GEOSHIELD
Verification
PLAN

PROJECT DESCRIPTION

Bradley Clarke Design Limited,
29 Berry Brow,
Clayton Bridge,
Manchester,
M40 1GR

The proposed development for which gas protection measures are required involve the construction of a new residential dwelling which will be located towards the southern end of the site area.

In accordance with BS8485:2015 + A1 2019 for a type A building and the building must be designed to a 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.

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 a concrete suspended slab with steel reinforcement as typical and a clean cover of 150mm of top soil below slab level. Validation of the imported soil and depth as well as waste transfer notes are recommended by the local planning authority.

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 verification site visits of the ground gas membrane will be a required remediation before sign off.

GEOSHIELD Verification PLAN

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GEOSHIELD Verification PLAN

PROJECT REFERENCE: GEO101765

PROJECT: 29 Berry Brow residential dwelling

PROJECT ADDRESS: 29 Berry Bow, Clayton

Manchester,

M40 1GR

SPECIFICATION: Verified in accordance CIRIA 735.

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

Substrate prepared in-accordance with manufactures instructions and BS8485.

JUTA GP1

JUTA GP SAM

JUTS GP TAPE

JUTA GP PRIMER

GEOSHIELD Verification PLAN

SPECIFICATION:

INFORMATION INCLUDED:

Specification:-

Phase 2 Environmental Report by Rogers Geotechnical Limited

Exploratory Hole Location Plan

Proposed Site Plan

Location Plan

19-071-PL-001-P10 - Boundary Fence Detail & Drive Way Splay Plan

19-071-PL-002-REV-P2 - Proposed Elevations

19-071-PL-003-REV-P9 - Proposed Plans

GP1 - Suspended Slab - Perimeter Section - Membrane above the slab

JUTA Material specification technical data sheets

Radon Maps UK - (Map 1) Site Location & (Map 2) Manchester

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.

GEOSHIELD
Verification
PLAN

SURVEYOR: Liam White

VERIFICATION COMPANY: GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER: 07584 222 519

EMAIL ADDRESS: lwhite@geoshield.co.uk

ORDER NUMBER: To be confirmed

PER VISIT: YES: ☐ NO: ☐ PROJECT: YES: ✔ NO: ☐

GEOSHIELD Verification PLAN

SPECIFICATION

9.1.2 Gas Concentrations

With respect to ground gas, the results of the monitoring visits indicated a maximum concentration of 0.1% methane, with concentrations of carbon dioxide ranging between 1.7% and 6.2%, in association with oxygen levels of between 17.0% and 21.1%. It should be appreciated that on non-contaminated sites there is generally about 20% by volume of oxygen, associated with low levels of carbon dioxide. In addition, a maximum flow rate of 0.1 litres per hour was recorded and will be employed in the following calculations.

The principal driving force for initiating the movement of gas in the ground is a change in barometric pressure. The most onerous gas condition on a site is usually observed on days of low or falling barometric pressure, preferably below 1000mb. It has been noted that measurements undertaken solely during high pressure conditions may be of lesser value. At this site the readings undertaken to date were at atmospheric pressures of between 988mb and 1011mb.

In order to establish the gas screening value (GSV) for carbon dioxide or methane, the maximum gas concentration (expressed as a decimal) is multiplied by the borehole flow rate (l/hr). In this case 0.1% (0.001) methane was recorded along with 6.2% (0.062) carbon dioxide, in association with a maximum flow rate of 0.1 l/hr. This results in a GSV of 0.0001 l/hr for methane and a GSV of 0.0062 l/hr for carbon dioxide. However, as levels of carbon dioxide exceeded 5%, the site should be

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Environmental Geotechnical Specialists

upgraded to Characteristic Situation Level 2. Therefore, it is considered that there is a low risk of harm to end users and some protection measures are required.

The sufficiency of gas monitoring data is considered in BS 8576: 2013: *Guidance on investigations for ground gas – Permanent gasses and Volatile Organic Compounds (VOC's). In this standard Table F3, Assessing sufficiency of data* has been employed to justify the curtailment of monitoring. In this context it should be noted that the gas screening value threshold for Characteristic Situation level 2 is <0.7 l/hr. Assuming the flow rate remains constant at 0.1l/hr the gas concentration of carbon dioxide would need to exceed 700% to move into the next risk band, which is not reasonable. Moreover, by keeping the concentration constant, the flow rate would need to increase to 11.9l/hr to move into the next band, which is in excess of a 100 fold increase. We consider that these increases are not feasible given the flow rates encountered. In view of the above it is considered that the site is fully characterised.

In light of the above, it is considered that the site can be fully classified as Characteristic Situation Level 2.

9.2 Site Specific Risk Assessment

9.2.1 Approach

Phase 2 Environmental Report by Rogers Geotechnical Limited

GEOSHIELD Verification PLAN

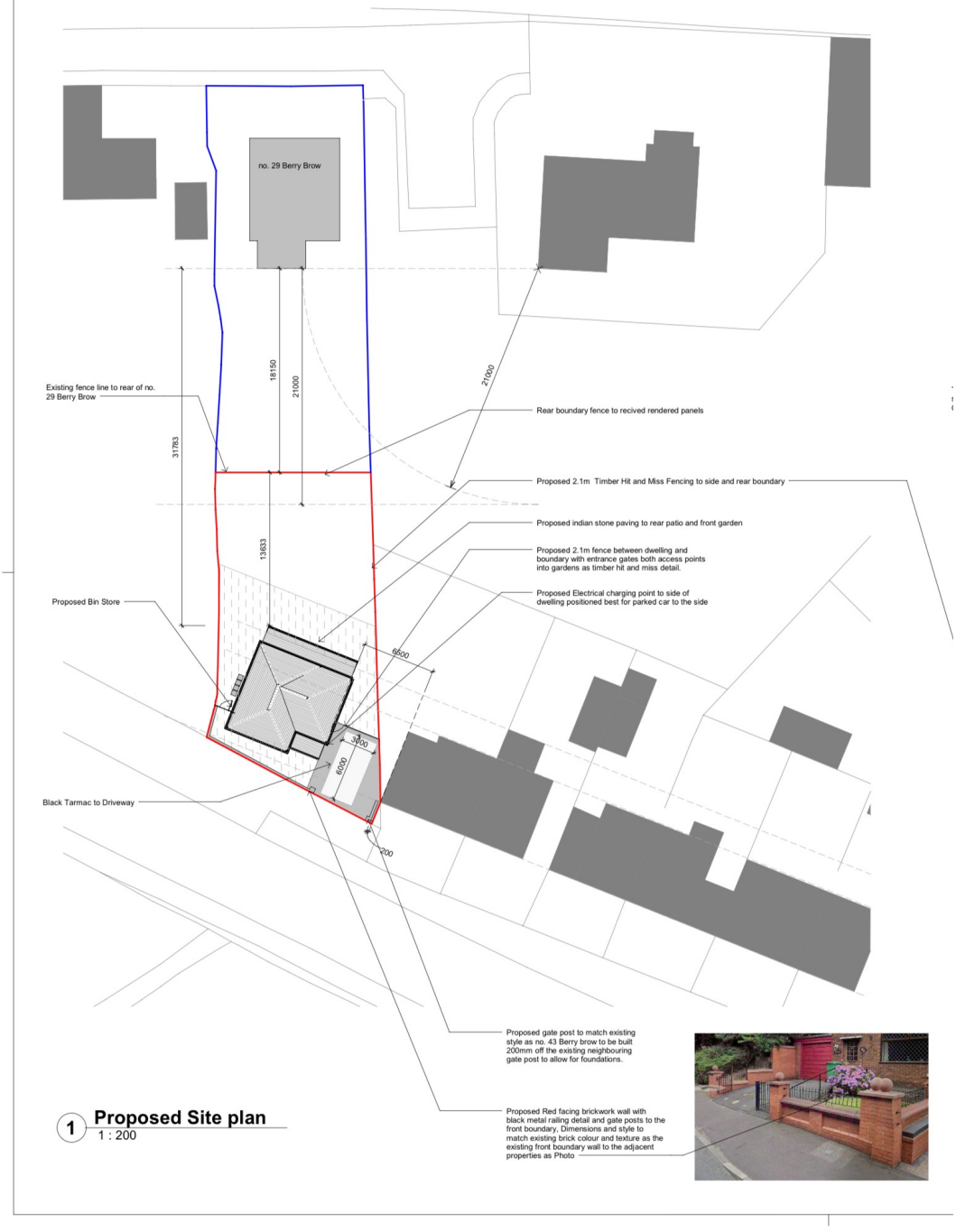
SPECIFICATION



Exploratory Hole Location Plan

GEOSHIELD Verification PLAN

SPECIFICATION



Proposed Site Plan

GEOSHIELD Verification PLAN

SPECIFICATION

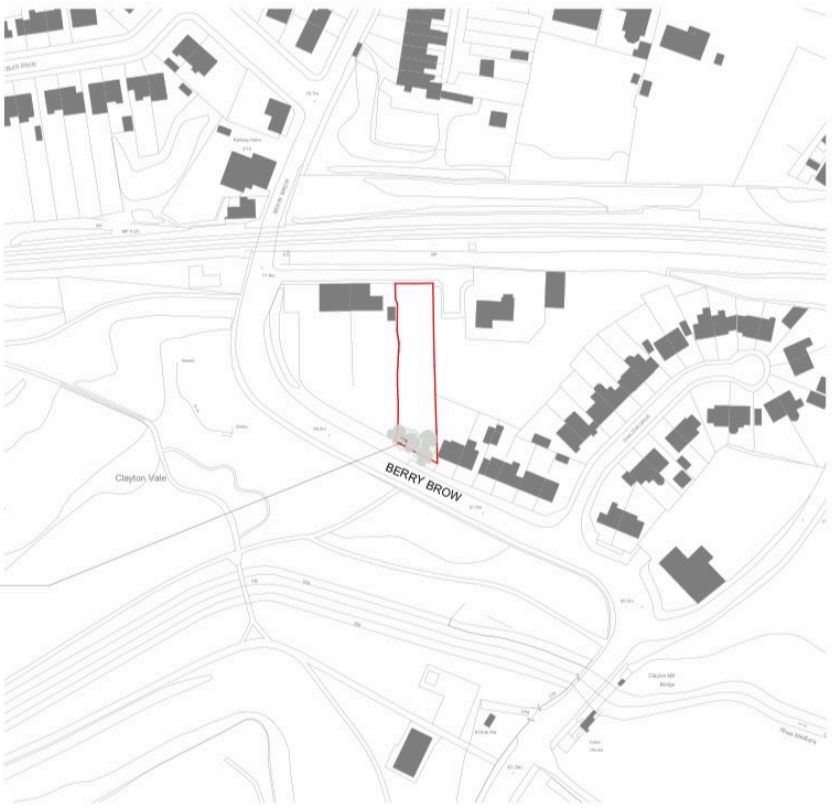
NOTE
S
ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE

ANY DISCREPANCIES ARE TO BE REPORTED TO THE PROJECT MANAGER BEFORE ANY WORK COMMENCES

THIS DRAWING SHALL NOT BE SCALED TO ASCERTAIN ANY DIMENSIONS WORK TO FIGURED DIMS ONLY

THIS DRAWING SHALL NOT BE REPRODUCED WITHOUT EXPRESS WRITTEN PERMISSION FROM Clarkes Bespoke Design LTD.

North



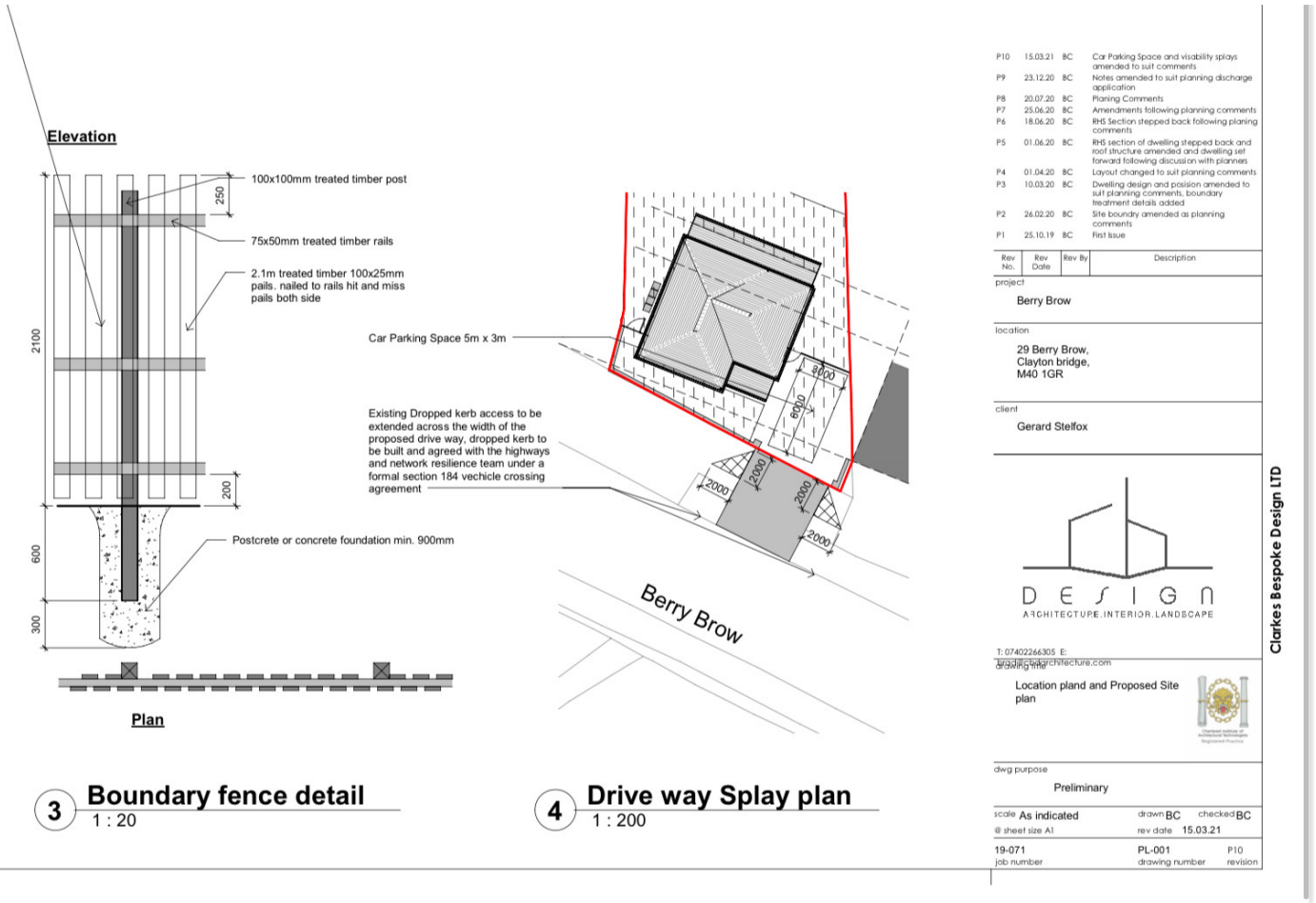
Trees to be removed

2 Location plan
1 : 1250

Location Plan

GEOSHIELD Verification PLAN

SPECIFICATION



19-071-PL-001-P10 - Boundary Fence Detail & Drive Way Splay Plan

GEOSHIELD Verification PLAN

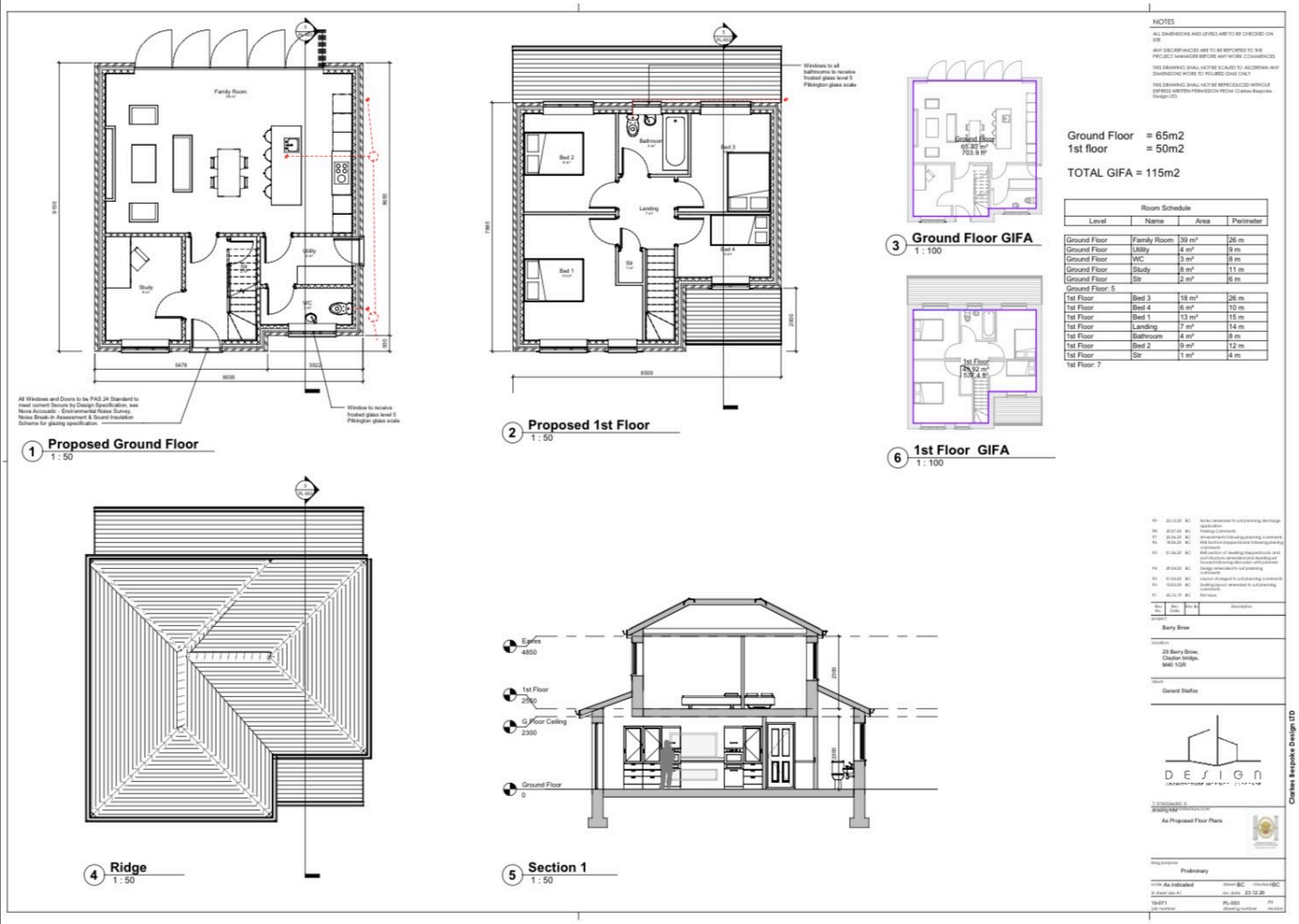
SPECIFICATION



19-071-PL-002-REV-P2 - Proposed Elevations

GEOSHIELD Verification Plan

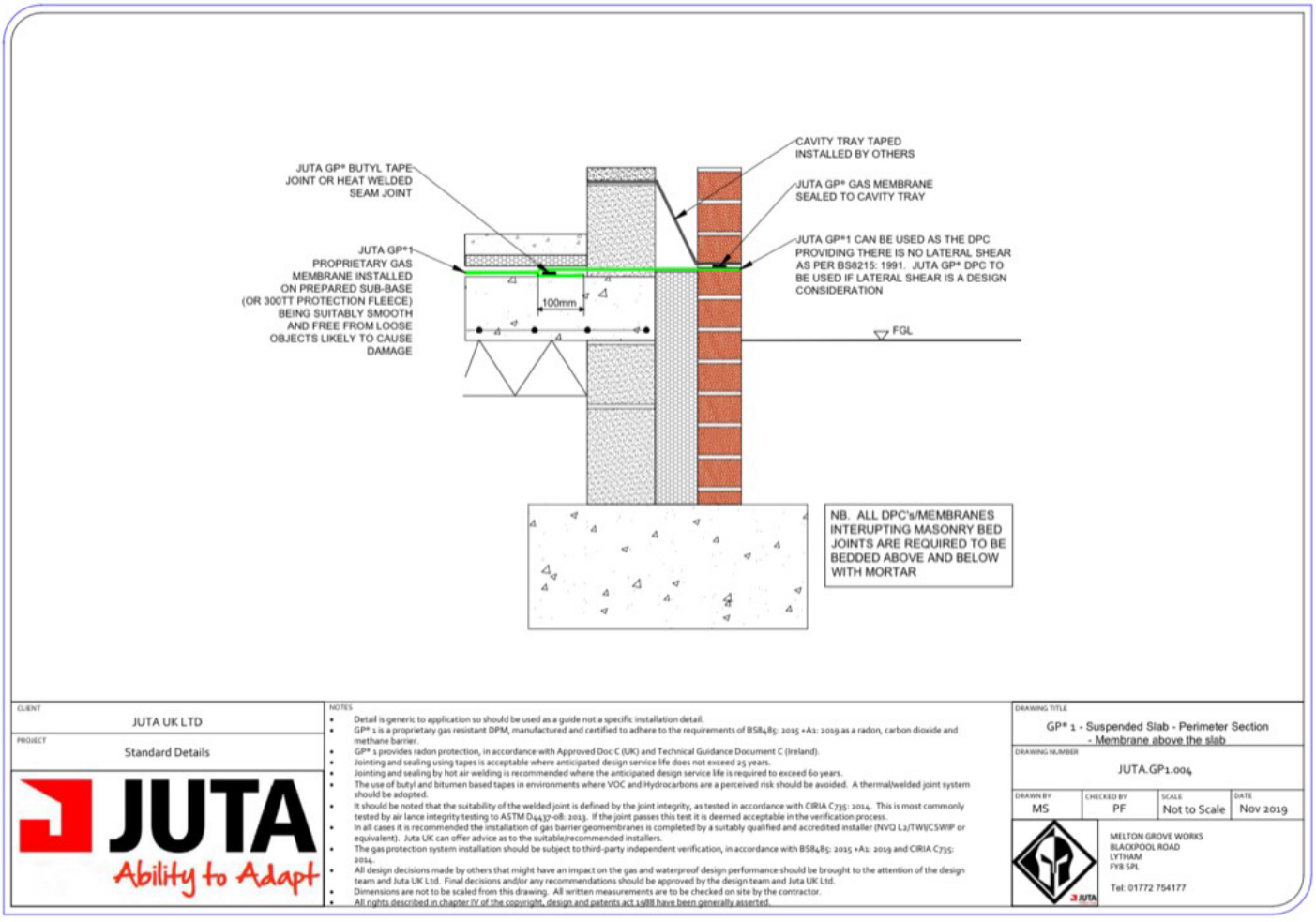
SPECIFICATION



19-071-PL-003-REV-P9 - Proposed Plans

GEOSHIELD Verification Plan

SPECIFICATION



GP1 - Suspended Slab - Perimeter Section - Membrane above the slab

GEOSHIELD Verification Plan

SPECIFICATION

GP® 1

Rev: June 2019

Ground Gas Protection

Juta GP® 1 – Gas Barrier is a multi-layer, low density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil. GP® 1 is specifically designed and manufactured to perform as a Methane, Carbon Dioxide, Radon, Ground Gas, VOC/Hydrocarbon vapors, air e moisture protection system.

JUTA GP® 1			
Characteristics	Test Method	Unit	JUTA GP® 1
Physical Properties			
Thickness	EN 1849-2	mm	0.6
Thickness - Between Scrim	BS EN ISO 9863-1:2016	Mm	0.4
Width	EN 1849-2	m	Various
Length	EN 1849-2	m	Various
Weight	EN 1849-2	G/M2	370
Hydraulic Properties			
Thickness	EN 20811	-	>300
Resistance to Water Penetration	EN 13967, EN 1928	-	Pass
Water Tightness	EN 1296, EN 1367, EN 1928	-	Pass
Hydraulic Properties			
Resistance to Static Load	EN 12730-B	Kg	20
Tensile Strength (MD)	EN 12311-1	N/50mm	600
Tensile Strength (CMD)	EN 12311-1	N/50mm	480
Tensile Elongation (MD)	EN 12310-1	%	20
Tensile Elongation (CMD)	EN 12310-1	%	20
Puncture Resistance	EN 12236	kN	1.25
Resistance to Tearing (Nail Shank) MD	EN 12310-1	N	330
Resistance to Tearing (Nail Shank) CMD	EN 12310-1	N	400
Durability and Chemical Resistance			
Transmission Rate of Volatile Liquids - Diesel	ISO 6179:2010 (B)	g/m2/h	0.246
Transmission Rate of Volatile Liquids - Xylene	ISO 6179:2010 (B)	g/m2/h	0.571
Transmission Rate of Volatile Liquids - Toluene	ISO 6179:2010 (B)	g/m2/h	0.583
Transmission Rate of Volatile Liquids - Petrol	ISO 6179:2010 (B)	g/m2/h	0.135
Gas Permeability			
Methane Permeability	BS EN ISO 15105-1	ml/m2/day/atm	<0.09
Carbon Dioxide Permeability	BS EN ISO 15105-1	ml/m2/day/atm	<0.09
Radon Permeability	K124/02/95	m2/s	8.0 x 10-15
Compliance and Certification			
CE Mark - EN13967:2012			
NHBC Standards Compliant			
BS 8485:2015 + A1 2019 Accordant			
BBA Certified - Certificate No. 12/4912			

Contact us to find out more information.
infoejuta.co.uk | 01772 754177 | JUTA.CO.UK
Melton Grove Works, Church Road, Lytham, FY8 5PL

JUTA

BBA CE riba product selector

JUTA GP1 Technical Data Sheet 1-2

GEOSHIELD Verification Plan

SPECIFICATION



Ground Gas Protection

Additional Information

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

STORAGE
Rolls of JUTA GP® 1 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.

INSTALLATION
JUTA GP® 1 should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015.

JOINTING AND SEALING
It is recommended JUTA GP® 1 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. JUTA GP® 1 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

- JUTA GP® 1 Starter Band
- JUTA GP® Tape
- JUTA GP® Self Adhesive Membrane
- JUTA GP® Primer
- JUTA GP® Top Hats and Preformed Corners
- JUTA GP® Protection Fleece
- JUTA GP® Void Vent (25/40mm)

PLEASE CONTACT JUTA UK DIRECTLY FOR MORE INFORMATION ON JUTA GP® 1

Contact us to find out more information.
info@juta.co.uk | 01772 754177 | JUTA.CO.UK
Melton Grove Works, Church Road, Lytham, FY8 5PL

JUTA

BBA CE riba product selector

JUTA GP1 Technical Data Sheet 2-2

GEOSHIELD Verification Plan

SPECIFICATION

GP® SAM

Rev: June 2019

Ground Gas Protection

JUTA 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 an aluminium foil with an upper surface finish of white cross laminated HDPE, and a lower surface finish of siliconized paper release film. JUTA GP® SAM is used for the gas/waterproofing of underground structures where harmful ground gasses are anticipated.

JUTA GP® SAM			
Characteristic	**Test Method**	**Unit**	**GP® SAM**
Physical Properties			
Thickness	EN 1849-2	mm	1.00
Width	EN 1849-2	M	0.3 or 1
Length	EN 1849-2	M	20
Weight	EN 1849-2	g/m²	1100
Hydraulic Properties			
Watertightness	EN 1928	-	PASS
Water Vapour Transmission	EN 1931	g/m²/day	0.013
Mechanical Properties			
Tensile Strength (MD/CMD)	EN12311-2	N/mm²	3
Elongation (MD/CMD)	EN 12311-2	%	>120
Resistance to Static Load	EN 12370	kg	20kg
Joint Strength	EN 12317-2	N	>30
Durability and Water tightness (ageing and chemicals)	EN 1847	-	PASS
Resistance to Nail Tear (MD/CMD)	EN 12310-1	N	>100
Reaction to Fire	EN 13501	Euro Class	F
Gas Permeability			
Methane Permeability	BS EN ISO 15105 - 1	ml/m²/day/atm	< 0.53
Carbon Dioxide Permeability	BS EN ISO 15105 - 1	ml/m²/day/atm	< 0.53
Radon Permeability	K124/02/95	m²/s	5.0×10^{-14}

JUTA GP® SAM complies with the latest codes of practice as published by BRE, CIRIA and BSI (BS 8485:2015).

Contact us to find out more information.
info@juta.co.uk | 01772 754177 | JUTA.CO.UK
Melton Grove Works, Church Road, Lytham, FY8 5PL

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JUTA GP SAM Technical Data Sheet 1-2

GEOSHIELD Verification Plan

SPECIFICATION



Ground Gas Protection

Additional Information

HANDLING

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

STORAGE

Rolls of JUTA GP® SAM should be stored horizontally, and pallets should not be stacked on top of one another.

JUTA GP® SAM should be stored 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.

INSTALLATION

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

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

ACCESSORY PRODUCTS

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

PLEASE CONTACT JUTA UK DIRECTLY FOR MORE INFORMATION ON JUTA GP® SAM

Contact us to find out more information.
info@juta.co.uk | 01772 754177 | JUTA.CO.UK
Melton Grove Works, Church Road, Lytham, FY8 5PL

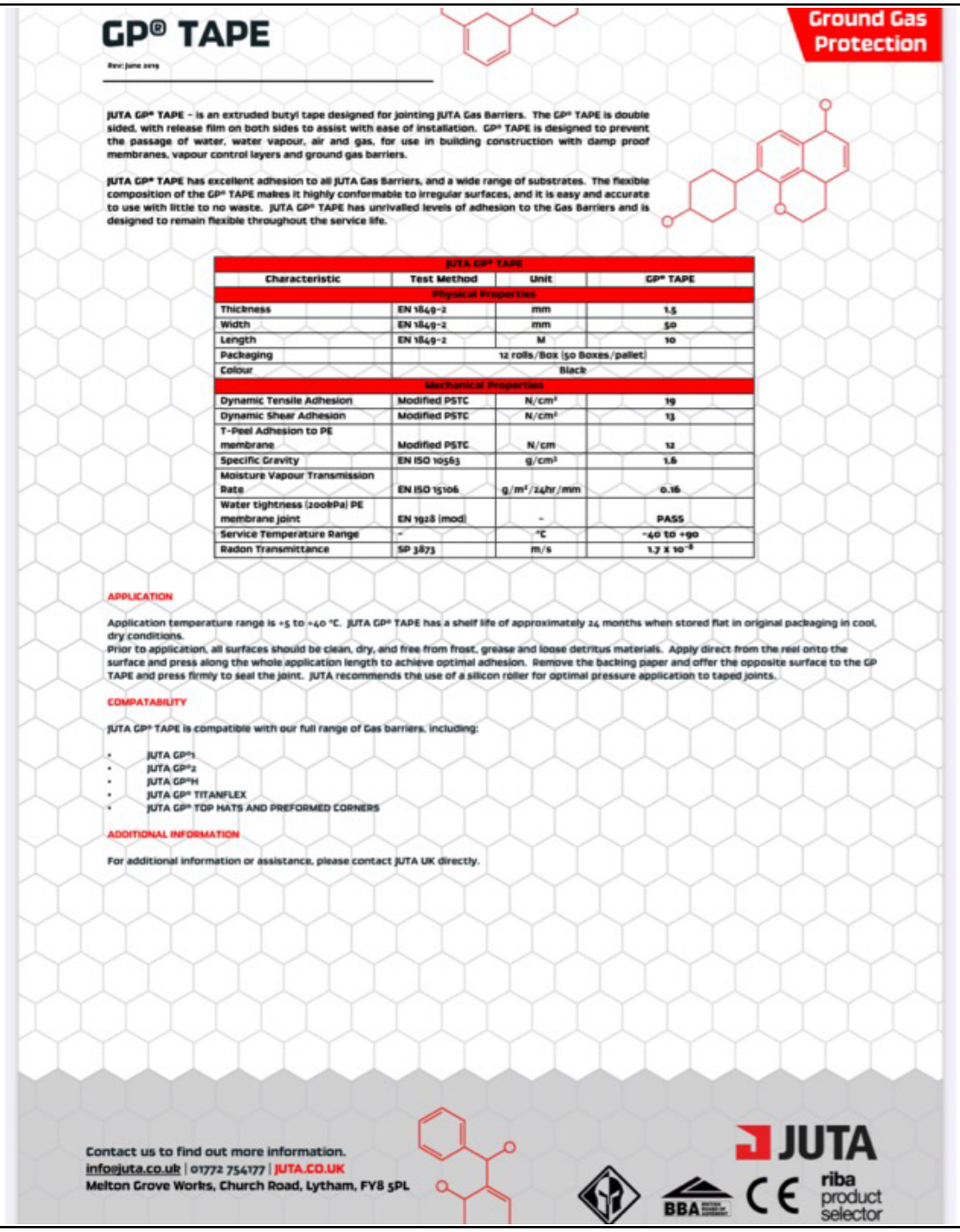
JUTA

BBA CE riba product selector

JUTA GP SAM Technical Data Sheet 2-2

GEOSHIELD Verification Plan

SPECIFICATION



GP® TAPE

Rev: June 2019

Ground Gas Protection

JUTA GP® TAPE - is an extruded butyl tape designed for jointing JUTA Gas Barriers. The GP® TAPE is double sided, with release film on both sides to assist with ease of installation. GP® TAPE is designed to prevent the passage of water, water vapour, air and gas, for use in building construction with damp proof membranes, vapour control layers and ground gas barriers.

JUTA GP® TAPE has excellent adhesion to all JUTA Gas Barriers, and a wide range of substrates. The flexible composition of the GP® TAPE makes it highly conformable to irregular surfaces, and it is easy and accurate to use with little to no waste. JUTA GP® TAPE has unrivalled levels of adhesion to the Gas Barriers and is designed to remain flexible throughout the service life.

JUTA GP® TAPE			
Characteristic	Test Method	Unit	GP® TAPE
Physical Properties			
Thickness	EN 1849-2	mm	1.5
Width	EN 1849-2	mm	50
Length	EN 1849-2	M	10
Packaging	12 rolls/Box (50 Boxes/pallet)		
Colour	Black		
Mechanical Properties			
Dynamic Tensile Adhesion	Modified PSTC	N/cm²	19
Dynamic Shear Adhesion	Modified PSTC	N/cm²	13
T-Peel Adhesion to PE membrane	Modified PSTC	N/cm	12
Specific Gravity	EN ISO 10563	g/cm³	1.6
Moisture Vapour Transmission Rate	EN ISO 15106	g/m²/24hr/mm	0.16
Water tightness (200kPa) PE membrane joint	EN 1928 (mod)	-	PASS
Service Temperature Range	-	°C	-40 to +90
Radon Transmittance	SP 3873	m/s	1.7×10^{-8}

APPLICATION

Application temperature range is +5 to +40 °C. JUTA GP® TAPE has a shelf life of approximately 24 months when stored flat in original packaging in cool, dry conditions.
Prior to application, all surfaces should be clean, dry, and free from frost, grease and loose detritus materials. Apply direct from the reel onto the surface and press along the whole application length to achieve optimal adhesion. Remove the backing paper and offer the opposite surface to the GP TAPE and press firmly to seal the joint. JUTA recommends the use of a silicon roller for optimal pressure application to taped joints.

COMPATABILITY

JUTA GP® TAPE is compatible with our full range of Gas barriers, including:

- JUTA GP®1
- JUTA GP®2
- JUTA GP®H
- JUTA GP® TITANFLEX
- JUTA GP® TOP HATS AND PREFORMED CORNERS

ADDITIONAL INFORMATION

For additional information or assistance, please contact JUTA UK directly.

Contact us to find out more information.
info@juta.co.uk | 01772 754177 | JUTA.CO.UK
Melton Grove Works, Church Road, Lytham, FY8 5PL

JUTA

BBA CE riba product selector

JUTA GP Tape Technical Data Sheet

GEOSHIELD Verification Plan

SPECIFICATION

GP® PRIMER

Ground Gas Protection

JUTA GP® (quick drying) PRIMER is a cold applied bituminous solution designed to penetrate and seal porous surfaces prior to the application of covering materials. Conforms to BS Code of Practice 144, Part 3.

Uses

GP® Primer seals porous substrates and encourages the adhesion of bituminous waterproofing systems and sheet coverings. It may be applied successfully to a wide range of surfaces:

- CONCRETE
- ASBESTOS CEMENT
- SLATE
- METALS (mild steel, Zinc, Lead)
- LIGHTWEIGHT CONCRETE SCREEDS

GP® PRIMER is available in 5 Litre and 25 litre containers.

GP® PRIMER	
Colour	Black
Coverage	
Metal Surfaces	6 - 11 m² per litre
Concrete	3 - 4 m² per litre
Bituminous	5 - 8 m² per litre
Drying time	Allow to dry completely before subsequent installation begins. Drying time is dependent on ambient air temperature, atmospheric conditions and porosity of the substrate. Average drying time at 20°C is between 2 - 6 hours.

APPLICATION

Apply by brush or spray

Surfaces should be clean, ie. Free from all oil, grease, dirt, dust and loose debris. On metal surfaces all loose rust should be removed using a wire bristled brush and where advanced signs of corrosion are evident these areas should initially be treated with a rust inhibitor. Surfaces should preferably be dry although GP® PRIMER will adhere to damp but not wet surfaces. GP® PRIMER should be applied evenly across the surface in one generous coating.

STORAGE

Storage life indefinite in tightly sealed, undamaged containers.

HEALTH AND SAFETY

Refer to Material Safety Data Sheet (MSDS) for a full list of hazards.

ADDITIONAL INFORMATION

For additional information or assistance, please contact JUTA UK directly.

Contact us to find out more information.
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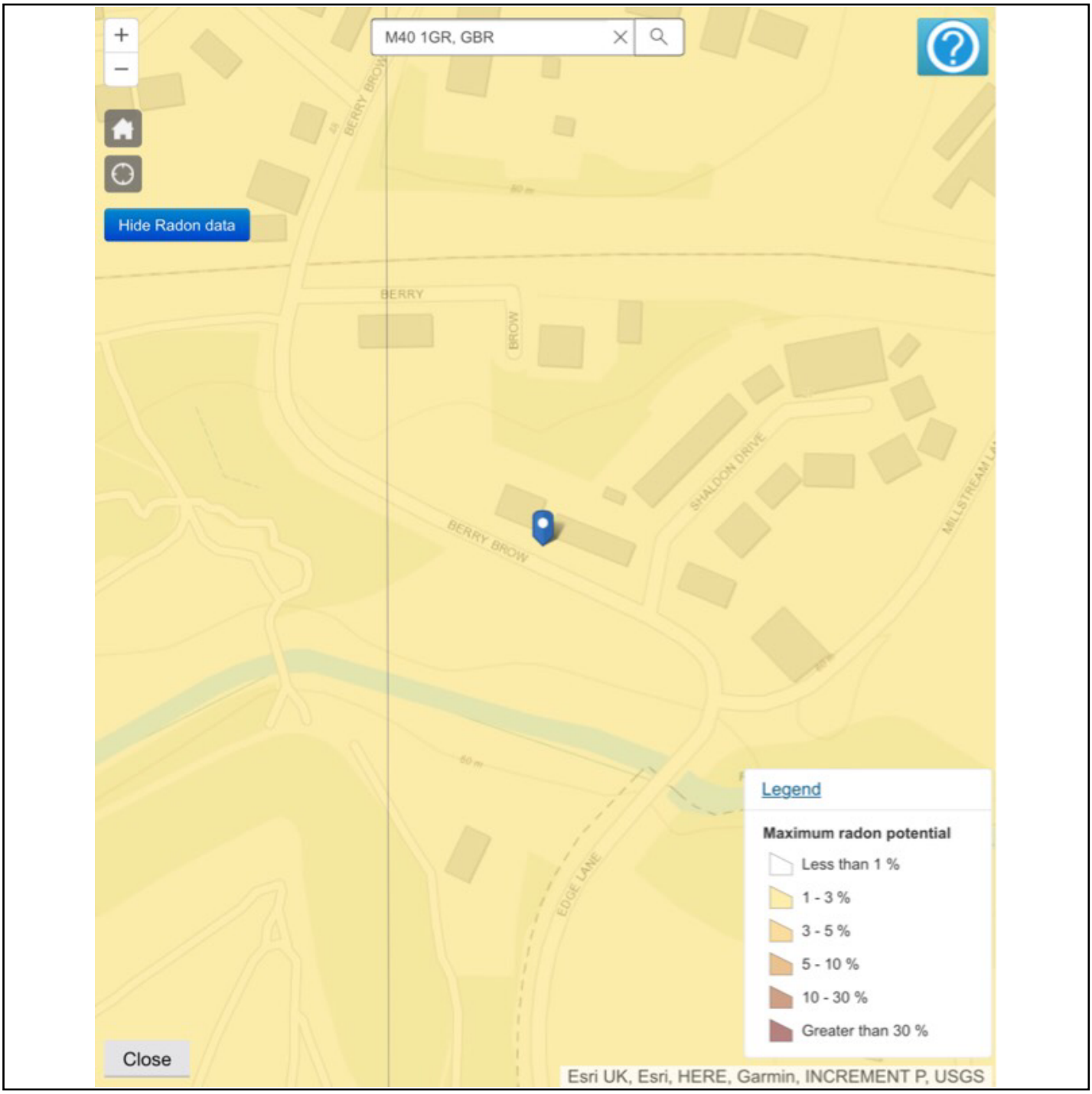
JUTA

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JUTA GP Primer Technical Data Sheet

GEOSHIELD Verification Plan

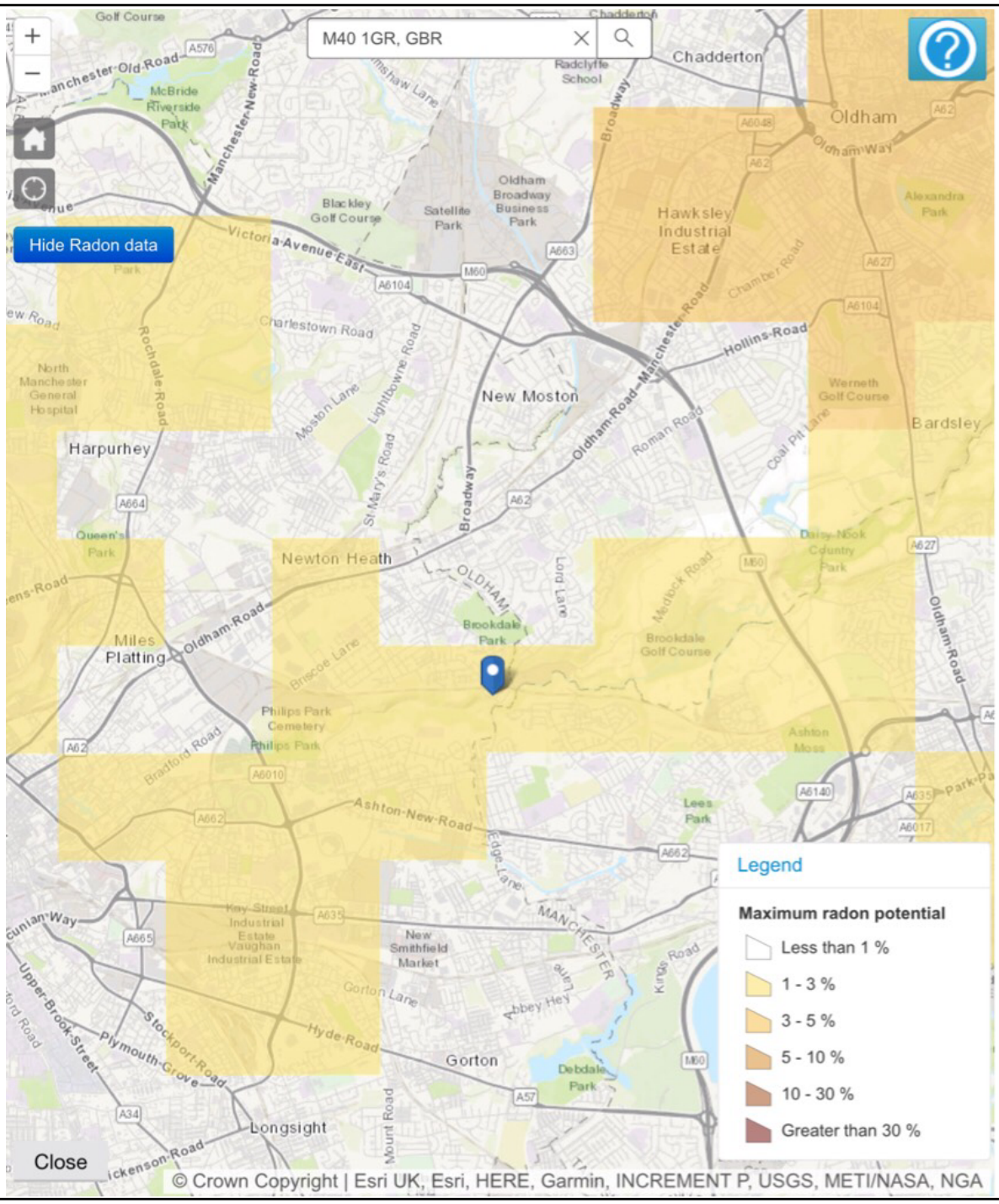
SPECIFICATION



Radon Maps UK - (Map 1) Site Location

GEOSHIELD Verification Plan

SPECIFICATION



Radon Maps UK - (Map 2) Manchester

GEOSHIELD Verification Plan

CLIENT DETAILS

CLIENT CONTACT:	Bradley Clarke
CONTACTS ROLE:	Project Manager
MOBILE PHONE:	07402 266 305
EMAIL ADDRESS:	brad@cbdarchitecture.com

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

GEOSHIELD Verification Plan

APPLICATION TEAM LEADERS

APPLICATOR NAME:	Gerard Stelfox
COMPANY:	GS Construction Builders Limited
APPLICATOR TEL:	
APPLICATOR EMAIL:	gsconstructionbuilders@gmail.com

APPLICATOR NAME:	
COMPANY:	
APPLICATOR TEL:	
APPLICATOR EMAIL:	

NOTES: The installers are unknown at this point so the installers will either be

NOTES: identified at the pre-verification meeting or the first site visit.

NOTES:

NOTES:

GEOSHIELD Verification Plan

HEALTH AND SAFETY

INDUCTION:	YES		NO:	✔
INDUCTION TIME:				

CSCS CARD:	YES	✔	NO:	
CSCS CARD NUMBER:	13466546			

METHOD STATEMENT:	YES	✔	NO:	
RISK ASSESSMENT:	YES	✔	NO:	
COSHH:	YES	✔	NO:	

SITE SPECIFIC HAZARDS: Materials falling from height

Slips, trips and falls

Excavations

Confined spaces

Plant

GEOSHIELD Verification Plan

NOTIFICATION:

24 HOURS:	YES	✔	NO		
48 HOURS:	YES		NO	✔	

REASON FOR VISIT:

DURING INSTALLATION:	✔	UNDERSLAB VENTILATION	
PRE - POUR:		DPC MEMBRANE CONNECTION	
TESTING:	✔	OTHER	

TRAINING LEVEL:

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

NOTES: It will be deemed that these applicators will be at an appropriate skill level

NOTES: for the job of installing the membrane.

NOTES: toolbox talk training will be provided by Geoshield for the management

NOTES: team and installers, should it be required.

GAS REGIME:

CS1/Green	YES		NO	
CS2/Amber	YES	✔	NO	
CS3/Amber 2	YES		NO	
CS3/ or above/Red	YES		NO	
VOC	YES		NO	
RADON BASIC	YES		NO	
RADON FULL	YES		NO	

Building Type: TYPE A

POINTS REQUIRED UNDER BS8485 2015: 3.5 POINTS

POINTS GAINED FROM BS8485 2015

Score for Structural Barrier:	1.5 POINTS
Grade 2 basement:	N/A
Grade 3 basement:	N/A
Score for Venting:	0 POINTS
Car park:	N/A
Score for Membrane:	2.0 POINTS

POINTS ACHIEVED UNDER BS8485 2015: 3.5 POINTS

GEOSHIELD Verification Plan

TESTING:

VISUAL: PICK and PROBE	YES	✔	NO	
NON-DESTRUCTIVE SMOKE TEST:	YES		NO	✔
NON-DESTRUCTIVE COMPRESSED AIR LANCE:	YES		NO	✔
DESTRUCTIVE JOINT TESTING:	YES		NO	✔
NON-DESTRUCTIVE TRACER GAS:	YES		NO	✔
DIELECTRIC POROSITY TEST:	YES		NO	✔
PUMP TEST FOR "Twinny" WELD	YES		NO	✔

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

NOTES: and pick and probe testing regime for this project

NOTES:

NOTES:

NOTES:

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

NOTES: be used.

GEOSHIELD Verification Plan

RISK ASSESSMENT

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

TYPE OF RISK	RANGE	RISK
High Risk	23 - 30	
Medium High Risk	19 - 22	20
Medium Risk	15 - 18	
Medium Low Risk	11 - 14	
Low Risk	0 - 10	

GeoShield have classed this project as a medium high risk.

GeoShield will lay all perimeters 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, manufactures 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

VERIFICATION PLAN

METHOD STATEMENT

EXPECTED VISITS:- 1 site visits are deemed necessary for verification, however extra visits may be considered for potential remediations before sign off.

TESTING:- Visual pick and probe testing on taped areas.

Air lance testing will be conducted where access allows for use of equipment.

PURPOSE:- Geoshield are 3rd party gas membrane verifiers and in order of this project to be compliant with BS8485:2019 and in accordance with CIRIA 735.

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

GEOSHIELD QUALIFICATION:- All verifiers are experienced and qualified, all either hold NVQ 4 or NVQ 2 level certification or are CSSW qualified. In addition all staff regularly maintain a CPD matrix and record.

REPORTING:- Each site visit be accompanied with a written and electronic report. Any remediations either completed on the visit or outstanding for a later date will be recorded and logged, sign off will not be achieved for each section area until all remediations has been completed. This will be fully recorded at all times.

GEOSHIELD Verification Plan

VERIFICATION PLAN

METHOD STATEMENT

GROUND GAS RISK:- From detail design drawings this project has been classified as a Type A building and a CS2 rating in accordance with BS8485:2019. This will require to mitigate a minimum score of 3.5 points. This will be achieved by 3rd party verification, slab or ground type and ventilation provision. A combination of which will achieve the necessary requirements.

GAS MEMBRANE PROTECTION:- It is essential that upon satisfactory install of gas membrane and after verification work is completed. The area will be protected either with a protection board or matting. In addition warning labels will be issued by Geoshield to advise on the need to restrict access to the installed area by follow on trades. This will help to reduce potential damage caused. This is essential before the final slab or screed is poured over the membrane.

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

SUBSTRATE METHOD STATEMENT

Substrate Type:

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

GEOSHIELD Verification Plan

PROTECTION METHOD STATEMENT

Protection Type:

Protection Board	Yes		No	✔
Protection Fleece	Yes		No	✔
Insulation	Yes	✔	No	

Where Protection Board is installed in the gas remediation strategy the verifier must be allowed access to inspect the membrane

Remarks:

WHERE NO PROTECTION BOARD SPECIFIED

GeoShield's methodology will initially take the strategy of verifying the first pre-pour. If the gas installation has been compromised when the steel reinforcement is installed the second pour will be pre-poured inspected

This will continue until the risk has been reduced

Remarks:

Concrete Spacers	Yes		No	✔
Plastic 'Tric-Trac'	Yes		No	✔

GEOSHIELD Verification Plan

VERIFICATION PLAN

HOUSING METHOD STATEMENT

Block and Beam Construction	Yes		No		Solid Floor	Yes	✔	No	

Structure	Score		Structure	Score	1.5
Venting	Score		Venting	Score	0
Membrane	Score		Membrane	Score	2.0

GAS TYPE:

Carbon Dioxide	Yes	✔	No		Methane	Yes		No	✔
VOC	Yes		No	✔	RADON	Yes		No	✔

VERIFICATION STRATEGY

Percentage strategy	(1st 10 Plots100%, 11 to 50 Plots 1:5, 51 to > 1:10)	Yes	✔	No	
Percentage strategy	100% Verification for VOC's	Yes		No	✔

CONTRACTOR/INSTALLER EVIDENCE

Arranged Evidence for Unverified Plots

GeoShield Audited CQA	Yes		No	✔
GeoShield supported documentation	Yes		No	✔
No Evidence Strategy	Yes		No	✔

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:	

GEOSHIELD Verification Plan

GEOSHIELD SUMMARY RISK ASSESSMENT

BS8485 Building Type	1	2	3	4	5
Profile of Project (school, warehouse)	1	2	3	4	5
Past history of contractor	1	2	3	4	5
Past history of the installer	1	2	3	4	5
Installers hold NVQ 2	1	2	3	4	5
Specific gas design	1	2	3	4	5
Design conforms to BS8485	1	2	3	4	5
Materials conform to BS8485	1	2	3	4	5
Verification follows CIRIA 735	1	2	3	4	5
BS8485 Gas Classification	1	2	3	4	5
VOC	1	2	3	4	5
Complexity of Design	1	2	3	4	5
Repitition of Design	1	2	3	4	5
Installation environment	1	2	3	4	5
Substrate design	1	2	3	4	5
Membrane protection	1	2	3	4	5

Low risk		Low - Medium	
Medium		Medium - High	
High			

GEOSHIELD Verification Plan

PRE-CONTRACT MEETING SUMMARY

A pro-for a 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 rating.

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.