Annex D: Ground Gas Protection

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 7 Issue 2

JUTA GAS-RESISTANT AND DAMP PROOFING MEMBRANES

GP5 GAS BARRIER

This Agrément Certificate Product Sheet(1) relates to the GP5(2) Gas Barrier, for use as a damp-proof membrane and a gas membrane in concrete ground floors, above or below slabs 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'.
(2) GP is a registered trademark.

The assessment includes

Product factors:

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review

KEY FACTORS ASSESSED

Section 1. Mechanical resistance and stability
Section 2. Safety in case of fire
Section 3. Hygiene, health and the environment
Section 4. Safety and accessibility in use
Section 5. Protection against noise
Section 6. Energy economy and heat retention
Section 7. Sustainable use of natural resources
Section 8. Durability

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

[redacted]

Hardy Giesler
Chief Executive Officer

Date of Second issue: 16 May 2024
Originally certified on 26 October 2022

This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation.

The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).

Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

The Certificate should be read in full as it may be misleading to read clauses in isolation.

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

British Board of Agrément
1st Floor, Building 3, Hatters Lane
Croxley Park, Watford
Herts WD18 8YG

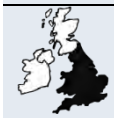
tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that the GP5 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 Building Regulations 2010 (England and Wales) (as amended)

Requirement:	**C1(2)**	**Site preparation and resistance to contaminants**
Comment:		The product can contribute to satisfying this Requirement. See section 3 of this Certificate.
Requirement:	**C2(a)**	**Resistance to moisture**
Comment:		The product, including joints, can contribute to a construction satisfying this Requirement. See section 3 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The product is acceptable. See sections 8 and 9 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)**	**Fitness and durability of materials and workmanship**
Comment:		The product can contribute to a construction satisfying this Regulation. See sections 8 and 9 of this Certificate.
Regulation:	**9**	**Building standards – construction**
Standard:	3.1	Site preparation – harmful and dangerous substances
Standard:	3.2	Site preparation – protection from radon gas
Comment:		The product can contribute to satisfying the requirements of these Standards, with reference to clauses 3.1.2(1)(2)and 3.1.6(1)(2). See section 3 of this Certificate.
Standard:	3.4	Moisture from the ground
Comment:		The product will enable a structure to satisfy the requirements of this Standard, with reference to clauses 3.4.1(1)(2), 3.4.2(1)(2), 3.4.5(1)(2) and 3.4.7(1)(2). See section 3 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to satisfying 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 – conversion**
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 product is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**26(1)(b)(2)**	**Site preparation and resistance to contaminants**
Comment:		The product will contribute to satisfying this Regulation. See section 3 of this Certificate.
Regulation:	**28(a)**	**Resistance to moisture and weather**
Comment:		The product will enable a structure to satisfy this Regulation. See section 3 of this Certificate.

Additional Information

NHBC Standards 2024

In the opinion of the BBA, the GP5 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, Technical Requirement R3 and Chapters 4.1 *Land quality – managing ground conditions*, 5.1 *Substructure and ground bearing floors* and 5.2 *Suspended ground floors*.

Fulfilment of Requirements

The BBA has judged the GP5 Gas Barrier to be satisfactory for use as described in this Certificate. The product has been assessed as a damp-proofing membrane and a gas-resistant membrane, for use in concrete ground floors above and below slabs not subject to hydrostatic pressure, to protect the building against moisture, radon, methane and carbon dioxide from the ground.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the product under assessment.

The GP5 Gas Barrier consists of a multilayer polyethylene membrane (with 7 layers in total). The product is available in dark blue/silver as standard.

The product has the nominal characteristics given in Table 1.

Table 1 Nominal characteristics of the GP5 Gas Barrier

Characteristic (unit)	GP5 Gas Barrier
Thickness (mm)	0.4
Roll length (m)	100(1)
Roll width (m)	2 and 4(1)
Mass per unit area ($g \cdot m^{-2}$)	400

(1) Other lengths and widths are available on request

Ancillary Items

The following ancillary items are essential to use with the product and have been assessed with the product:

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

The Certificate holder recommends the following ancillary items for use with the product, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- 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 — used to provide ventilation
- GP Void Vent 40 — used to provide ventilation
- GP Protection Fleece — to form a protective layer to prevent damage to the membrane
- GP-SAM —a self-adhesive membrane
- GP DPC — a damp-proof course (DPC).

Definitions for products and applications inspected

A gas-resistant membrane is defined for the purpose of this Certificate as a membrane placed above, below or within the floor slab construction to restrict methane and carbon dioxide migration from the ground into a building (as defined in BS 8485 : 2015).

Product assessment – key factors

The product was assessed for the following key factors, and the outcome of the assessments is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Data were assessed for the following characteristics.

1.1 Structural and mechanical properties

1.1.1 Results of tests for mechanical properties are given in Table 2.

Table 2 Results of mechanical properties tests

Product assessed	Assessment method	Requirement	Result
GP5 Gas Barrier	Nail tear to BS EN 12310-1 : 2000		
	Longitudinal direction	Value achieved	288 N
	Transverse direction		259 N
GP5 Gas Barrier	Tensile strength to BS EN 12311-1 : 2000		
	Control		
	Longitudinal direction	Value achieved	494 N·(50mm)$^{-1}$
	Transverse direction		461 N·(50mm)$^{-1}$
GP5 Gas Barrier	Elongation to BS EN 12311-1 : 2000		
	Control		
	Longitudinal direction	Value achieved	677%
	Transverse direction		690%
GP5 Gas Barrier	Resistance to static loading to BS EN 12730 : 2015	Value achieved	20kg
GP5 Gas Barrier	Resistance to dynamic impact: Method A to BS EN 12691 : 2018	Value achieved	<200 mm

1.1.2 On the basis of the data assessed, the product can be punctured by sharp objects and care must be taken when handling building materials over the exposed surface.

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

1.1.4 The product will remain flexible at temperatures likely to occur in practice.

2 Safety in case of fire

Not applicable.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Weathertightness and damp–proofing

3.1.1 Results of weathertightness and damp-proofing tests are given in Table 3.

Table 3 Results of weathertightness tests

Product assessed	Assessment method	Requirement	Result
A representative related product	Watertightness to BS EN 1928 : 2000	No leakage after 24 hours	Pass
A representative related product	Water vapour permeability to BS EN 1931 : 2000	Value achieved	0.14 $g \cdot m^{-2} \cdot 24h^{-1}$
A representative related product	Shear strength of joints Control to BS EN 12317-2 : 2010 welded joint	Value achieved	293.7 N

3.1.2 On the basis of data assessed, the GP5 Gas Barrier, including joints, provides an effective barrier to the passage of liquid moisture from the ground.

3.1.3 On the basis of data assessed, the membrane is impervious to water and provides a waterproofing layer capable of accepting minor structural movements without damage.

3.2 Resistance to underground gases

3.2.1 Results of resistance to hazardous ground gases tests are given in Table 4.

Table 4 Results of resistance to hazardous ground gases tests

Product assessed	Assessment method	Requirement	Result
GP5 Gas Barrier	Methane permeability to BS ISO 15105-1 : 2007	As per BS 8485 : 2015 <40 $ml.m^{-2} \cdot d^{-1} \cdot atm^{-1}$	0.12 $ml \cdot m^{-2} \cdot day^{-1} \cdot atm^{-1}$
GP5 Gas Barrier	Carbon dioxide permeability to BS ISO 15105-1 : 2007	Value achieved	1.53 $ml \cdot m^{-2} \cdot day^{-1} \cdot atm^{-1}$
GP5 Gas Barrier	Radon permeability to K124/02/95 and Method C of ISO/TS 11665-13	Value achieved	9.8×10^{-14} $m^2 \cdot s^{-1}$

3.2.2 On the basis of data assessed, the GP5 Gas Barrier will restrict the ingress of radon, methane and carbon dioxide into buildings from naturally occurring sources, and meets the performance criteria for a gas-resistant membrane as defined in BS 8485 : 2015.

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Not applicable.

7 Sustainable use of natural resources

The product contains polyethylene, which can be recycled.

8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in this product were assessed.

8.2 Specific test data were assessed for the following.

Table 5 Results of durability tests

Product assessed	Assessment method	Requirement	Result
A representative related product	Tensile strength to BS EN 12311-2 : 2000 Longitudinal direction		
	Heat aged at 70°C for 84 days	No significant loss of properties following ageing	Pass
	UV aged 20 $MJ \cdot m^{-2}$		Pass
	Water soak 180 days @ 23°C		Pass
	Tensile strength to BS EN 12311-2 : 2000 Transverse direction		
	Heat aged at 70°C for 84 days	No significant loss of properties following ageing	Pass
	UV aged 20 $MJ \cdot m^{-2}$		Pass
	Water soak 180 days at 23°C		Pass
A representative related product	Elongation to BS EN 12311-2 : 2000 Longitudinal direction		
	Heat aged at 70°C for 84 days	No significant loss of properties following ageing	Pass
	UV aged 20 $MJ \cdot m^{-2}$		Pass
	Water soak 180 days at 23°C		Pass
	Elongation to BS EN 12311-2 : 2000 Transverse direction		
	Heat aged at 70°C for 84 days	No significant loss of properties following ageing	Pass
	UV aged 20 $MJ \cdot m^{-2}$		Pass
	Water soak 180 days at 23°C		Pass
A representative related product	Shear strength of joints Water soak 180 days at 23°C to BS EN 12317-2 : 2010	≥ 75% of control value	Pass
GP5 Gas Barrier	Watertightness to BS EN 1928 : 2000 Heat aged at 70°C for 84 days	No leakage after 24 hours exposure to 1 m head of water	Pass

8.3 Service life

8.3.1 Under normal service conditions, the product will have a life at least as long as the building in which it is installed, provided it is designed and installed in accordance with this Certificate and the Certificate holder's instructions.

8.3.2 The product will not be significantly affected by short term exposure to ultraviolet (UV) light. However, long periods of exposure may reduce the effectiveness of the membrane and it must be protected from UV light as soon as practicable after it is installed.

PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed against the requirements of BS 8000-4 : 1989, BS 8485 : 2015, CP 102 : 1973 Section 3, this Certificate and the Certificate holder's instructions, and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 The design of gas protection systems must be carried out by competent professionals with sufficient knowledge of ground gas risk and the construction methods and materials.

9.1.3 The continuity of the gas protection must extend over the footprint of the building, and the product must be sealed to a gas-resistant DPC where applicable.

9.1.4 In gas/chemical applications, hot air welding specifications must be obtained from the Certificate holder, but such advice is outside the scope of this Certificate.

9.1.5 Where the construction is subject to NHBC requirements, reference must be made to NHBC NF 94 *Hazardous Ground gas – an essential guide for housebuilders*.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions following the relevant guidance given in BRE Report BR 211 : 2023, BS 8485 : 2015 and NHBC NF 94.

9.2.3 All gas membrane installations must be subject to third-party independent validation, in accordance with BS 8485 : 2015.

9.2.4 The product can be installed in all normal site conditions, provided the air temperature is not below 5°C and the membrane is free from condensation.

9.2.5 The surface onto which the product is to be laid must be dry and free from sharp protrusions and debris that could damage the membranes. Surfaces must be free from dust and frost.

9.2.6 The product must normally only be installed over a surface that has a smooth finish, ie it must be free from voids, projections and mortar deposits (see section 9.2.9).

9.2.7 For gas-resistant applications, the membrane must be installed either with hot air welded or taped joints in accordance with the Certificate holder's instructions.

9.2.8 The product must be protected as soon as possible after installation to minimise direct foot trafficking. Direct trafficking by vehicles must be avoided.

9.2.9 Unless the base is smooth, a surface blinding of soft sand (or similar material) must be used to prevent puncturing during installation or when concrete screed is being placed.

9.2.10 If the membrane is installed below a reinforced floor or concrete slab, it must be covered with a screed or protection layer prior to the positioning of the reinforcement.

9.2.11 If the membrane is above the slab, installation must be delayed until just before the laying of the screed or flooring, to avoid damage from site traffic.

Procedure

Hot air welded joints

9.2.12 The membrane is rolled out with the printed side uppermost, ensuring that it is properly aligned. All end and side overlaps must be a minimum of 100 mm and laps must be staggered.

9.2.13 Before welding work is carried out, trials must be completed to determine the 'operating window' for the welding equipment, materials and ambient conditions. Typically, the operating window will be between 180 and 240°C at a rate of 1.5 $m \cdot min^{-1}$. In case of doubt, the Certificate holder must be consulted for advice, but such advice is outside the scope of this Certificate.

9.2.14 Weld widths must be a minimum of 50 mm and must be checked for integrity after being formed.

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

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

Taped joints

9.2.17 For use in damp-proofing applications, the membrane must be jointed using butyl or bitumen tape.

9.2.18 After laying the first sheet, the protective release film on one side of the tape is removed and the tape applied to the clean membrane sheet along a 100 mm guide line from the edge.

9.2.19 The second layer of membrane must be unrolled over the first layer, ensuring an overlap of 150 mm, before rolling with a silicone roller to remove any trapped air.

9.2.20 The joint can then be finished with a suitable sealing tape applied over the joint to provide a smooth finish.

9.3 Workmanship

9.3.1 To achieve the performance described in this Certificate, installation of the GP5 Gas Barrier must be carried out by installers trained by the Certificate holder.

9.3.2 The BBA operates an Approved Installer Scheme for gas membranes; details of approved installer companies are included on the BBA website (www.bbacerts.co.uk).

9.4 Maintenance and repair

9.4.1 As the product is confined within the structure and has suitable durability, maintenance is not required. However, any damage occurring before enclosure must be repaired.

9.4.2 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.

9.4.3 If required by the local authority, the adequacy of repair work must be confirmed by an independent validation report.

10 Manufacture

10.1 The production processes for the product have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

†10.2 The BBA has undertaken to review 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.

11 Delivery and site handling

11.1 The Certificate holder stated that the product is delivered to site in rolls wrapped in polythene film. Each roll bears a label including the product name and grade, material specification, ID number, batch number and date of manufacture.

11.2 Delivery and site handling must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 Rolls must be stacked on a flat surface, kept under cover and protected from sunlight and mechanical damage.

ANNEX A – SUPPLEMENTARY INFORMATION †

Supporting information in this Annex is relevant to the product but has not formed part of the material assessed for the 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.

CE marking

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

Management Systems Certification for production

The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by TÜV Austria (Certificate 010150310/02).

Additional Guidance

A.1 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, but such advice is outside the scope of this Certificate.

A.2 Additional guidance on the use of damp-proof material is available in CP 102 : 1973, BS 8000-0 : 2014 and BS 8000-4 : 1989.

Bibliography

BRE Report BR 211 : 2023 *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 1928 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*

BS EN 1931 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of water vapour transmission properties*

BS EN 12310-1 : 2000 *Flexible sheets for waterproofing — Determination of resistance to tearing (nail shank) — Bitumen sheets for roof waterproofing*

BS EN 12311-1 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties — Plastic and rubber sheets for roof waterproofing*
BS EN 12311-2 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties — Plastic and rubber sheets for roof waterproofing*

BS EN 12317-2 : 2010 *Flexible sheets for waterproofing — Determination of shear resistance of joints — Plastic and rubber sheets for roof waterproofing*

BS EN 12691 : 2018 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to impact*

BS EN 12730 : 2015 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to static loading*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

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*

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

ISO/TS 11665-13 *Measurement of radioactivity in the environment — Air: radon 222 — Part 13 : Determination of the diffusion coefficient in waterproof materials*

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

NHBC NF 94 *Hazardous ground gas — an essential guide for housebuilders*

Conditions of Certificate

Conditions

1 This Certificate:

- relates only to the product 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.

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.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product 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.

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

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

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product 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.

British Board of Agrément
1st Floor, Building 3, Hatters Lane
Croxley Park, Watford
Herts WD18 8YG
tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

MEC Environmental Ltd – Blackburn Technology Management Centre -
Challenge Way - Greenbank Technology Park – Blackburn – BB1 5QB

MEC ENVIRONMENTAL LTD

Gas Membrane Installation

Validation Report

MCS Group

Headley Road East

Woodley

Reading

RG5 4SJ

THIS PAGE IS INTENTIONALLY BLANK

1. INTRODUCTION

1.1 Purpose

UK Membranes are installing a gas protection membrane to the aforementioned site. MEC Environmental Ltd (MEC) has been appointed by UK Membranes to carry out independent validation of the installation of the membrane on the site as per our terms of engagement. The frequency of independent inspections has been determined by the client, comprehensive CQA should be forwarded by the installer to cover any data gaps for areas that have not been subjected to independent inspections.

The **SOLE** purpose of the works undertaken by MEC Environmental is to provide independent inspections and a factual report as and when requested to assist the client in gaining regulatory approval with regards to the gas membrane installation. This is as per the scope of work section within our term's engagement.

1.2 Limitations

This report is limited to providing lines of evidence to the regulatory authority for the areas components inspected by MEC only in support of the discharging of the relevant planning conditions only and cannot be used or relied upon for any other purpose. No professional liability shall be extended to any other parties by MEC, the report should explicitly not be relied on by any future vendor or tenant as proof that the gas protection measures are sufficient for the site and functioning at the time of purchase or start of any tenancy. Gas protection systems are not solely reliant on the gas membrane as points are scored under BS8485 for the floor slab, membrane and venting, these components work collaboratively to provide a gas protection system. This is as per the conditions within our term's engagement.

The report has been provided on the assumption that no damage or works that may have compromised the components and integrity of the gas membrane have been made after our inspections, failure to report any such occurrences will invalidate any liability and render the report and contents invalid. This is as per the conditions within our term's engagement.

This report has been prepared in accordance with the best available practice and the relevant guidance documents listed below of which the author of the report was a contributor and member of the steering committees:

Mallett H, Wilson S, Corban M (2014) "Good practice on the testing and verification of protection systems for buildings against hazardous ground gases". CIRIA Report C735

1.3 Compliance with Regulation 7 of Building Regulations

Regulation 7 of the building regulations requires that building work shall be carried out in a workmanlike manner. Approved document 7 suggests installation can comply with the regulation if workmanship is such that, where relevant, materials are adequately mixed or prepared and applied, used or fixed so as to perform adequately the functions for which they are intended.

A reasonable standard may be demonstrated by:

Compliance with a standard and independent certification - The relevant standard for gas protection measures is BS8485:2015 +A1:2019, Table 7 of the standard requires that gas membranes are verified as per CIRIA C735.

Past experience – The installers qualifications are checked by MEC Environmental to ensure that the installation supervisor holds the NVQ Level 2 in gas membrane installations.

Integrity Testing methods. – are carried out as prescribed in CIRIA C735, unless stated elsewhere Frequency of Visits – MEC have not been employed to prepare a validation plan for this project, the frequency of visits is as per the instructions of the client, in essence MEC inspected the available membrane that could be inspected each time an inspection visit was requested. The area inspected on each visit is noted on the survey sheets in appendix 1. This report should be read in conjunction with the installers CQA report.

1.4 Method of Inspection (Per Visit)

All seams and non-seam areas of the available gas membrane were inspected/tested by the Validation Surveyor for identification of defects, protruding and penetrating objects, lack of subgrade support, overheating, holes, blisters, undispersed raw materials, scratches and gouges, and any sign of contamination by foreign matter.

Any portion of the gas membrane exhibiting a flaw or failing a visual inspection/testing was repaired. Several procedures exist for the repair of these areas. The final decision as to the appropriate repair procedure was agreed upon between the Validation Consultant and the Installer at the time of the repair and is noted in the survey sheets.

Major repairs are visually inspected/tested, repairs passing the inspection/testing were considered acceptable. In some cases minor repairs maybe carried out under contractor CQA and photographic evidence supplied to the verifier for inclusion in the report.

1.5 MEC Staff Competency

All site inspections have been carried out by suitably qualified staff as defined in CIRIA C735, the qualification held by all MEC inspection surveyors is either the NVQ Level 4 in gas protection verification or the NVQ Level 2 in gas membrane installation

The author of this report is also a CL:AIRE accredited Specialist in Gas Protection Verification (SGPV) and holds both the NVQ Level 2 in gas membrane installation and the NVQ Level 4 in gas protection verification.

1.6 Conclusion

During our inspections to the areas denoted in Appendix 1 (Site Surveys Sheets) we witnessed the installer carrying out the installation in a workmanlike manner, the materials were adequately prepared and applied, used and fixed so as to perform adequately the functions for which they are intended as per Regulation 7 of the building regulations. In instances were 100% of the installation has not been independently inspected/tested then this report should be read in conjunction with the gas membrane installers CQA records.

The installers all hold the NVQ Level 2 “Gas membrane Installations” qualification and as such are classed as a qualified and experienced installer. MEC Environmental have checked the CSCS Trade Cards of the installers, which confirms the holder has attained the qualification.

Signed [redacted] Date: 30/05/2025

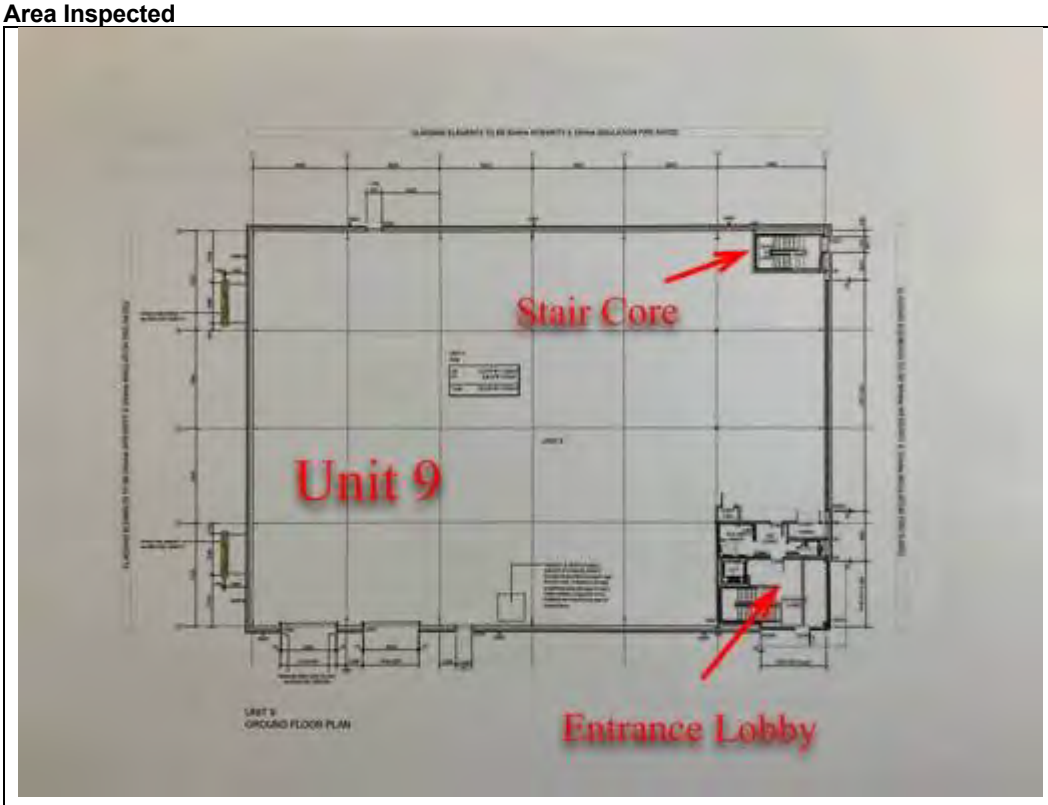
Michael Corban S.G.P.V.
Director
MEC Environmental Ltd

Appendix 1 – Site Survey Sheets

Main Contractor Name: MCS Group		**Date: 13/11/2024**
Site Name: Headley Road East, Woodley, Reading.		**Temp: 11 °C**
		Installer: UK Membranes
Postcode: RG5 4SJ	**Surveyor:** James Hall (TGPV)	
Building Reference/Unit No:	Unit 9	
Area Inspected:	Entrance Lobby and Stair Core - See Marked Up Plan	
Description of Works:	MEC Environmental carried out a thorough inspection of the gas membrane. The installation team have installed Juta GP5 Gas Barrier to the full line out to the Entrance Lobby and Stair Core to Unit 9, this was laid upon Kingspan Green Guard insulation boards. All laps between adjacent sheets were hand welded with rolled pressure applied. All steel stanchions, pipe penetration's and retrofit termination detailing to the perimeter cladding rail was completed using Juta GPSAM with adequate heat and pressure applied creating the seal.	
Sub-Grade Preparation:	The membrane is being laid above of insulation boards and is acceptable to lay the membrane on	
Result of Inspection:	No defects recorded and therefore no action required	
(Section 1, Materials and Method of Seal)		
Gas Membrane Name: Juta GP5 Gas Barrier		
Other Products Used: Juta GP Primer & Juta GPSAM		
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed		
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Stanchion Seal Method: The stanchions have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.		
Others Please List:		
(Section 2, Testing and Inspection Method)		
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection	
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like	

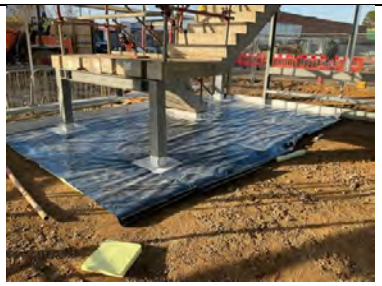
(Section 3, Defects List)	Action Required
N/A	No defects recorded and therefore no action required

Area Inspected



Gas Membrane Overview

Overview of the installation to the Entrance Lobby area.



Overview of the installation to the Stair Core area.

Subgrade Photos

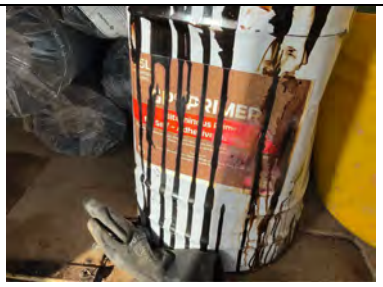
Evidence of the insulation boards used KingSpan GreenGuard.

Evidence of KingSpan GreenGuard below gas barrier.

Materials Used

Evidence of the Juta GP5 Gas Barrier packaging.

Evidence of the Juta GPSAM.



Evidence of the Juta GP primer.

Perimeter Detail

Entrance Lobby. Overview along the perimeter edge cladding rail sealed using Juta GPSAM.

Entrance Lobby. Probe testing along the perimeter cladding rail termination.

Entrance Lobby. Probe testing along the perimeter cladding rail termination.

Stair Core. Overview along the perimeter edge cladding rail sealed using Juta GPSAM.

Stair Core. Probe testing along the perimeter cladding rail termination.

Stair Core. Probe testing along the perimeter cladding rail termination.

Pipe and Duct Seals

Entrance Lobby. Probe testing to sealed pipe penetration's.

Entrance Lobby. Probe testing to sealed duct pipe penetration's.

Stanchions and Columns Seals

Entrance Lobby. Probe testing to sealed steel stanchions.

Entrance Lobby. Probe testing to sealed steel stanchions.

Entrance Lobby. Probe testing to sealed steel stanchions.

Stair Core. Probe testing to sealed steel stanchions.

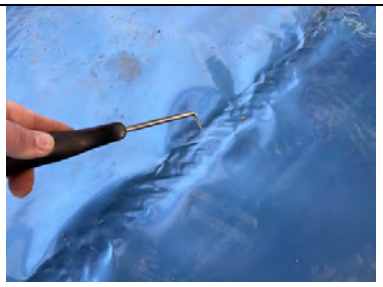
Stair Core. Probe testing to sealed steel stanchions.

Stair Core. Probe testing to sealed steel stanchions.

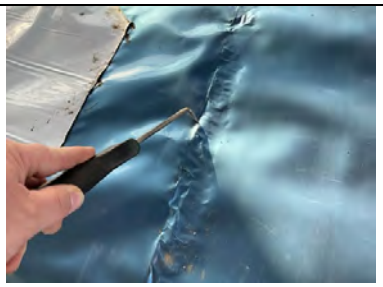
Testing of Joints

Entrance Lobby. Overview along a hand welded membrane lap joint.

Entrance Lobby. Probe testing along hand welded membrane lap joints.



Entrance Lobby. Probe testing along hand welded membrane lap joints.



Stair Core. Probe testing along hand welded membrane lap joints.

Stair Core. Probe testing along hand welded membrane lap joints.

Additional Photos

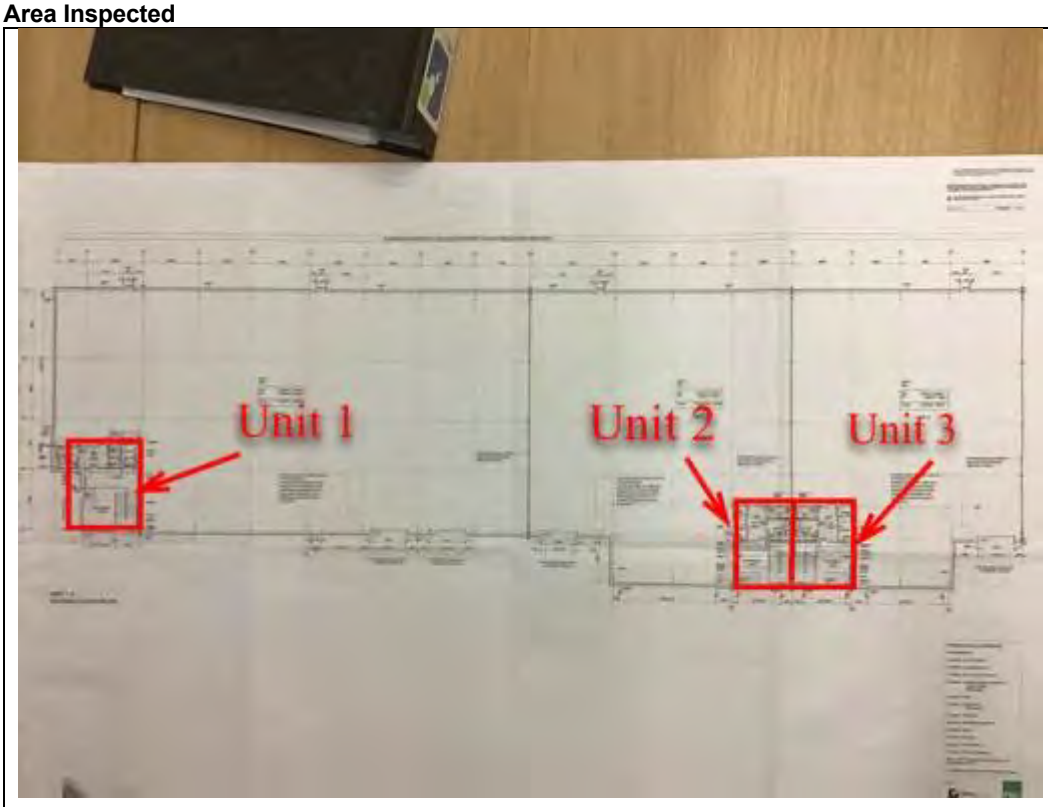
Stair Core. Base of the stair core was sealed using Juta GPSAM.

Stair Core. Probe testing along termination to the stair core base.

Main Contractor Name: MCS		**Date: 03/01/2025**
Site Name: Headley Road East, Woodley, Reading.		**Temp: 8 ºC**
		Installer: UK Membranes.
Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)	
Building Reference/Unit No:	Units 1,2 & 3.	
Area Inspected:	Line out to communal areas. (See Marked Up Plan).	
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane that has been laid upon a well rolled fine aggregate substrate floor to the communal areas in units 1,2 3. All membrane laps have been hand welded together using a hot air gun and rolled using a neoprene roller with pressure applied. All detailing work to the steel Stanchions, pipe penetrations, perimeter steel cladding rail and precast concrete lift pit has been successfully completed using Juta GP SAM.	
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on	
Result of Inspection:	No defects recorded and therefore no action required	
(Section 1, Materials and Method of Seal)		
Gas Membrane Name: Juta GP5 gas membrane & Juta GP SAM.		
Other Products Used: N/A.		
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed		
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Stanchion Seal Method: The stanchions have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.		
Others Please List: Retro fit detailing work to the precast concrete lift pit.		
(Section 2, Testing and Inspection Method)		
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection	
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like	
(Section 3, Defects List)		**Action Required**

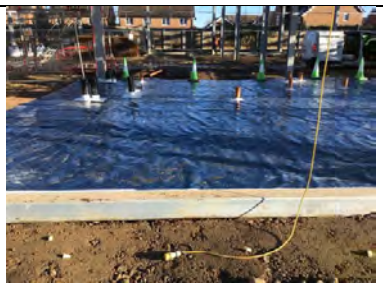
N/A.	No defects recorded and therefore no action required

Area Inspected

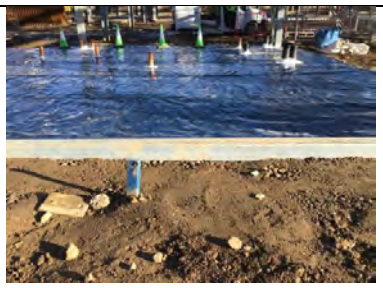


Gas Membrane Overview

A general overview of the installed Juta GP5 gas membrane to the communal area in unit 1.



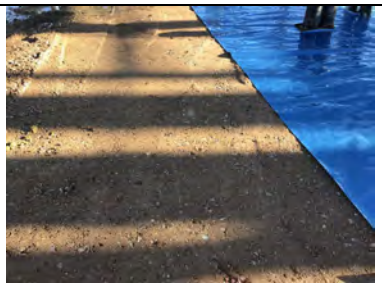
A general overview of the installed Juta GP5 gas membrane to the communal area in unit 2.



A general overview of the installed Juta GP5 gas membrane to the communal area in unit 3.

Subgrade Photos

Evidence of the rolling machine that was used on the fine coarse aggregate substrate for the membrane to be laid upon.



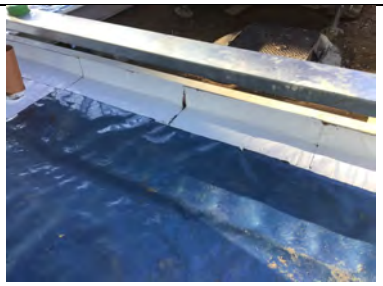
Evidence of the well rolled substrate.

Materials Used

Evidence of the Juta GP SAM that has been used for the detailing work on this project.

Evidence of the Juta GP5 gas membrane that has been used on this project.

Perimeter Detail



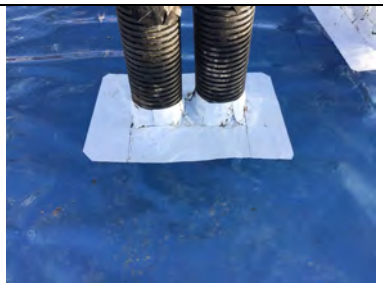
Retro fit detailing to the perimeter steel cladding rail in unit 1.

Probe testing the perimeter detailing work in unit 1.

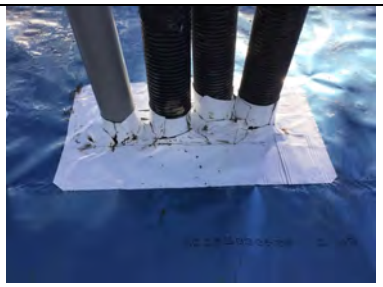
Probe testing the perimeter detailing work in units 2 & 3.

Pipe and Duct Seals

Probe testing all pipe penetration detailing in unit 1.



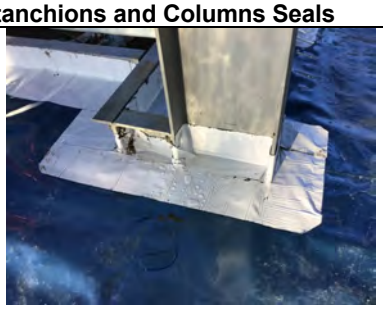
Typical pipe penetration detailing in unit 1.



Typical pipe penetration detailing in unit 2.

Probe testing all pipe penetration detailing in unit 3.

Stanchions and Columns Seals

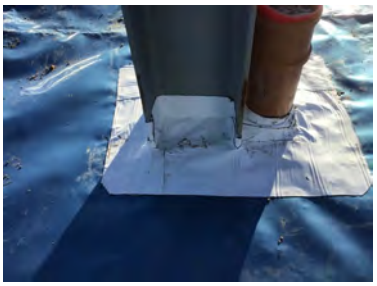


Typical stanchion detailing work in unit 1.

Probe testing all steel stanchion detailing in unit 1.

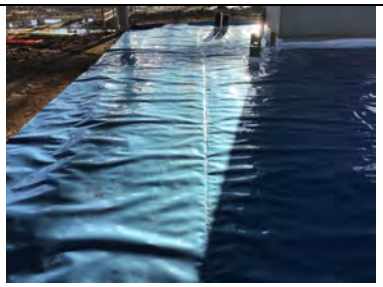
Steel stanchion detailing work in unit 2.

Probe testing all steel stanchions in unit 3.



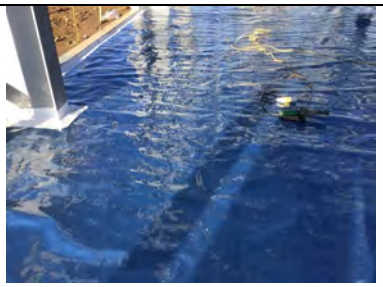
Typical steel stanchion detailing in unit 3.

Testing of Joints

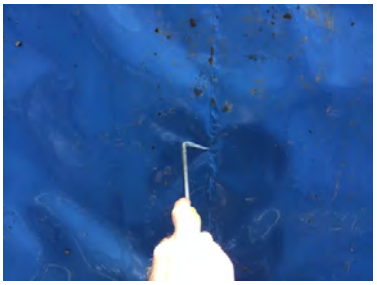


A typical hand welded membrane lap in unit 1.

Probe testing a hand welded membrane lap in unit 1.



All membrane laps have been hand welded together using a hot air gun in units 2 & 3.



Probe testing a hand welded membrane lap in unit 3.

Additional Photos

Retro fit detailing to the precast concrete lift pit wall in unit 1.

Probe testing the detailing work around the lift pit in unit 1.

Main Contractor Name: MCS		**Date: 30/01/2025**
Site Name: Headley Road East, Woodley, Reading.		**Temp: 10 °C**
		Installer: UK Membranes.
Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)	
Building Reference/Unit No:	Unit 9.	
Area Inspected:	Full Line out to GL 1-7 / A-E. (See Marked Up Plan).	
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane that has been laid upon a well rolled substrate. The membrane laps have been hand welded in some areas using a hot air gun and rolled using a neoprene roller with pressure applied with the other areas being auto welded. All detailing work to the steel Stanchions, pipe penetrations & perimeter steel cladding rail have been successfully completed using Juta GP SAM. All armoured joint metal pins have been sealed using double sided tape.	
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on	
Result of Inspection:	No Action Required all Defects rectified at time of inspection	

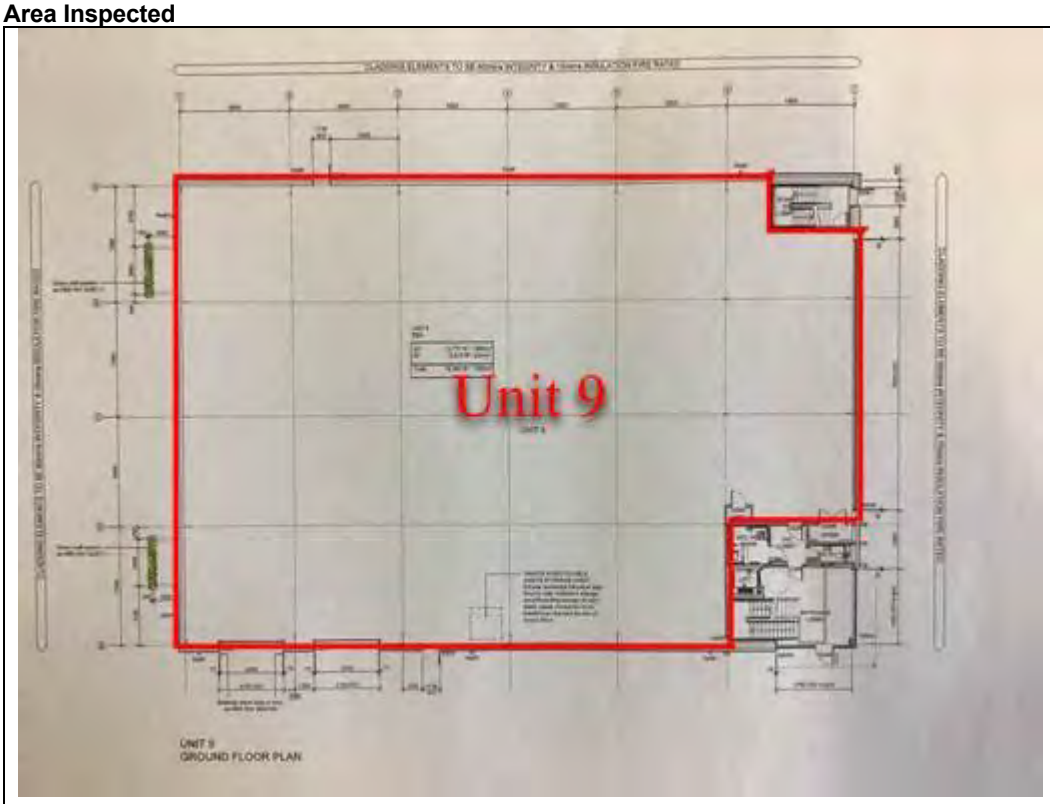
(Section 1, Materials and Method of Seal)
Gas Membrane Name: Juta GP5 gas membrane & Juta GP SAM.
Other Products Used: Double sided tape.
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735
Stanchion Seal Method: The stanchions have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735, The stanchions has been wrapped in miothenes which resrtricted the inspection to this area
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.
Others Please List: N/A.

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	**Action Required**

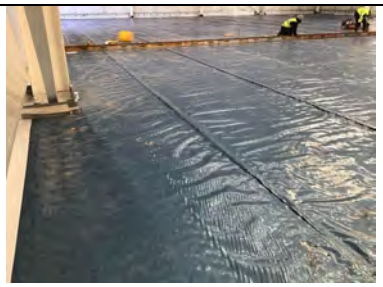
At the time of our inspection all steel stanchions had a steel plate and miothene in place around them, I was however able to inspect and probe test the inside of the web of the steel but not the face so therefore our inspection to these areas was restricted. During our inspection holes were found in the membrane around the shutter pins due to follow on trades these areas were repaired upon our inspection by UK Membranes using Juta GP SAM.	No Action Required all Defects rectified at time of inspection

Area Inspected



Gas Membrane Overview

A general overview of unit 9.



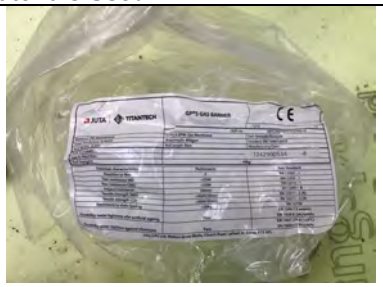
An overview of the Juta GP5 gas membrane that has been installed across the full footprint of unit 9.

Overview of the Juta GP5 gas membrane that has been installed across the full footprint of unit 9.

Subgrade Photos

Evidence of a well rolled fine aggregate substrate that the membrane has been laid upon.

Materials Used



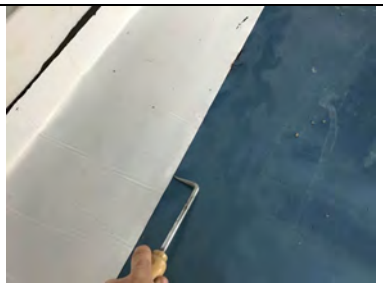
Evidence of the Juta GP5 gas membrane that has been installed as a full line out in unit 9.

Evidence of the Juta GP SAM that has been used for the detailing work on this project.

Perimeter Detail

Retro fit detailing to the perimeter cladding rail.

Probe testing all perimeter detailing.



Probe testing the perimeter detailing.

Pipe and Duct Seals

Typical pipe penetration detailing.

Probe testing a sealed pipe penetration.

Stanchions and Columns Seals

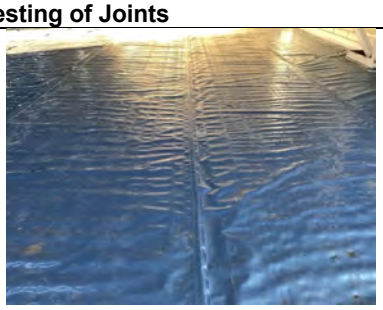
A restricted inspection took place upon todays visit due to the steel plate & miothene that had already been welded to the steel stanchions.

Typical steel stanchion detailing.

Probe testing a sealed steel stanchion.

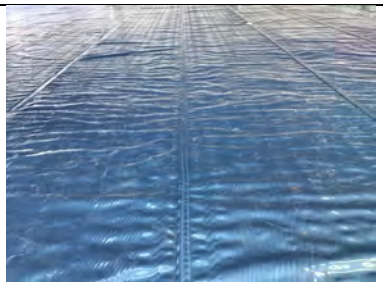
Probe testing the inner web of the steel stanchion.

Testing of Joints

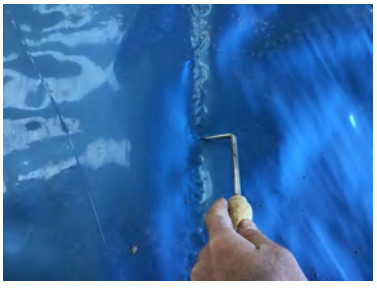


A typical auto welded membrane lap.

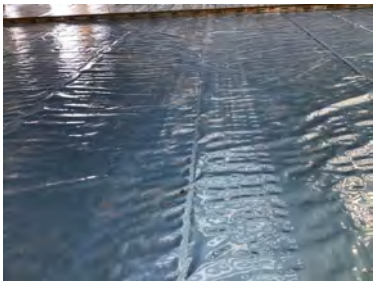
Probe testing a auto welded membrane lap.



Overview of an auto welded membrane lap.



Probe testing a hand welded membrane lap.



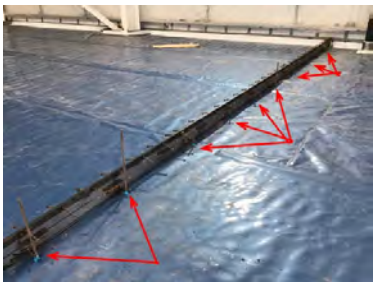
A typical hand welded membrane lap.

Additional Photos

A strip of Juta GP SAM has been heat sealed to the Juta GP5 gas membrane across the armoured joint due to excessive holes found in the membrane due to follow on trades.

A hole found in the membrane upon our inspection.

Patch repair using Juta GP SAM to damaged membrane.

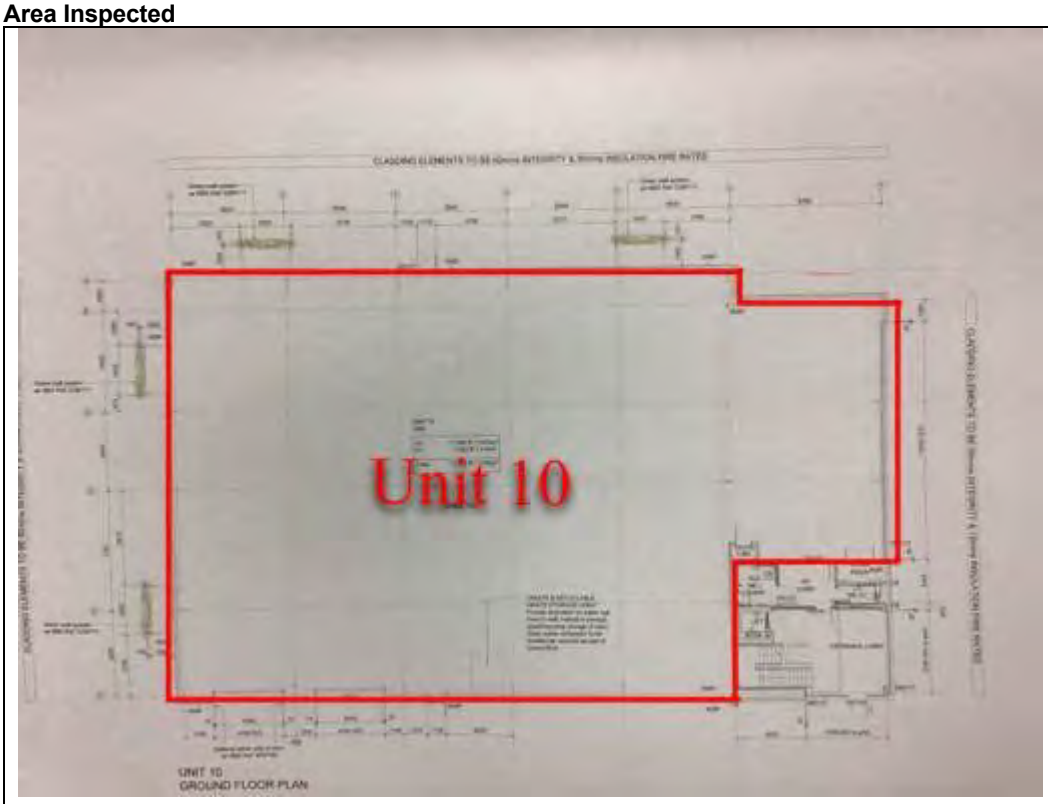


Double sided tape has been used to seal the bases of the armoured shutter pins.

Main Contractor Name: MCS		**Date: 03/02/2025**
Site Name: Headley Road East, Woodley, Reading.		**Temp: 8 ºC**
		Installer: UK Membranes.
Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)	
Building Reference/Unit No:	Unit 10.	
Area Inspected:	Full Line out to GL 1-7 / A-F. (See Marked Up Plan).	
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane that has been laid upon insulation boards. The membrane laps have been hand welded in some areas using a hot air gun and rolled using a neoprene roller with pressure applied with the other areas being auto welded. All detailing work to the steel Stanchions, pipe penetrations & perimeter steel cladding rail have been successfully completed using Juta GP SAM. All armoured joint metal pins have been sealed using double sided tape.	
Sub-Grade Preparation:	The membrane is being laid above of insulation boards and is acceptable to lay the membrane on	
Result of Inspection:	No Action Required all Defects rectified at time of inspection	
(Section 1, Materials and Method of Seal)		
Gas Membrane Name: Juta GP5 gas membrane & Juta GP SAM.		
Other Products Used: Double sided tape.		
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed		
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Stanchion Seal Method: The stanchions have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735, The stanchions has been wrapped in miothenes which resrtricted the inspection to this area		
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.		
Others Please List: N/A.		
(Section 2, Testing and Inspection Method)		
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection	
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like	
(Section 3, Defects List)		**Action Required**

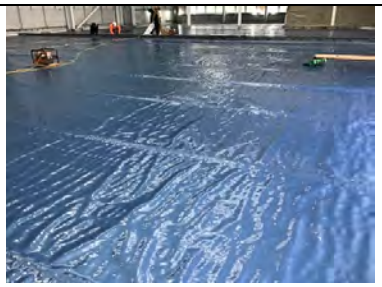
At the time of our inspection all steel stanchions had a steel plate and miothene in place around them, I was however able to inspect and probe test the inside of the web of the steel but not the face of the steel stanchion so therefore our inspection to these areas was restricted. During our inspection holes were found in the membrane around the armoured joint pins due to follow on trades these areas were repaired upon our inspection by UK Membranes using Juta GP SAM.	No Action Required all Defects rectified at time of inspection

Area Inspected



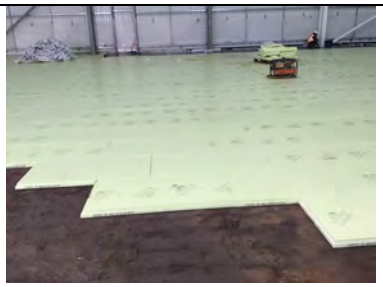
Gas Membrane Overview

A general overview of unit 10.



An overview of the Juta GP5 gas membrane that has been installed across the full footprint of unit 10.

Subgrade Photos



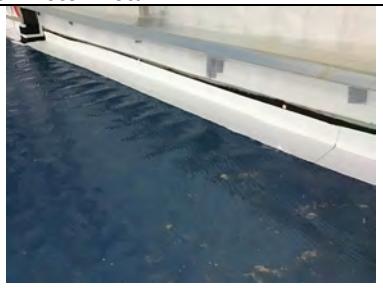
Evidence of the insulation boards being laid prior to the installation of the loose laid gas membrane.

Materials Used

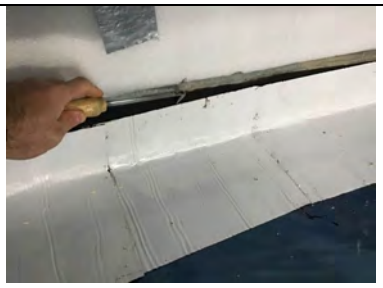
Evidence of the Juta GP SAM that has been used for the detailing work on this project.

Evidence of the Juta GP5 gas membrane that has been installed as a full line out in unit 10.

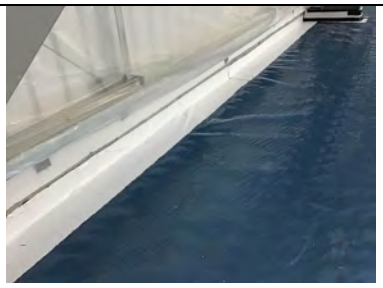
Perimeter Detail



Overview of the retro fit detailing to the perimeter cladding rail.



Probe testing the cladding rail detailing.



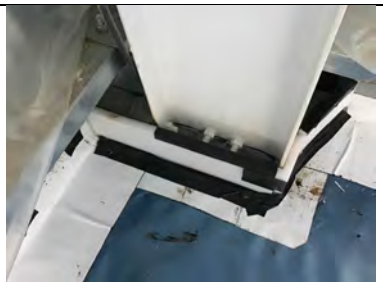
Overview of the retro fit detailing to the perimeter cladding rail.

Pipe and Duct Seals

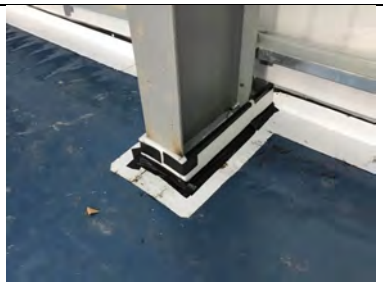
Typical pipe penetration detailing.

Probe testing the pipe penetration detailing.

Stanchions and Columns Seals



A restricted inspection took place upon todays visit due to the steel plate & miothene that had already been welded to the steel stanchions.



A restricted inspection took place upon todays visit due to the steel plate & miothene that had already been welded to the steel stanchions.

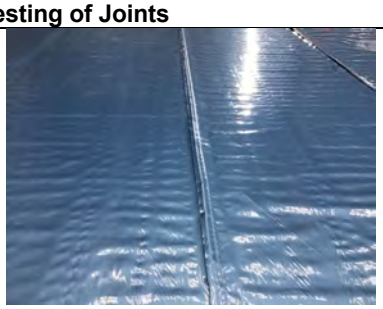
Probe testing the inner web of the steel stanchion.

Probe testing a sealed steel stanchion.

Probe testing the inner web of the steel stanchion.

A restricted inspection took place upon todays visit due to the steel plate & miothene that had already been welded to the steel stanchions.

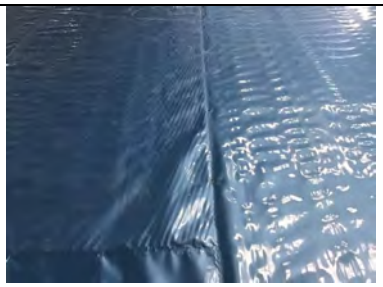
Testing of Joints



A typical auto welded membrane lap.

Probe testing a auto welded membrane lap.

Probe testing a typical hand welded membrane lap.



Overview of a typical hand welded membrane lap.

Additional Photos

A strip of Juta GP SAM has been heat sealed to the Juta GP5 gas membrane across the armoured joint due to excessive holes found in the membrane due to follow on trades.

Double sided tape has been used to sealed the armoured joint metal pins.

Patch repair using Juta GP SAM to a weld defect found upon our inspection.

Main Contractor Name: MCS	**Date: 10/02/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 5 °C**
	Installer: UK Membranes.

Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)
Building Reference/Unit No:	Units 4 & 5.
Area Inspected:	Line out to communal & stair core areas. (See Marked Up Plan).
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane that has been laid upon a well rolled fine aggregate substrate floor to the communal & stair core areas in units 4 & 5. All membrane laps have been hand welded together using a hot air gun and rolled using a neoprene roller with pressure applied. All detailing work to the steel Stanchions & pipe penetrations have successfully completed using Juta GP SAM. The perimeter steel cladding rail and precast concrete lift pit has been sealed as a retro fit detail using Juta GP SAM. All metal rod armoured joint pins have been sealed using double sided butyl tape.
Sub-Grade Preparation:	The subgrade had already been covered prior to our inspection and therefore has not been inspected by MEC Environmental
Result of Inspection:	A re-inspection of the defects is required once completed

(Section 1, Materials and Method of Seal)

Gas Membrane Name: Juta GP5 gas membrane & Juta GP SAM.

Other Products Used: Double sided butyl tape.

Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed

Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735

Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area

Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.

Others Please List: Retro fit detailing work to the precast concrete lift pit & the concrete stair bases.

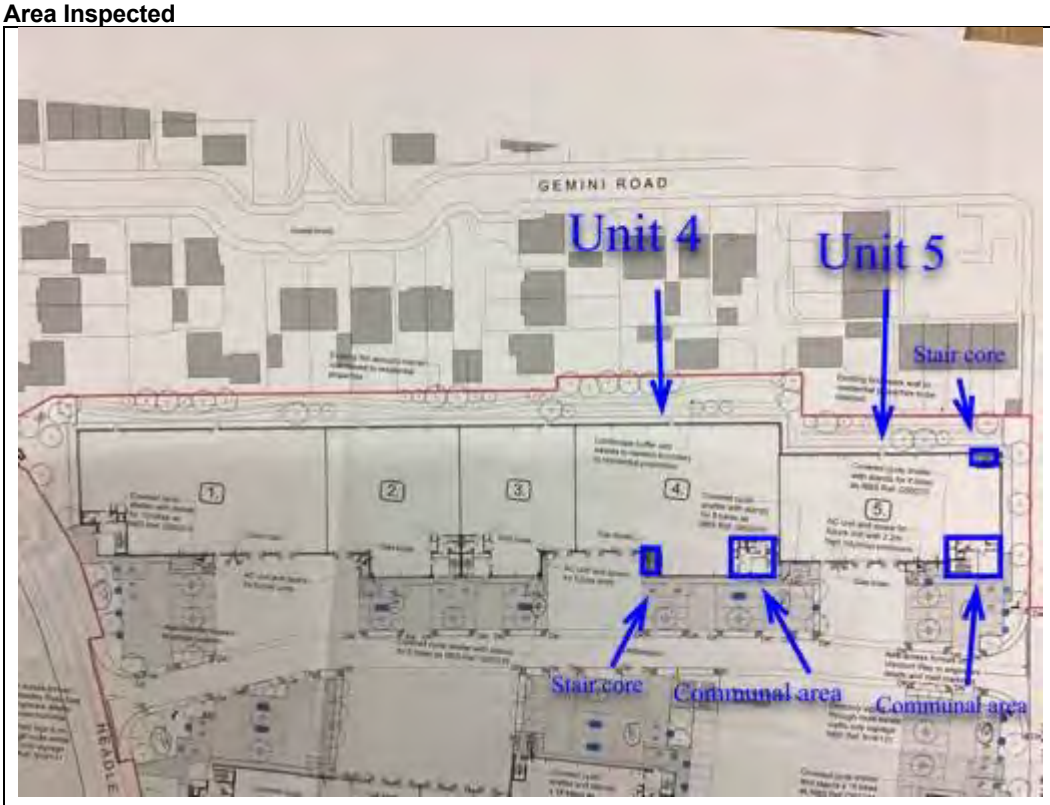
(Section 2, Testing and Inspection Method)

Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	**Action Required**

Excessive damage was found to the membrane at the time of our inspection caused by follow on trades, to all areas noted above. A re inspection will be required when complete. NOTE: the was no evidence of the Juta GP5 gas membrane or Juta GP SAM left on site upon our inspection.	A re-inspection of the defects is required once completed

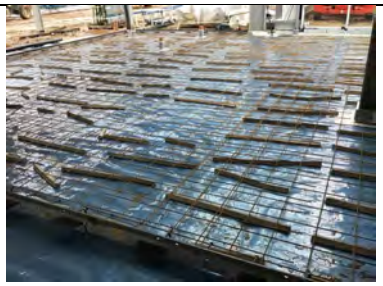
Area Inspected



Gas Membrane Overview

A general overview of units 4 & 5.

An overview of the Juta GP5 gas membrane installed to the stair core area in unit 4.



Overview of the Juta GP5 gas membrane that has been installed to the communal area in unit 4.

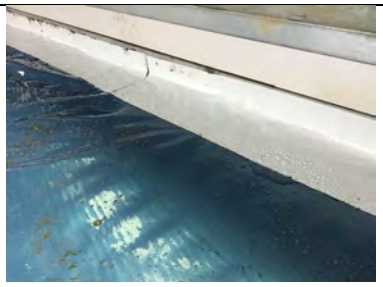
Overview of the Juta GP5 gas membrane that has been installed to the communal area in unit 5.

An overview of the Juta GP5 gas membrane installed to the stair core area in unit 5.

Subgrade Photos

Materials Used

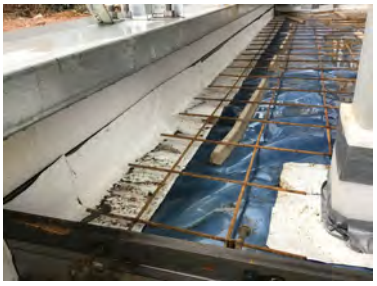
Perimeter Detail



Retro fit detailing to the perimeter cladding rail in unit 4.

Probe testing all retro fit detailing in unit 4.

Probe testing the retro fit detailing in unit 5.



Overview of the retro fit detailing in the communal area in unit 5.

Pipe and Duct Seals

Probe testing a sealed pipe penetration in unit 4.

Typical pipe penetration detailing in unit 4.

Probe testing a typical pipe penetration detail in plot 5.

Probe testing all sealed pipe penetrations in unit 5 communal areas.

Stanchions and Columns Seals

Typical steel stanchion detailing in unit 4.

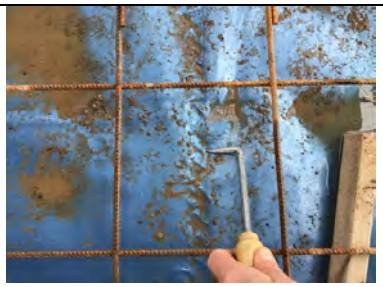
Restricted inspection to the detailing work around the steel stanchion in unit 4.

Overview of the detailing to the inner web of the steel stanchion in unit 4.

Probe testing to the inner web of the steel stanchion in unit 5.

Restricted inspection of the steel stanchion detailing work in unit 5.

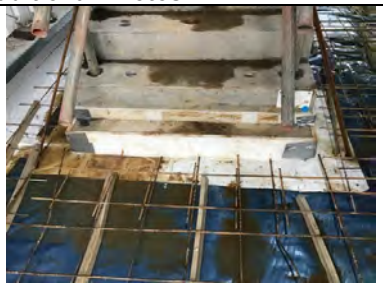
Testing of Joints



Probe testing all hand welded membrane laps through the steel mesh that was in place at the time of our inspection.

Probe testing a typical hand welded membrane lap.

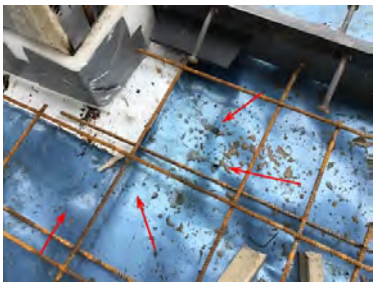
Additional Photos



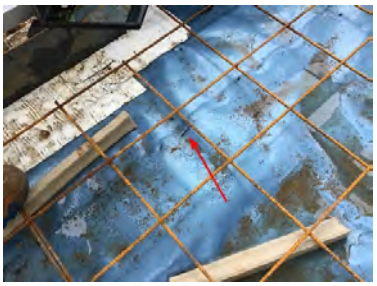
Restricted inspection to the bases of the concrete stairs due to the miothene in place.

Miothene was in place around the lift pit detailing in units 4 & 5 at the time of out inspection.

Miothene was covering the detailing work around the lift pit at the time of our inspection.

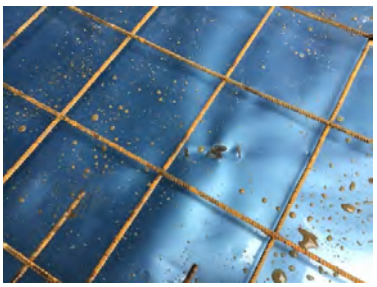


Excessive damage was found during our inspection due to follow on trades.



Damaged membrane was found during our inspection.

Damaged membrane was found upon our inspection.



Damage found on the membrane upon our inspection.

Slice in the membrane found upon our inspection.

Slices in the membrane found upon our inspection.

Damaged found to the membrane upon our inspection.

Main Contractor Name: MCS	**Date: 14/02/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 3 °C**
	Installer: UK Membranes.
Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)
Building Reference/Unit No:	Units 4 & 5.
Area Inspected:	Remedial works to communal & stair core areas. (See Marked Up Plan).
Description of Works:	MEC Environmental carried out a thorough inspection of the Remedial work. All damaged membrane that was caused by follow on trades has now been repaired using approximately 300mm x 300mm patches of SAGM. All metal rod, armoured joint pins have been sealed using double sided butyl tape. No evidence was left on site of the SAGM & Double sided butyl tape therefore MEC was unable to provide photographic evidence of the material used for the remedial work.
Sub-Grade Preparation:	N/A
Result of Inspection:	No Action Required all Defects rectified at time of inspection

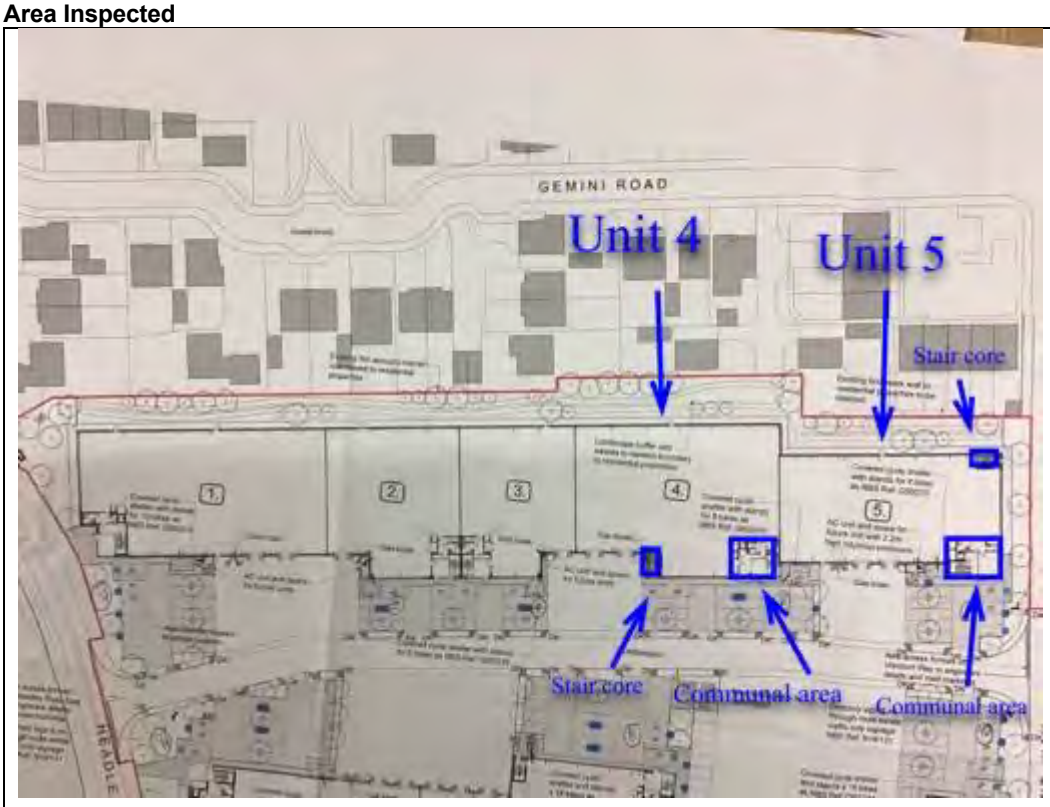
(Section 1, Materials and Method of Seal)
Gas Membrane Name: SAGM.
Other Products Used: Double sided butyl tape.
Perimeter Seal Method: Not Applicable
Service Entry Seal Method: Not Applicable
Stanchion Seal Method: Not Applicable
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.
Others Please List: Remedial work to damaged membrane.

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	**Action Required**
Excessive damage was found to the membrane at the time of our inspection caused by follow on trades, to all areas noted above. A re inspection will be required when complete.	No Action Required all Defects rectified at time of inspection

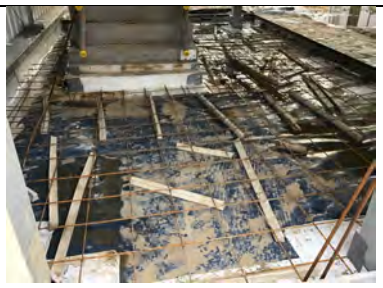
NOTE: the was no evidence of the Juta GP5 gas membrane or Juta GP SAM left on site upon our inspection.	

Area Inspected

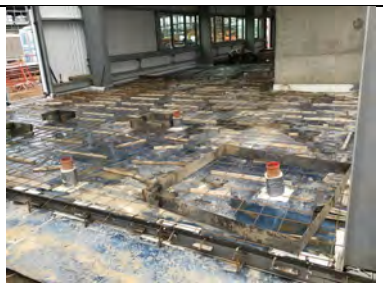


Gas Membrane Overview

A general overview of units 4 & 5.



Overview of stair core area in unit 4.



Overview of the communal area in unit 4.

Overview of the communal area in unit 5.

Overview of the stair core area in unit 5.

Subgrade Photos

Materials Used

Perimeter Detail

Pipe and Duct Seals

Stanchions and Columns Seals

Testing of Joints

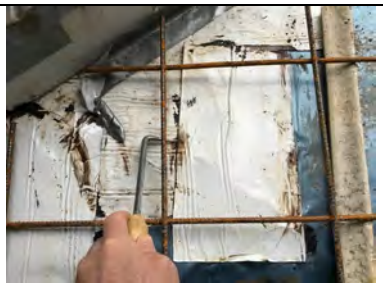
Additional Photos

Overview of the remedial work that has been achieved by using SAGM around the armoured joint metal pins and using a strip of double sided butyl tape to the base of the pins in unit 4 stair core area.

A patch of SAGM has been heat sealed to all damaged membrane around the armoured joint pins, sealing the base of the pins using double sided butyl tape.

Overview of the remedial work that has been achieved by using SAGM around the armoured joint metal pins and using a strip of double sided butyl tape to the base of the pins in unit 4 communal area.

Overview of the remedial work that has taken place to the communal area in unit 4.



Probe testing all SAGM remedial work that has been done across units 4 & 5.

Overview of the remedial work that has taken place in unit 5 communal area.

Retro fit detail using SAGM to all damaged areas in unit 5 stair core area.

Overview of the patch repairs that have been achieved to the damaged membrane caused by follow on trades in unit 5 stair core area.

Main Contractor Name: MCS	**Date: 04/03/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 4 °C**
	Installer: UK Membranes.
Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)
Building Reference/Unit No:	Unit 6.
Area Inspected:	Full line out to the communal & stair core areas. (See Marked Up Plan).
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 Gas Membrane that has been installed across the full footprint of the communal & stair core area in unit 6. The substrate was already covered prior to our inspection and therefore not inspected by MEC Environmental. All pipe penetrations, stanchions the retro fit detailing to the base of the stair core and cladding rail have been sealed using SAGM. The armoured joint pins have been sealed using double sided butyl tape. MEC was unable to obtain photographic evidence of any of the products used during our inspection on this project.
Sub-Grade Preparation:	The subgrade had already been covered prior to our inspection and therefore has not been inspected by MEC Environmental
Result of Inspection:	No Action Required all Defects rectified at time of inspection

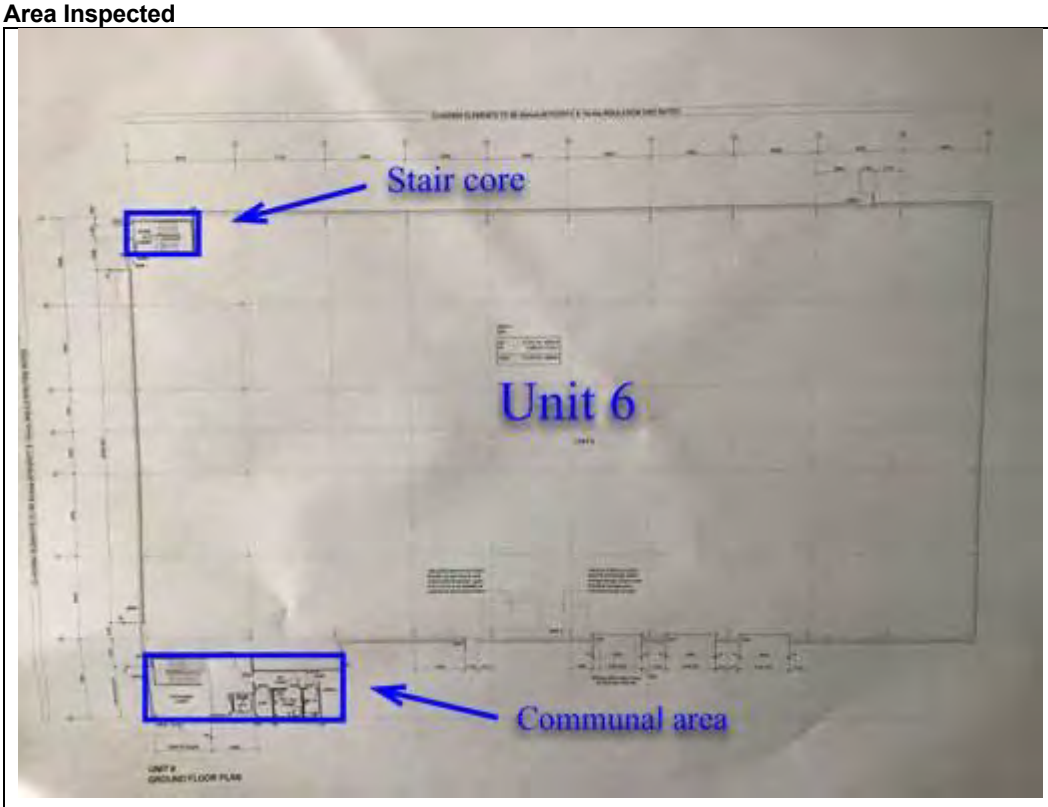
(Section 1, Materials and Method of Seal)
Gas Membrane Name: Juta GP5 Gas Membrane & SAGM.
Other Products Used: Double sided butyl tape.
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735
Stanchion Seal Method: The stanchions have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735, The stanchions has been wrapped in miothenes which resrtricted the inspection to this area
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.
Others Please List: Armoured joint pin seals & base of concrete stair core detailing.

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	**Action Required**

There was no recorded damage to the membrane during our inspection, however I was unable to inspect the membrane underneath the already poured service pit.	No Action Required all Defects rectified at time of inspection

Area Inspected



Gas Membrane Overview

Overview of the full line out to the communal area in unit 6.

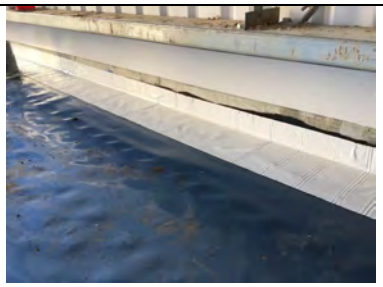
Overview of the full line out to the stair core area in unit 6.

A general overview of unit 6.

Subgrade Photos

Materials Used

Perimeter Detail



Retro fit detailing to the perimeter cladding rail.

Probe testing all perimeter detailing work.

Perimeter retro fit detailing work.

Pipe and Duct Seals

Typical pipe penetration detailing.

Probe testing a typical pipe penetration detail.

Probe testing a typical pipe penetration detail.

Stanchions and Columns Seals

Probe testing the inner web of the stanchion detailing work.

Restricted inspection of the steel stanchion upon our inspection.

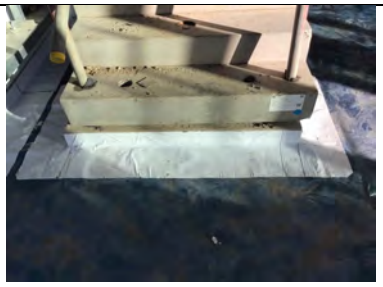
Probe testing a typical stanchion detail.

Probe testing a typical stanchion detail in the stair core area.

Testing of Joints

Probe testing all hand welded membrane laps.

Additional Photos



Retro fit detailing to the base of the concrete stair core.

Probe testing to the stair core detailing.

Double sided butyl tape used on the bases of the metal rods used for the armoured joints.

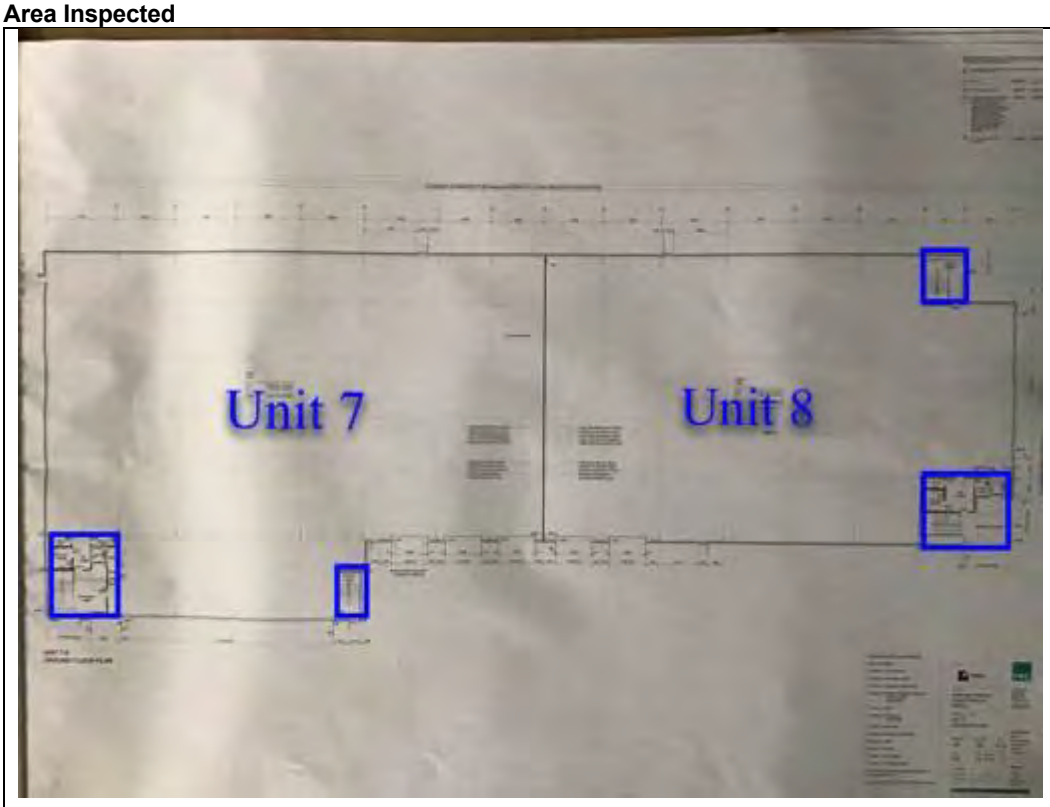
SAGM detailing to the extended membrane underneath the lift pit.

The SAGM has been sealed to the extended membrane that was previously installed underneath the service pit, the membrane underneath the service pit has not been inspected by MEC Environmental. I can therefore confirm that the membrane has been installed correctly.

Main Contractor Name: MCS		**Date: 07/03/2025**
Site Name: Headley Road East, Woodley, Reading.		**Temp: 9 °C**
		Installer: UK Membranes.
Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)	
Building Reference/Unit No:	Units 7 & 8.	
Area Inspected:	Full line out to the communal & stair core areas. (See Marked Up Plan).	
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 Gas Membrane that has been installed across the full footprint of the communal & stair core areas in units 7 & 8. The substrate was already covered prior to our inspection and therefore not inspected by MEC Environmental. All pipe penetrations, stanchions the retro fit detailing to the base of the concrete stair core and perimeter cladding rail have been sealed using SAGM. The armoured joint pins have been sealed using double sided butyl tape. MEC was unable to obtain photographic evidence of any of the products used during our inspection on this project.	
Sub-Grade Preparation:	The subgrade had already been covered prior to our inspection and therefore has not been inspected by MEC Environmental	
Result of Inspection:	No Action Required all Defects rectified at time of inspection	
(Section 1, Materials and Method of Seal)		
Gas Membrane Name: Juta GP5 Gas Membrane, Juta GP SAM & Juta GP1 SAM		
Other Products Used: Double sided butyl tape.		
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed		
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area		
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.		
Others Please List: Armoured joint pin seals & base of concrete stair core detailing.		
(Section 2, Testing and Inspection Method)		
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection	
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like	
(Section 3, Defects List)		**Action Required**

There was no recorded damage to the membrane during our inspection. All patch repairs were completed prior to our inspection by UK Membranes.	No Action Required all Defects rectified at time of inspection

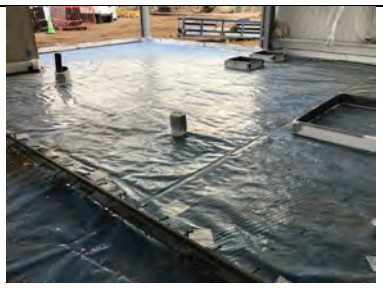
Area Inspected



Gas Membrane Overview

Overview of the Juta GP5 gas membrane installed across the full footprint of the communal area in unit 7.

Overview of the Juta GP5 gas membrane installed across the full footprint of the stair core area in unit 7.



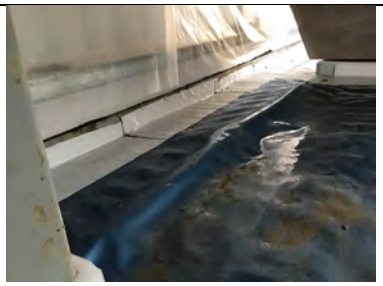
Overview of the Juta GP5 gas membrane installed across the full footprint of the communal area in unit 8.

Overview of the Juta GP5 gas membrane installed across the full footprint of the stair core area in unit 8.

Subgrade Photos

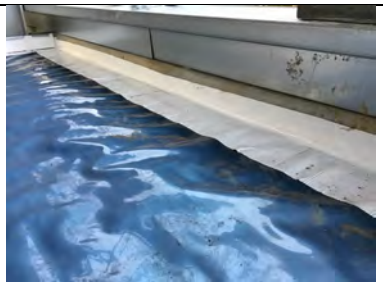
Materials Used

Perimeter Detail



Retro fit detailing in units 7 & 8.

Probe testing all perimeter retro fit detailing within units 7 & 8.



Retro detailing to the perimeter cladding rail.

Probe testing all perimeter detailing within units 7 & 8.

Pipe and Duct Seals

Probe testing all pipe penetration detailing.

Typical pipe penetration detailing in unit 7 communal area.

Typical pipe penetration detailing.

Typical pipe penetration detailing.

Stanchions and Columns Seals

Restricted inspection to the steel stanchions within units 7 & 8.

Restricted inspection to the steel stanchions within units 7 & 8.

Probe testing the inner web of the steel stanchion.

Probe testing the inner web of the steel stanchion.

Testing of Joints

Probe testing all typical hand welded membrane laps.

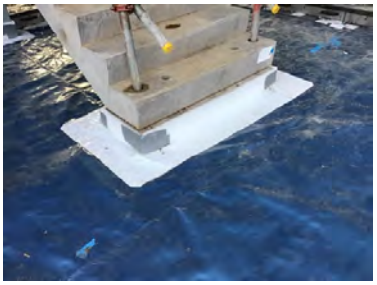
Probe testing all hand welded membrane laps.

Additional Photos

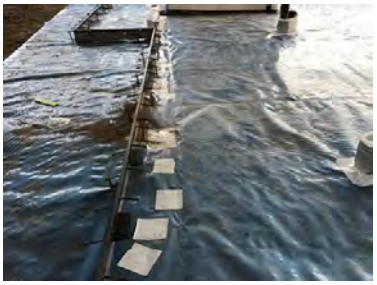
Retro fit detailing to the concrete stair core in unit 7.

Probe testing all retro fit detailing in unit 7.

Retro fit detailing using Juta GP1 SAM around the corner lift pit.



The miothene was in place around the concrete stairs in unit 8.



Patch repairs to damaged membrane along side the armoured joint pins in unit 7.

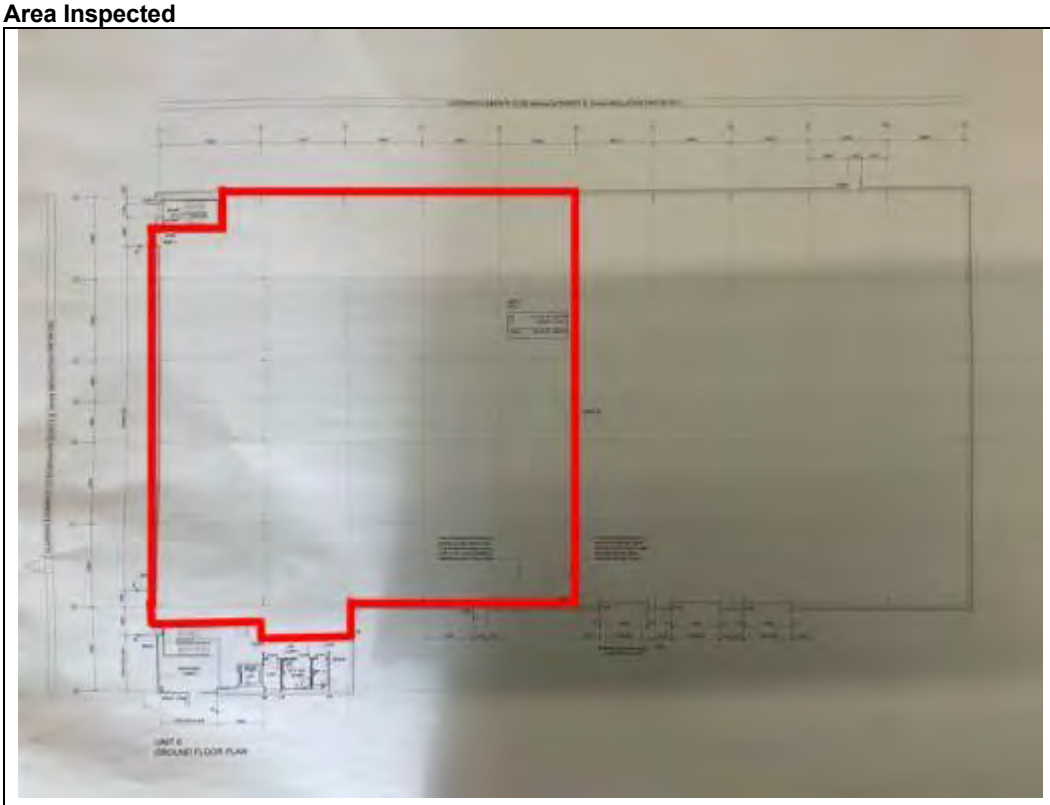
Double sided butyl tape has been used to seal the base of the armoured joint pins.

Main Contractor Name: MCS Group		**Date: 29/04/2025**
Site Name: Headley Road East, Woodley, Reading.		**Temp: 15 °C**
		Installer: UK Membranes
Postcode: RG5 4SJ	**Surveyor:** James Hall (TGPV)	
Building Reference/Unit No:	Unit 6	
Area Inspected:	Laser Screed Pour - Gridlines: A-G & 1-6 See Marked Up Plan	
Description of Works:	MEC Environmental carried out a thorough inspection of the gas membrane. The installation team have installed Juta GP5 Gas Barrier to the full line out installation as the pour progressed using 2 meter rolls. This was laid upon graded coarse aggregate substrate that's continuously rolled prior to gas barrier installation. All laps between adjacent sheets of Juta GP5 were hand welded with rolled pressure applied. Steel stanchions were detailed using Juta GP1 SAM, however these were partially a restricted inspection due to concrete workers installed miothene strips surrounding each steel stanchion. Pipe penetration's and retrofit termination detailing to the perimeter screed rail was completed using Juta GP1 SAM with adequate heat and pressure applied. During our inspection we witnessed the installer carrying out their own CQA repairs as the pour progressed.	
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on	
Result of Inspection:	No Action Required all Defects rectified at time of inspection	
(Section 1, Materials and Method of Seal)		
Gas Membrane Name: Juta GP5 Gas Barrier		
Other Products Used: Juta GP1 SAM		
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed		
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area		
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.		
Others Please List: Armoured joint pin holes were detailed using Juta GP1 SAM		
(Section 2, Testing and Inspection Method)		
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection	
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the	

	membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	Action Required
N/A	No Action Required all Defects rectified at time of inspection

Area Inspected



Gas Membrane Overview

General overview of the laser screed pour area.

Overview of the installation of Juta GP5 gas barrier.

Overview of the installation of Juta GP5 gas barrier as the pour progressed.

Subgrade Photos

Substrate being continuously rolled prior to Juta GP5 gas barrier installation.

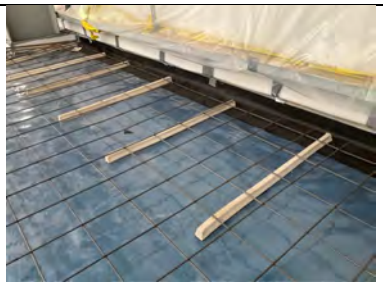
Substrate being continuously rolled prior to Juta GP5 gas barrier installation.

Materials Used

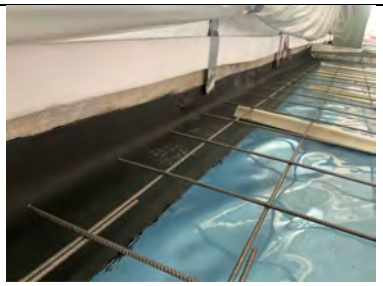
Evidence of the Juta GP5 gas barrier packaging label.

Evidence of the Juta GP1 SAM.

Perimeter Detail



Overview of the termination detailing to the perimeter cladding rail.



Overview of the termination detailing to the perimeter cladding rail.

Probe testing along termination detailing to perimeter edge cladding rail.

Probe testing along termination detailing to perimeter edge cladding rail.

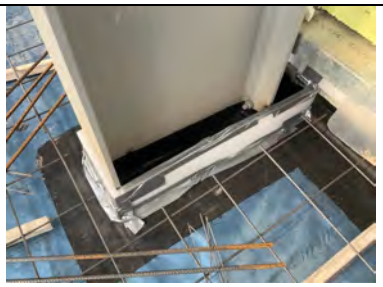
Pipe and Duct Seals

Probe testing to pipe penetration details.

Probe testing to pipe penetration details.

Stanchions and Columns Seals

Steel stanchion detailed using Juta GP1 SAM but restricted inspection.



Steel stanchion detailed using Juta GP1 SAM but restricted inspection.

Probe testing to partially restricted steel stanchion.

Probe testing to partially restricted steel stanchion.

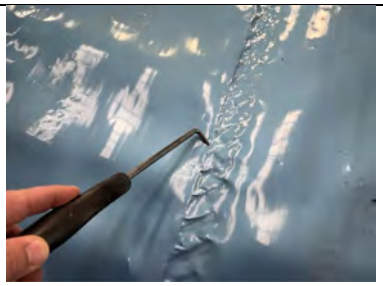
Probe testing to partially restricted steel stanchion.

Steel stanchion detailed using Juta GP1 SAM but restricted inspection.

Testing of Joints

Probe testing along hand welded membrane lap joints.

Probe testing along hand welded membrane lap joints.



Probe testing along hand welded membrane lap joints.

Additional Photos

Armoured joint pins were detailed using Juta GP1 SAM.

Probe testing to armoured joint pins.

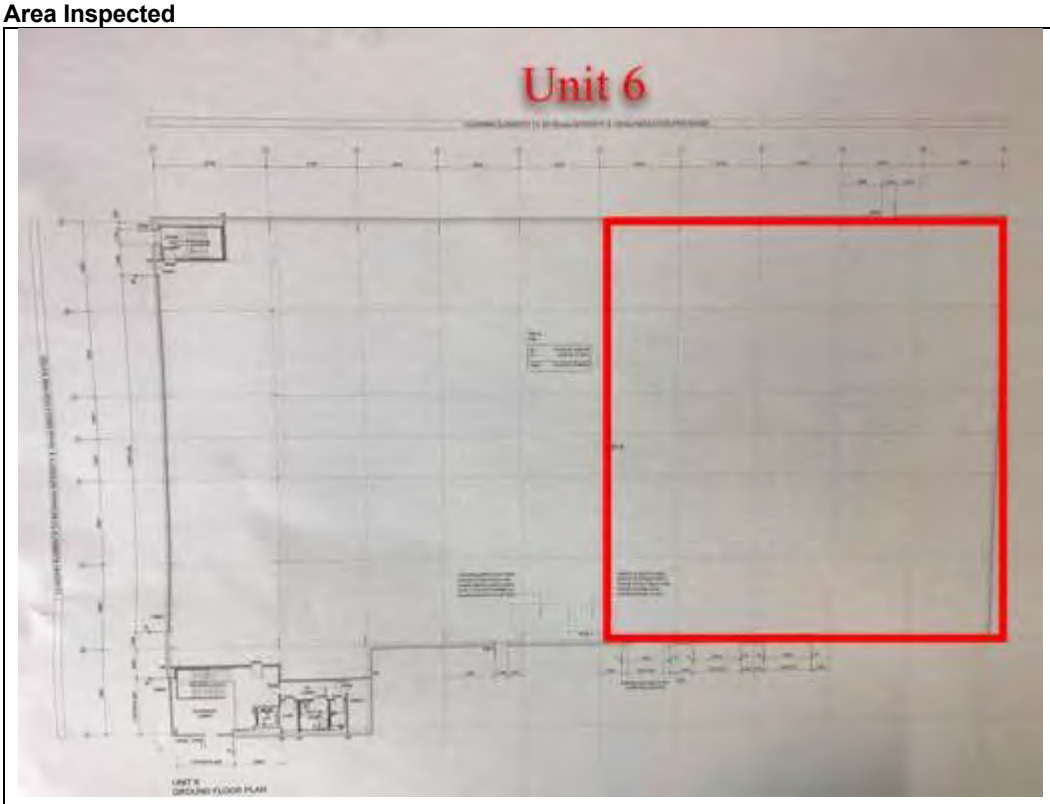
Probe testing to installer CQA patch repairs.

Evidence that the perimeter edge cladding rail was primed.

Main Contractor Name: MCS Group.		**Date: 30/04/2025**
Site Name: Headley Road East, Woodley, Reading.		**Temp: 18 °C**
		Installer: UK Membranes.
Postcode: RG5 4JS.	**Surveyor:** Adam McDermott (TGPV)	
Building Reference/Unit No:	Unit 6.	
Area Inspected:	Full line out to pour 2 of 2, GL 6-11 / A-G (See Marked Up Plan).	
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane that has been lined on a just in time basis as the pour progresses, hand welding all membrane laps using a hot air gun. The membrane has been laid upon a well rolled fine coarse aggregate substrate. All steel stanchions, 1no pipe penetration and the retro fit detailing to the perimeter cladding rail has been completed using Juta GP1 SAM. The bases of the armoured joint shutter pins have been sealed using Juta GP1 SAM.	
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on	
Result of Inspection:	No Action Required all Defects rectified at time of inspection	
(Section 1, Materials and Method of Seal)		
Gas Membrane Name: Juta GP5 gas membrane & Juta GP1 SAM.		
Other Products Used: N/A.		
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed		
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area		
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.		
Others Please List: Metal shutter pin base detailing & patch repairs.		
(Section 2, Testing and Inspection Method)		
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection	
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like	
(Section 3, Defects List)		**Action Required**

All CQA repairs have been carried out by UK Membranes as the pour is progressing. All steel stanchions in pour 2 in unit 6, have been noted as a restricted inspection due to the miothene already being in place at the time of our visit.	No Action Required all Defects rectified at time of inspection

Area Inspected



Gas Membrane Overview

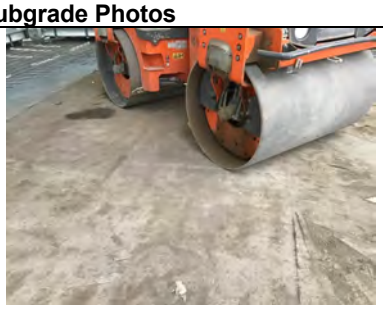
A general overview of unit 6.

Overview of the Juta GP5 gas membrane installation as the pour progresses.

Overview of the Juta GP5 gas membrane installed on a just in time basis as the pour progresses.

Overview of the Juta GP5 gas membrane installed on a just in time basis as the pour progresses.

Subgrade Photos



The substrate had been continuously rolled during the installation of the gas membrane as the pour progresses.

Evidence of a well rolled substrate.

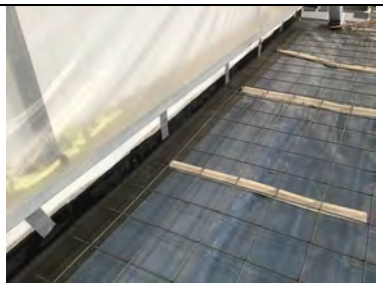
Materials Used

Evidence of the Juta GP5 gas membrane packaging label.

Evidence of the Juta GP1 SAM that has been used for the detailing on this project.

Perimeter Detail

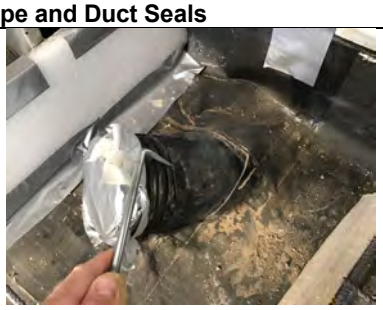
Probe testing the retro fit detailing around the perimeter of unit 6.



Retro fit detail to the perimeter cladding rail.

Probe testing the perimeter cladding rail detailing.

Pipe and Duct Seals



Probe testing a typical pipe penetration detail.

Stanchions and Columns Seals

Probe testing the inner web of the steel stanchion.

Probe testing the inner web of the steel stanchion.

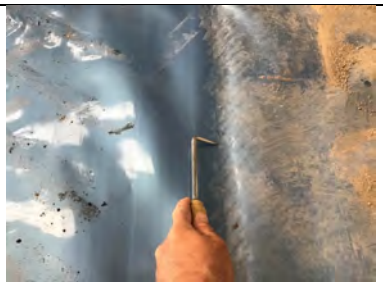
Miothene was in place around the steel stanchions at the time of our inspection.

Restricted inspection of the steel stanchion due to the miothene being in place at the time of our inspection.

Testing of Joints

Overview of a typical hand welded membrane lap.

Probe testing all hand welded membrane laps.

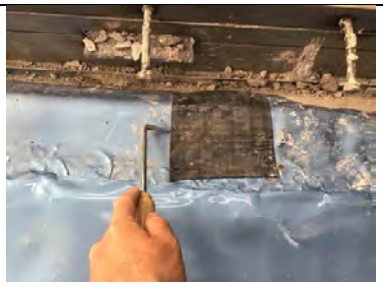


Probe testing a hand welded membrane lap.

Additional Photos

The bases of the armoured joint pin holes have been sealed using Juta GP1 SAM.

All armoured joint pin bases have been sealed using Juta GP1 SAM.



Patch repair using Juta GP1 SAM.

Main Contractor Name: MCS Group	**Date: 07/05/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 13 °C**
	Installer: UK Membranes

Postcode: RG5 4SJ	**Surveyor:** James Hall (TGPV)
Building Reference/Unit No:	Units 1-5
Area Inspected:	Unit 1 - Pour 1 of 2. Gridlines: A-E/1-6 See Marked Up Plan
Description of Works:	MEC Environmental carried out a thorough inspection of the gas membrane. The installation team have installed Juta GP5 Gas Barrier as a full line out as the pour progresses. This was laid upon graded coarse aggregate, that was continuously rolled prior to gas membrane installation. All laps between adjacent sheets were auto welded and or alternatively hand welded with rolled pressure applied. All steel stanchions, pipe penetration's and retrofit termination detailing to the perimeter cladding rail was completed using Juta GP1 SAM with adequate heat and pressure applied. During today's inspection MEC inspected the next pours perimeter edge termination detailing. During inspection we witnessed the installer carrying out their own CQA repairs as the pour progressed. Armoured joint pins were detailed using Juta GP1 SAM.
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on
Result of Inspection:	No Action Required all Defects rectified at time of inspection

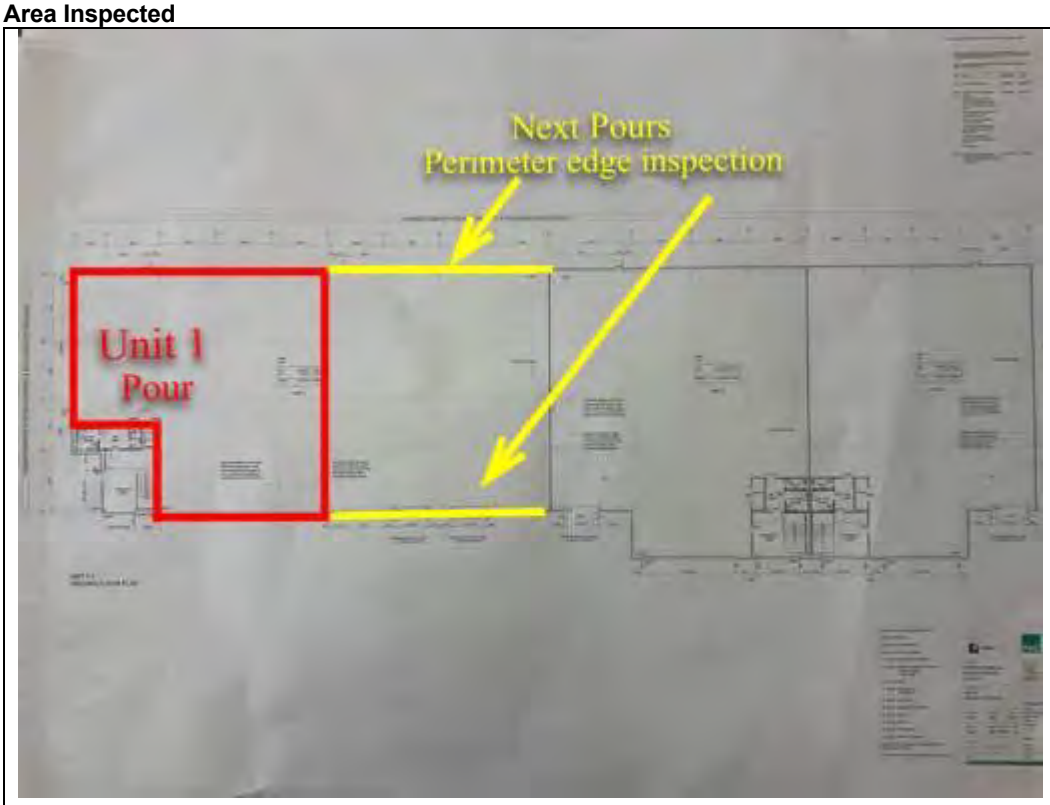
(Section 1, Materials and Method of Seal)
Gas Membrane Name: Juta GP5 Gas Barrier
Other Products Used: Juta GP1 SAM
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of welding with a hot air automatic welding machine, the width of the welded joint is a minimum of 30mm.
Others Please List: N/A

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the

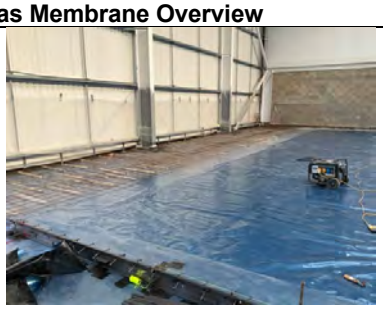
	membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	Action Required
2no of defects recorded, these were patched repaired by installer and inspected.	No Action Required all Defects rectified at time of inspection

Area Inspected

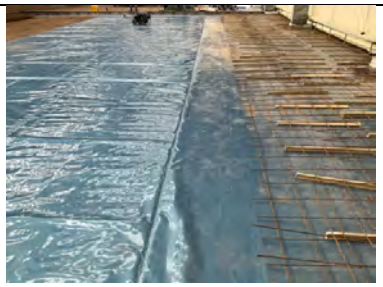


Gas Membrane Overview



Overview of the installation of Juta GP5 Gas Barrier.

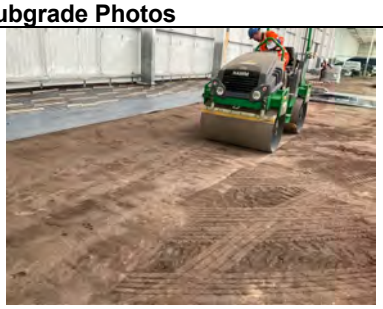
Overview of the installation to the undercroft area.



Overview of the installation of Juta GP5 Gas Barrier.

Overview of the installation of Juta GP5 Gas Barrier as the pour progressed.

Subgrade Photos

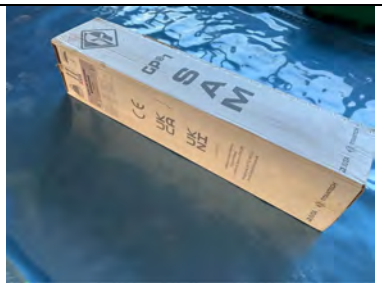


Substrate being continuously rolled prior to gas membrane installation.

Substrate rolled in prep for gas membrane installation.

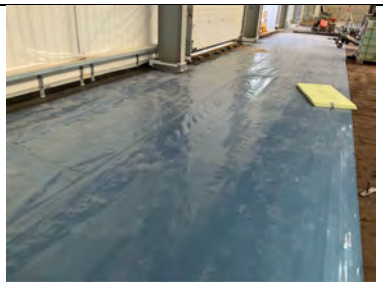
Materials Used

Evidence of the Juta GP5 gas barrier packaging label.

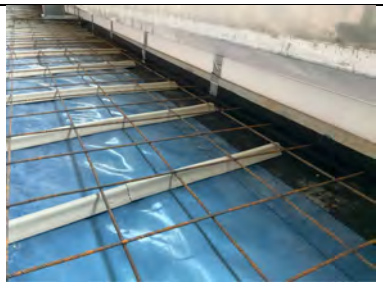


Evidence of the Juta GP1 SAM packaging.

Perimeter Detail



Overview of the perimeter edge



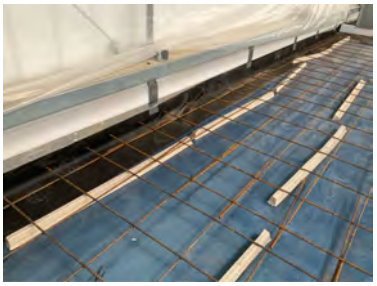
Overview of the retrofit termination

Probe testing to perimeter edge termination.

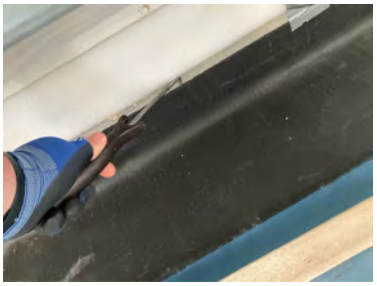
termination detailing to the next pour.

detailing to perimeter cladding rail using Juta GP1 SAM.

Probe testing to perimeter edge termination.



Overview of the retrofit termination detailing to perimeter cladding rail using Juta GP1 SAM.



Probe testing to perimeter edge termination.

Probe testing to perimeter edge termination.

Pipe and Duct Seals

Probe testing to pipe penetration details.

Probe testing to pipe penetration details.

Probe testing to pipe penetration details.

Stanchions and Columns Seals

Restricted inspection to steel stanchion.

Probe testing to steel stanchion details.

Restricted inspection to steel stanchion.

Probe testing to steel stanchion details.

Restricted inspection to steel stanchion.

Probe testing to steel stanchion details.

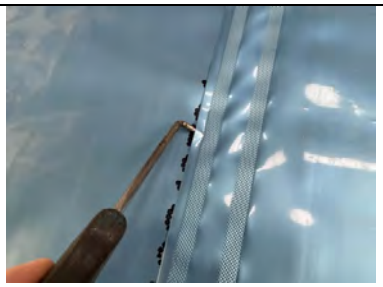
Probe testing to steel stanchion details.

Probe testing to steel stanchion details.

Testing of Joints

Probe testing along hand welded membrane lap joints.

Probe testing along hand welded membrane lap joints.



Probe testing along auto welded membrane lap joints.

Probe testing along auto welded membrane lap joints.

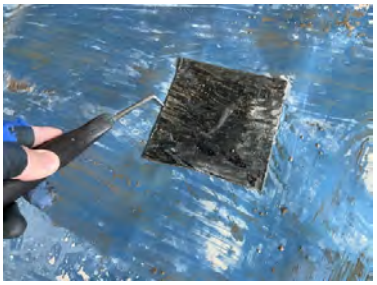
Probe testing along hand welded membrane lap joints.

Additional Photos

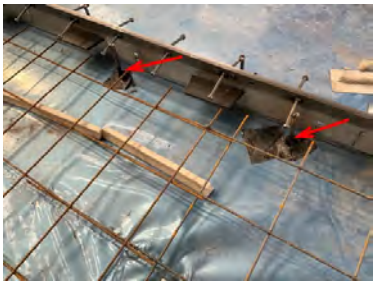
Defect recorded.

Defect was patched repaired using Juta GP1 SAM and probe tested.

Defect recorded.

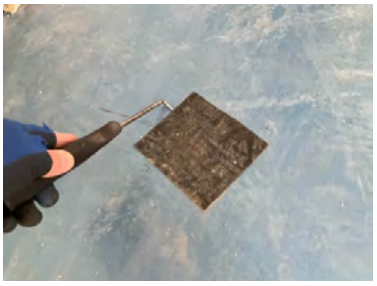


Defect was patched repaired using Juta GP1 SAM and probe tested.



Armoured joint pin were detailed using Juta GP1 SAM.

Probe testing to armoured joint pins.



Probe testing to installer CQA patch repairs.

Main Contractor Name: MCS Group.	**Date: 08/05/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 20 °C**
	Installer: UK Membranes.
Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)
Building Reference/Unit No:	Units 1-5.
Area Inspected:	Unit 1, Pour 2 of 8. GL A-E / 6-10. (See Marked Up Plan).
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane installation that has been installed on a just in time basis as the pour progresses, on top of a well rolled fine coarse aggregate substrate. All membrane laps between adjacent sheets have been auto welded or hand welded with pressure applied. All steel stanchions, pipe penetrations and the perimeter cladding rail retro fit detailing has been completed using Juta GP1 SAM, and were inspected on a previous visit by MEC Environmental. During today's inspection MEC Environmental inspected the perimeter edge and the installation of the Juta GP5 gas membrane to the undercroft area for the next pour. (Marked in yellow). All CQA repairs were carried out by UK Membranes as the pour progressed. All armoured joint pins were detailed using Juta GP1 SAM.
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on
Result of Inspection:	No Action Required all Defects rectified at time of inspection

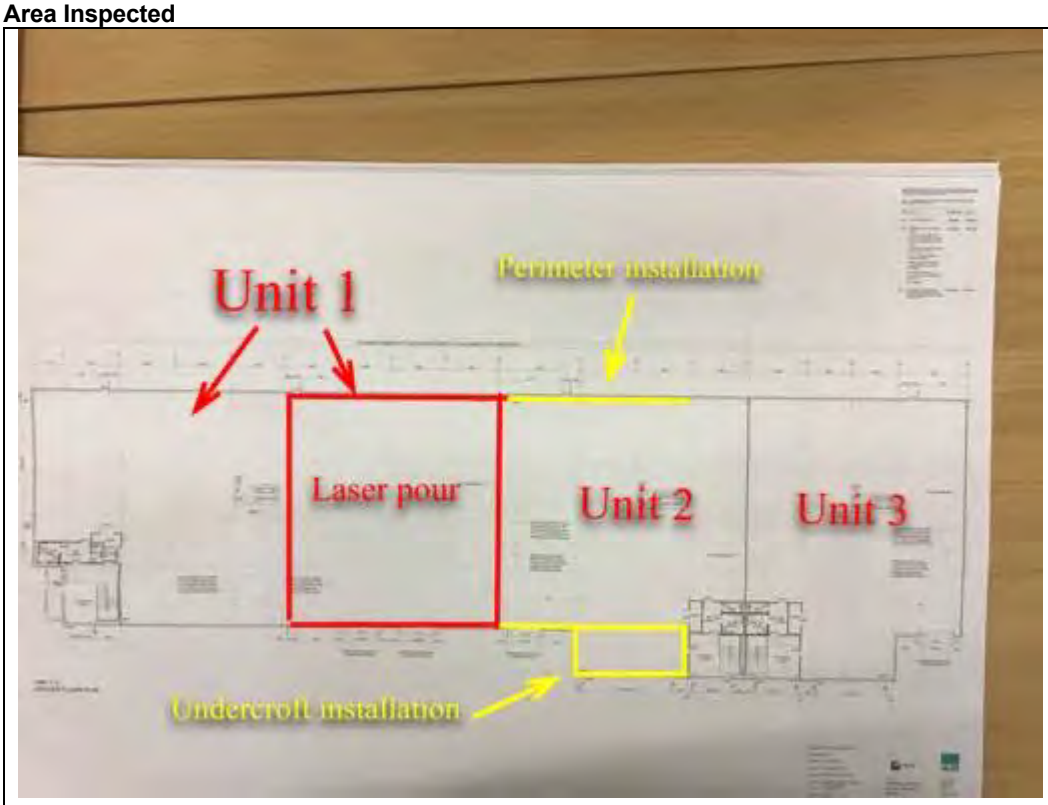
(Section 1, Materials and Method of Seal)
Gas Membrane Name: Juta GP5 gas membrane & Juta GP1 SAM.
Other Products Used: N/A.
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of welding with a hot air automatic welding machine, the width of the welded joint is a minimum of 30mm.
Others Please List: CQA repairs & armoured pin detailing.

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the

	membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	Action Required
UK Membranes carried out there own CQA repairs as the the pour progressed.	No Action Required all Defects rectified at time of inspection

Area Inspected



Gas Membrane Overview

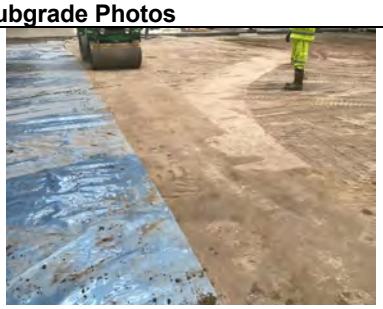
Overview of the Installed Juta GP5 gas membrane to the undercroft area in unit 2. (marked in yellow on the site plan).

Overview of the Juta GP5 gas membrane installed to the perimeter edge in unit 2 (marked in yellow on the site plan).

Overview of the pour progressing.

Overview of the Juta GP5 gas membrane installation as the pour progresses.

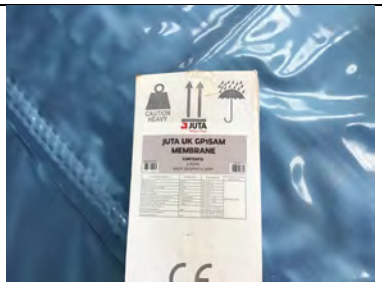
Subgrade Photos



Evidence of the substrate being rolled prior to the installation of the Juta GP5 gas membrane as the pour progresses.

Materials Used

Evidence of the Juta GP5 gas membrane that has been used on this project.



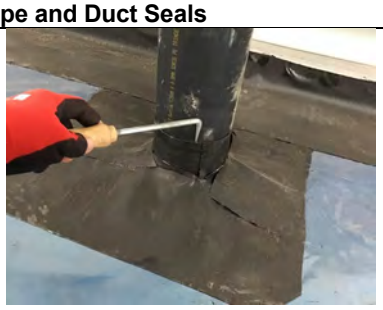
Evidence of the Juta GP1 SAM that has been used for the detailing work on this project.

Perimeter Detail

Probe testing the perimeter cladding rail detailing.

Cladding rail detailing.

Pipe and Duct Seals

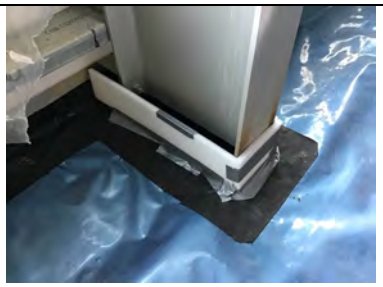


Probe testing a typical pipe penetration detail.

Probe testing a typical pipe penetration detail.

Stanchions and Columns Seals

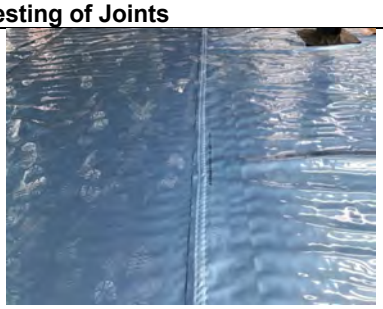
Overview of the previously inspected perimeter and steel cladding rail in unit 1 pour 2 of 8.



Restricted inspection of the steel stanchion detailing to the undercroft of unit 2, pour 3.

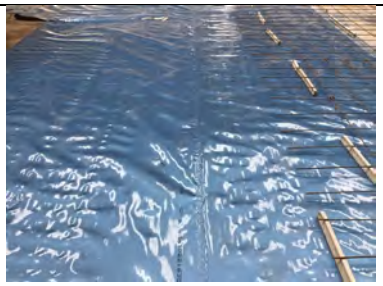
Probe testing the inner web of the steel stanchion.

Testing of Joints



Typical auto welded membrane lap.

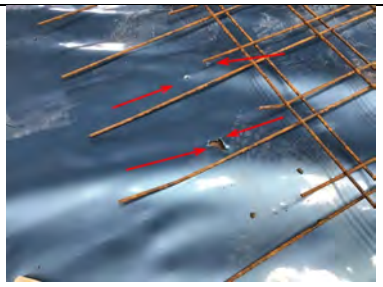
Probe testing all auto welded membrane laps.



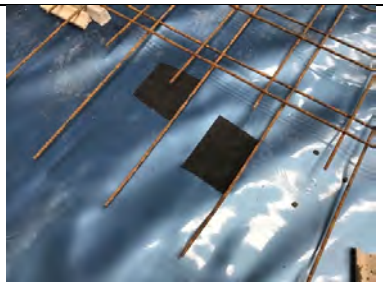
Typical hand welded membrane lap.

Probe testing all hand welded membrane laps.

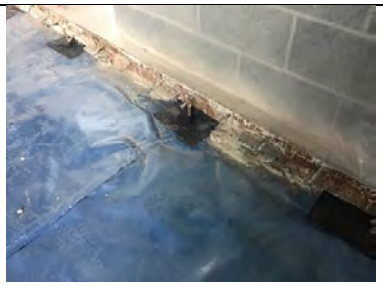
Additional Photos



Hole found in the membrane.



Repaired damaged membrane by UK Membranes using Juta GP1 SAM.



Armoured joint pin repairs using Juta GP1 SAM.

Main Contractor Name: MCS Group	**Date: 09/05/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 10 °C**
	Installer: UK Membranes
Postcode: RG5 4SJ	**Surveyor:** James Hall (TGPV)
Building Reference/Unit No:	Units 1-5
Area Inspected:	Unit 2 Laser Screed Pour 3 of 8 - GL: A-E/10-13. Unit 3 Undercroft Area, GL: E-F/15-17 (Marked Yellow) - See Marked Up Plan
Description of Works:	MEC Environmental carried out a thorough inspection of the gas membrane. The installation team have installed Juta GP5 Gas Barrier as a full line out as the pour progresses. This was laid upon graded coarse aggregate, that was continuously rolled prior to gas membrane installation. All laps between adjacent sheets were auto welded and or alternatively hand welded with rolled pressure applied. Steel stanchions, pipe penetration's and retrofit termination detailing to the perimeter cladding rail was completed using Juta GP1 SAM with adequate heat applied. The perimeter edge detailing was inspected on a previous inspection. During inspection MEC inspected Unit 3's Undercroft Area to a full line out installation and throughout our inspection we witnessed the installer carrying out their own CQA repairs and detailing of the armoured joint pins using Juta GP1 SAM.
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on
Result of Inspection:	No defects recorded and therefore no action required

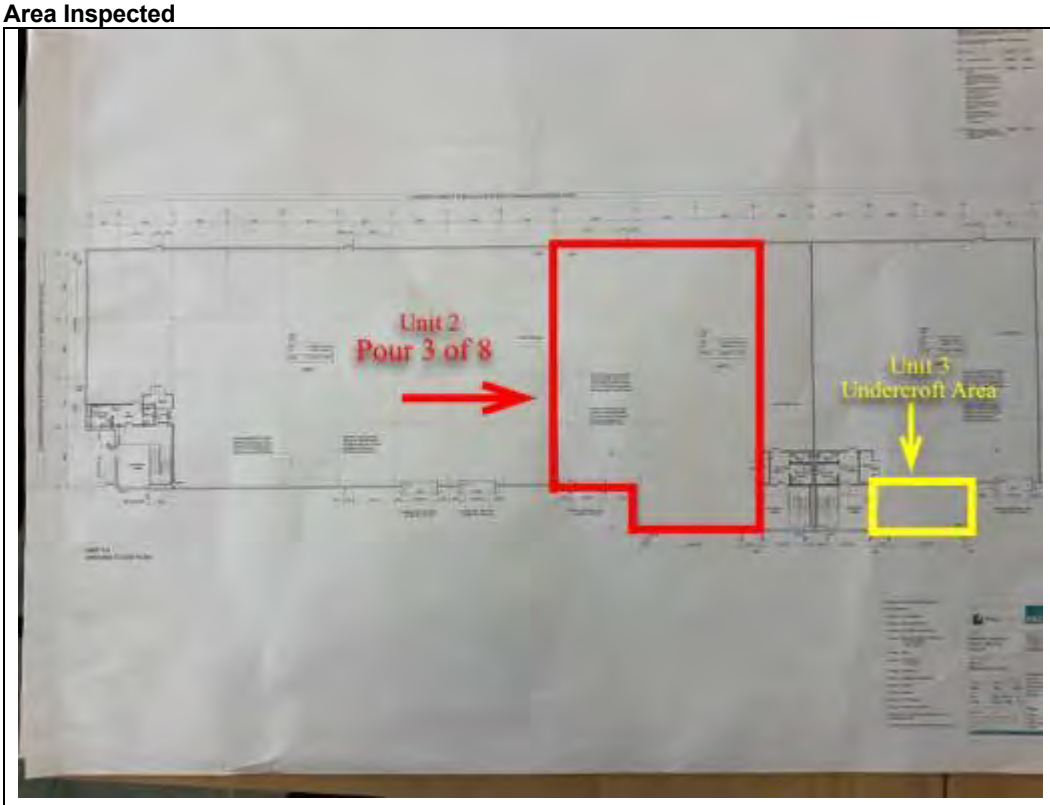
(Section 1, Materials and Method of Seal)
Gas Membrane Name: Juta GP5 Gas Barrier
Other Products Used: Juta GP1 SAM
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735
Stanchion Seal Method: The stanchions have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of welding with a hot air automatic welding machine, the width of the welded joint is a minimum of 30mm.
Others Please List: N/A

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the

	membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	Action Required
N/A	No defects recorded and therefore no action required

Area Inspected



Gas Membrane Overview

General overview of the pour area.

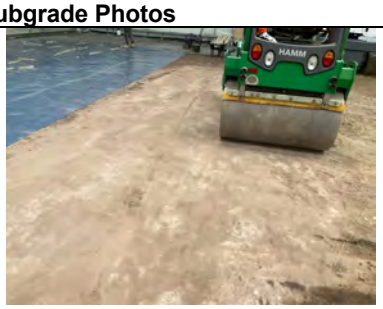
Overview of the installation using Juta GP5 Gas Barrier.

Overview of the installation process as the pour progressed.

Overview of Unit 3 Undercroft full line out using Juta GP5 gas barrier.

An alternative overview of Unit 3 Undercroft Area.

Subgrade Photos

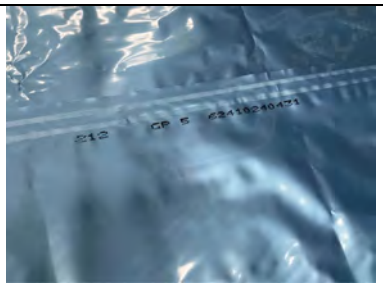


Substrate base being continuously rolled prior to gas membrane installation.

Substrate base being continuously rolled.

Materials Used

Evidence of the Juta GP5 Gas Barrier packaging label.



Juta GP5 gas barrier labelling

Evidence of the Juta GP1 SAM packaging.

Perimeter Detail

Overview of the retrofit termination

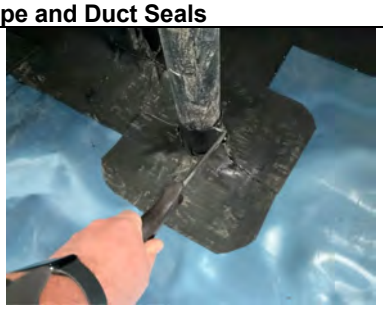
Probe testing along perimeter edge termination detailing.

Probe testing along perimeter edge termination detailing.

detailing along perimeter edge cladding rail using Juta GP1 SAM.

Probe testing along perimeter edge termination detailing.

Pipe and Duct Seals



Probe testing to pipe penetration detail.

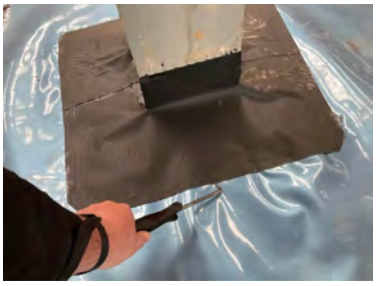
Stanchions and Columns Seals

Steel stanchion detailed using Juta GP1 SAM.

Probe testing to steel stanchion details.

Probe testing to steel stanchion details.

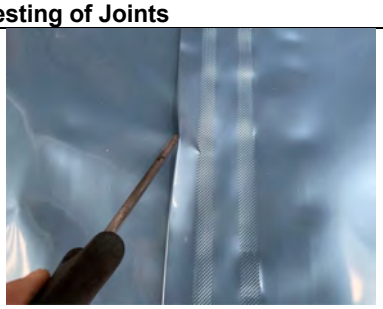
Steel stanchion detailed using Juta GP1 SAM.



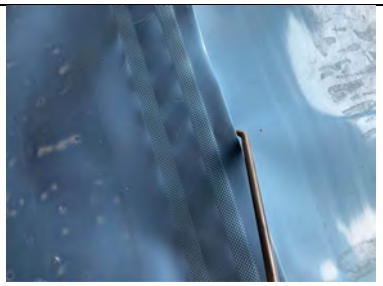
Probe testing to steel stanchion details.

Probe testing to steel stanchion details.

Testing of Joints



Probe testing along auto welded membrane lap joints.

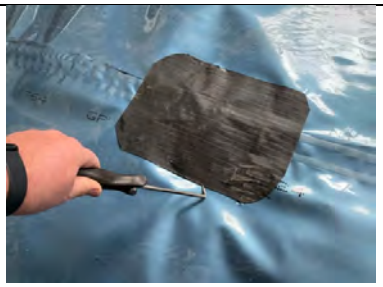


Probe testing along auto welded membrane lap joints.

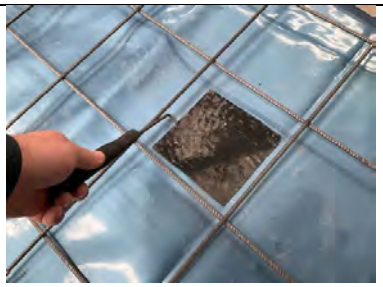
Probe testing along hand welded membrane lap joints.

Probe testing along hand welded membrane lap joints.

Additional Photos



Probe testing installer CQA patch repairs.



Probe testing installer CQA patch repairs.

Probe testing armoured joint pins.

Probe testing armoured joint pins.

Main Contractor Name: MCS Group	**Date: 12/05/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 17 °C**
	Installer: UK Membranes

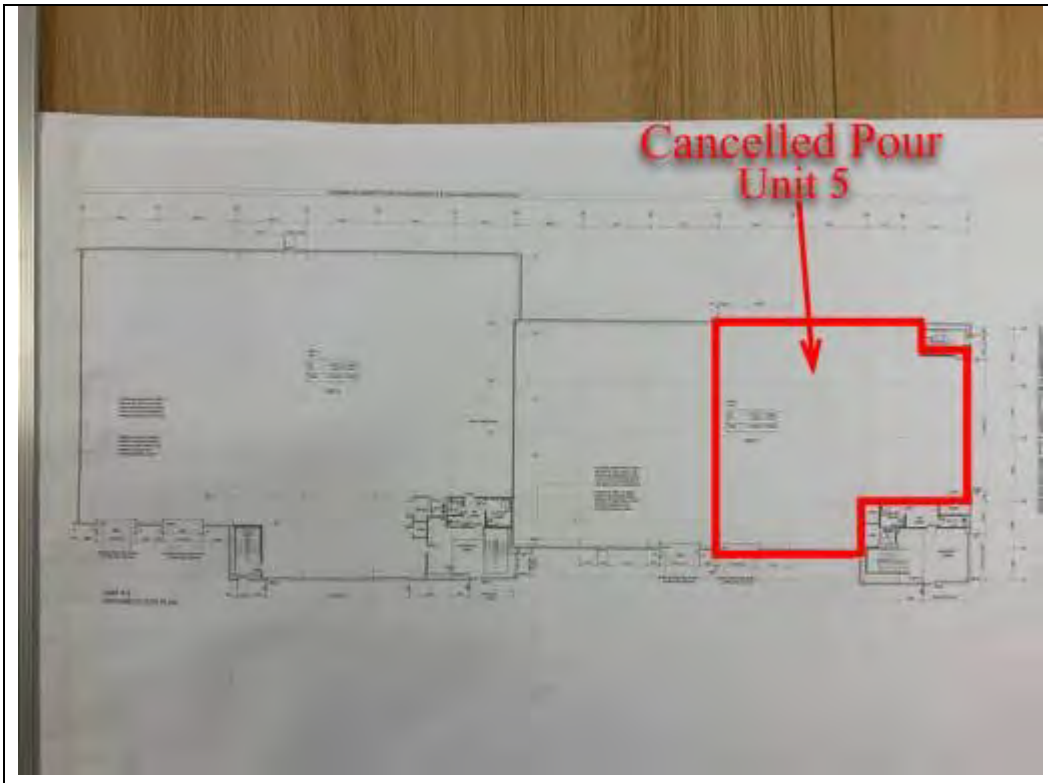
Postcode: RG5 4SJ	**Surveyor:** James Hall (TGPV)
Building Reference/Unit No:	Units 1-5
Area Inspected:	Cancelled Unit 5 - Laser Screed Pour - See Marked Up Plan
Description of Works:	Today's Pour in Unit 5 has been cancelled because of sufficient flooding along one elevation of the Perimeter edge, which has coursed the substrate to soften and lift the insulation boards below the gas membrane where water is present. The cancellation of the pour was made by the site management at MCS Group.
Sub-Grade Preparation:	See "Description of Works" Section for details
Result of Inspection:	N/A

(Section 1, Materials and Method of Seal)
Gas Membrane Name: N/A
Other Products Used: N/A
Perimeter Seal Method: Not Applicable
Service Entry Seal Method: Not Applicable
Stanchion Seal Method: Not Applicable
Material Jointing Method: Not Applicable
Others Please List: N/A

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	Not Applicable

(Section 3, Defects List)	**Action Required**
Pour was Cancelled.	N/A

Area Inspected



Gas Membrane Overview

Subgrade Photos

Materials Used

Perimeter Detail

Pipe and Duct Seals

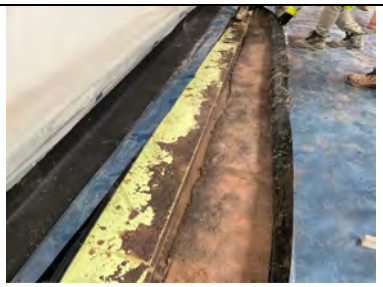
Stanchions and Columns Seals

Testing of Joints

Additional Photos

Flooding lang perimeter edge.

Membrane was cut to assess the existent of the water damage to substrate base.



Membrane was cut to assess the existent of the water damage to substrate base.

Flooding along perimeter edge.

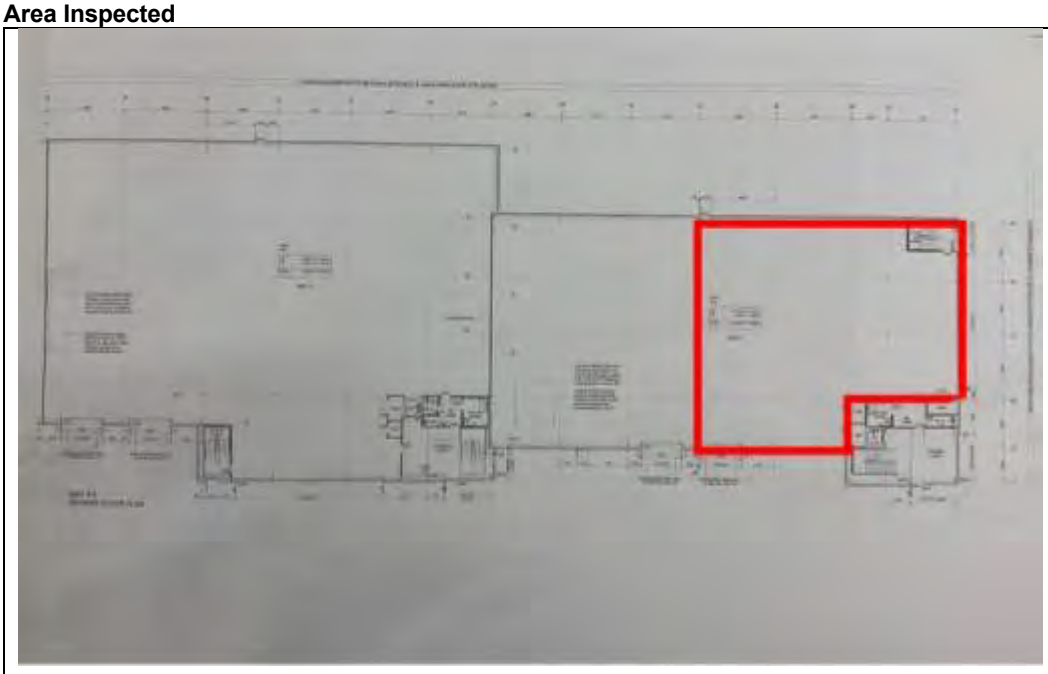
Insulation boards lifting due to the water damage along the perimeter edge and softening of the substrate base.

Flooding along perimeter edge.

Main Contractor Name: MCS		**Date: 13/05/2025**
Site Name: Headley Road East, Woodley, Reading		**Temp: 15 °C**
		Installer: UKM
Postcode: RG5 4SJ	**Surveyor:** Ross Edwards (NVQ 4)	
Building Reference/Unit No:	Unit 5	
Area Inspected:	Laser pour gridlines 27-31 / A1-E1 -See Marked Up Plan	
Description of Works:	MEC Environmental carried out a thorough inspection of the gas membrane, the membrane has been installed over the full footprint ahead of the laser pour using 4 meter bundles that have been hand welded. The membrane has terminated at the edge of the perimeter cladding rail, where the installers have installed strips of JUTA GP1 SAM as a retro detail to the perimeter cladding rail. Along the armoured joint there the steel pins are the installers have wrapped JUTA GP1 SAM with sufficient heat applied. Where the steel stanchion details are miothene had been wrapped around the detail partially restricting the inspection.	
Sub-Grade Preparation:	The subgrade consists of sand blinding that has been well rolled and compacted and is acceptable to lay the membrane on	
Result of Inspection:	No defects recorded and therefore no action required	
(Section 1, Materials and Method of Seal)		
Gas Membrane Name: JUTA GP5 Gas Membrane		
Other Products Used: JUTA GP1 SAM		
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed		
Service Entry Seal Method: Not Applicable		
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area, The stanchions have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.		
Others Please List: N/A		
(Section 2, Testing and Inspection Method)		
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection	
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like	
(Section 3, Defects List)		**Action Required**

No defects located during inspection	No defects recorded and therefore no action required

Area Inspected



Gas Membrane Overview

Overview to the pour area.

Subgrade Photos

Close up of the substrate.

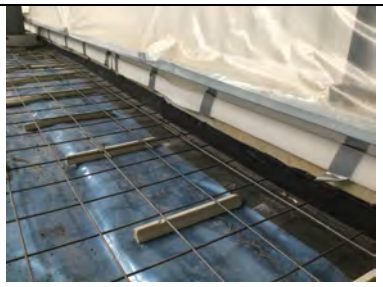
Roller used ahead of the membrane line out.

Materials Used

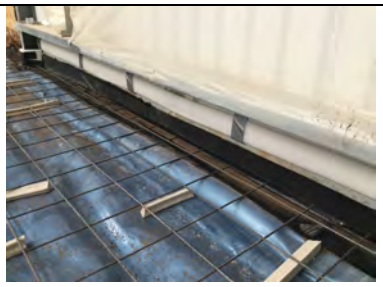
JUTA GP5 Gas Membrane label

JUTA GP1 SAM label

Perimeter Detail



JUTA GP1 SAM along the perimeter cladding.

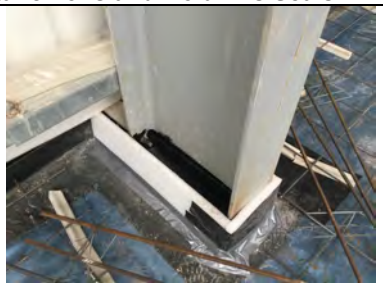


Perimeter termination along the cladding rail.

Testing to the JUTA GP1 SAM along the cladding rail.

Pipe and Duct Seals

Stanchions and Columns Seals



Steel stanchion detailing

Steel stanchion detail

Testing to the stanchion detail.

Testing of Joints

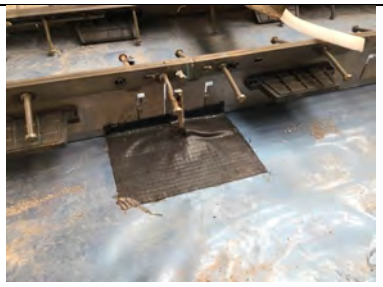
Testing along the welded lap joint.

Testing to the lap joint.

Testing to the welded lap joint.

Testing to the hand welded lap joint.

Additional Photos



JUTA GP1 SAM wrapped around the armoured joint pins.

Testing to the JUTA GP1 SAM.

Concrete wagon kept off the steel mesh

Main Contractor Name: MCS Group	**Date: 14/05/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 15 °C**
	Installer: UK Membranes

Postcode: RG5 4SJ	**Surveyor:** James Hall (TGPV)
Building Reference/Unit No:	Units 1-5
Area Inspected:	Unit 5, Laser screed Pour 5 of 8. Gridlines: A1-E1/24-27. - See Marked Up Plan
Description of Works:	MEC Environmental carried out a thorough inspection of the gas membrane. Installers have installed Juta GP5 Gas Barrier lining 2 meter rolls out as the pour progresses. This was laid upon graded coarse aggregate, that was continuously rolled prior to gas membrane installation. All laps between adjacent were hand welded with rolled pressure applied. Steel stanchions, pipe penetration and retrofit termination detailing to the perimeter cladding rail was completed using Juta GP1 SAM with adequate heat applied. All armoured joint pins were detailed using Juta GP1 SAM. Throughout our inspection we witnessed the installer carrying out their own CQA repairs and detailing of the armoured joint pins using Juta GP1 SAM.
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on
Result of Inspection:	No Action Required all Defects rectified at time of inspection

(Section 1, Materials and Method of Seal)

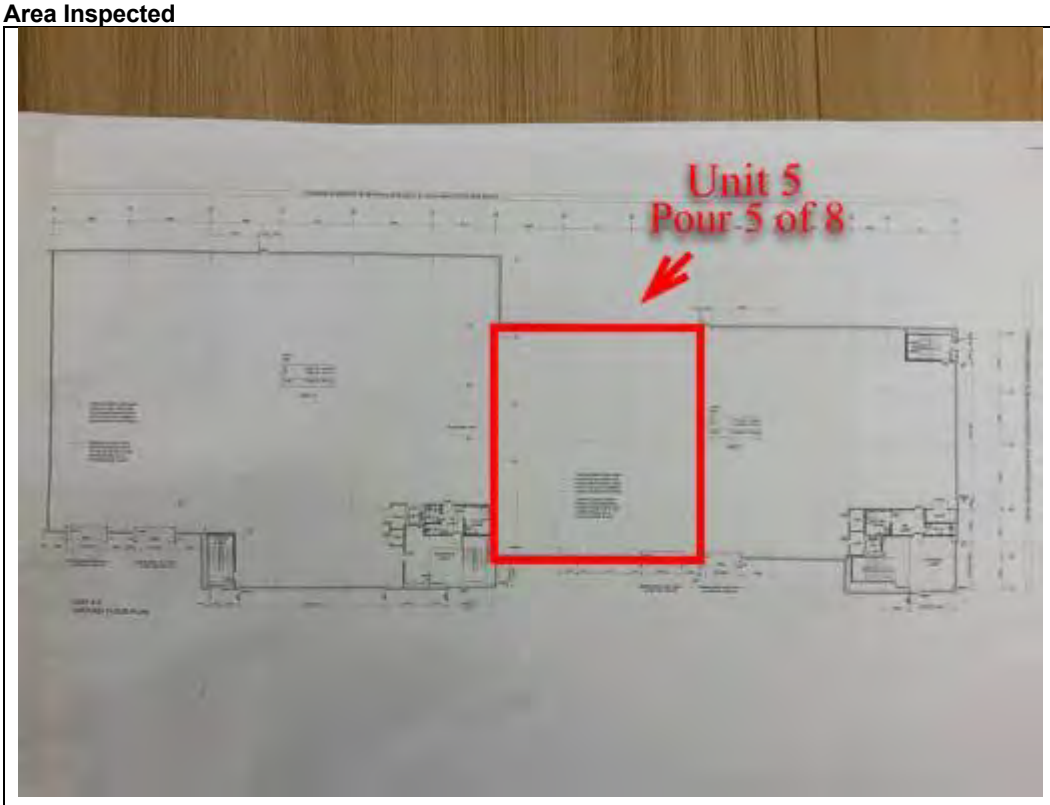
Gas Membrane Name: Juta GP5 Gas Barrier
Other Products Used: Juta GP1 SAM & Juta GP Primer
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.
Others Please List: N/A

(Section 2, Testing and Inspection Method)

Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	Action Required
2no of defects recorded at the time of inspection. Threse were patched repaired by installer using Juta GP1 SAM with adequate heat, then probe tested during inspection.	No Action Required all Defects rectified at time of inspection

Area Inspected



Gas Membrane Overview

General overview of the pour area.

Overview of the installation of Juta GP5 gas barrier.

Overview of the Juta GP5 Gas Barrier installation as the pour progress.

Subgrade Photos

Substrate being rolled prior to gas barrier installation.

Substrate was continuously rolled.

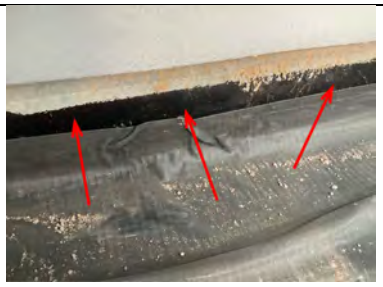
Materials Used

Evidence of the Juta GP5 Gas Barrier packaging label.

Evidence of the Juta GP1 SAM packaging.

Evidence of the Juta GP Primer.

Perimeter Detail



Evidence that the perimeter cladding rail was primed prior to termination detailing.

Probe testing along retrofit termination detailing to cladding rail.

Probe testing along retrofit termination detailing to cladding rail.

Probe testing along retrofit termination detailing to cladding rail.

Pipe and Duct Seals

Probe testing to pipe penetration details.

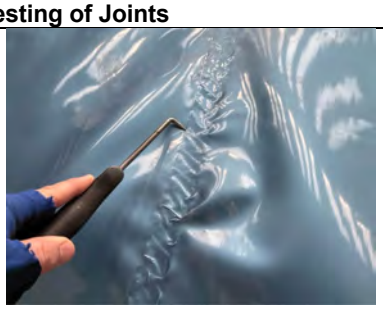
Stanchions and Columns Seals

Restricted inspection to steel stanchions due to miothene strips surrounding.

Probe testing to steel stanchion details.

Probe testing to steel stanchion details.

Testing of Joints



Probe testing along hand welded membrane lap joints.

Probe testing along hand welded membrane lap joints.

Additional Photos

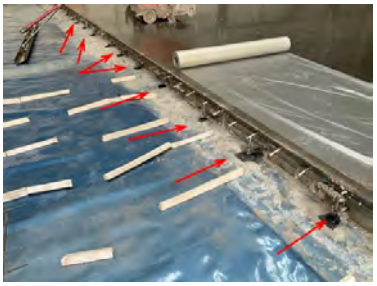
Defect recorded.

Recorded defect was patched

Defect recorded.

repaired by installer using Juta GP1 SAM and probe tested.

Recorded defect was patched repaired by installer using Juta GP1 SAM and probe tested.



All armoured joint pin were detailed using Juta GP1 SAM.

Probe testing to detailed armoured joint pin.

Main Contractor Name: MCS Group.	**Date: 15/05/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 22 °C**
	Installer: UK Membranes.

Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)
Building Reference/Unit No:	Units 1-5.
Area Inspected:	Unit 4, Pour 6 of 8. GL A-F / 20-24. (See Marked Up Plan).
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane that has been installed on a just in time basis as the pour progresses, on top of a well rolled fine coarse aggregate substrate. All membrane laps between adjacent sheets have been auto welded or hand welded with pressure applied. All steel stanchions, 1no pipe penetration and the perimeter cladding rail retro fit detailing has been completed using Juta GP1 SAM, but as a restricted inspection due to the miothene being in place at the time of our visit. All CQA repairs were carried out by UK Membranes as the pour progressed. All armoured joint pins were detailed using Juta GP1 SAM.
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on
Result of Inspection:	No Action Required all Defects rectified at time of inspection

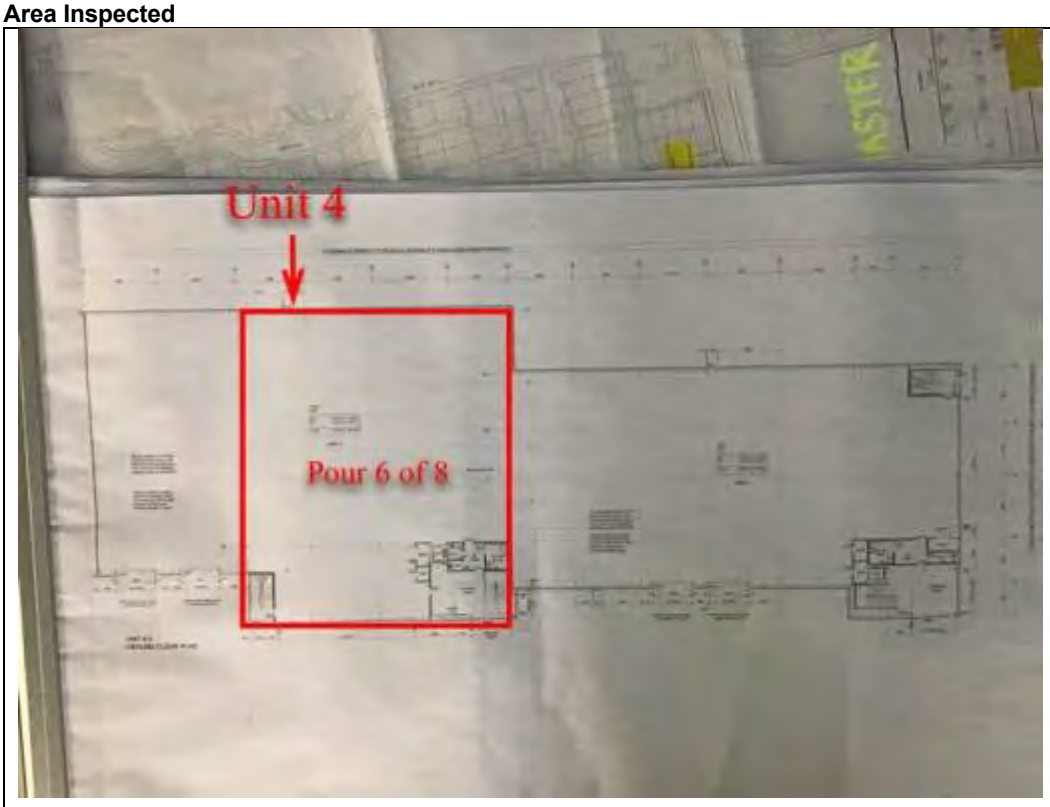
(Section 1, Materials and Method of Seal)
Gas Membrane Name: Juta GP5 gas membrane & Juta GP1 SAM.
Other Products Used: N/A.
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: The upstand of the pipe has been wrapped in miothenes which resrtricted the inspection to this area
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of welding with a hot air automatic welding machine, the width of the welded joint is a minimum of 30mm.
Others Please List: CQA repairs & armoured pin detailing.

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

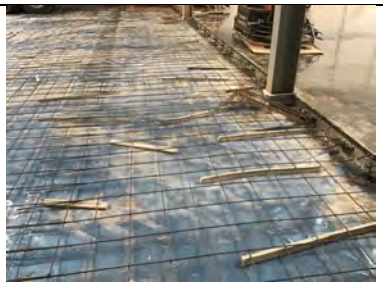
(Section 3, Defects List)	**Action Required**

UK Membranes carried out there own CQA repairs as the the pour progressed.	No Action Required all Defects rectified at time of inspection

Area Inspected



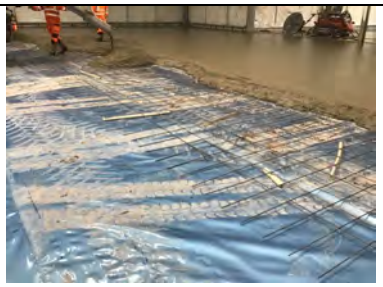
Gas Membrane Overview



Overview of the Juta GP5 gas membrane installation as the pour progresses.

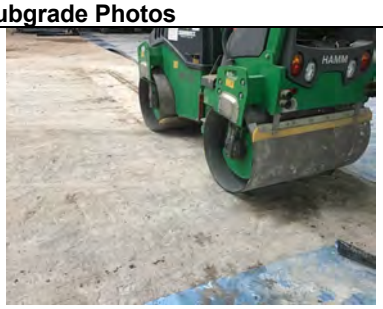
Overview of the Juta GP5 gas membrane installation to the undercroft area in unit 4.

Overview of the Juta GP5 gas membrane installation as the pour progresses.



Overview of the Juta GP5 gas membrane installation as the pour progresses.

Subgrade Photos



Evidence of the substrate being rolled prior to the installation of the Juta GP5 gas membrane as the pour progresses.

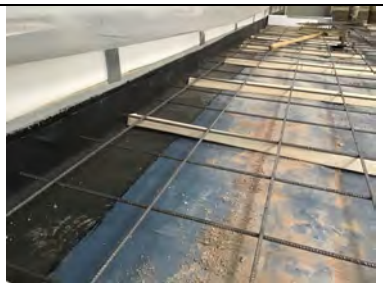
Materials Used

Evidence of the Juta GP1 SAM that has been used for the detailing work on this project.

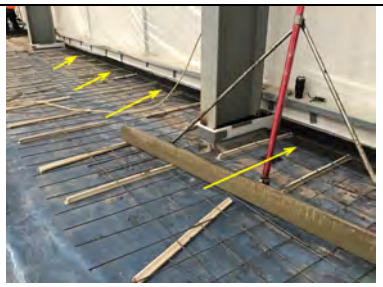
Evidence of the Juta GP5 gas membrane that has been used on this project.

Perimeter Detail

Probe test the perimeter retro fit detailing.

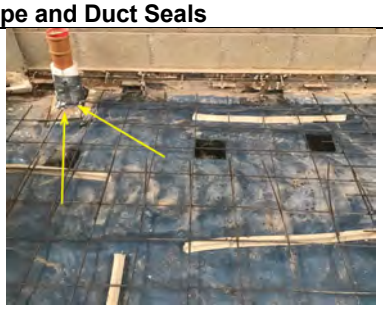


Retro fit detailing.



Overview of the perimeter retro fit detailing.

Pipe and Duct Seals



The pipe penetration was covered with miothene at the time of our inspection.

Stanchions and Columns Seals

Restricted inspection of a steel stanchion due to the being wrapped in miothene.

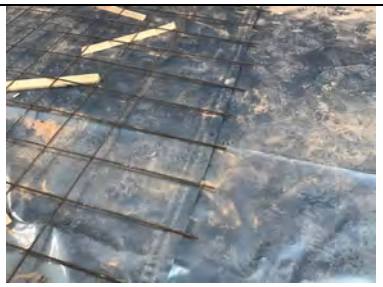
Steel stanchion detailing wrapped with miothene.

Probe testing the inner web of the steel stanchion.

Probe testing the detailing work.

Testing of Joints

Probe testing a hand welded membrane lap.



Overview of a auto welded membrane lap.

Probe testing an auto welded membrane lap.

Additional Photos

Armoured joint pin detailing using Juta GP1 SAM.

Hole found in the membrane during our inspection.

Probe testing the repaired hole found in the membrane.

Main Contractor Name: MCS Group	**Date: 16/05/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 14 °C**
	Installer: UK Membranes
Postcode: RG5 4SJ	**Surveyor:** James Hall (TGPV)
Building Reference/Unit No:	Units 1-5
Area Inspected:	Unit 4. Laser Screed Pour 7 of 8. Gridlines: A-E & 18-20/21. See Marked Up Plan
Description of Works:	MEC Environmental carried out a thorough inspection of the gas membrane. Installers have installed Juta GP5 Gas Barrier lining 4 meter bundles out as the pour progresses, or alternatively 2 meter rolls. This was laid upon graded coarse aggregate, that was continuously rolled prior to gas membrane installation. All laps between adjacent sheets were auto welded or alternatively hand welded with rolled pressure applied. Steel stanchions and retrofit termination detailing to the perimeter cladding rail was completed using Juta GP1 SAM with adequate heat applied. All armoured joint pins were detailed using Juta GP1 SAM. Throughout our inspection we witnessed the installer carrying out their own CQA repairs. Note: MEC were unable to gather photographic evidence of the materials packaging used (Juta GP1 SAM) during today's inspection. However evidence of these materials have been recorded on previous inspection's.
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on
Result of Inspection:	No Action Required all Defects rectified at time of inspection

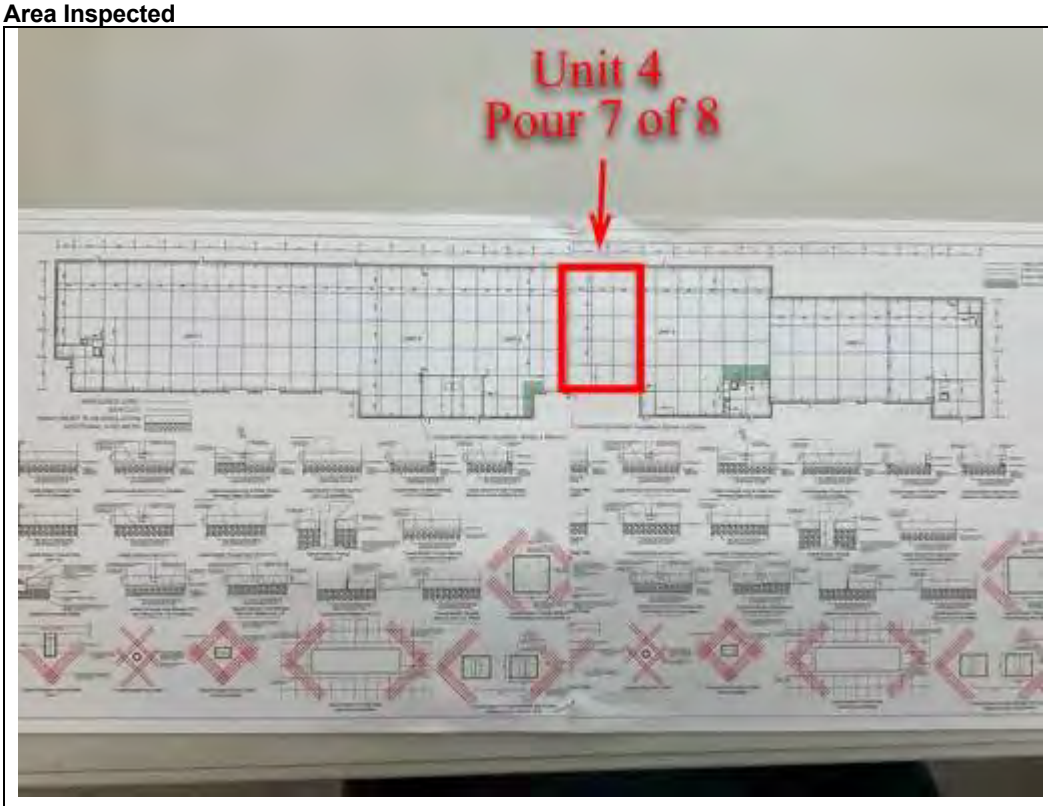
(Section 1, Materials and Method of Seal)
Gas Membrane Name: Juta GP5 Gas Barrier
Other Products Used: Juta GP1 SAM & Juta GP Primer
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: Not Applicable
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of welding with a hot air automatic welding machine, the width of the welded joint is a minimum of 30mm.
Others Please List: N/A

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection

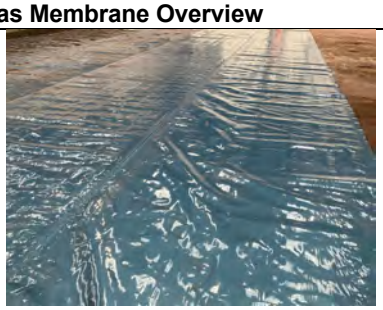
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	**Action Required**
1no of defects recorded, this was patched repaired at the time of inspection.	No Action Required all Defects rectified at time of inspection

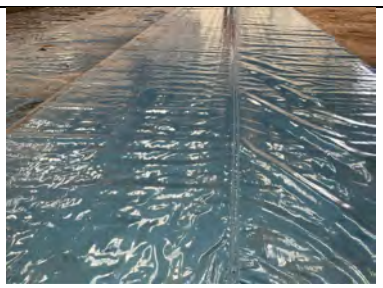
Area Inspected



Gas Membrane Overview



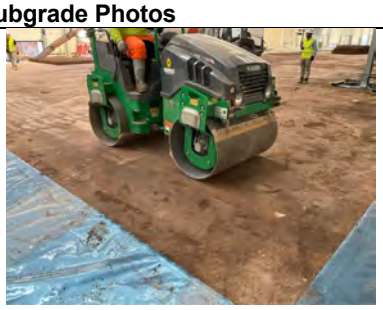
Overview of the Juta GP5 Gas Barrier installation as the pour progresses.



Overview of the Juta GP5 Gas Barrier installation as the pour progresses.

General overview of the installation as the pour progressed.

Subgrade Photos



Substrate being continuously rolled.

Substrate was well rolled prior to gas barrier installation.

Materials Used

Evidence of the Juta GP5 Gas Barrier packaging label.

Evidence of the Juta GP Primer.

Perimeter Detail

Probe testing along the perimeter edge cladding rail termination detailing

Probe testing along the perimeter edge cladding rail termination detailing

Evidence of the perimeter edge cladding rail being primed prior to termination detailing.

Pipe and Duct Seals

Stanchions and Columns Seals

Probe testing to steel stanchion details.

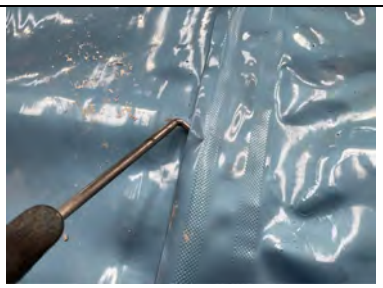
Probe testing to steel stanchion details.

Probe testing to steel stanchion details.

Probe testing to steel stanchion details.

Testing of Joints

Probe testing along auto welded membrane lap joints.



Probe testing along auto welded membrane lap joints.

Probe testing along hand welded membrane lap joints.

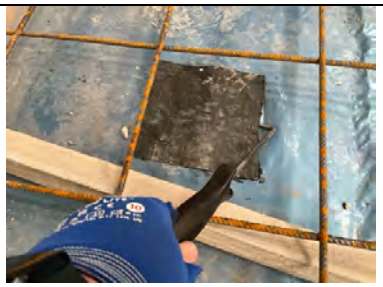
Additional Photos

Probe testing to detailed armoured joint pins.

Probe testing to detailed armoured joint pins.

Defect recorded.

Recorded defect was patched repaired by installer using Juta GP1 SAM and probe tested.



Probe testing installers own CQA patch repairs.

Main Contractor Name: MCS Group.	**Date: 19/05/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 18 °C**
	Installer: UK Membranes.
Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)
Building Reference/Unit No:	Units 1-5.
Area Inspected:	Unit 4, Pour 8 of 8. GL A-F / 14-18. (See Marked Up Plan).
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane that has been installed on a just in time basis as the pour progresses, on top of a well rolled fine coarse aggregate substrate. All membrane laps between adjacent sheets have been auto welded or hand welded with pressure applied. All steel stanchions, 1no pipe penetration and the perimeter cladding rail retro fit detailing has been completed using Juta GP1 SAM, but as a restricted inspection due to the miothene being in place at the time of our visit. All CQA repairs were carried out by UK Membranes as the pour progressed. All armoured joint pins were detailed using Juta GP1 SAM.
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on
Result of Inspection:	No Action Required all Defects rectified at time of inspection

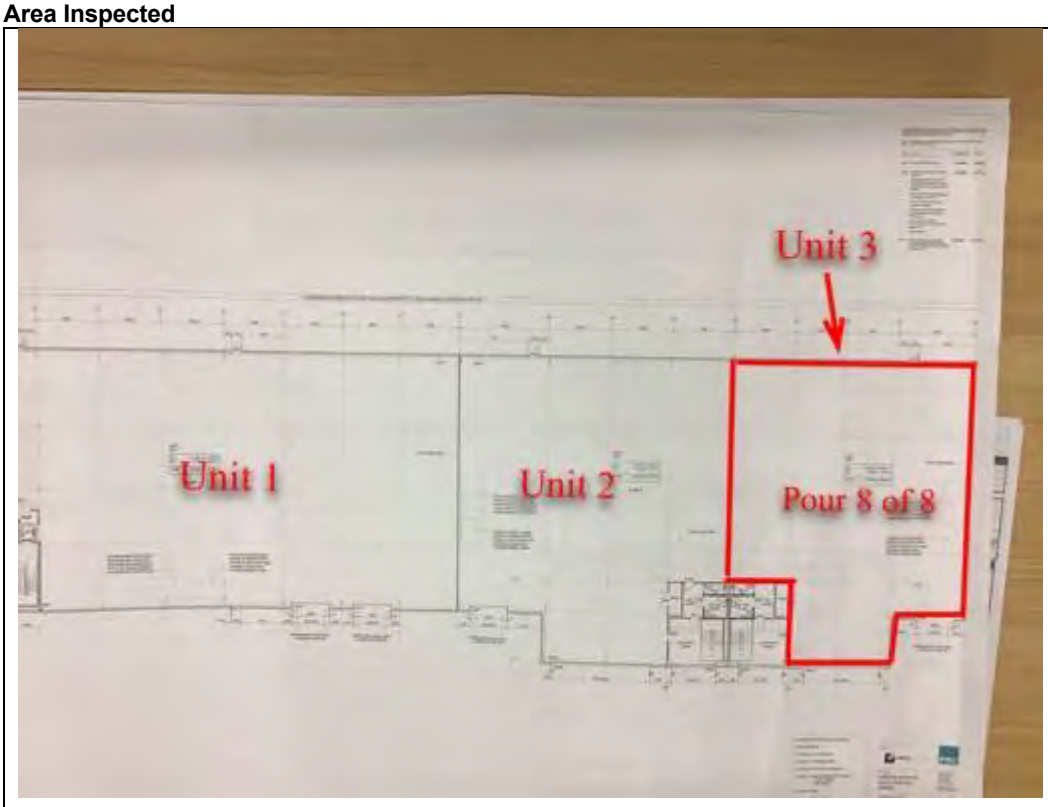
(Section 1, Materials and Method of Seal)
Gas Membrane Name: Juta GP5 gas membrane & Juta GP1 SAM.
Other Products Used: N/A.
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of welding with a hot air automatic welding machine, the width of the welded joint is a minimum of 30mm.
Others Please List: CQA repairs & armoured pin detailing.

(Section 2, Testing and Inspection Method)	
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

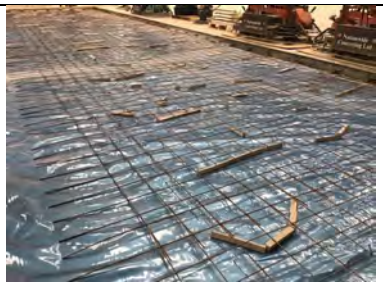
(Section 3, Defects List)	**Action Required**

UK Membranes carried out there own CQA repairs as the the pour progressed.	No Action Required all Defects rectified at time of inspection

Area Inspected



Gas Membrane Overview



Overview of the Juta GP5 gas membrane installation prior to the pour progressing.

Overview of the Juta GP5 gas membrane installation as the pour progresses.

Overview of the Juta GP5 gas membrane being laid as the pour progresses.

Subgrade Photos

Evidence of the substrate being rolled prior to the installation of the Juta GP5 gas membrane as the pour progresses.

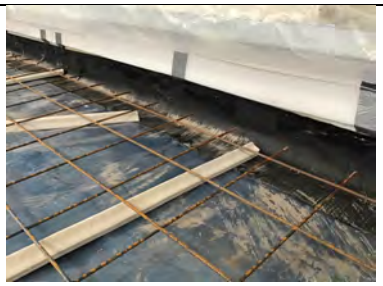
A well rolled substrate.

Materials Used

Evidence of the Juta GP5 gas membrane that has been used on this project.

Evidence of the Juta GP1 SAM that has been used for the detailing work on this project.

Perimeter Detail



Perimeter retro fit detailing.

Probe testing the perimeter retro fit detailing.

Bitumen primer has been applied to the steel cladding rail prior to the self adhesive detailing.

Pipe and Duct Seals

Probe testing a typical pipe penetration detail.

Stanchions and Columns Seals

Steel stanchion wrapped in miothene during our inspection.

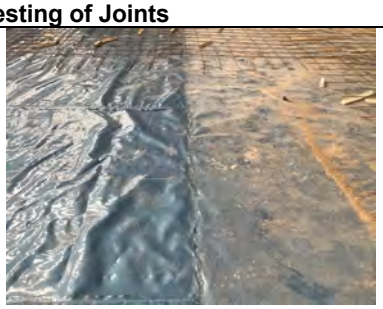
Steel stanchion overview.

All steel stanchions were covered with miothene at the time of our inspection.

Prove testing the inner web of the steel stanchion.

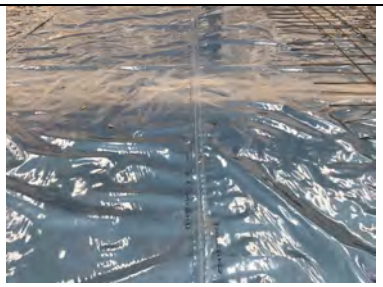
Probe testing all steel stanchion detailing.

Testing of Joints



Overview of a typical hand welded membrane lap.

Probe testing the hand welded membrane lap.



Overview of an auto welded membrane lap.

Probe testing all auto welded membrane laps.

Additional Photos

All armoured joint pin holes have been sealed using Juta GP1 SAM.

Damaged found in the membrane at the time of our inspection.

Repaired damaged membrane using Juta GP1 SAM.

Main Contractor Name: MCS Group.	**Date: 29/05/2025**
Site Name: Headley Road East, Woodley, Reading.	**Temp: 22 °C**
	Installer: UK Membranes.

Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)
Building Reference/Unit No:	Units 7 & 8.
Area Inspected:	Unit 7 & 8 underneath the Mezzanine floors & and laser pour installation to unit 7. GL 1-9 / A-G. (See Marked Up Plan).
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane that has been installed on a just in time basis as the pour progresses in unit 7, & as a full line out to the undercroft areas in units 7 & 8, on top of a well rolled fine coarse aggregate substrate. All membrane laps between adjacent sheets hand welded using a hot air gun and rolled with pressure applied. All steel stanchions, 3no pipe penetrations and the perimeter cladding rail retro fit detailing has been completed using Juta GP1 SAM, a restricted inspection has taken place to the steel stanchions due to the miothene being in place at the time of our visit. All CQA repairs were carried out by UK Membranes as the pour progressed. All armoured joint pins were detailed using Juta GP1 SAM.
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on
Result of Inspection:	No Action Required all Defects rectified at time of inspection

(Section 1, Materials and Method of Seal)

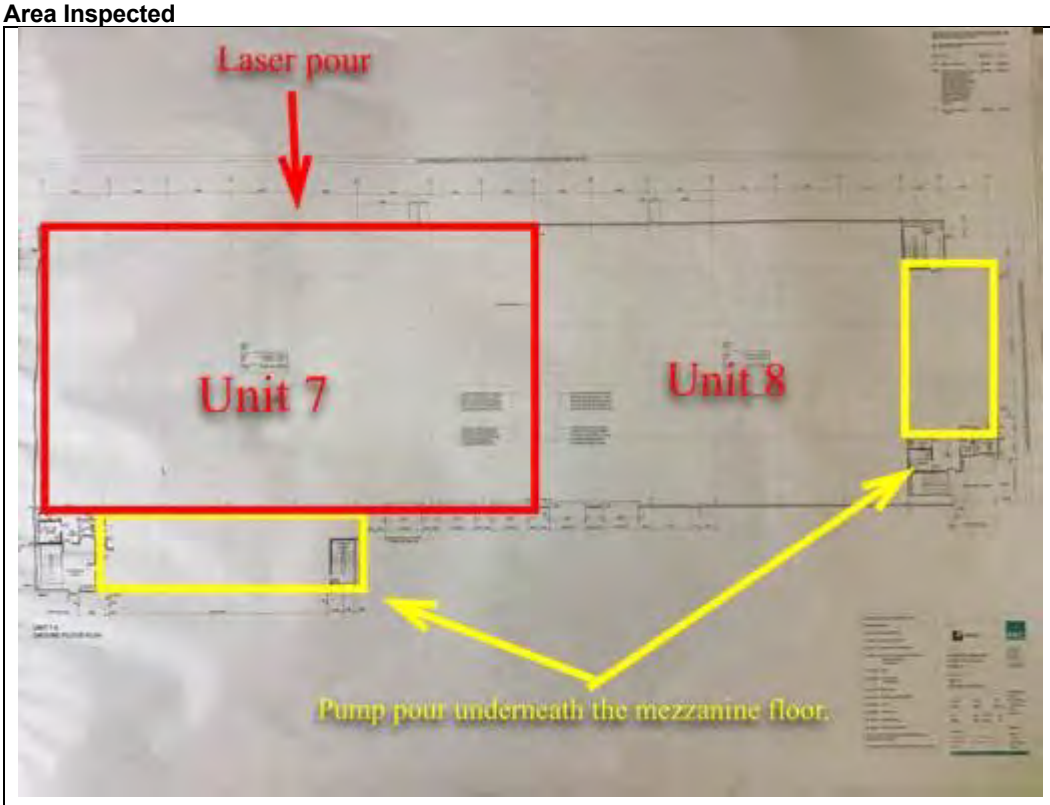
Gas Membrane Name: Juta GP5 gas membrane & Juta GP1 SAM.
Other Products Used: N/A.
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.
Others Please List: CQA repairs & armoured pin detailing.

(Section 2, Testing and Inspection Method)

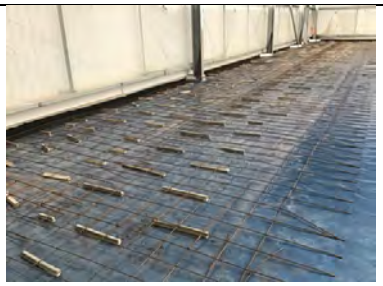
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like

(Section 3, Defects List)	Action Required
UK Membranes carried out there own CQA repairs as the the pour progressed.	No Action Required all Defects rectified at time of inspection

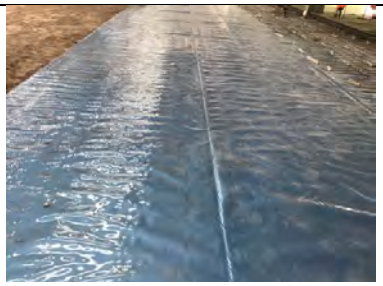
Area Inspected



Gas Membrane Overview



Overview of the Juta GP5 gas membrane installation prior to the pour progressing.



Overview of the Juta GP5 gas membrane installation prior as the pour is progressing.

Overview of the Juta GP5 gas membrane installation to the undercroft area in unit 7.

Overview of the Juta GP5 gas membrane installation to the undercroft in unit 8.

Subgrade Photos

Evidence of the substrate being rolled prior to the installation of the Juta GP5 gas membrane as the pour progresses.

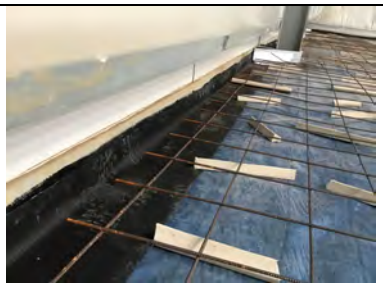
Overview of the rolled substrate.

Materials Used

Evidence of the Juta GP1 SAM that has been used for the detailing work on this project.

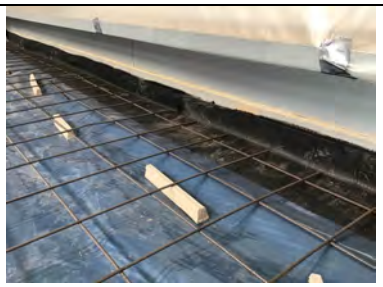
Evidence of the Juta GP5 gas membrane that has been used on this project.

Perimeter Detail

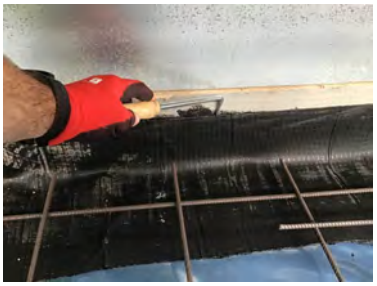


Overview if the perimeter retro detailing.

Probe testing the perimeter retro detailing.

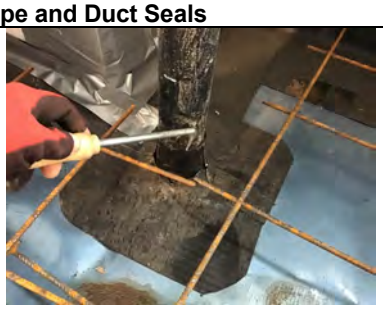


Retro fit detailing.



Probe testing the perimeter retro fit detailing.

Pipe and Duct Seals



Probe testing a typical pipe penetration detail.

Probe testing a pipe penetration detail in unit 8.

Typical pipe penetration detailing in unit 7.

Probe testing a typical pipe penetration in unit 8.

Stanchions and Columns Seals

Steel stanchion detailing that has been covered with miothene prior to our inspection.

Steel stanchion detailing that has been wrapped with miothene.

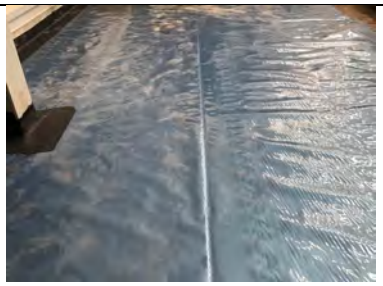
Probe testing the inner web of the steel stanchion.

Steel stanchion detailing.

Probe testing the inner web of the steel stanchion.

Testing of Joints

Probe testing a typical hand welded membrane lap.



Overview of a hand welded membrane lap.

Typical hand welded membrane lap.

Probe testing a typical hand welded membrane lap.

Additional Photos

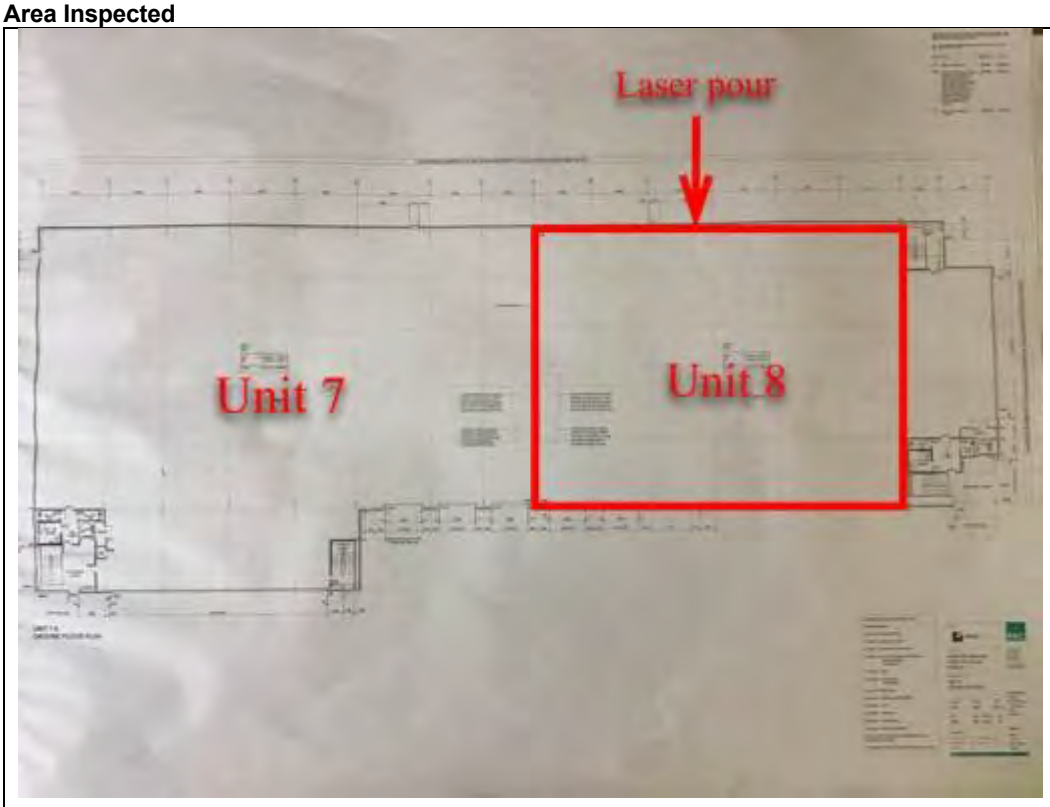
Armoured joint pin hole detailing.

UK Membranes carried out the own CQA repairs as the pour progressed.

Main Contractor Name: MCS Group.		**Date: 30/05/2025**
Site Name: Headley Road East, Woodley, Reading.		**Temp: 24 °C**
		Installer: UK Membranes.
Postcode: RG5 4SJ.	**Surveyor:** Adam McDermott (TGPV)	
Building Reference/Unit No:	Units 7 & 8.	
Area Inspected:	Laser pour installation to unit 8. GL 9-15 / A-G. (See Marked Up Plan).	
Description of Works:	MEC Environmental carried out a thorough inspection of the Juta GP5 gas membrane that has been installed on a just in time basis as the pour progresses, on top of a well rolled fine coarse aggregate substrate. All membrane laps between adjacent sheets hand welded using a hot air gun and rolled with pressure applied. All steel stanchions, 2no pipe penetrations, the steel stanchions and the perimeter cladding rail retro fit detailing has been completed using Juta GP1 SAM. All CQA repairs were carried out by UK Membranes as the pour progressed. All armoured joint pins were detailed using Juta GP1 SAM.	
Sub-Grade Preparation:	The subgrade consists of graded coarse aggregrate down to dust that has been well rolled and compacted and is acceptable to lay the membrane on	
Result of Inspection:	No Action Required all Defects rectified at time of inspection	
(Section 1, Materials and Method of Seal)		
Gas Membrane Name: Juta GP5 gas membrane & Juta GP1 SAM.		
Other Products Used: N/A.		
Perimeter Seal Method: The membrane has been sealed to the cladding rail with SAGM that has been heat sealed		
Service Entry Seal Method: The external of the pipe/ducts have been sealed using strips of self-adhesive gas membrane, this is an approved and recognised method in CIRIA C735		
Stanchion Seal Method: The stanchions has been wrapped in miothenes which resrtricted the inspection to this area		
Material Jointing Method: The membrane has been overlapped sufficiently to achieve a sound joint, the joint is clean and dry and has been joined by means of hand welding with a hot air gun and neoprene roller, the width of the welded joint is a minimum of 30mm.		
Others Please List: CQA repairs & armoured pin detailing.		
(Section 2, Testing and Inspection Method)		
Leak/Hole Detection	MEC Environmental Ltd carried out a thorough Visual Inspection to the available area at the time of our inspection	
Joint Testing	The surveyor carried out Probe testing as per the method prescribed in ASTM D4437 to all detailing work, detailing work is defined as any part of the installation that includes a joint in the membrane, this includes but is not limited to pipes/ducts, stanchions, wind posts, braces, field seams, masonry abutments, tanking, door thresholds and the like	
(Section 3, Defects List)		**Action Required**

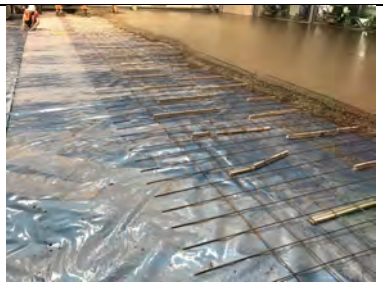
UK Membranes carried out there own CQA repairs as the the pour progressed.	No Action Required all Defects rectified at time of inspection

Area Inspected

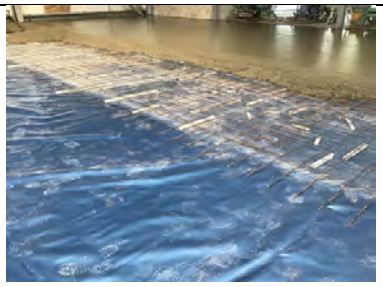


Gas Membrane Overview

Overview of the Juta GP5 gas membrane installation prior to the steel mesh being placed on top around the perimeter of unit 8.

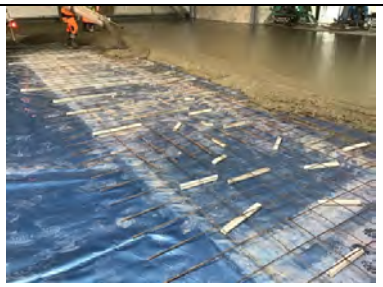


Overview of the Juta GP5 gas membrane installation as the pour is progressing.



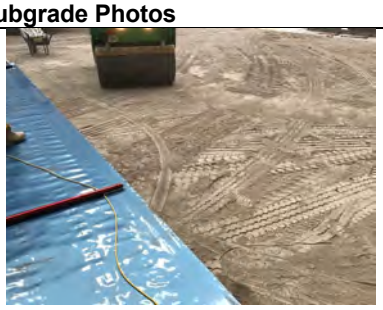
Overview of the Juta GP5 gas membrane installation as the pour is progressing.

Overview of the Juta GP5 gas membrane around the perimeter of unit 8 with the steel mesh in place.



Overview of the Juta GP5 gas membrane installation as the pour is progressing.

Subgrade Photos



Evidence of the substrate being rolled prior to the installation of the Juta GP5 gas membrane as the pour progresses.

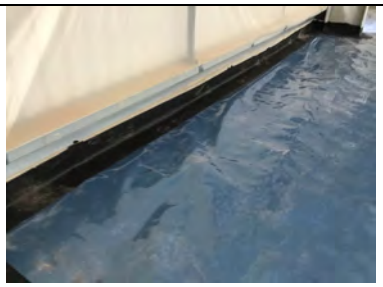
A well rolled fine coarse aggregate substrate.

Materials Used

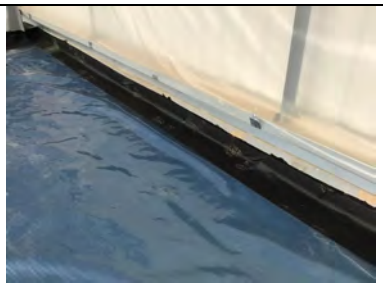
Evidence of the Juta GP5 gas membrane that has been used on this project.

Evidence of the Juta GP1 SAM that has been used for the detailing work on this project.

Perimeter Detail



Steel cladding rail retro fit detailing.

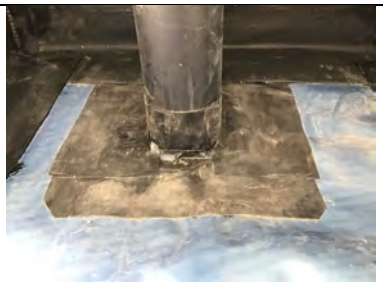


Steel cladding rail retro fit detailing.

Probe testing all perimeter steel cladding rail retro fit detailing.

Pipe and Duct Seals

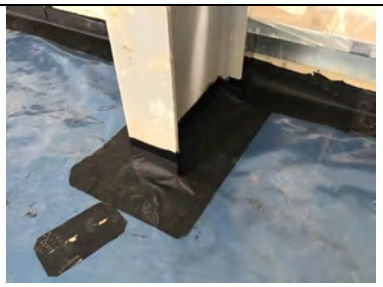
Typical pipe penetration detailing.



Typical pipe penetration detailing.

Probe testing a typical pipe penetration detail.

Stanchions and Columns Seals



Typical steel stanchion detailing.

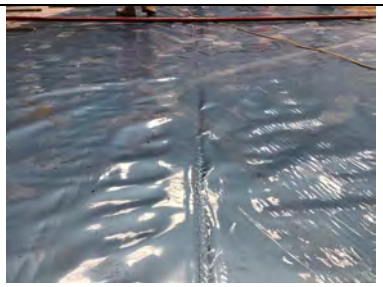
Typical steel stanchion detailing.

Probe testing a typical steel stanchion detail.

Probe testing a typical steel stanchion detail.

Overview of a steel stanchion detail.

Testing of Joints

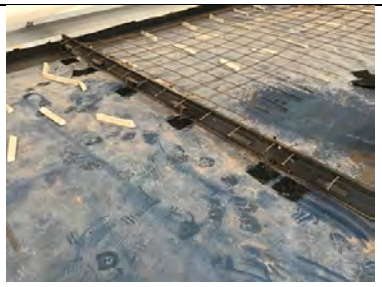


Overview of a typical hand welded membrane lap.

Probe testing all hand welded membrane laps.

Additional Photos

Probe testing a Juta GP1 SAM CQA repair.



The armoured joint pin bases have been detailed using Juta GP1 SAM.

Annex E: Buried Services

SALES INVOICE AND ADVICE NOTE

ISO 9001 Quality Management RS 25357
ISO 14001 Environmental Management EMS 532981

Distributors of Quality Natural Gas, LPG & Plumbing Fittings.

Invoice to

SGLS BUILDING SERVICES LTD
SUMNER SUITE, 1ST FLOOR
COLESHILL TOWN HALL
HIGH STREET
COLESHILL
BIRMINGHAM
B46 3BG

Delivered to

MCS Build Site Offices
Viscount Way
Woodley

Reading
RG5 4DZ

gasa@sglsservices.com

B.E.S. Ltd
Unit 12, Jnct. 6 Ind Park
Electric Avenue
Birmingham B6 7JJ

Tel 0121 322 6400
Fax 0121 322 6440
Website: www.bes.co.uk

VAT Reg No.
GB 113 2041 40

[redacted]

Despatch Date
05/03/25

[redacted]

Invoice Date
& Tax Point
06/03/25

[redacted]

Page
1 01

SL- Net Monthly

Parts No	Description	Quantity	Price	Per		Goods Value	VAT Code
23598	WEB 1002396686 32MMX50M PURITON BAR PIPE	4	591.68	1		2,366.72	01

[redacted]

VAT Code	Rate%	Goods Amount	VAT Total
01	20.00	2366.72	473.34

Shortage or damage must be advised in writing within 3 working days of receipt. Non-delivery must be advised in writing within 7 working days of notified date of despatch. Otherwise no claims will be accepted.

B.E.S. Ltd. Registered in England No. 01202345
Registered Office; Regent House, Bath Avenue, Wolverhampton WV1 4EG.

Total Goods	2,366.72
Total VAT	473.34
Total	2,840.06

Mr Paul Shepherd
Shepherd Brombley Partnership
1 Winnall Valley Road
Winchester
SO23 0LD

DS reference: DS6118328

developer.services@thameswater.co.uk

0800 009 3921

Mon-Fri, 8am-5pm

thameswater.co.uk/developerservices

Your connection quote.

Site location: Headley Road East, Woodley, Reading, RG5 4SN

New services supplies from mains extension scheme 50310523

Dear Mr Paul

Please find your quote for your new water connection attached.

This tells you how much we'll charge for the work you've requested. The charges have been calculated in line with our charging arrangements for new connection services. Please note that this link also provides the latest information on important changes to the structure of our charges for new connections. These will be introduced from 1 April 2020 and could affect your decision about whether to accept this quote.

The charge covers work including making the excavation, carrying out the connection itself and any traffic management activities, which ensure safe working in or near the road.

If your quote includes internal water meters, you'll need to call us to order these meters when you're ready for them. Currently, the lead time for delivery is approximately eight to ten weeks.

Your quote

DS reference number	DS6118328
Quote specifics	10x32mm metered Barrir pipe to serve 10 commercial units
Quote amount	£33,780.00
Quote expiry date	06 November 2024

What do I need to do?

Please review the charges together with our terms and conditions. Take note of the time it takes for us to make your connection to our network and the expiry date for your quote. When you're ready to move ahead, make your payment and commence your pipework to the property boundary.

How long is the quote valid for?

The quote is subject to the included terms and conditions and is valid for 180 calendar days. If it is not accepted within that time, or if the works are not commenced within 12 months of acceptance, we will contact you to confirm if the parameters of the scheme are still valid. If the scheme has changed or is no longer active, this may result in a requote being required or any monies paid being returned to you.

If your requirements change at any time, you'll need to ask us for a requote, for which non-refundable fees will apply. We update our charges on 1 April every year, so if you ask us for a requote in a new charging year, our rates, and the way we calculate the charges, may have changed.

How do I pay my quote?

If you'd like to go ahead, please make your payment using the method that suits you best. Once we receive payment we'll send a confirmation in the post within 10 calendar days.

Online	To pay by card visit www.thameswater.co.uk/payds This is the easiest and simplest way to pay.
Bank transfer (BACS or CHAPS)	Sort Code: 60-00-01 Bank Account: 90478703 Vat No: GB37456915 Reference: DS reference number – it's crucial you include this so we can track your payment.
Phone	To pay by card over the phone, call 0800 009 3921. We don't accept American Express.
Cheque	Make the cheque payable to 'Thames Water Utilities'. Please write your DS reference number on the back of the cheque.
Provide security and pay later	You can pay in arrears if you provide security equal to the expected charges for the works (including an inflation allowance). Call us on 0800 009 3921 if you wish to take this option.

How do I get connected to the network?

There are some key steps you must take before we can connect you to our network:

1. Lay your pipework up to the property boundary, in compliance with Water Regulations. You'll find a checklist of how the pipes must be laid in our 'Getting you connected' guide, which is included in the overview of the process here. We recommend you use a WaterSafe or Thames Water approved plumber for this work.
2. Once the pipework to the property boundary is complete, either email us the certificate of compliance provided by your approved plumber or call us on 0800 009 3921 to book a Water Regulations inspection giving us at least seven days' notice.

3. For a newly-built property, please email your plot number and new full postal address to developer.services@thameswater.co.uk

As you are making a connection to non-household properties such as shops or other commercial spaces, these will automatically have an account set up with a retailer and you won't be billed by Thames Water. Once your account is set up you can change which retailer sends your bill. You can find more information on this at open-water.or.uk.

How long will the work take?

Once you've laid the supply pipes on your land and they've passed our Water Regulations inspection, it can take up to **three months** for us to make the connection to our network. Permission is often needed before carrying out work in a road or footpath, or on privately-owned land. Also, many local authorities won't permit us to work in roads near shopping areas between mid-November and mid-February to avoid disrupting Christmas and New Year trading.

Important technical information – please pass to your plumber

If there's a history of contamination on the connection site, we won't permit standard plastic pipework to be used for underground work. You'll therefore need to lay a suitable 'barrier' pipework.

If your connection has an external diameter above 90mm, please arrange for your supply to terminate with a PH16 flanged end.

Please note that all supplies on manifold connections or in shared trenches will need to be ready for connection at the same time. You'll need to tell us if this isn't possible so that we can issue a revised quote.

We require meters to be installed on the risers to each unit in an accessible location.

We're required under the Water Industry Act 1991 to provide customers with a minimum pressure of 10 metres head (about 1 bar) at the outside stop valve for their property. This should equate to a flow rate of at least 9 litres per minute at the point at which it leaves our pipes.

- Pressures will vary by location and in some cases may be higher than this. We can't guarantee the pressure will always remain at this high level.
- Customers are responsible for modifying the settings on pressure-sensitive appliances – such as fire sprinklers, combination boilers and power showers – if the pressure changes. We therefore strongly advise customers and developers to make sure that installations and upgrades aren't dependent on pressures above 10 metres head.

Can I speak to someone?

We're here if you need a hand. Just call our helpdesk team on the number below.

Yours sincerely,

Harold Tagami
Senior Designer
Developer Services

Annex F: Topsoil Certification

Declaration of Compliance BS3882:2015

Soil source: British Sugar TOPSOIL

This declaration confirms that the topsoil represented by the attached Topsoil Analysis Report conforms to the requirements of the British Standard for Topsoil (BS3882:2015).

The sample was sampled and tested in accordance with the requirements of BS3882:2015

- Samples are taken for analysis every 8000 tonnes (5000 m3) of product
- Samples are taken from all TOPSOIL products ready for despatch
- All products are sampled after screening
- Analysis certificates are retained for a period of 5 years

- Laboratory analysis is undertaken at a **UKAS** and **MCERTS** accredited laboratory
- All laboratory methods are in accordance with BS3882:2015
- All British Sugar TOPSOIL products are produced to a **Quality Management System** approved by Lloyd's Register Quality Assurance to **ISO 9001:2008** standard

Signed

Natalie Gudgin
British Sugar TOPSOIL, National TOPSOIL Manager
1 Samson Place, London Road, Peterborough, PE7 8QJ
Telephone 0870 2402314

TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Natalie Gudgin
British Sugar plc Co-Products
1 Samson Place
London Road
Peterborough
PE7 8QJ

6th December 2024
Our Ref: TOHA/24/1631/SS
Your Ref: PO 60280124

Dear Sirs

Topsoil Analysis Report: Bury St Edmunds – Bury L20

We have completed the analysis of the LANDSCAPE 20 TOPSOIL sample recently submitted, referenced *Bu-L20-Nov24* and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the LANDSCAPE 20 TOPSOIL sample for general landscape purposes. In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Topsoil *(BS3882:2015 - Specification for topsoil* – Table 1, *Multipurpose Topsoil)*.

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification or validation testing or waste designation purposes, especially after the topsoil has left the British Sugar factory.

SAMPLE EXAMINATION

The sample was described as a dark brown (Munsell Colour 10YR 3/3), dry, friable, very calcareous SANDY LOAM with a weakly developed, very fine to medium, occasionally very coarse, granular structure*. The sample was virtually stone-free and contained a moderate proportion of organic fines. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

*This appraisal of soil structure was made from examination of a disturbed sample. Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

ANALYTICAL SCHEDULE

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- particle size analysis (sand, silt, clay);
- stone content (2-20mm, 20-50mm, >50mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C:N ratio;
- heavy metals (As, B, Ba, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, V, Zn);
- total cyanide and total (mono) phenols;
- aromatic and aliphatic TPH (C5-C35 banding);
- speciated PAHs (US EPA16 suite);
- benzene, toluene, ethylbenzene, xylene;
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below. The interpretation considers the use of the LANDSCAPE 20 TOPSOIL for general landscape purposes and its compliance/non-compliance with our general landscape specification.

RESULTS OF ANALYSIS

Particle Size Analysis and Stone Content

The sample fell into the *sandy loam* texture class, which is usually considered suitable for general landscape applications provided the soil's physical condition is satisfactory.

The sample was virtually stone-free and, as such, stones should not restrict the use of the soil for general landscape purposes.

pH and Electrical Conductivity Values

The sample was strongly alkaline in reaction (pH 8.1). This pH value would be considered suitable for general landscape purposes provided species with a wide pH tolerance or those known to prefer alkaline, calcareous soils are selected for planting, turfing and seeding.

The electrical conductivity (salinity) value (water extract) was moderate, which indicates that soluble salts should not be present at levels that would be harmful to plants.

The electrical conductivity value by $CaSO_4$ extract (*BS3882* requirement) fell below the maximum specified value (3300 µS/cm) given in *BS3882:2015 – Table 1*.

Organic Matter and Fertility Status

The sample was adequate to well supplied with organic matter and all major plant nutrients.

The C:N ratio of the sample was acceptable for general landscape purposes.

Potential Contaminants

With reference to *BS3882:2015 - Table 1:* Notes 3 and 4, there is a requirement to confirm levels of potential contaminants in relation to the topsoil's proposed end use. This includes human health, environmental protection and metals considered toxic to plants. In the absence of site-specific criteria, the concentrations that affect human health have been assessed for *residential with home grown produce* end-use against the Suitable For Use Levels (S4ULs) presented in the LQM/CIEH S4ULs for Human Health Risk Assessment (2015) and the DEFRA SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document (2014). The concentration of barium has been compared with the *residential* land use given in the document *EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment* (2010).

Of the potential contaminants determined, none was found at levels that exceeded their guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in *BS3882:2015 – Table 1*.

CONCLUSION

The purpose of the analysis was to determine the suitability of the LANDSCAPE 20 TOPSOIL sample for general landscape purposes. In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Topsoil *(BS3882:2015 - Specification for topsoil* – Table 1, *Multipurpose Topsoil)*.

From the soil examination and subsequent laboratory analysis, the sample was described as a stro

ngly alkaline, non-saline, very calcareous sandy loam with a weakly developed structure and very low stone content. The sample was adequate to well supplied with organic matter and all major plant nutrients. Of the potential contaminants determined, none were found at levels that exceeded their guideline values.

Based on our findings, the topsoil represented by this sample would be considered suitable for general landscape purposes (trees, shrubs and amenity grass), provided that species with a wide pH tolerance or those known to prefer alkaline, calcareous soils are selected and the physical condition of the soil is satisfactory.

The topsoil was also fully compliant with the requirements of the British Standard for Topsoil *(BS3882:2015 – Specification for Topsoil - Table 1, Multipurpose Topsoil).*

Soil Handling Recommendations

It is important to maintain the physical condition of the soil and avoid structural damage during all phases of soil handling (e.g. stockpiling, respreading, cultivating, planting). As a consequence, soil handling operations should be carried out when soil is reasonably dry and non-plastic (friable) in consistency.

It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking by site machinery, and soil handling should be stopped during and after heavy rainfall and not continued until the soil is friable in consistency. If the soil is structurally damaged and compacted at any stage during the course of soiling or landscaping works, it should be cultivated appropriately to relieve the compaction and to restore the soil's structure prior to any planting, turfing or seeding.

Further details on soil handling are provided in Annex A of *BS3882:2015.*

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully

[redacted]

[redacted]

Neema Senthil Kumar
BSc MSc
Graduate Soil Scientist

Rebecca Roberts
BSc MSc MISoilSci
Senior Soil Scientist

For & on behalf of Tim O'Hare Associates LLP

TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Client:	**British Sugar plc Co-Products**
Client Ref:	**Bury St Edmunds**
Job:	**Topsoil Analysis**
Date:	**06/12/2024**
Job Ref No:	**TOHA/24/1631/SS**

Sample Reference			**Bu-L20-Nov24**	
Clay (<0.002mm)	%	U	16	✓
Silt (0.002-0.063mm)	%	U	19	✓
Sand (0.063-2.0mm)	%	U	65	✓
Texture Class (UK Classification)	--	U	SL	--
Stones (2-20mm)	% DW	G	1	✓
Stones (20-50mm)	% DW	G	0	✓
Stones (>50mm)	% DW	G	0	✓
pH Value (1:2.5 water extract)	units	G	8.1	✓
Electrical Conductivity (1:2.5 water extract)	uS/cm	U	885	✓
Electrical Conductivity (1:2 $CaSO_4$ extract)	uS/cm	U	2641	✓
Exchangeable Sodium Percentage	%	U	3.2	✓
Moisture Content	%	U	11	--
Organic Matter (LOI)	%	U	4.6	✓
Total Nitrogen (Dumas)	%	U	0.28	✓
C : N Ratio	:1	U	10	✓
Extractable Phosphorus	mg/l	U	68	✓
Extractable Potassium	mg/l	U	749	✓
Extractable Magnesium	mg/l	U	104	✓
Total Arsenic (As)	mg/kg	M	9	✓
Total Barium (Ba)	mg/kg	M	40	✓
Total Beryllium (Be)	mg/kg	M	0.5	✓
Total Cadmium (Cd)	mg/kg	M	0.4	✓
Total Chromium (Cr)	mg/kg	M	18	✓
Hexavalent Chromium (Cr VI)	mg/kg	M	< 1.8	✓
Total Copper (Cu)	mg/kg	M	18	✓
Total Lead (Pb)	mg/kg	M	17	✓
Total Mercury (Hg)	mg/kg	M	< 0.3	✓
Total Nickel (Ni)	mg/kg	M	13	✓
Total Selenium (Se)	mg/kg	M	< 1.0	✓
Total Vanadium (V)	mg/kg	M	28	✓
Total Zinc (Zn)	mg/kg	M	49	✓
Water Soluble Boron (B)	mg/kg	M	2.1	✓
Total Cyanide (CN)	mg/kg	M	< 1.0	✓
Total (mono) Phenols	mg/kg	M	< 1.0	✓
Naphthalene	mg/kg	M	< 0.05	✓
Acenaphthylene	mg/kg	M	< 0.05	✓
Acenaphthene	mg/kg	M	< 0.05	✓
Fluorene	mg/kg	M	< 0.05	✓
Phenanthrene	mg/kg	M	0.10	✓
Anthracene	mg/kg	M	< 0.05	✓
Fluoranthene	mg/kg	M	0.19	✓
Pyrene	mg/kg	M	< 0.05	✓
Benzo(a)anthracene	mg/kg	M	0.10	✓
Chrysene	mg/kg	M	0.10	✓
Benzo(b)fluoranthene	mg/kg	M	0.15	✓
Benzo(k)fluoranthene	mg/kg	M	< 0.05	✓
Benzo(a)pyrene	mg/kg	M	< 0.05	✓
Indeno(1,2,3-cd)pyrene	mg/kg	M	< 0.05	✓
Dibenzo(a,h)anthracene	mg/kg	M	< 0.05	✓
Benzo(g,h,i)perylene	mg/kg	M	0.09	✓
Total PAHs (sum USEPA16)	mg/kg	M	< 0.80	✓
Aliphatic TPH (C5-C6)	mg/kg	M	< 0.010	✓
Aliphatic TPH (C6-C8)	mg/kg	M	< 0.010	✓
Aliphatic TPH (C8-C10)	mg/kg	M	< 0.010	✓
Aliphatic TPH (C10-C12)	mg/kg	M	< 1.0	✓
Aliphatic TPH (C12-C16)	mg/kg	M	< 2.0	✓
Aliphatic TPH (C16-C21)	mg/kg	M	< 8.0	✓
Aliphatic TPH (C21-C35)	mg/kg	M	< 8.0	✓
Aliphatic TPH (C5-C35)	mg/kg	M	< 10	✓
Aromatic TPH (C5-C7)	mg/kg	M	< 0.010	✓
Aromatic TPH (C7-C8)	mg/kg	M	< 0.010	✓
Aromatic TPH (C8-C10)	mg/kg	M	< 0.020	✓
Aromatic TPH (C10-C12)	mg/kg	M	< 1.0	✓
Aromatic TPH (C12-C16)	mg/kg	M	< 2.0	✓
Aromatic TPH (C16-C21)	mg/kg	M	< 10	✓
Aromatic TPH (C21-C35)	mg/kg	M	< 10	✓
Aromatic TPH (C5-C35)	mg/kg	M	< 10	✓
Benzene	mg/kg	M	< 0.005	✓
Toluene	mg/kg	M	< 0.005	✓
Ethylbenzene	mg/kg	M	< 0.005	✓
o-xylene	mg/kg	M	< 0.005	✓
m & p-xylene	mg/kg	M	< 0.008	✓
Asbestos	ND/D	I	Not-detected	✓

Visual Examination

The sample was described as a dark brown (Munsell Colour 10YR 3/3), dry, friable, very calcareous SANDY LOAM with a weakly developed, very fine to medium, occasionally very coarse, granular structure. The sample was virtually stone-free and contained a moderate proportion of organic fines. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

✓	Meets General Landscape Specification
X	Fails General Landscape Specification
SL	SANDY LOAM Texture Class
M	MCERTS accredited method (& UKAS accredited method)
I	ISO 17025 accredited method
U	UKAS accredited method
G	GLP accredited method

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification or validation testing.

[redacted]

Neema Senthil Kumar
BSc MSc
Graudate Soil Scientist

Results of analysis should be read in conjunction with the report they were issued with

Client:	**British Sugar plc Co-products**
Client Ref:	**Bury St Edmunds Landscape 20 TOPSOIL**
Date:	**06/12/2024**
Job Ref No:	**TOHA/24/1631/SS**

TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Sample Reference			L20-Bury-Jul 23	L20-Bury-Nov 23	L20-Bury-Mar24	L20-Bury-Jun 24	L20-Bury-Nov 24	Average	
Client Reference			TOHA/23/1012/SS	TOHA/23/1167/SS	TOHA/24/1283/SS	TOHA/24/1429/SS	TOHA/24/1631/SS		
pH Value (1:2.5 water extract)	units	G	8.1	7.5	7.9	8.0	8.1	7.9	✓
Electrical Conductivity (1:2.5 water extract)	uS/cm	U	1311	1010	1309	830	885	1069	✓
Organic Matter (LOI)	%	U	5.9	5.0	5.1	3.7	4.6	4.9	✓
Total Arsenic (As)	mg/kg	M	11	8	10	9	9	9	✓
Total Barium (Ba)	mg/kg	M	44	34	54	35	40	41	✓
Total Beryllium (Be)	mg/kg	M	0.57	0.43	0.65	0.46	0.5	0.52	✓
Total Cadmium (Cd)	mg/kg	M	0.5	0.4	< 0.2	< 0.2	0.4	0.3	✓
Total Chromium (Cr)	mg/kg	M	20	15	32	22	18	21	✓
Hexavalent Chromium (Cr VI)	mg/kg	M	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	✓
Total Copper (Cu)	mg/kg	M	19	13	18	12	18	16	✓
Total Lead (Pb)	mg/kg	M	23	20	25	19	17	21	✓
Total Mercury (Hg)	mg/kg	M	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	✓
Total Nickel (Ni)	mg/kg	M	15	11	18	12	13	14	✓
Total Selenium (Se)	mg/kg	M	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	✓
Total Vanadium (V)	mg/kg	M	30	24	38	26	28	29	✓
Total Zinc (Zn)	mg/kg	M	57	44	67	45	49	52	✓
Water Soluble Boron (B)	mg/kg	M	0.4	1	1.8	0.9	2.1	1.2	✓
Total Cyanide (CN)	mg/kg	M	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	✓
Total (mono) Phenols	mg/kg	M	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	✓
Naphthalene	mg/kg	M	< 0.05	0.16	< 0.05	< 0.05	< 0.05	< 0.05	✓
Acenaphthylene	mg/kg	M	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	✓
Acenaphthene	mg/kg	M	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	✓
Fluorene	mg/kg	M	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	✓
Phenanthrene	mg/kg	M	0.08	0.1	0.08	< 0.05	0.10	0.08	✓
Anthracene	mg/kg	M	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	✓
Fluoranthene	mg/kg	M	0.13	0.17	0.16	< 0.05	0.19	0.14	✓
Pyrene	mg/kg	M	0.15	0.16	0.14	< 0.05	< 0.05	0.11	✓
Benzo(a)anthracene	mg/kg	M	< 0.05	0.10	0.07	< 0.05	0.10	0.07	✓
Chrysene	mg/kg	M	0.09	0.11	0.10	< 0.05	0.10	0.09	✓
Benzo(b)fluoranthene	mg/kg	M	0.15	0.14	0.13	< 0.05	0.15	0.13	✓
Benzo(k)fluoranthene	mg/kg	M	< 0.05	0.08	0.06	< 0.05	< 0.05	0.06	✓
Benzo(a)pyrene	mg/kg	M	0.05	0.14	0.09	< 0.05	< 0.05	0.08	✓
Indeno(1,2,3-cd)pyrene	mg/kg	M	< 0.05	0.08	0.06	< 0.05	< 0.05	0.06	✓
Dibenzo(a,h)anthracene	mg/kg	M	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	✓
Benzo(g,h,i)perylene	mg/kg	M	< 0.05	0.09	0.07	< 0.05	0.09	0.07	✓
Total PAHs (sum USEPA16)	mg/kg	M	< 0.80	1.33	0.95	< 0.80	< 0.80	0.94	✓
Aliphatic TPH (C5-C6)	mg/kg	M	< 0.100	< 0.020	< 0.020	< 0.020	< 0.010	< 0.001	✓
Aliphatic TPH (C6-C8)	mg/kg	M	< 0.10	< 0.020	< 0.020	< 0.020	< 0.010	< 0.001	✓
Aliphatic TPH (C8-C10)	mg/kg	M	< 0.10	< 0.050	< 0.050	< 0.050	< 0.010	< 0.001	✓
Aliphatic TPH (C10-C12)	mg/kg	M	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	✓
Aliphatic TPH (C12-C16)	mg/kg	M	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	✓
Aliphatic TPH (C16-C21)	mg/kg	M	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	✓
Aliphatic TPH (C21-C35)	mg/kg	M	< 8.0	< 8.0	11	< 8.0	< 8.0	9	✓
Aliphatic TPH (C5-C35)	mg/kg	M	< 10	< 10	11	< 10	< 10	10	✓
Aromatic TPH (C5-C7)	mg/kg	M	< 0.10	< 0.010	< 0.010	< 0.010	< 0.010	< 0.10	✓
Aromatic TPH (C7-C8)	mg/kg	M	< 0.10	< 0.010	< 0.010	< 0.010	< 0.010	< 0.10	✓
Aromatic TPH (C8-C10)	mg/kg	M	< 0.10	< 0.050	< 0.050	< 0.050	< 0.020	< 0.10	✓
Aromatic TPH (C10-C12)	mg/kg	M	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	✓
Aromatic TPH (C12-C16)	mg/kg	M	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	✓
Aromatic TPH (C16-C21)	mg/kg	M	< 10	< 10	< 10	< 10	< 10	< 10	✓
Aromatic TPH (C21-C35)	mg/kg	M	< 10	< 10	< 10	< 10	< 10	< 10	✓
Aromatic TPH (C5-C35)	mg/kg	M	11	< 10	< 10	< 10	< 10	10	✓
Benzene	mg/kg	M	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	✓
Toluene	mg/kg	M	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	✓
Ethylbenzene	mg/kg	M	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	✓
o-xylene	mg/kg	M	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	✓
m & p-xylene	mg/kg	M	< 0.005	< 0.005	< 0.005	< 0.005	< 0.008	< 0.005	✓
Asbestos	–	I	Not-detected	Not-detected	Not-detected	Not detected	Not-detected	Not-detected	✓

✓	Meets General Landscape Specification
X	Fails General Landscape Specification
M	MCERTS accredited method (& UKAS accredited method)
U	UKAS accredited method
G	GLP accredited method
I	ISO 17025 accredited method
nt	Not Tested

[redacted]

Neema Senthil Kumar
BSc MSc
Graduate Soil Scientist

TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Mr Mike Jupp
The Woodhorn Group
Woodhorn Business Centre
Woodhorn Lane
Oving
Chichester
West Sussex PO20 2BX

8th December 2023
Our Ref: TOHA/23/1191/SS
Your Ref: PO29876

Dear Sirs

Subsoil Analysis Report: Mid Hants Quarry, Calshot, Southampton – BS8601 Subsoil

We have completed the analysis of the soil sample recently submitted, referenced *BS8601 Subsoil,* and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the subsoil sample for use in general landscape applications (trees, shrubs, amenity grass). In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Subsoil *(BS8601:2013 – Specification for subsoil and requirements for use – Table 1, Multipurpose Subsoil),* including analysis of potential contaminants.

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the subsoil source. The report and results should therefore not be used by third parties as a means of verification or validation testing, especially after the subsoil has left The Woodhorn Group site.

SAMPLE EXAMINATION

The sample was described as a dark yellowish brown (Munsell Colour 10YR 5/6), slightly moist, friable, non-calcareous LOAMY SAND with a weakly developed, fine to coarse, granular and sub-angular structure*. The sample was virtually stone-free and no unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

*This appraisal of soil structure was made from examination of a disturbed sample. Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

ANALYTICAL SCHEDULE

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- particle size analysis (% sand, silt, clay);
- stone content (2-20mm, 20-75mm, >75mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- organic matter content;
- heavy metals (As, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn);
- soluble sulphate, elemental sulphur, acid volatile sulphide;
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16 suite);
- aromatic and aliphatic TPH (C5-C35 banding);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

RESULTS OF ANALYSIS

Particle Size Analysis and Stone Content

The sample fell into the *loamy sand* texture class and would be described as light in texture. Such soils typically have good aeration and drainage properties but can possess poor water retention capacities. As a consequence, they often have a greater risk of drought, particularly during prolonged dry periods, and additional irrigation should be considered.

The sample was virtually stone-free and, as such, stones should not restrict the use of the soil for use as subsoil in general landscape purposes.

pH and Electrical Conductivity Values

The sample was strongly alkaline in reaction (pH 8.1). This pH value would be considered suitable as subsoil for general landscape purposes providing species with a wide pH tolerance or those known to prefer alkaline soils are selected for planting, turfing and seeding.

The electrical conductivity (salinity) value (water extract) was low, which indicates that soluble salts would not be present at levels that would be harmful to plants.

The electrical conductivity value by $CaSO_4$ extract (*BS8601* requirement) fell below the maximum specified value (2800 µS/cm) given in *BS8601:2013 – Table 1*.

Organic Matter Content

The organic matter content was low (<0.5%) and compliant with *BS8601:2013 – Table 1*.

Potential Contaminants

With reference to *BS8601:2013 – Section 4.2: Note 2*, there is a requirement to confirm levels of potential contaminants in relation to the subsoil's proposed end use. This includes human health, environmental protection and metals considered toxic to plants. In the absence of site-specific assessment criteria, the concentrations of selected potential contaminants that affect human health have been assessed for the concentrations that affect human health have been assessed for *residential* end-use against the Suitable For Use Levels (S4ULs) presented in the LQM/CIEH S4ULs for Human Health Risk Assessment (2015) and the DEFRA SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document (2014).

Of the potential contaminants determined, none exceeded their respective guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in *BS8601:2013 – Table 1*.

CONCLUSION

The purpose of the analysis was to determine the suitability of the sample for use as subsoil in general landscape purposes (trees, shrubs, amenity grass). In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Subsoil *(BS8601:2013 – Specification for subsoil and requirements for use – Table 1, Multipurpose Subsoil),* including analysis of potential contaminants.

From the soil examination and subsequent laboratory analysis, the sample was described as a strongly alkaline, non-calcareous, non-saline, virtually stone-free loamy sand with a weakly developed structure. The organic matter content was low and consistent with subsoil. Of the potential contaminants determined, none exceeded their respective guideline values.

To conclude, based on our findings, the soil represented by this sample would be considered suitable as subsoil for general landscape purposes (trees, shrubs and amenity grass), provided species with a wide pH tolerance or those known to prefer alkaline soils are selected and the physical condition of the soil is satisfactory.

The sample was also fully compliant with the requirements of the British Standard for Subsoil *(BS8601:2013 – Specification for subsoil and requirements for use – Table 1, Multipurpose Subsoil).*

Soil Handling Recommendations

Reference should be made to Section 6.0 of *BS8601:2013* with regard to the handling and management of the subsoil:

"Soils generally lose strength and become less resistant to damage as they become wetter; therefore, it is essential that they are stripped, handled and trafficked only in the appropriate conditions of weather and soil moisture, and with suitable machinery. If sustained heavy rainfall (e.g. >10 mm in 24 h) occurs during soil stripping operations, work should be suspended and not restarted until the ground has had at least one dry day or until a suitable moisture content has been reached. A soil can be considered to have a suitable moisture content for stripping and handling if the whole thickness of the subsoil layer being stripped and/or handled is at a moisture content below the plastic limit as determined in accordance with BS 1377-2:1990 (incorporating Amendment No. 1).

Machinery should be selected and routed to minimise soil compaction."

Further guidance is provided in Clauses 6.1–6.5.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully

[redacted]

Harriet MacRae
BSc MSc
Graduate Soil Scientist

[redacted]

Rebecca Hollands
BSc MSc MISoilSci
Senior Soil Scientist

For & on behalf of Tim O'Hare Associates LLP

TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Client:	**The Woodhorn Group**
Project:	**Mid Hants Quarry, Calshot Road, Southampton - BS8601 Subsoil**
Job:	**Subsoil Analysis - BS8601:2013**
Date:	**08/12/2023**
Job Ref No:	**TOHA/23/1191/SS**

Sample Reference			**BS8601 Subsoil**
		Accreditation	
Clay (<0.002mm)	%	UKAS	6
Silt (0.002-0.063mm)	%	UKAS	9
Sand (0.063-2.0mm)	%	UKAS	85
Texture Class (UK Classification)	--	UKAS	LS
Stones (2-20mm)	% DW	GLP	1
Stones (20-75mm)	% DW	GLP	0
Stones (>75mm)	% DW	GLP	0
pH Value (1:2.5 water extract)	units	UKAS	8.1
Electrical Conductivity (1:2.5 water extract)	uS/cm	UKAS	260
Electrical Conductivity (1:2 $CaSO_4$ extract)	uS/cm	UKAS	2336
Organic Matter (LOI)	%	UKAS	<0.5
Exchangeable Sodium Percentage	%	UKAS	5.8
Total Arsenic (As)	mg/kg	MCERTS	4
Total Cadmium (Cd)	mg/kg	MCERTS	< 0.2
Total Chromium (Cr)	mg/kg	MCERTS	9
Hexavalent Chromium (Cr VI)	mg/kg	MCERTS	< 1.8
Total Copper (Cu)	mg/kg	MCERTS	4
Total Lead (Pb)	mg/kg	MCERTS	4
Total Mercury (Hg)	mg/kg	MCERTS	< 0.3
Total Nickel (Ni)	mg/kg	MCERTS	4
Total Selenium (Se)	mg/kg	MCERTS	< 1.0
Total Zinc (Zn)	mg/kg	MCERTS	13
Water Soluble Boron (B)	mg/kg	MCERTS	0.2
Total Cyanide (CN)	mg/kg	MCERTS	< 1.0
Total (mono) Phenols	mg/kg	MCERTS	< 1.0
Naphthalene	mg/kg	MCERTS	< 0.05
Acenaphthylene	mg/kg	MCERTS	< 0.05
Acenaphthene	mg/kg	MCERTS	< 0.05
Fluorene	mg/kg	MCERTS	< 0.05
Phenanthrene	mg/kg	MCERTS	< 0.05
Anthracene	mg/kg	MCERTS	< 0.05
Fluoranthene	mg/kg	MCERTS	< 0.05
Pyrene	mg/kg	MCERTS	< 0.05
Benz(a)anthracene	mg/kg	MCERTS	< 0.05
Chrysene	mg/kg	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	MCERTS	< 0.05
Benzo(k)fluoranthene	mg/kg	MCERTS	< 0.05
Benzo(a)pyrene	mg/kg	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	MCERTS	< 0.05
Dibenzo(a,h)anthracene	mg/kg	MCERTS	< 0.05
Benzo(g,h,i)perylene	mg/kg	MCERTS	< 0.05
Total PAHs (sum USEPA16)	mg/kg	MCERTS	< 0.80
Aliphatic TPH >C5 - C6	mg/kg	MCERTS	< 0.020
Aliphatic TPH >C6 - C8	mg/kg	MCERTS	< 0.020
Aliphatic TPH >C8 - C10	mg/kg	MCERTS	< 0.050
Aliphatic TPH >C10 - C12	mg/kg	MCERTS	< 1.0
Aliphatic TPH >C12 - C16	mg/kg	MCERTS	< 2.0
Aliphatic TPH >C16 - C21	mg/kg	MCERTS	< 8.0
Aliphatic TPH >C21 - C35	mg/kg	MCERTS	< 8.0
Aliphatic TPH (C5 - C35)	mg/kg	MCERTS	< 10
Aromatic TPH >C5 - C7	mg/kg	MCERTS	< 0.010
Aromatic TPH >C7 - C8	mg/kg	MCERTS	< 0.010
Aromatic TPH >C8 - C10	mg/kg	MCERTS	< 0.050
Aromatic TPH >C10 - C12	mg/kg	MCERTS	< 1.0
Aromatic TPH >C12 - C16	mg/kg	MCERTS	< 2.0
Aromatic TPH >C16 - C21	mg/kg	MCERTS	< 10
Aromatic TPH >C21 - C35	mg/kg	MCERTS	< 10
Aromatic TPH (C5 - C35)	mg/kg	MCERTS	< 10
Benzene	mg/kg	MCERTS	< 0.005
Toluene	mg/kg	MCERTS	< 0.005
Ethylbenzene	mg/kg	MCERTS	< 0.005
p & m-xylene	mg/kg	MCERTS	< 0.005
o-xylene	mg/kg	MCERTS	< 0.005
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	MCERTS	< 0.005
Asbestos	D/ND	ISO 17025	Not-detected

LS = LOAMY SAND

Visual Examination

The sample was described as a dark yellowish brown (Munsell Colour 10YR 5/6), slightly moist, friable, non-calcareous LOAMY SAND with a weakly developed, fine to coarse, granular to sub-angular blocky structure. The sample was virtually stone-free and no unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

[redacted]

Harriet MacRae
BSc MSc
Graduate Soil Scientist

Results of analysis should be read in conjunction with the report they were issued with

Annex G: Waste Disposal Records

Part A. Notification Details

The Hazardous Waste Regulations 2005 Consignment Note

Consignment no: COLLAR/06435

Consignment type: Hazardous

Reference no: QU-7389 Rigid tanker

The waste below is to be removed from Collard Demolition (The KAM Group SW Ltd)
Producer address: Headley Road, Woodley, Reading, RG5 4SN
Contact details
Collard Demolition (The KAM Group SW Ltd) -
Darren@kamgroupsw.co.uk

The waste will be taken to Yellowstone Environmental Solutions Ltd
Disposal point address 20 Wincombe Business Park, Shaftesbury, Dorset, SP7 9QJ, EPR/ZP3233FP
Contact details
Russell Lempa 01747 858561
emilee@yellowstonesolutions.co.uk, wastedocs@yellowstonesolutions.co.uk

Part C: Carriers Certificate

Third party consignment note code
Collection date: March 01, 2023
Single/multiple collection: Single
Collection number:
Round number:

Vehicle registration or non-mode of transport: WJ22 GDO
Trailer registration: Rigid tanker
Carrier: Andrew Rose
Carrier address:
20 Wincome Business Park, Shaftesbury, SP7 9QJ
Carrier registration no/reason for exemption: CBDU165023

I certify that I today collected the consignment and that the waste removal address, waste delivery address, and wastes described in part B are correct. I have also been advised of any specific handling requirements.

[redacted]

Carrier Signature - 01/03/2023 13:38

Part D: Consignor's Certificate

Consignor name: Darren / R Collard - not present
Consignor address
Headley Road Woodley Reading RG5 4SN

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.
I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the waste(England and Wales) Regulations 2011.
By signing this document I can confirm that, where relevant, all fuel duty has been paid.

[redacted]

Customer Signature - 01/03/2023 13:38

Part E: Consignee Certificate

Weighbridge Information
Ticket Number:

Gross Weight: 0

Tare Weight: 0

Net Weight: 0

Consignee Name
Consignee address Yellowstone Environmental Solutions Ltd
20 Wincombe Business Park, Shaftesbury, Dorset, SP7 9QJ

Vehicle Registration (or non-mode of transport) WJ22 GDO Trailer registration:
Rigid tanker

Where The Consignment Forms Part Of A Multiple Collection, As Identified In Part C, I Certify That The Total Number Of Consignments Forming The Collection Are:
I certify that waste permit/exempt waste operation number EPR/ZP3233FP authorises the management of the waste described in B at the address given in Part A.

Disposal Signature -

Analysis Signature -

Disposal Signature Date -

Analysis Signature Date -

Part B: Description Of The Waste

Process giving rise to waste: Waste Transfer

SIC Code: 38220

1	Description: Waste Diesel Water						
UN ID: 1202	Shipping: Diesel oil, Light Fuel			UN Class: 3	Packing Group: III		Tunnel Codes:
EWC: 13 07 01	Special handling: AS PER ADR INST	Waste QTY (kg): 13000.00	Physical: Liquid	Haz: HP3,HP5,HP7,HP14	Container Types: Vac tanker	Container(s): 1	Unit Weight:
Component: Diesel				Concentration: <50%			
Component: Water				Concentration: Balance			

Part E: Consignee Certificate - Extended Waste List

Note number:
COLLAR/06435

Note type:
Hazardous

Job reference:
QU-7389 Rigid tanker

	EWC Code	Finished Qty (kg)	R or D Code	Accepted
1	13 07 01	13000.00		☑ Accepted

Additional Notes

Tank clean plus uplift from IBCs on site.. Attend at 9am Tank clean postponed due to heavy sludge. 12 x IBCs done plus numerous drums and bunds. Andrew

Company Details

Yellowstone Environmental Solutions Ltd
20 Wincombe Business Park
Shaftesbury
Dorset
SP7 9QJ

Part A. Notification Details

Duty of Care Note

Consignment no: YELLOW/10809 Consignment type: Duty Of Care Reference no: 10x IBCs.TUESDAY. QU-10763

The waste below is to be removed from Yellowstone Environmental Solutions ltd
Producer address: 20 Wincombe Business Park, Shaftesbury, Dorset, SP7 9QJ
Contact details
Yellowstone Environmental Solutions ltd - 01747 858561
wastedocs@yellowstonesolutions.co.uk

The waste will be taken to The KAM Group
Disposal point address Headley Road East, Woodley, Reading, RG5 4SW
Contact details
Darren Negus 07506 284830
darren@kamgroupsw.co.uk

Part C: Carriers Certificate

Third party duty of care note code
Collection date: September 03, 2024
Single/multiple collection: Single
Collection number:
Round number:

Vehicle registration or non-mode of transport: GJ19 ASX
Trailer registration: Tautliner
Carrier: Philip Wilmot
Carrier address:
20 Wincome Business Park, Shaftesbury, SP7 9QJ
Carrier/Broker registration no/reason for exemption: CBDU165023

I certify that I today collected the consignment and that the waste removal address, waste delivery address, and wastes described in part B are correct. I have also been advised of any specific handling requirements.

[redacted]

Carrier Signature - 03/09/2024 10:29

Part D: Holder/Producer Of The Waste

Consignor name: David Esplin
Consignor address:
20 Wincombe Business Park
Shaftesbury Dorset SP7 9QJ

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.
I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the waste(England and Wales) Regulations 2011.
By signing this document I can confirm that, where relevant, all fuel duty has been paid.

[redacted]

Customer Signature - 03/09/2024 10:29

Part E: Destination Of The Waste

Weighbridge Information
Ticket Number: Gross Weight: 0 Tare Weight: 0 Net Weight: 0

Consignee Name: Jamie aquilina
Consignee Address:
The KAM Group
Headley Road East, Woodley, Reading, RG5 4SW

Vehicle Registration (or non-mode of transport) GJ19 ASX Trailer registration:
Tautliner

Where The Consignment Forms Part Of A Multiple Collection, As Identified In Part C, I Certify That The Total Number Of Consignments Forming The Collection Are:
I certify that waste permit / exempt waste operation number authorises the management of the waste described in B at the address given in Part A.

[redacted]

Disposal Signature - 03/09/2024 12:34

Part B: Description Of The Waste

Process giving rise to waste:

SIC Code:

1 Description: Empty IBCs

Tunnel Codes:

EWC: 15 01 10	Waste QTY (kg): 1000.00	Physical: Solid	Container Types: IBC	Container(s): 10	Unit Weight: 100

Part E: Consignee Certificate - Extended Waste List

Note number: YELLOW/10809

Note type: Duty Of Care

Job reference: 10x IBCs.TUESDAY. QU-10763

	EWC Code	Finished Qty (kg)	R or D Code	Accepted
1	15 01 10	1000.00	R13	☑ Accepted

Additional Notes

Deliver x10 EMPTY IBCs. what3words - boxing.post.drove 1000 to 1045

Company Details

Yellowstone Environmental Solutions Ltd
20 Wincombe Business Park
Shaftesbury
Dorset
SP7 9QJ

01747 858561
wastedocs@yellowstonesolutions.co.uk

HAZARDOUS WASTE RETURNS SUMMARY

Collection Address:	Disposal Address:	Customer:	Account No:	Customer's Ref:	Our Ref:
R Collard Ltd Headley Road East Woodley, Reading RG5 4SN	CSG Aylesford Mills Road Quarry Wood Industrial Estate Aylesford Kent ME20 7NA	R Collard Ltd	CO4682	c7998/28951	OP-0334079

Consignment No.	Consignment Type	Round No.	Collection No.	Date Received	Postcode of Place of Production	EWC Code	Hazard	Physical Form	Weight (kg)	R&D Code	Ref
N/A	Single			04/07/2024	RG5 4SN	20 01 21*	HP14	Solid	100.00	*R13	WA-0576450

Generated:10/07/2024