

Plot Completion Report – Gas Protection Measures



Site Name:	Chain Road, Blackley
Developer:	Great Places Housing Group
Plot Numbers:	1-12
Inspection Date:	12 th and 13 th of September and 13 th and 31 st October 2022.

Construction phase remedial requirements specified in the Phase 2 Geo-Environmental Investigation, Risk Assessment and Remedial Strategy by LKC (ref: LKC 21 1026-02 R4, dated 14th September 2022) and comprised:

- » Installation of gas protection measures throughout the site to include ventilated sub-floor void and a carbon dioxide resistant gas membrane, installed in accordance with the manufacturers specifications and independently verified.

Corden EPS Total Gas Barrier was used in Plots 1-4. Juta GP1 Gas Membrane was used in Plots 5-12. The technical datasheets for both membranes are appended.



Evidence of gas membrane installed across Plots 1-4.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 1.



Evidence of top hats and sealing at service entry points in Plot 1.



Evidence of installation of air bricks in Plot 1.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 2.



Evidence of top hats and sealing at service entry points in Plot 2.



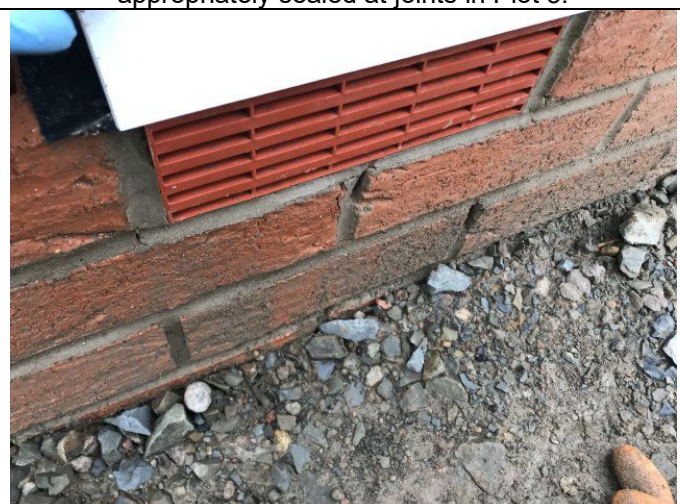
Evidence of installation of air bricks in Plot 2.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 3.



Evidence of top hats and sealing at service entry points in Plot 3.



Evidence of installation of air bricks in Plot 3.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 4.



Evidence of top hats and sealing at service entry points in Plot 4.



Evidence of installation of air bricks in Plot 4.



Evidence of gas membrane installed across Plot 5.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 5.



Evidence of top hats and sealing at service entry points in Plot 5.



Evidence of gas membrane installed across Plot 6.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 6.



Evidence of top hats and sealing at service entry points in Plot 6.



Evidence of gas membrane installed across Plot 7.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 7.



Evidence of top hats and sealing at service entry points in Plot 7.



Evidence of gas membrane installed across Plot 8.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 8.



Evidence of top hats and sealing at service entry points in Plot 8.



Evidence of gas membrane installed across Plots 9 and 10.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 9.



Evidence of top hats and sealing at service entry points in Plot 9.



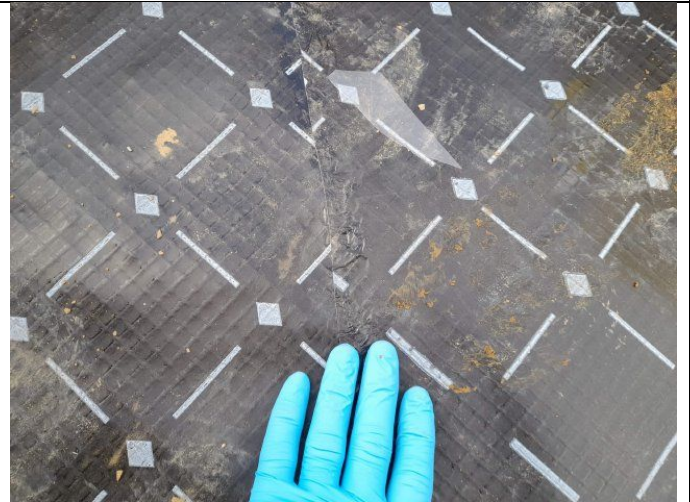
Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 10.



Evidence of top hats and sealing at service entry points in Plot 10.



Evidence of gas membrane installed across Plots 11 and 12.



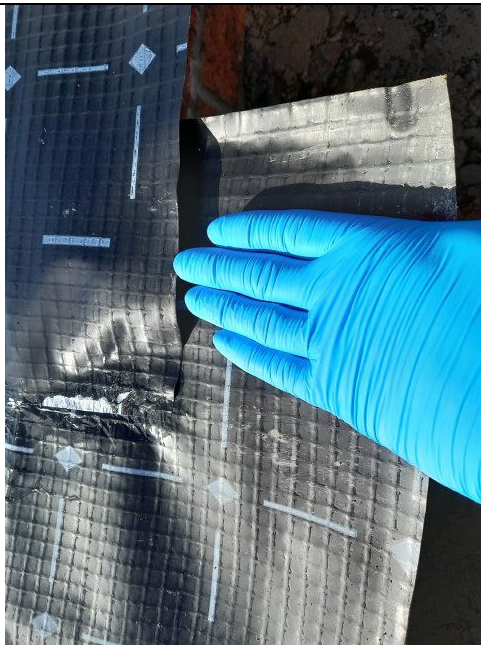
Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 11.



Evidence of top hats and sealing at service entry points in Plot 11.



Evidence of installation of air bricks in Plot 11.



Example of overlapping and sealing of gas membrane appropriately sealed at joints in Plot 12.



Evidence of top hats and sealing at service entry points in Plot 12.

LKC has completed the inspection of the gas membranes installed in Plots 1-12 and concludes a suitable membrane was installed in each plot in accordance with the remedial requirements. LKC can confirm that following an inspection of the membrane, it was observed that all joints and service penetrations were sealed with appropriate tape and top hats (if required) and that there were no visible rips or tears.

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**Report
Reviewed
By:**

Colin Crompton

Disclaimer

This report has been prepared by LKC who have exercised such professional skill, care and diligence as may reasonably be expected of a properly qualified and competent consultant experienced in preparing reports of a similar scope. However, to the extent that the report is based on or relies upon information contained in records, reports or other materials provided to LKC which have not been independently produced or verified, LKC gives no warranty, representation or assurance as to the accuracy or completeness of such information.

This report is issued on the condition that LKC will not be held liable for the condition of the gas protection measures following the date of inspection or for any works done to the plot following the date of inspection. Opinions on such conditions, where given, are for general guidance only. It should be noted that the scope of this report is to validate the installed gas protection measures only.

This report is prepared solely for the benefit of Great Places Housing Group. It may not be relied upon by, or submitted to a third party for their reliance for the purposes of valuation, mortgage, insurance and regulatory approval, until all invoices have been settled in full. Those using this information in subsequent assessments or evaluations do so at their own risk.

CORDEN EPS TOTAL GAS BARRIER

Corden EPS Total Gas Barrier is a multi-layer, low-density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil.

Corden EPS Total Gas Barrier is specifically designed and manufactured to perform as a methane, carbon dioxide, radon ground gas, volatile organic compound and air & moisture protection system.

Corden EPS Total Gas Barrier complies with the latest codes of practice as published by BRE, CIRIA and BSI (BS 8485:2015+A1:2019)

Suitable for use as gas protection for NHBC GREEN, AMBER 1, and AMBER 2 site characterisations.

Corden EPS Total Gas Barrier			
Characteristic	Test Method	Unit	Corden EPS TGB
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			
Water Column	EN 20811	-	>300
Resistance to water penetration	EN 13967, EN 1928	-	PASS
Water tightness	EN 1296, EN 1367, EN 1928	-	PASS
Mechanical 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 12311	-1 %	20
Tensile Elongation (CMD)	EN 12311	-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			

INSTALLATION

Corden EPS Total Gas Barrier should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015+A1:2019.

JOINTING AND SEALING

It is recommended Corden EPS Total Gas Barrier 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+A1:2019.

Corden EPS Total Gas Barrier 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.

Corden EPS pre-formed details, or Self Adhesive Gas Membrane are available for sealing around protuberances.

ACCESSORY PRODUCTS

A wide range of accessories are available for use with the Corden EPS Total Gas Barrier, including:

- EPS GAS TAPE
- EPS GRM SELF ADHESIVE MEMBRANE
- EPS PRIME
- EPS TOP HATS AND PREFORMED CORNERS CLOAKS
- EPS PROTECTION FLEECE
- EPS GEO-VENT VOID FORMER (25/40mm)

HANDLING

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

STORAGE

Rolls of Corden EPS Total Gas Barrier 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.

ADDITIONAL INFORMATION

For additional information or assistance, please contact Corden EPS directly.





GP[®]1



GP[®]1 proprietary gas resistant damp proof membrane (DPM) 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, air & moisture protection system.

Thickness	0.6 mm
Width	Various m
Length	Various m
Weight	370 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 and hence appropriate care and equipment is required for unloading and handling.

Storage

Rolls of 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

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





Feature	Characteristics	Test Method	GP [®] 1
Physical Properties	Thickness	EN 1849-2	0.6 mm
	Thickness - between Scrim	BS EN ISO 9863-1:2016	0.4 mm
	Width	EN 1849-2	Various m
	Length	EN 1849-2	Various m
	Weight	EN 1849-2	370 g/m ²
Hydraulic Press	Water Column	EN 20811	> 300
	Resistance to Water Penetration	EN 13967, EN 1928	Pass
	Water Tightness	EN 11296, EN 1367, EN 1928	Pass
Mechanical Properties	Resistance to Static Load	EN 12730-B	20 kg
	Tensile Strength (MD)	EN 12311-1	600 N/50mm
	Tensile Strength (CMD)	EN 12311-1	480 N/50mm
	Tensile Elongation (MD)	EN 12310-1	20%
	Tensile Elongation (CMD)	EN 12310-1	20%
	Puncture Resistance	EN 12236	1.25 kN
	Resistance to Tearing (Nail Shank) MD	EN 12310-1	330 N
	Resistance to Tearing (Nail Shank) CMD	EN 12310-1	400 N
Durability and Chemical Resistance	Transmission Rate of Volatile Liquids - Diesel	ISO 6179:2010 (B)	0.246 g/m ² /h
	Transmission Rate of Volatile Liquids - Xylene	ISO 6179:2010 (B)	0.571 g/m ² /h
	Transmission Rate of Volatile Liquids - Toluene	ISO 6179:2010 (B)	0.583 g/m ² /h
	Transmission Rate of Volatile Liquids - Petrol	ISO 6179:2010 (B)	0.135 g/m ² /h
Gas Permeability	Methane Permeability	BS EN ISO 15105-1	< 0.09 ml/m ² /day/atm
	Carbon Dioxide Permeability	BS EN ISO 15105-1	< 0.09 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)		
	NHBC Standards Compliant		
	Conforms to BS 8485:2015 + A1 2019		
	BBA Certified - Certificate No. 20/5728		

JUTA UK

Please contact JUTA UK Directly for more information on GP[®]1

Jointing and Sealing

It is recommended 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.

Accessory Products

- GP[®]1 Starter Band
- GP[®] Tape
- GP[®] Self Adhesive Membrane
- GP[®] Primer
- GP[®] Top Hats and Preformed Corners
- GP[®] Protection Fleece
- GP[®] Void Vent (24/40mm)