanical Point Stress/ 'Pick and Probe' Testing



CIRIA 735

4.3.2 - Mechanical point stress tests involve running a blunt instrument (e.g. a screwdriver) along the edge of a seam to identify any unbonded seams. This method is not as effective as air lancing but it can be especially useful in hard to reach areas where it is not possible to air lance.

The instrument used should not puncture the gas membrane. This method is less appropriate for materials that are easily punctured where an air lance test is more suitable (although if a gas membrane can be easily punctured its suitability as a membrane is open to question).

SPECIFICATION

Air Lance Testing



CIRIA 735

4.3.3 - Air lance testing identifies unbonded areas of seam by directing a high pressure jet of air at the seam. The air is at a minimum pressure of 345kPa via a 4.8mm nozzle and is located no more than 50mm from the seam being tested.

In order to achieve the requirements of ASTM D4437-08:2013 bespoke specialist equipment is required to maintain the required pressure.



GeoShield Verification Plan



RISK ASSESSMENT

SITE SPECIFIC CIRCUMSTANCES	1	2	3	4	5
Complexity of Design	1	✓ 2	3	4	5
Repetition of design	1	✓ 2	3	4	5
Experience of workforce	1	✓ 2	3	4	5
Gas regime	1	✓ 2	3	4	5
Project management experience	1	2	✓ 3	4	5
Installation conditions (exposed?)	1	✓ 2	3	4	5
Robust Project specific gas design	1	✓ 2	3	4	5

TYPE OF RISK	RANGE	RISK
High Risk	23 - 30	
Medium High Risk	19 - 22	
Medium Risk	15 - 18	15
Medium Low Risk	11 - 14	
Low Risk	0 - 10	

GeoShield have classed this project as a medium risk.

GeoShield will lay all parameters down for standards at the pre-verification meeting to assist both the installer and the main contractor.



GeoShield Verification Plan



VERIFICATION REPORT

These items will be included in the report

- NUMBER 1 GAS MEMBRANE SPECIFICATION
- NUMBER 2 ELEMENTS OF THE GAS MEMBRANE
- NUMBER 3 DATE, TIME and WEATHER CONDITIONS
- NUMBER 4 PLANS and DETAILS ISSUED
- NUMBER 5 INSTALLATION PHOTO's RELATING TO GRID LINES
- NUMBER 6 REPORTING DEFECTS AND LOGGING IN REMEDIATION LOG
- NUMBER 7 AREAS OF LIMITATION (areas unable to inspect)
- NUMBER 8 LOGGING AND REPORTING RESULTS OF TESTING

VERIFICATION REPORT ISSUE

HARD COPY:	☐ YES	☒	☐ NO	☐	EMAIL:	☐ YES	☒	☐ NO	☐
DROP BOX LINK:	☐ YES	☒	☐ NO	☐	FLASH DRIVE:	☐ YES	☐	☐ NO	☒



GeoShield Verification Plan



GEOSHIELD COMPETENCE

>GeoShield was founded in 2015

>GeoShield solely verifies, they are fully independent of installers, manufacturers and geotechnical companies.

>GeoShield follow guidance in CIRIA 735 (sufficient experience, membership of relevant professional organisations) GeoShield are members of the BVC, BGA, ERA The RADON Council, and UKRA

>Currently GeoShield hold the Chairmanship of the British Verification Council

>Two employees are NSAC Level 3 assessors for the NVQ 2 Gas Membrane install

>GeoShield were key in forming the NVQ 4 Verification qualification in which 2 Verification officers are undertaking this qualification

>GeoShield have the only qualified assessor for the NVQ 4 Verification qualification

>GeoShield Verification officers currently keep up to date CPD's

>All GeoShield Verification Officers have a full understanding of gas membrane install including 3 experienced (NVQ 2) installers in the GeoShield team

>GeoShield Verification Officers are all independent carrying there own air

compressors. Other testing equipment GeoShield have access to are 2 x Buckley

Dielectric Testing machines and also inert gas testing equipment



GeoShield Verification Plan



METHOD STATEMENT - Page 1

EXPECTED VISITS:- Six site visits are expected in line with the proposed build

programme, additional visits may be considered (if required) to achieve sign off.

TESTING:- Mechanical Point Stress (Pick & Probe) testing on taped areas.

Air lance testing will be carried out (as per CIRIA C735 Annex 1, Table A3).

Only if the application falls below the accepted standard will other testing be used.

This project will NOT achieve sign off for gas membrane installation unless independent verification is carried out.

PURPOSE:- Geoshield are 3rd party gas membrane verifiers in accordance with

CIRIA 735 and for this project to be compliant with BS8485:2019, the gas system

must meet certain criteria from Tables 5, 6 & 7 to achieve mitigation of score for

verification. The chosen membrane must be verified by Geoshield to ensure the

materials have been installed in accordance with the manufacturer's specification.

REPORTING:- Each site visit be accompanied with a written and electronic report.

Any remediations either completed on the visit or outstanding will be recorded

and logged, sign off will not be achieved for each section area until all

remediations have been completed. This will be fully recorded at all times.



GeoShield Verification Plan



METHOD STATEMENT - Page 2

GROUND GAS RISK:- From the Phase 2 Ground Investigation, the project has been classified as a Types A & B buildings and a CS2 rating in accordance with BS8485:2015+A1 2019, so this project will require a minimum score of 3.5 points for mitigation.

This will be achieved by 3rd party verification of the gas membrane and suspended raft slab, where applicable to the site specific design.

A combination of which will achieve the necessary requirements.

GAS MEMBRANE PROTECTION:- It is advised that the substrate should be prepared by removal of loose stone and debris. Other forms of protection could be in the form of either a protection board, geotextile fleece and insulation. In addition labels will be issued by Geoshield to restrict access to the installed area by follow on trades and help raise awareness to encourage a better duty of care. This will help to reduce the risk of potential damage caused to the gas membrane system.

FINAL:- Geoshield will liaise with the projects site supervision and all relevant parties prior to the installation start. This plan will be presented and reviewed, all points made clear as previously stated. Any alterations will be listed at the end of this plan as an all party agreed way forward.



GeoShield Verification Plan



VERIFICATION PLAN

METHOD STATEMENT

VERIFICATION STRATEGY:

Percentage Strategy: 1st 10 Plots (100%), 11-50 Plots (1:5) & 51 or > (1:10) ☐

Percentage Strategy: 100% Verification for VOC/Hydrocarbons ☒

Verification Percentage on site: 100% Not Specified ☐

Remarks: Due to the use of JUTA GP5 Gas Membrane on site being used to protect against VOC's, 100% verification is to be carried out throughout this project.

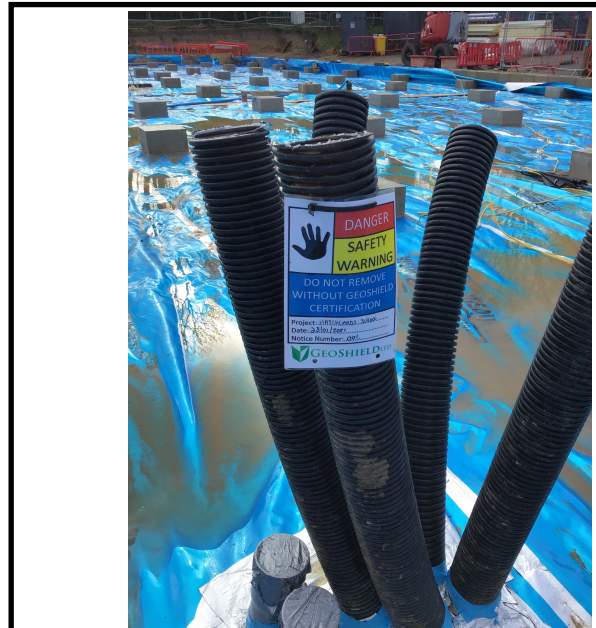
It is recommended that the installers are present at the time of testing so any remediations can be rectified. If remediations are not rectified the nature of the fault found will determine whether or not extra visits are required to test remediations.

Protection Type:- Protection Board ☐ Protection Fleece ☐

Insulation ☐ Remarks:

TESTING PROCEDURE

Method Statement - Pipe Penetrations and Service Entries Notice Signs



Geoshield Notice Signs -

During testing on site, notice signs will be tied to all pipe penetrations and a service entries which have not passed inspection.

Areas cannot be passed unless verification stickers have been applied to the Notice Signs, once remediations have been successfully carried out.



GeoShield Verification Plan



TESTING PROCEDURE

Method Statement - Membrane Sticker Notice Signs



Geoshield Notice Signs -

During testing on site, areas cannot be passed unless verification stickers have been applied, once remediations have been successfully carried out.



GeoShield Verification Plan



SUBSTRATE METHOD STATEMENT

SUBSTRATE TYPE:

Block and Beam Construction	Yes	☐	No	☒
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Minimum Preparation	Swept Clear	Yes	☐	No	☒
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Minimum Preparation	Vacuuming	Yes	☐	No	☒
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Minimum Preparation	Compressed air to remove	Yes	☐	No	☒
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Minimum Preparation	Remove Mortar Droppings	Yes	☐	No	☒
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Stone Substrate	Yes	☐	No	☒
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Minimum Preparation	Minimum 25mm Sand Blinding	Yes	☐	No	☒
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Minimum Preparation	Limestone Dust	Yes	☐	No	☒
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Minimum Preparation	Compacted Substrate	Yes	☐	No	☒
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Minimum Preparation	No large stones	Yes	☐	No	☒
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Concrete Substrate	Yes	☒	No	☐
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Minimum Preparation	No Hollows	Yes	☒	No	☐
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Minimum Preparation	Troweled Surface	Yes	☒	No	☐
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Remarks:	
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GeoShield Verification Plan



PRE-CONTRACT MEETING

Items for discussion at the Pre-Contract meeting	☐
>Induction Procedure	☐
>Identification of installation team and point of contact	☐
>Identification of Project management team	☐
>Identification of Sub-Contractors associated with membrane installation	☐
>Validation of Membrane and design specification	☐
>Verification procedure	☐
>Notifications for Verification	☐
>Preparation of substrate	☐
>Program of works	☐
>Utility entry	☐
>Protection of Membrane	☐
>Remediation Procedure	☐
>Testing Procedures	☐
>Sign off Procedure	☐
>Installer PI	☐

All information is assumed correct at time of issue.

DATE:	
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GeoShield Verification Plan



PRE-CONTRACT MEETING SUMMARY

As discussed in this Pre Verification Plan, the installation and verification of the JUTA products. All details and drawings in this verification plan have been discussed so now the installers must run through how they will install the JUTA products. The indented method and manufacturers specification have been discussed in relation to the details provided for the project. Methods for preparation before installation have been laid out so the workers are made aware of the standards required to gain consent from the local authorities in order to satisfy and discharge planning consent. In addition to this aftercare of the JUTA products such as the gas barrier and GP SAM during, after installation, and after verification.

Finally GeoShield have discussed the site visits that are required and what testing and verification will be carried out to the highest standard and verification principles associated with CIRIA 735 and BS8485:2015 +A1 2019.



GeoShield Verification Plan



PRE-CONTRACT MEETING SUMMARY

A pro-forma quality assurance document will be discussed during the Pre-Verification meeting and training undertaken with the management team for non verified areas.

The Pre-Verification meeting will be led by Geoshield and should include all relevant parties who have an impact on the installation and future protection. Geoshield will provide guidance and strategy for all parties.

The site specific checklist will be covered as well as the risk assessment.

This site has been classified as a CS2

Any design alterations will be discussed and included in a revised Pre-Verification Plan.

Any specification changes must also be included in a revised Pre-Verification Plan.

All items will be minuted by the Geoshield representative.

This Pre-Verification plan follows all current guidance and the aim is to make all parties aware of the ramifications of poor installation and their responsibilities if they damage the membrane.

