



GRM Development Solutions Ltd
Laurus House
First Avenue
Centrum 100
Burton upon Trent
Staffordshire
DE14 2WH

Tel: 01283 551 249
Web: www.grm-uk.com

Our Ref: P9573-VAL.1
Date: 16th February 2024

BY EMAIL ONLY
Owl Homes Ltd.
For Attention of Clare Mellor

Dear Clare,

Re: Station Road, Market Bosworth – Gas Membrane Validation of Plots 1, 2, 69 and 70, and the Installers Certification of Plots 1 to 12, and 65 to 73 Report.

Further to your instructions, GRM Development Solutions Ltd (GRM) attended site to validate the installation of the gas protection measures fitted at the above site, and to confirm that the gas protection measures comply with GRM's Gas Protection Measures Design and Verification Plan dated August 2022 (Ref: GRM/P9573/GPMDVP.1).

The site has been divided into two areas; the southern area was classified as Characteristic Situation 1 (CS1) for which no gas protection measures are required (Plots 13 to 64), and the northern area classified as Characteristic Situation 2 (CS2) as outlined in BS8485:2015+A1:2019, for which gas protection measures are required (Plots 1 to 12 and 65 to 73). It was considered that CS2 would be sufficient to mitigate against any remnant risk of ground gas from the low-risk sources that have been identified. The low-risk sources included limited thicknesses of made ground, associated with the former brickworks, demolished buildings, clay pit and pond identified during the Phase I and Phase II works.

The agreed scope of the plot specific protection measures comprises a pre-cast (beam and block) concrete floor, ventilated sub-floor void and a Juta GP-1 gas barrier membrane extended across the cavities and sealed at all joints and fully sealed service penetrations. The membrane specification sheets are enclosed in Appendix A.

The installation of the gas membrane was undertaken by qualified installers: MB Membranes Ltd. (Plots 1-11 and 65-73), the installers (James Doyle and Christopher South) and for Plot 12, Omega Lining Solutions Ltd, the installer (Ian Greene), have undertaken their NVQ Level 2 Diploma in gas membrane installation (certificates presented in Appendix B).

GRM (Ian McCulloch) attended site on 19th August 2022 and 29th November 2022 to inspect the installation of the membrane of Plot 1, 2, 69 and 70. Ian has attended a training course provided by CL:AIRE. A copy of the relevant training certificate can be found in Appendix C.



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GRM Development Solutions Limited, Laurus House, First Avenue, Centrum 100, Burton upon Trent, Staffs DE14 2WH
www.grm-uk.com | info@grm-uk.com | 01283 551249 Company No. 3099018 (England), VAT Reg. No. 658 1005 48

GRM are checking 1:20 of the installed membranes in line with the Gas Protection Measures Design and Verification Plan, and MB Membranes Ltd and Omega Lining Solutions Ltd have supplied the completion certificates and photos for the remaining plots (Plots 3-12, 65-68, and 71-73).

The Owl Homes Ltd. Site Layout Plan, the Extent of Gas Protection Measures, and the Housing Type Foundation Details Plans, are enclosed for reference in Appendices D, E and F, respectively.

Air vents were observed to be present around the perimeter of the building to Owl Homes Design, and the sub floor venting as seen in Plot 4 (observed during a site visit), also conform to Owl Homes Design.

GRM can confirm that the membranes of Plots 1, 2, 69 and 70 were installed to a satisfactory standard at the time of the validation, as required by the GPMDVP, and have therefore passed the gas protection measures validation inspection.

The gas protection measures inspection record, photographs and completion certificates are enclosed in Appendices G, H, and I, respectively.

We can confirm that MB Membranes Ltd and Omega Lining Solutions Ltd, have provided the installation completion certificates, and certificate of conformity, certificate of handover respectively and installation photographs for the remaining Plots (Plots 3 to 12, 65 to 68 and 71 to 73), which are presented in Appendix J.

We trust this is suitable for your current requirements; however, should you require any further information or would like any clarification of the points raised please do not hesitate to contact us.

Yours sincerely,
for GRM Development Solutions Ltd



Gill Pittam BSc(Hons) FGS
Senior Engineering Geologist



George Salloway BSc (Hons) MSc MEnvSc
Senior Geo-environmental Scientist

Enclosed:

- Appendix A – JUTA GP1 Gas Barrier Data Sheets
- Appendix B – MB Membranes Ltd. & Omega Lining Solutions Ltd. Inspector's Qualification Certificates
- Appendix C – GRM's Inspector's Qualification Certificate
- Appendix D – Owl Homes Ltd.'s Site Layout Plan
- Appendix E – GRM's Extent of Gas Protection Measures
- Appendix F – Owl Homes Ltd.'s Housing Type Foundation Details Plans
- Appendix G – Gas Protection Measures Inspection Record
- Appendix H – Membrane Validation Photographs
- Appendix I – GRM's Completion Certificates
- Appendix J – Installer's Installation Completion Certificates, Certificate of Conformity and Certificate of Handover and Installation Photographs



A P P E N D I X A

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Juta (UK) Ltd

Melton Grove Works
Church Road
Lytham FY8 5PL



Tel: 01772 754177

e-mail: info@juta.co.uk

website: www.juta.co.uk

Agrément Certificate

20/5728

Product Sheet 1

JUTA GAS-RESISTANT AND DAMP PROOFING MEMBRANES

GP1 GAS BARRIER

This Agrément Certificate Product Sheet⁽¹⁾ relates to GP1 Gas Barrier, for use as a low-density polyethylene (LDPE) gas barrier and damp-proof membrane in concrete ground floors, above and below the slab not subject to hydrostatic pressure, to protect the building against moisture, radon, methane and carbon dioxide from the ground.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Resistance to water and water vapour — the membrane provides an effective barrier to the passage of liquid water and water vapour from the ground (see section 6).

Resistance to underground gases — the membrane is capable of restricting the ingress of radon, methane and carbon dioxide into the building (see section 7).

Resistance to puncture — the membrane has a high resistance to puncture and on a smooth or blinded surface will not be damaged by foot or site traffic (see section 8).

Durability — under normal service conditions, the membrane will remain effective against the ingress of water and water vapour, and will restrict the ingress of radon, methane and carbon dioxide during the lifetime of the flooring construction in which it is installed (see section 12).



The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 11 March 2020

Hardy Giesler
Chief Executive Officer

The BBA is a UKAS accredited certification body – Number 113.

The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers **MUST** check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

British Board of Agrément

Bucknalls Lane
Watford
Herts WD25 9BA

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tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

Regulations

In the opinion of the BBA, GP1 Gas Barrier, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	C1(2)	Site preparation and resistance to contaminants
Comment:		When properly installed in a correctly designed structure, the membrane forms an effective barrier to radon, methane and carbon dioxide, enabling compliance with this Requirement. See section 7.1 of this Certificate.
Requirement:	C2(a)	Resistance to moisture
Comment:		When properly installed in a correctly designed structure, the membrane forms an effective barrier to the movement of water within the ground floor slab, enabling compliance with this Requirement. See sections 6.1 and 6.2 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The membrane is an acceptable material. See section 12.1 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The membrane can contribute to a construction satisfying this Regulation. See section 12.1 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.1	Site preparation – harmful and dangerous substances
Standard:	3.2	Site preparation – protection from radon gas
Comment:		The membrane will enable a floor to satisfy the requirements of these Standards, with reference to clauses 3.1.2 ⁽¹⁾⁽²⁾ , 3.1.6 ⁽¹⁾⁽²⁾ , 3.1.7 ⁽¹⁾⁽²⁾ , 3.1.8 ⁽¹⁾⁽²⁾ , 3.2.1 ⁽²⁾ and 3.2.2 ⁽¹⁾⁽²⁾ . See section 7.1 of this Certificate.
Standard:	3.4	Moisture from the ground
Comment:		When properly installed in a correctly designed structure, the membrane forms an effective barrier to the movement of water within the ground floor slab, enabling compliance with this Standard, with reference to clauses 3.4.2 ⁽¹⁾⁽²⁾ , 3.4.4 ⁽¹⁾⁽²⁾ and 3.4.6 ⁽¹⁾⁽²⁾ . See sections 6.1 and 6.2 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The membrane can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		Comments in relation to the product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ .

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(a)(i)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)	The membrane is acceptable. See section 12.1 and the <i>Installation</i> part of this Certificate.
Regulation:	26	Site preparation and resistance to contaminants
Comment:		When properly installed in a correctly designed structure, the membrane forms an effective barrier to radon, methane and carbon dioxide enabling compliance with this Regulation. See section 7.1 of this Certificate.
Regulation:	28	Resistance to moisture and weather
Comment:		When properly installed in a correctly designed structure, the membrane forms an effective barrier to the movement of water within the ground floor slab, enabling compliance with this Regulation. See sections 6.1 and 6.2 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 1 *Description* (1.2) of this Certificate.

Additional Information

NHBC Standards 2020

In the opinion of the BBA, GP1 Gas Barrier, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 4.1 *Land quality – managing ground conditions* and 5.1 *Substructure and ground bearing floors*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product, in accordance with harmonised European Standard BS EN 13967 : 2012.

Technical Specification

1 Description

1.1 GP1 Gas Barrier is a multilayer, LDPE membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil.

1.2 The membrane has the following nominal characteristics:

Thickness (mm)	0.6 (including reinforcement scrim)
Effective thickness (mm)	0.4 (measured between the reinforcement scrim)
Roll length (m)	various
Roll width (m)	various
Mass per unit area (g·m ⁻²)	370
Tensile strength (N·50 mm ⁻¹)	
Machine direction	600
Cross direction	480
Elongation (%)	
Machine direction	20
Cross direction	20

Nail tear resistance (N)	
Machine direction	330
Cross direction	400
Watertightness	pass
Colour	
upper surface	various
lower surface	various.

1.3 Ancillary products for use with the membrane include:

- butyl or bitumen tape — for use for joints and laps
- jointing tape — for securing laps and joints.

1.4 Ancillary products for use with the membrane, but outside the scope of this Certificate, include:

- GP Top Hats — to seal around entry points to the membrane
- GP Internal Corner Cloaks — prefabricated corner details
- GP External Corner Cloaks — prefabricated corner details
- GP Primer — used to provide adhesion for application of bitumen enhanced geomembranes
- GP Void Vent 25 — cusped high-density polyethylene (HDPE) drainage core with a non-woven polypropylene geotextile separator/filter bonded to one side
- GP Void Vent 40 — cusped HDPE drainage core with a non-woven polypropylene geotextile separator/filter bonded to one side
- GP Protection Fleece — to form a protective layer to prevent damage to the membrane
- GP-SAM — gas-resistant self-adhesive membrane
- GP DPC — a gas resistant damp-proof course (dpc).

2 Manufacture

2.1 The membrane is manufactured by an extrusion/coating process.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of ČSN EN ISO 9001 : 2016 and ČSN EN ISO 14001 : 2016 by Bureau Veritas (Certificates CZ006792-1 and CZ002815-1 respectively).

3 Delivery and site handling

3.1 Rolls are wrapped in polythene film. Each roll has a leaflet enclosed describing the membrane and installation details. The BBA logo and the number of this Certificate are printed on the leaflet and pallet label.

3.2 The rolls must be stacked on a flat surface, kept under cover and protected from sunlight and mechanical damage.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on GP1 Gas Barrier.

4 Use

4.1 GP1 Gas Barrier is satisfactory for use as a gas-resistant barrier to restrict the ingress of radon, methane and carbon dioxide into buildings from landfill and naturally occurring sources.

4.2 Buildings in areas of risk should be constructed in accordance with the recommendations of BRE Report BR 211 : 2015 and following the guidance set out in BS 8485 : 2015.

4.3 The membrane is also satisfactory for use as a damp-proof membrane in accordance with CP 102 : 1973 Section 3, BS 8000-0 : 2014 and BS 8000-4 : 1989.

5 Practicability of installation

The membrane is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Resistance to water and water vapour



6.1 The membrane, including joints, provides an effective barrier to the passage of liquid moisture from the ground.

6.2 The membrane will comply with the minimum sheet thickness detailed in the documents supporting the national Building Regulations.

6.3 The membrane is impervious to water and provides a waterproof layer capable of accepting minor structural movements without damage.

7 Resistance to underground gases



7.1 The membrane will restrict the ingress of radon, methane and carbon dioxide into buildings from landfill and naturally occurring sources and satisfy the performance criteria for a gas-resistant membrane as defined in BS 8485 : 2015.

7.2 Measured gas permeability/diffusion values on unjointed membrane are given in Table 1.

Table 1 Gas permeability of GP1

Gas	Method	Result
Methane ⁽¹⁾	BS ISO 15105-1	$<0.09 \text{ ml} \cdot \text{m}^2 \cdot \text{day}^{-1} \cdot \text{atm}^{-1}$
Carbon dioxide	BS ISO 15105-1	$<0.09 \text{ ml} \cdot \text{m}^2 \cdot \text{day}^{-1} \cdot \text{atm}^{-1}$
Radon	K124/02/95	$8.0 \times 10^{-15} \text{ m}^2 \cdot \text{s}^{-1}$

(1) BS 8485 : 2015 requires that the methane transmission measured in accordance with BS ISO 15105-1 :2007 for a gas-resistant membrane is $<40 \text{ ml} \cdot \text{m}^{-2} \cdot \text{d}^{-1} \cdot \text{atm}^{-1}$.

7.3 In the opinion of the BBA, the membrane satisfies the criteria for a radon gas resistant membrane of BRE Report BR 211 : 2015.

8 Resistance to puncture

8.1 The membrane can be punctured by sharp objects and care should be taken when handling building materials over the exposed surface.

8.2 Provided there are no sharp objects present on the membrane's surface prior to and during installation of the protective layer, the membrane will not be damaged by normal foot traffic.

9 Compatibility with other materials

The membrane contains an aluminium foil interlayer which may be subject to corrosion by alkaline conditions if damage to the membrane and exposure occurs. However, under normal circumstances, the polyethylene faces of the membrane are compatible with other materials and products typically used in the same areas, with the exception of those containing pitch.

10 Underfloor heating

There will be no adverse effect on the membrane from the underfloor heating under normal service conditions. In other circumstances, the Certificate holder's advice should be sought.

11 Maintenance

As the membrane is confined under concrete and has suitable durability (see section 12), maintenance is not required. However, any damage occurring before enclosure must be repaired (see section 15).

12 Durability



12.1 The membrane will, in normal circumstances, remain effective against the ingress of water and water vapour, and will restrict the ingress of radon, methane and carbon dioxide during the lifetime of the building.

12.2 Long periods of exposure to ultraviolet light will reduce the effectiveness of the membrane.

Installation

13 General

13.1 GP1 Gas Barrier must be installed and fixed in accordance with this Certificate, the Certificate holder's instructions, the relevant clauses of BRE Report BR 211 : 2015 and the guidance given in BS 8485 : 2015.

13.2 The membrane can be installed in all normal site conditions, provided that the air temperature is not below 5°C to prevent the risk of surface condensation.

14 Procedure

14.1 The membrane must only be applied to surfaces that have a smooth finish, ie they should be free from voids, projections and mortar deposits. Surfaces should be dry and free from dust and frost.

14.2 Concrete surfaces should be dense. Vertical surfaces of brickwork and blockwork must be dry and rendered to provide an even surface. Brickwork or blockwork not rendered must be flush pointed to give a smooth surface without sudden changes in level.

14.3 The membrane is rolled out with the printed side uppermost, ensuring that it is properly aligned. All end and side overlaps should be a minimum of 100 mm where taped and prepared in accordance with the Certificate holder's instructions.

14.4 When the membrane is laid below the concrete slab, it should be loose-laid to accommodate any small movements.

14.5 All surfaces must be dried thoroughly prior to joining. Roll edges can be welded or taped. A strip of the tape is unrolled over the membrane with its nearest edge 50 mm from the membrane edge. The protective paper is removed from the butyl tape prior to rolling an adjacent run of the membrane, which must be carefully unrolled over the jointing tape, ensuring a 100 mm overlap.

14.6 All service penetrations and direction changes should be properly detailed in accordance with the Certificate holder's instructions. Service ducts should be vented to prevent the possibility of gas accumulating in confined spaces.

14.7 The continuity of the gas protection must extend over the footprint of the building, and the membrane must be sealed to a gas-resistant dpc where required.

14.8 The membrane should be covered by a screed or other protective layer, such as GP Protection Fleece, as soon as possible after installation. If blockwork protection is used, care must be taken to avoid damage to the membrane during construction.

14.9 The membrane installation should be subject to third-party independent validation, in accordance with BS 8485 : 2015.

15 Repair

Any damage to the membrane must be repaired using a patch of the membrane, and laps welded or sealed with double sided tape and secured with the butyl tape. All patched areas must extend a minimum of 100 mm from the damaged area. If required by the local authority, repair work should be confirmed by an independent validation report, as all gas membrane installations should be subject to third-party validation in accordance with BS 8485 : 2015.

Technical Investigations

16 Tests

16.1 An assessment was made of data to BS EN 13967 : 2012 in relation to:

- tensile strength and elongation
- nail tear resistance
- watertightness
- resistance to static loading.

16.2 Tests were carried out to determine:

- thickness, width, density and mass per unit area
- dimensional stability, low temperature flexibility and water vapour permeability
- tensile strength and elongation (control, heat aged , and UV exposed)
- watertightness (control and heat aged)
- nail tear strength (control and heat aged)
- resistance of joints to air pressure
- tensile strength of joints (control and heat aged)

to assess:

- membrane characteristics
- durability of the membrane and joints.

17 Investigations

17.1 An evaluation was made of the results of the test data regarding permeability of radon, methane and carbon dioxide.

17.2 A site visit was conducted to assess practicability of installation.

17.3 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BRE Report BR 211 : 2015 *Radon : Guidance on protective measures for new buildings*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

BS 8485 : 2015 + A1 : 2019 *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*

BS EN 13967 : 2012 + A1 : 2017 *Flexible sheets for waterproofing — Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet — Definitions and characteristics*

ČSN EN ISO 9001 : 2016 *Quality management systems — Requirements*

ČSN EN ISO 14001 : 2016 *Environmental management systems — Requirements with guidance for use*

BS ISO 15105-1 : 2007 *Plastics. Film and sheeting — Determination of gas-transmission rate — Differential-pressure methods*

CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*

K124/02-95 *Radon diffusion coefficient by Czech Technical University to test number 124-11 — Measurement of radon coefficient*

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

18.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

18.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

18.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.



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 for protection against methane, carbon dioxide, radon, ground gas, air & moisture.

Features and benefits:

- High quality reinforced membrane.
- Low permeability to hydrocarbon and VOC vapours, carbon dioxide, methane and radon.
- Complies with latest codes of practice as published by the BRE and CIRIA, and BS 8485.

Can be used on any site in accordance with BS8485:2015 and NHBC requirements where carbon dioxide, methane or radon is present up to and including CIRIA 665 SITUATION 6. The barrier is sufficiently resistant to the ingress of harmful gasses into a building. On more heavily contaminated sites a passive or active venting system may be required to dilute the gasses down to acceptable levels and specific design advice should be sought.

Accessory Products

- GP[®]1 SAM
- GP[®] DPC
- 300TT
- GP[®] Tape
- GP[®] Lap Tape

Physical Properties

Thickness	0.6 mm
Width	2 m
Length	50 m
Weight	370 g/m ²

Gas Permeability

Methane	< 0.09
Carbon Dioxide	< 0.09
Radon	8.0 x 10 ⁻¹⁵

Compliance and Certification

CE MARK - EN13967:2015
NHBC Standards Compliant
BS8485:2015 + A1 2019 Accordant
BBA Certified - Certificate No. 20/5728 P1

Specification Clauses

Uniclass 2015 - PR_25_57_65_90
Plastic Sheets

CAWS - J40/145 Loose laid weldable polyethylene gas retardant damp proofing
J40/140 loose laid plastics or rubber sheet gas retardant damp proofing
D21/350 Gas retardant membrane



Please Scan

UK
NI

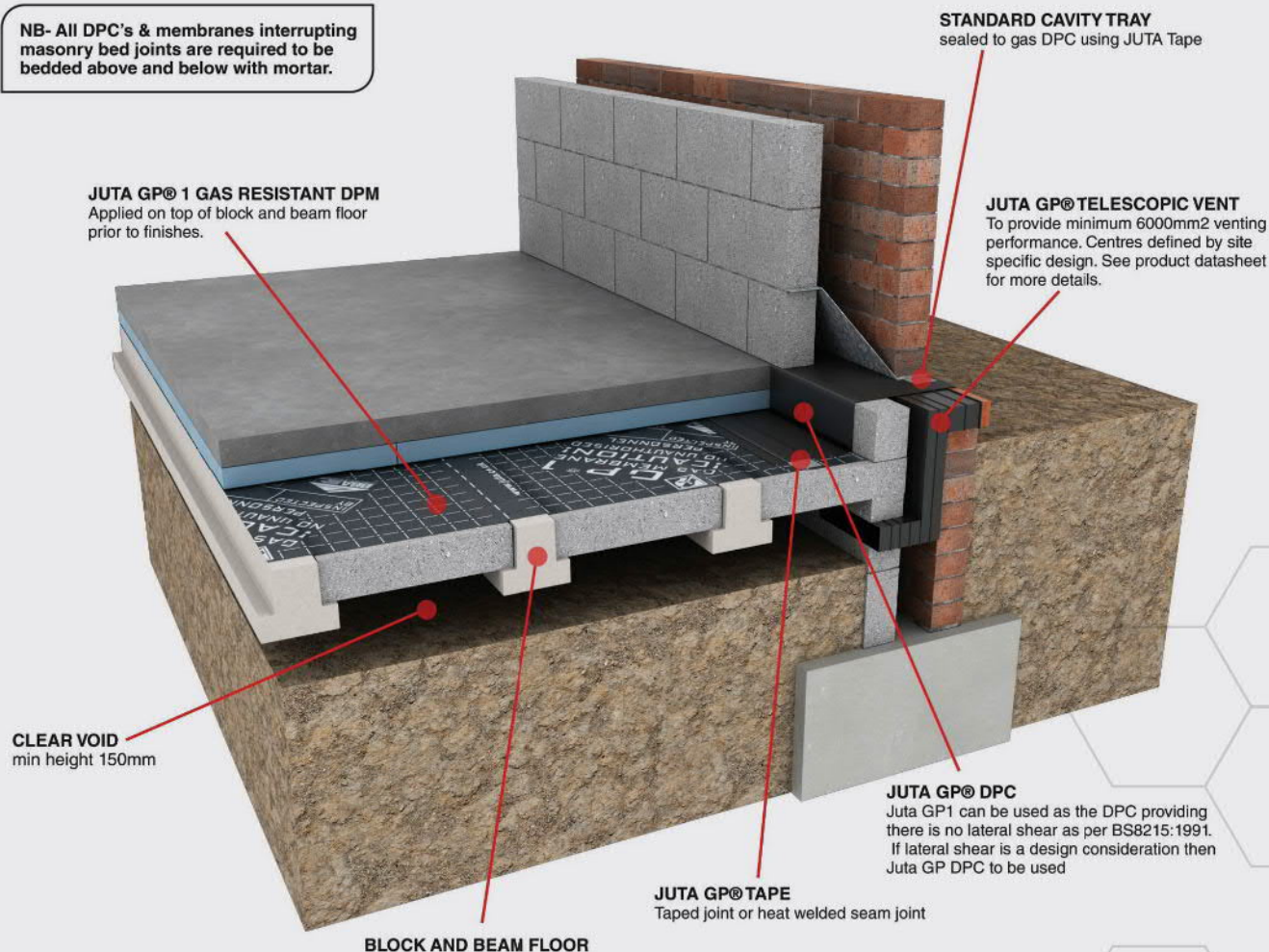


UK
CA



Standard Detail - Ground Block & Beam Flooring

NB- All DPC's & membranes interrupting masonry bed joints are required to be bedded above and below with mortar.



Various typical details available on request. Please contact **technical@juta.co.uk** for further information



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



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GRM Development Solutions Limited, Laurus House, First Avenue, Centrum 100, Burton upon Trent, Staffs DE14 2WH
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This is to certify that

James Doyle

has achieved the following Qualification

**NOCN_Cskills Awards Level 2 NVQ Diploma
in Sub-structure Work Occupations
(Construction) - Installation of Gas
Membranes**



Qualification Approval No: 603/1279/8
ULN: 6376900975
Award Date: 24/04/2020
Certificate No: 47253868



Graham Hasting-Evans

Graham Hasting-Evans
Group Managing Director
NOCN Group



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For more information see <http://register.ofqual.gov.uk>

James Doyle

Credit/s Awarded

Unit Title	Unit Code	Credit(s)	Level
Conforming to General Health, Safety and Welfare in the Workplace	A/503/1170	2	L1
Moving, Handling and Storing Resources in the Workplace	F/503/1171	5	L2
Conforming to Productive Working Practices in the Workplace	J/503/1169	3	L2
Preparing to install gas membranes in the workplace	K/615/6045	15	L2
Installing gas membranes in the workplace	M/615/6046	19	L2



Qualification Approval No: 603/1279/8
ULN: 6376900975
Award Date: 24/04/2020
Certificate No: 47253868



Graham Hasting-Evans

Graham Hasting-Evans
Group Managing Director
NOCN Group



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This is to certify that

Christopher South

has achieved the following Qualification

**NOCN_Cskills Awards Level 2 NVQ Diploma
in Sub-structure Work Occupations
(Construction) - Installation of Gas
Membranes**



Qualification Approval No: 603/1279/8
ULN: 2599139790
Award Date: 03/10/2018
Certificate No: 46742231



Graham Hasting-Evans

Graham Hasting-Evans
Group Managing Director
NOCN Group



Regulated by



For more information see <http://register.ofqual.gov.uk>



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This is to certify that

Ian Greene

has achieved the following Qualification

**NOCN_Cskills Awards Level 2 NVQ Diploma
in Sub-structure Work Occupations
(Construction) - Installation of Gas
Membranes**



Qualification Approval No: 603/1279/8
ULN: 6034122332
Award Date: 28/03/2022
Certificate No: 47727750



Graham Hasting-Evans

Graham Hasting-Evans
Chief Executive Officer
NOCN Group



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Certificate of Attendance

Continuing Professional Development

This is to certify that

Ian McCulloch

Has attended and passed the course
Verification of Gas Protection Systems

on

27th February 2020

at

Doncaster Membrane Installations Ltd, Unit 6b,
Merchant Workspace, Adwick Park, Manvers S63
5AB

Contact time: 6.5 hours

Trainers: Michael Corban & Gordon Cave:



Richard Froggatt, CL:AIRE Chairman

CL:AIRE

Registered address: 32 Bloomsbury Street, London, WC1B 3QJ
Telephone: +44 (0)2072 994250

Email: enquiries@claire.co.uk Website: www.claire.co.uk

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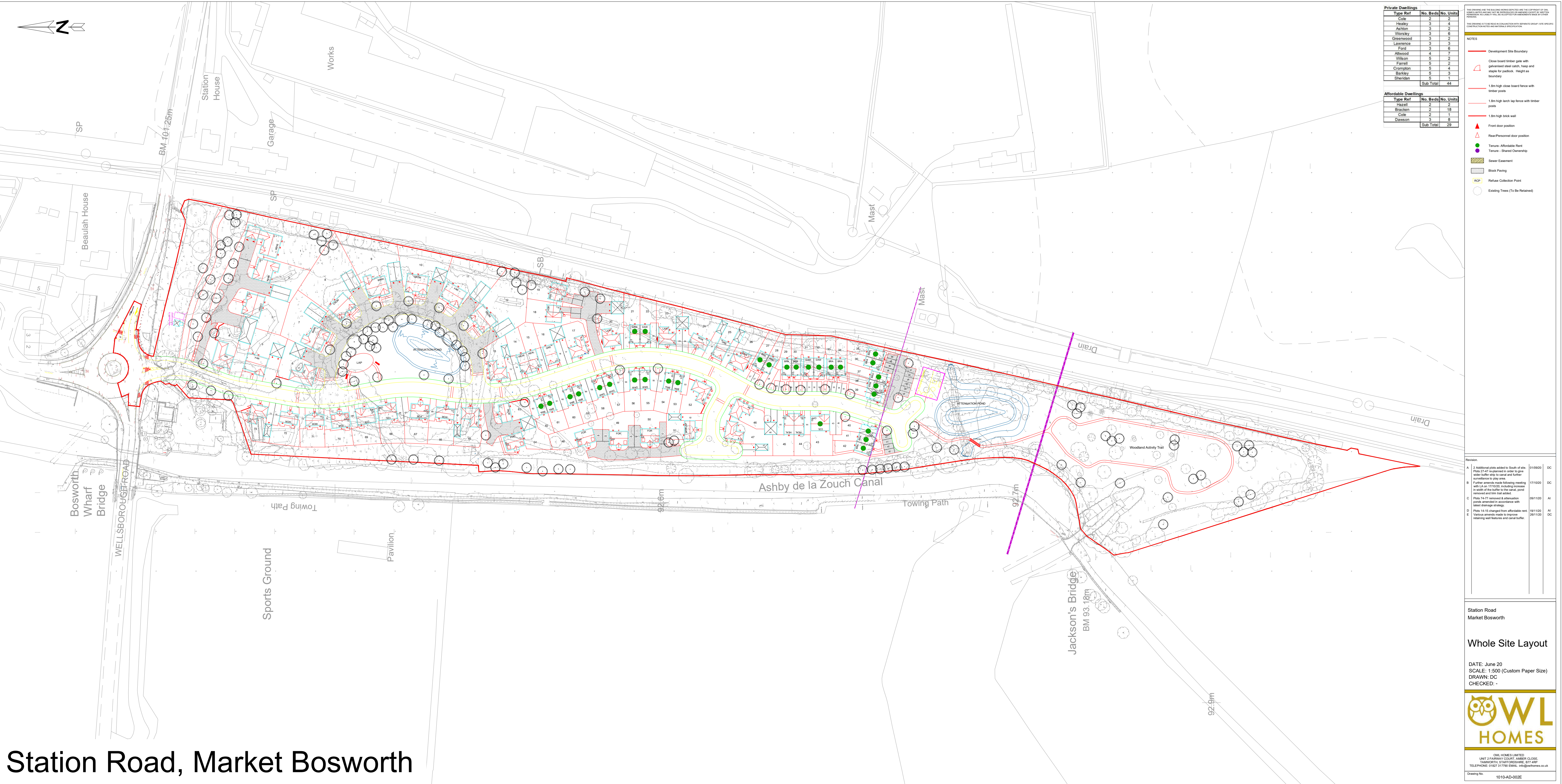
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Station Road, Market Bosworth

Private Dwellings			
Type Ref	No.	Beds	No. Units
Cole	2	2	2
Healey	3	4	4
Ashton	3	2	2
Worsley	3	6	6
Greenwood	3	2	2
Lawrence	3	3	3
Ford	3	6	6
Ashwood	4	7	7
Wilson	5	2	2
Farnell	5	2	2
Crompton	5	4	4
Barkley	5	3	3
Shedden	5	1	1
Sub Total			44

Affordable Dwellings			
Type Ref	No.	Beds	No. Units
Shard	2	3	2
Bracken	2	18	18
Cole	2	1	1
Dawson	3	8	8
Sub Total			29

- NOTES
- Development Site Boundary
 - Close board timber gate with galvanneal steel catch, hinge and staple for padlock. Height as boundary
 - 1.8m high close board fence with timber posts
 - 1.8m high larch lap fence with timber posts
 - 1.8m high back wall
 - Front door position
 - Rear/Personnel door position
 - Tenure - Affordable Rent
 - Tenure - Shared Ownership
 - Sewer Easement
 - Black Paving
 - Refuse Collection Point
 - Existing Trees (To Be Retained)

Revision			
A	2 Additional plots added to South of site. Plots 21-47 replaced in order to give surveillance to play area.	01/09/20	DC
B	Notes to refer step 10 canal and further surveillance to play area.	17/10/20	DC
C	Further general notes relating to the site. Plots 1-10 replaced in order to give surveillance to play area. Plots 11-10 replaced in order to give surveillance to play area. Plots 11-10 replaced in order to give surveillance to play area.	08/11/20	AI
D	Plots 1-10 replaced in order to give surveillance to play area. Plots 11-10 replaced in order to give surveillance to play area. Plots 11-10 replaced in order to give surveillance to play area.	18/11/20	AI
E	Various amendments made to improve retaining wall features and canal buffer.	28/11/20	DC

Station Road
Market Bosworth

Whole Site Layout

DATE: June 20
SCALE: 1:500 (Custom Paper Size)
DRAWN: DC
CHECKED: -



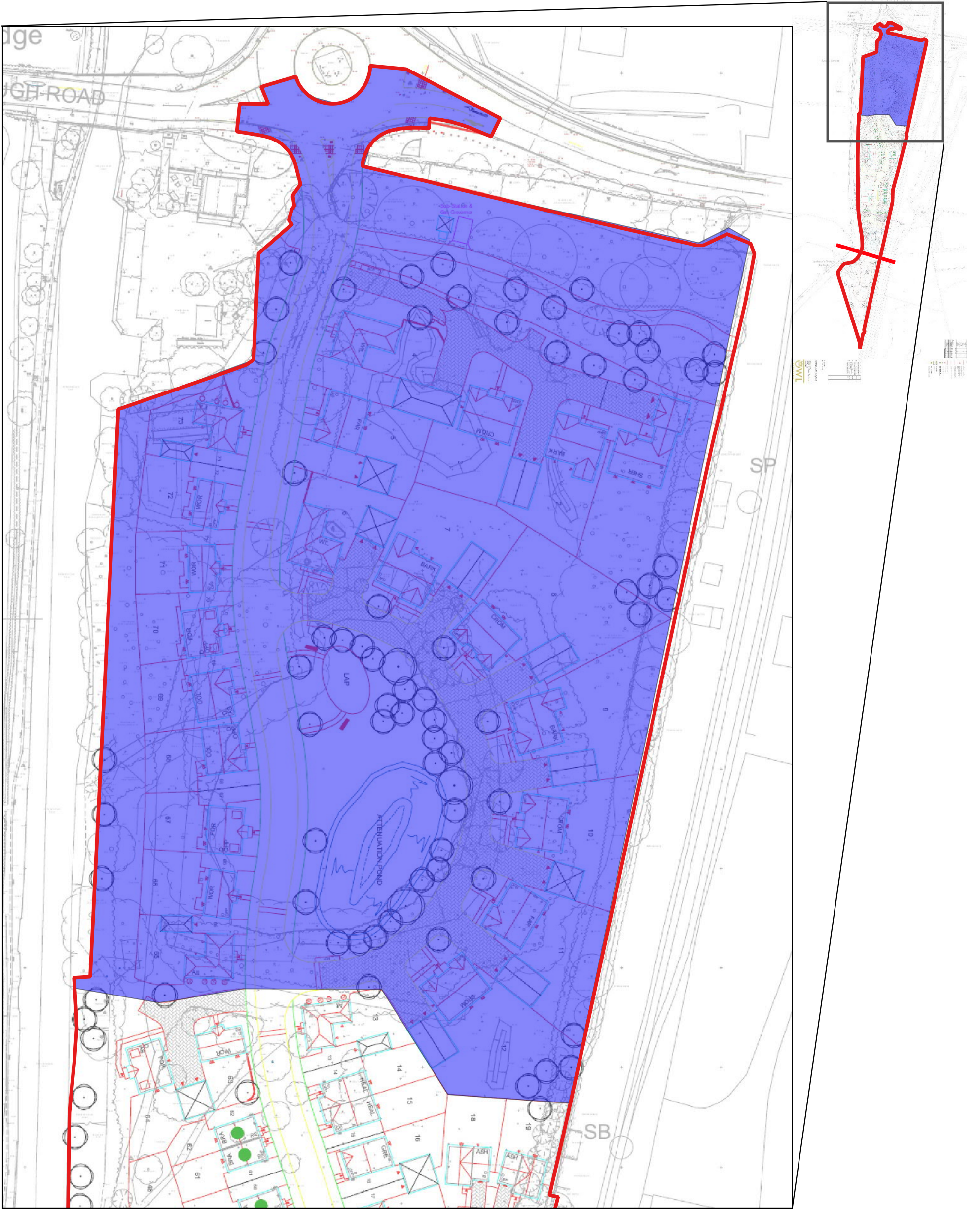
OWL HOMES LIMITED
UNIT 2 FAIRWAY COURT, ANBER CLOSE
TAMWORTH, STAFFORDSHIRE, B77 4BP
TELEPHONE: 01827 317700 EMAIL: info@owlhomes.co.uk
Drawing No: 1010-AD-002E



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NOTES:

Gas protection measures required for plots 1-12 and 65-73. To comprise beam and block ventilated subfloor with sufficient air flow through sleeper walls. Ventilation to meet current Building Regulations and warranty providers requirements. Location of air bricks to be confirmed by the architect allowing for access/utilities restrictions. JUTA GP-1 gas membrane to be installed and suitably sealed at joints and to penetrations. Non-fluid slab and membrane penetrations to be filled with closed cell foam.

CLIENT:	Owl Homes	TITLE:	Extent of Gas Protection Measures	PROJECT No:		P9573	DATE:		08/2022
				DESIGN/DRAWN:		RU	ISSUE:		Final
PROJECT:				Station Road, Market Bosworth		© GRM Development Solutions Ltd © Crown Copyright. AL 100014100			