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FAO Robert Healy
Elivia Homes Southern
Issued by email to robert.healy@eliviahomes.co.uk
MEC Ref. MEC_LR/25June24/SO31 5HZ
25 June 2024

Re: Grange Road, Netley, Southampton - Planning Application DC/24/97396

Robert

Further to our discussions, MEC has reviewed the comments provided by Rachael Morris, Senior Planning Officer (Planning & Environment – Planning / Development Manager) at Eastleigh Borough Council (EBC), dated 19 June 2024.

In response to the above, please see below and appended:

EBC Comment 19 June 2024	MEC Response 25 June 2024
Qualifications – UK Membranes	MEC checked the installation Contractors CSCS cards on site, which provide a record of their NVQ Level 2 qualification in Gas Protection Installation. As the CSCS cards include photographs of the individuals and personal details, MEC do not retain copies – but we can confirm they were physically checked on site.
Qualifications– MB Membranes	
Specification Data Sheets Not Provided	Technical Data Sheets are appended for both JUTA GP1 and JUTA GP1 Self Adhesive Gas Membrane (SAGM).
Gas Protection Points – Outstanding 1.5 Score	The site has been assessed as CS2 / AMBER 1 per the Remediation Strategy and Verification Plan (Geo-Environmental, Ref. GE17635-RSVP-OCT19v1.1). This is on the basis of peak methane 0.1%v/v, peak carbon dioxide 6.9%v/v and peak flow 0.2l/hr. BS8485:2015+A1:2019 indicates that for a Type A building (i.e. private housing) on a CS2 site, a Gas Protection Score of 3.5 Points should be achieved. On this site, the installation of a robust gas membrane (JUTA GP1), by a specialist installation Contractor with independent specialist verification achieves a Gas Protection Score of 2 Points per Table 7 of BS8485:2015+A1:2019. A further 2.5 Points is achieved via the provision of a sub-slab venting system which comprises (below the block and beam floor slab) an open void (circa 200mm deep¹) with venting provision which achieves a vent area of 1500mm²/m run¹ on two opposing building elevations, including cross-venting to sleeper walls via missed blockwork¹.

¹ Construction confirmed with Elivia Homes – see example photos appended.



	The above provision is in accordance with the minimum requirements of Approved Document C – Site Preparation and Resistance to Contaminants and Moisture (The Building Regulations 2010, England) and is a 'deemed to comply' scenario per NHBC Guidance Document NF94 – Hazardous Ground Gas, An Essential Guide for Housebuilders (NHBC, 2023). To confirm the above, a venting calculation has been completed for carbon dioxide (which is the main risk driver at the site) based on site specific input parameters which reflect the as built site construction – see below. The venting calculation demonstrates that the minimum venting provision required per Approved Document C (1500mm²/m run) significantly exceeds the amount of venting required to maintain equilibrium concentrations of carbon dioxide within the void below the accepted threshold of 1.25% (CLAIRE Technical Bulletin 16 – Complete Continuous Monitoring in Underfloor Voids (CLAIRE, 2017), 1mm²/m run. Further to the above, the venting calculation demonstrates that it would take a no wind event in excess of 1,400 hours (58 days) for carbon dioxide concentrations within the void to 'build up' and exceed the accepted threshold of 1.25%. As the maximum no wind period in the UK is 10hrs, this confirms that the void achieves 'very good' performance, which equates to a Gas Protection Score of 2.5 Points per Table 6 of BS8485:2015+A1:2019. In summary, the gas mitigation provided via the gas membrane and sub-slab venting achieves a total Gas Protection Score of 4.5 Points, which exceeds the 3.5 Point requirement of BS8485:2015+A1:2019 for a CS2 site and Type A building construction.
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It is recommended that a copy of this correspondence is submitted to EBC for review and comment / approval.

Should there be any further queries, please do not hesitate to contact the undersigned.

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Head of Ground Gas Risk Assessment & Design

MEC Environmental Limited

BEng, FGS, CGeol

RSoBRA (Human Health), ASoBRA (Permanent Gases & Vapour Intrusion)



Address	Grange Rd, Netley, Southampton	Building width	10 m
Client	Elivia Homes Southern	Building length	15 m
Building Type	Housing	Building height	7 m
Reference	MEC_2024_D0010	Number of storeys	2
Calculation by	SM	Depth of void	200 mm
Checked by	MC	Height of vents	0.15 m
Gas risk characteristics			
Site characterisation	CS2	Total surface emission rate of gas into void	0.000207 m³/h
Characterisation by	Geo-Environmental Limited - Reemdiation Strategy & Verification Plan (GE17635/RSVP/OCT19v1.1)	Design concentration in the void/outlets	1.25 %
Type of gas assessed	Carbon Dioxide	Required fresh air flow rate through void	5.00E-06 m/s
Volume of gas	6.9 %	Orientation of building	Not known
Borehole flow rate	0.2 l/h	Category of terrain	Country with scattered wind breaks
Surface emission rate of gas	0.00138 l/hr/m²	Site exposure category	Sheltered inland
Method of calculation SER	Pecksen Method	Estimated time wind speed to be exceeded	80.00%
Calculation of ventilation sizing			
Hourly mean wind speed; U_{10}	4.5 m/s	Plan area of building	30 m²
Reference Wind speed; U_r	0.74 m/s	Time to take for void to fill to 1% of gas	1449 hrs**
Discharge coefficient for narrow openings; C_d	0.61	**This is greater than the maximum period of still wind of 10 hours - Acceptable ✓	
Building pressure coefficient; ΔC_p	0.4		
Area of ventilation required for building; A_w	18 mm²		
This will provide ventilation p/m run of wall	1 mm²*		
*This is less than the minimum venting area required per Building Regulations, Approved Document C - Acceptable ✓		Calculations are based on CIEH Ground Gas Handbook: 2009, BS5925: 1991 and BS8485: 2015 + A1: 2019	



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Photo Example 1.

Void Below Plot and Cross Ventilation to Sleeper Walls (Missed Block Work with Lintel Above)





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Photo Example 2.

Void Below Plot and Cross Ventilation to Sleeper Walls (Missed Block Work with Lintel Above)





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
	Hydrogen Sulphide Permeability	BS EN ISO 15105-1	< 0.1 ml/m ² /day/atm
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)



GP[®]1 SAM

GP[®]1 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[®]1 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[®]1 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 [®] 1 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[®]1 SAM

Installation

GP[®]1 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[®]1 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