

ANALYTICAL REPORT

Report Number	41800-24	G281	PHILIPPA LAMBOURNE	Client	FOREST WOOD AUG 24
Date Received	28-JUN-2024		FREELAND HORTICULTURE LTD		SUBSOIL
Date Reported	10-JUL-2024		ROSEDALE NURSERY		
Project	SOIL		COLLEGE ROAD		
Reference	FOREST WOOD SUBSOIL		HEXTABLE		
Order Number			KENT BR8 7LT		

Laboratory Reference		SOIL703130									
Sample Reference		FOREST WOOD SUBSOIL									
Determinand	Unit	SOIL									
pH water [1:2.5]		8.3									
Available Phosphorus (Index)	mg/l	<2.5 (0)									
Available Potassium (Index)	mg/l	110 (1)									
Available Magnesium (Index)	mg/l	134 (3)									
Sand 2.00-0.063mm	% w/w	82									
Silt 0.063-0.002mm	% w/w	12									
Clay <0.002mm	% w/w	6									
Stones 2-20mm	% w/w	1.3									
Conductivity Sat CaSO4	uS/cm	2121									
Available Sodium	mg/l	13.2									
Available Calcium	mg/l	451									
Organic Matter LOI	% w/w	2.4									
Neutralising Value as CaCO3 eq.	% w/w	2.6									
Neutralising Value as CaO eq.	% w/w	1.4									
Total Copper	mg/kg	7.3									
Total Zinc	mg/kg	67.6									
Total Nickel	mg/kg	68.2									
Total Fresh Weight (Fresh)	g	1689.8									
Total Visible Contaminants	%	0.00									
Stones 20-75mm	%w/w	0.0									
Stones >75mm	%w/w	0.0									
Mass of Sharps	g	0.0									
Glass/Sharps	%	0.00									
Plastic	%	0.00									
Textural Class **		LS									

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Order Number			KENT BR8 7LT		

Laboratory Reference	SOIL703130										
Sample Reference	FOREST WOOD SUBSOIL										
Determinand	Unit	SOIL									
Estimated CEC	meq/100g	6.9									

Notes											
Analysis Notes	The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated. Organic material reincorporated.										
Document Control	This test report shall not be reproduced, except in full, without the written approval of the laboratory.										

Reported by	** Please see the attached document for the definition of textural classes. Dr R C Wilkinson Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS Tel: 01344 886338 Fax: 01344 890972 email: enquiries@nrm.uk.com										
-------------	--	--	--	--	--	--	--	--	--	--	--

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

- vf Very Fine (more than 2/3's of sand less than 0.106 mm)
- f Fine (more than 2/3's of sand less than 0.212 mm)
- c Coarse (more than 1/3 of sand greater than 0.6 mm)
- m Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

- M medium (less than 27% clay)
- H heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

Analytical Notes

Accreditation and method details

NRM is a UKAS-accredited testing laboratory (No 2334), accredited to BS EN ISO 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF communicate dated April 2017). <http://ilac.org/?download=120917>

NRM is accredited for particular determinands in specific matrices as set out in the laboratory's current UKAS schedule of accreditation https://www.ukas.com/wp-content/uploads/schedule_uplds/00002/2334Testing_Multiple.pdf

Accreditation applies to the following parameters in this report and is applicable to SOLL samples only. All other tests within this report are unaccredited.

Test	Analysis SOP	Method Description
Fluoride	JAS-487	Sulphuric acid extraction (1:10 ratio) and determination by ion selective electrode
Arsenic	JAS-510 / JAS-300	Aqua regia digest on hot block and determination by ICP-OES
Barium		
Beryllium		
Cadmium		
Chromium		
Cobalt		
Copper		
Lead		
Molybdenum		
Mercury		
Nickel	JAS-510 / JAS-455	Aqua regia digest on hot block and determination by AFS
Vanadium		
Zinc		
Selenium		

Analysis Notes

Analysis is carried out on the air-dried (<30°C) and ground sample.

The results as reported relate only to the item(s) submitted for testing.

The results are presented on a dry matter basis.

Indices are derived solely from the numerical value and test result without reference to measurement uncertainty.

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We cannot offer interpretation or opinions for results.

Sampling information

BS ISO 18512:2007 (Soil quality – Guidance on long and short-term storage of soil samples) states that for pH the period of stability and therefore holding time for a wet or 'fresh' soil sample is one week from sampling. Other determinants in the fresh sample may be considered stable for up to a month. Once the sample has been dried the sample may then be considered stable for up to 3 years. No records are maintained by NRM on date sampled or date dried so all samples within this report are considered not to be meeting the requirements of this BS / ISO. Consequently, all pH results given are those of the as-received sample and may not reflect the pH value of the sample when taken.

END OF REPORT

Appendix B

Drinking Water Supply Pipes Evidences

QUOTATION

Our Ref: 08Q07317/1
 Originator: Dan Holley
 Your Ref: MILLY PRIESTLEY
 Issue Date: 16Oct24
 Required Date: 16Oct2
 Page: 1
 Account number: 00211912
 Please note:



Robert Price - Builders' Merchants
 Old Compton Place, Corporation Road, Newport, Gwent, NP19 4AD
 Tel: 01633 636163 Email: newport@robert-price.co.uk

Customer

CIVILS & CONSTRUCTION UK LTD
 UNIT 13
 VAUXHALL IND EST
 RUABON
 WREXHAM
 LL14 6HA
 TEL: 01978 788925

Delivery

Job Name:

Line	Qty	Description	Unit Price ex VAT	Total ex VAT	VAT%
1	3	RADIUS PURITON BARRIER PIPE 32MM X 50M XQ2535	£408.57	£1225.71	20.0
2	2	PURITON COUPLER 32MM XR5245	£10.15	£20.30	20.0
3	1	PHILMAC STOPCOCK 32MM 2844	£49.59	£49.59	20.0
4	2	BLUE WATER PIPE FITTING 81284400 PHILMAC LINER 32MM 78004 BLUE WATER PIPE FITTING	£0.53	£1.06	20.0
5	4	RADIUS MDPE BLUE WATER PIPE 63mm x 50m COIL SC80 12.5 bar VA0071	£291.25	£1165.00	20.0
6	3	PHILMAC COUPLER 63MM 9177 BLUE WATER PIPE FITTING 98917700	£32.95	£98.85	20.0
7	13	PHILMAC LINER 63MM 78007 BLUE WATER PIPE FITTING 97800700	£1.26	£16.38	20.0
8	1	PHILMAC TEE 63MM 9377 BLUE WATER PIPE FITTING 98937700	£48.49	£48.49	20.0
9	2	ABOVE/BELOW GROUND MDPE BALL VALVE 63MM 26390	£85.86	£171.72	20.0
.....Total excluding VAT from line 1				£2797.10	
VAT				£559.42	
Total including VAT				£3356.52	

Quotations are subject to our normal Terms and Conditions of sale. A copy is available on our website.

Prices are as at today's date and are subject to any price increase. Unfortunately we are unable to notify customers prior to every increase.
 Special orders cannot be returned

Customer are responsible for ensuring the accuracy of any design, drawing or specification provided by them. If we are asked to assist customers by estimating quantities, we will not be liable for any shortage or over-estimation of materials nor for any consequential loss, however caused. Estimates will be based on minimum specifications recommended by our suppliers. Final quantities are the customer's responsibility and customers are strongly advised to employ the services of a qualified quantity surveyor.

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Email: accounts@robert-price.co.uk
Telephone: 01873 858585
Registered: England No. 1235332

CIVILS & CONSTRUCTION UK LTD UNIT 13 VAUXHALL IND EST RUABON WREXHAM LL14 6HA				Delivery Address: HOME BARGAINS MAESGLAS RETAIL PARK NEWPORT NP20 2NZ				SALES INVOICE			
								SALES INVOICE No.		08/S2931955	
								ACCOUNT No.		00211912	
								INV.DATE/TAX POINT		17Oct24	
Delivery Note No.		Despatch Date		Your Order No.		Supplied by					
08D46423		17Oct24		HB03-461		NEWPORT Delivered					
Quantity	Unit	Item No.	Description			Price	Per	Value	V		
3	Each	PPE50300	RADIUS PURITON BARRIER PIPE 32MM X 50M XQ2535			408.57	Each	1225.71			
2	Each	PPJ10301	PURITON COUPLER 32MM XR5245			10.15	Each	20.30			
2	Each	PPJ29900	PHILMAC LINER 32MM 78004 BLUE WATER PIPE FITTING			0.53	Each	1.06			
3	Each	PPE32900	RADIUS MDPE BLUE WATER PIPE 63mm x 50m COIL SC80 12.5 bar VA0071			291.25	Each	873.75			
2	Each	PPJ20900	PHILMAC COUPLER 63MM 9177 BLUE WATER PIPE FITTING 98917700			32.95	Each	65.90			
13	Each	PPJ30300	PHILMAC LINER 63MM 78007 BLUE WATER PIPE FITTING 97800700			1.26	Each	16.38			
1	Each	PPJ24300	PHILMAC TEE 63MM 9377 BLUE WATER PIPE FITTING 98937700			48.49	Each	48.49			
						C/fwd to n		2251.59			
VAT No. 288 9220 15				THIS TRANSACTION IS SUBJECT TO OUR STANDARD CONDITIONS OF SALE, COPIES OF WHICH ARE AVAILABLE ON REQUEST. Chain of custody certified products are identified in the item description. FSC: INT-COC-002446 PEFC: CATG-PEFC-COC-631			TOTAL GOODS				
Code	Rate	Taxable	Amount				TOTAL VAT				
							INVOICE TOTAL				

Pollutant Linkage 2 – Barrier Pipe



Photo 2 – The barrier pipe is the bright blue coiled pipe with typical dark blue stripe.

File

Message

Tell me what you want to do...

Ignore

Junk

Delete

Reply

Reply All

Forward

More

Meeting

More

Move

Move

Rules

OneNote

Actions

Mark Unread

Categorize

Follow Up

Translate

Find

Related

Select

Zoom

Zoom

Send to OneNote

Viva Insights



Mark Heath <Mark.Heath@dwrcymru.com>

Richard Sanders; Josh Braithwaite; Guy Priestley; Mircea Dobrescu

RE: 32mm barrier pipe



RE: WMD0003181 - New Fire Main complex, Home Bargains Store, Newport.

Outlook item

Caution! This message has come from an external source. Do not click on any links unless you are expecting this message.

Good afternoon Richard,

We have no jurisdiction on the private watermain installed, this was advised within my email to Toni Heward of 22/01/25 (attached). Our Water Regulations Team have confirmed that they are satisfied with the internal arrangement and that it meets the required specifications.

Regards,



Mark Heath

Project Manager

Developer Services

Dŵr Cymru Welsh Water



E: developer.services@dwrcymru.com



T: 0800 917 2652 | M: 07917 233097



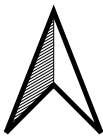
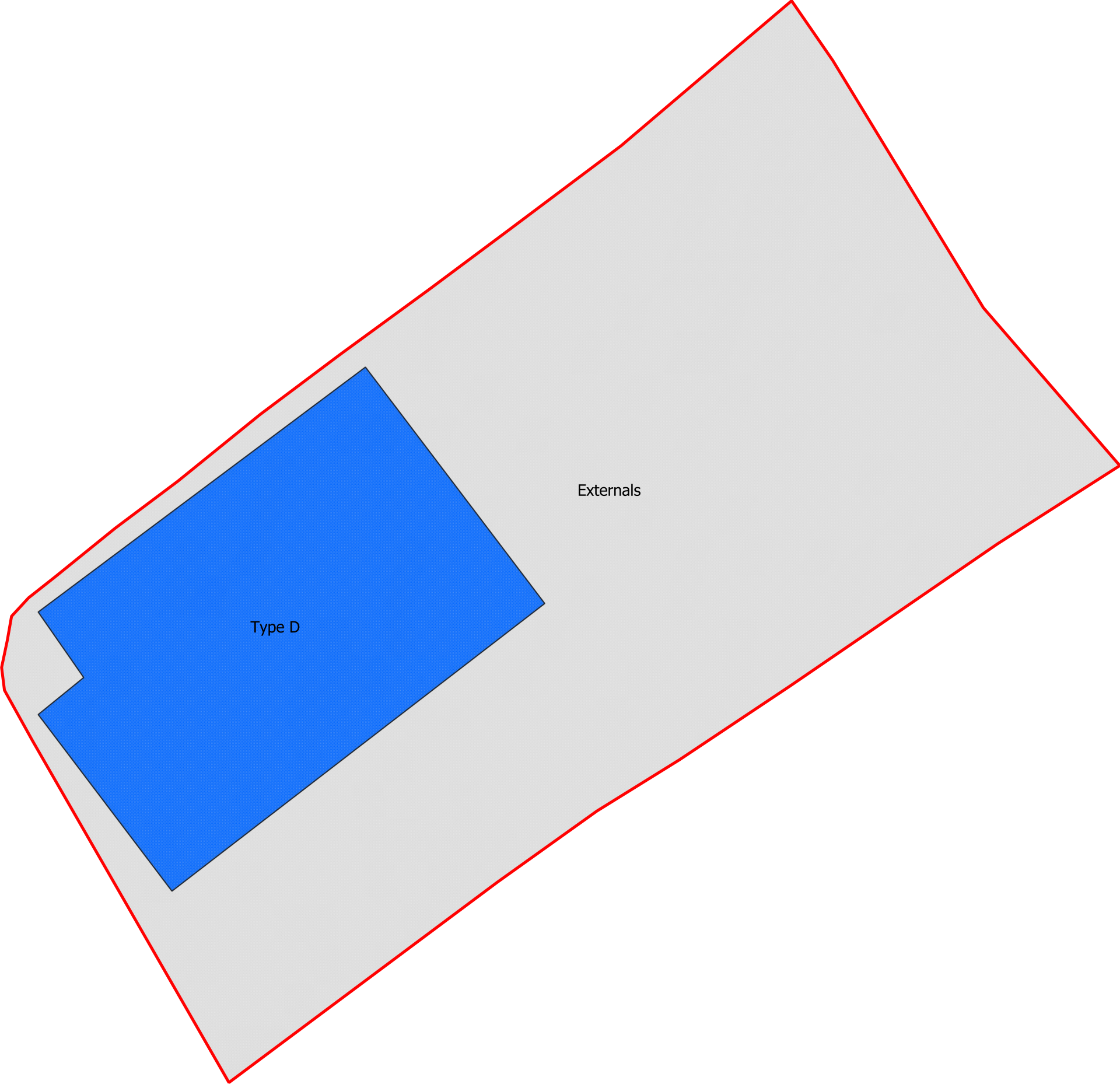
A: PO Box 3146, Cardiff, CF30 0EH

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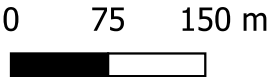
Appendix C

Ground Gas Protection Evidences



Legend

- RLB
- Gas Membrane Extent
- External Area



FAIRHURST

HB Newport

Extent of Gas Membrane

Project Number	151157		
Drawn By	CH		
Checker/Approver	DM		
Drawing number			Rev
151157-GEO-SK001		0	

Braithwaite Group

HOME BARGAINS STORE, NEWPORT

Ground Gas Protection Verification Report



Braithwaite Group

Home Bargains Store, Newport

Ground Gas Protection Verification Report

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 9774

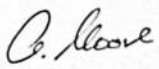
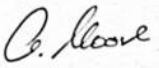
OUR REF. NO. 9774-GGVR-001

DATE: FEBRUARY 2025

ADS Consult
107 Mere Grange Business Park,
Leaside,
St Helens,
WA9 5GG
Phone: +44 (0) 151 541 4000

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QUALITY CONTROL

Issue/revision	Issue	
Remarks		
Date	05.02.25	
Prepared by	J. Ashworth BSc. (Hons)	
Signature		
Authorised by	A. Moore BSc. MSc. FGS CGeol. MICE CEng. SiLC QP SQP	
Signature		
Project number	9774	
Report number	9774-GGVR-001	
Comments	Rev00	

CONTENTS

1	INTRODUCTION	1
1.1	TERMS OF REFERENCE	1
1.2	DESCRIPTION OF DEVELOPMENT	1
1.3	SCOPE AND OBJECTIVES	1
1.4	LIMITATIONS	1
2	CONSTRUCTION RECORD	2
2.1	DESIGN	2
2.2	INSTALLATION TEAM	2
2.3	INSTALLATION METHODOLOGY	3
2.4	DOCUMENTATION OF GAS PROTECTION MEASURES CONSTRUCTION	3
2.4.1	SUBGRADE PREPARATION	3
2.4.2	MEMBRANE MATERIALS SPECIFICATION	3
2.4.3	MEMBRANE INSTALLATION	4
2.4.4	POST INSTALLATION PROTECTION	5
3	VERIFICATION STATEMENT	6
4	REFERENCES	7

FIGURES

Figure A.1 Site Location Plan
 Figure A.2 Site Development Plan
 Figure A.3 As Built Gas Membrane Installation Details
 Figure A.4 As Built Gas Membrane Installation Plan
 Drawing 151157-FRH-40-GF-DR-S-4300-C01 Ground Floor Plan GA
 Drawing 2402 103 C Plans as Proposed HVAC Service Penetrations May 2024

TABLES

Figure 2-1 – Cross Section of Installed Gas Protection Measures	2
Table 2-1 – Summary of Appointed Construction Team	2
Table 2-3 – BS 8485:2015 Table 7 Gas protection score for the gas resistant membrane and comparison to membranes used on site	3



APPENDICES

APPENDIX A FIGURES AND DRAWINGS

APPENDIX B PHOTOGRAPH RECORD

APPENDIX C MEMBRANE SPECIFICATION AND PERFORMANCE CERTIFICATE

APPENDIX D MEMBRANE INSTALLER QUALIFICATION CERTIFICATE

APPENDIX E CONTRACTOR STATEMENT

1 INTRODUCTION

1.1 TERMS OF REFERENCE

ADS Consult (ADS), a subsidiary of ADS Structural UK Limited, was instructed by Braithwaite Group (the client) to provide Verification of installed Ground Gas Protection Measures at the Home Bargains Store, Newport.

1.2 DESCRIPTION OF DEVELOPMENT

The site is located at West Retail Park, Docks Way, Newport with postcode NP20 2NZ, and approximate National Grid Reference 331150, 186330. A Site Location Plan is included as Figure A.1 and Site Boundary Plan as Figure A.2 (Appendix A).

The development comprises of the erection of 1 No. retail unit with associated access and serving arrangements and car parking.

The development plan is presented as Figure A.3 (Appendix A).

The site has been subject to site investigations, ground gas monitoring and has an agreed Remediation Strategy.

1.3 SCOPE AND OBJECTIVES

This report has been produced to provide information demonstrating the installation of a gas protection membrane to the new retail unit in accordance with best practice and relevant published guidance including BS8485:2015 and CIRIA C735 and as set out in the Verification Plan of the Remediation Strategy (Ref: 2, see Section 4) and Ground Gas Risk Assessment for the site (Ref: 3, see Section 4).

The objective is to demonstrate that an effective barrier is installed to protect future building users from potential ingress of ground gases.

1.4 LIMITATIONS

This report is addressed to and may be relied up on by:

Braithwaite Group
The 3rd Floor,
16 Cook Street,
Liverpool
L2 9RF

ADS Consult has prepared this report based on information provided by the client and their agents. ADS has used third party information in this report and takes no responsibility for the accuracy of the data. A statement of the works completed has been provided by the main contractor and is attached as Appendix E.

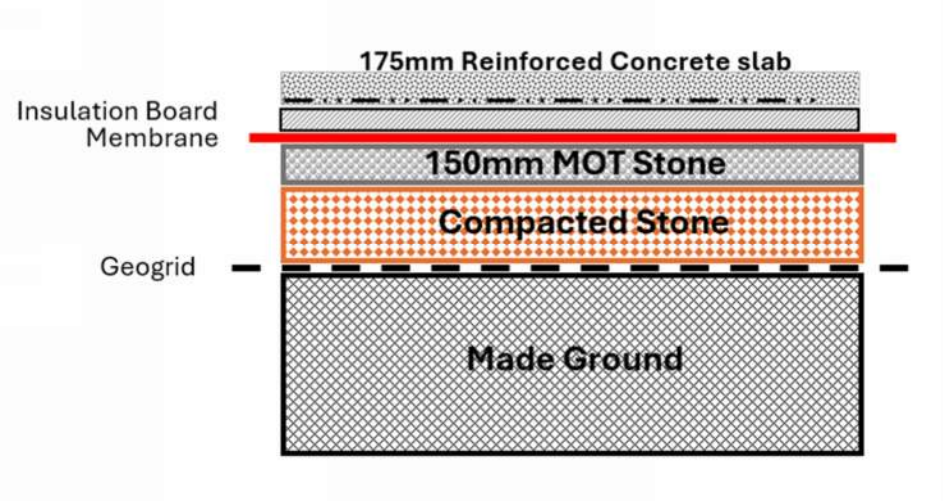
The information contained in this report is intended for the use of the Braithwaite Group. ADS take no responsibility for the use of this information by any third party or for uses other than that described in this report or detailed within the terms of our engagement.

2 CONSTRUCTION RECORD

2.1 DESIGN

A cross section of the floor construction across the building is presented below.

Figure 2-1 – Cross Section of Installed Gas Protection Measures



Further drawings are included in Appendix A to show the location of joints in the floor areas and locations of service entry points through the concrete slab.

2.2 INSTALLATION TEAM

Membrane installation works were completed between 16th and 22nd October 2024.

The team responsible for the preparation of the floor areas, installation of the membrane, supervision and construction of the overlying floor slab are summarised in Table 2.1 below:

Table 2-2 – Summary of Appointed Construction Team

Organisation	Role
Braithwaite Group	Client – full time site supervision of all contractors.
Civils and Construction Uk,	Groundworks and drainage contractor responsible for subgrade and services under supervision of Civils and Construction UK.
Megan Services Limited	Groundworks contractor responsible for installation of membrane and insulation boards under supervision of Civils and Construction UK.
Megan Services Limited	Specialist concrete floor construction team.

The Contractor provided a suitably trained and experienced representative for the installation of the membrane, confirmed as Mike Farrell and his certificate of training is presented in Appendix D. The Contractor has confirmed the details presented in this report in a statement presented as Appendix E.

No other parties were engaged to undertake inspection and all information is provided by the Contractor.

2.3 INSTALLATION METHODOLOGY

The membrane installation stages were:

1. The subgrade installed comprised of minimum 150mm well graded, well compacted Type 1 material, blinded with fines and compacted and rolled to provide a clean and flat surface for the membrane.
2. Subgrade was inspected by the contractor to remove any oversized stones or raised inclusions that may damage the membrane after installation.
3. The membrane was rolled out in panels ahead of the intended floor construction areas. All seams were overlapped by a minimum 300mm and joined by double sided tape.
4. The membrane was inspected to confirm laps, for any cuts or tears, the joints inspected to ensure a continuous seal immediately before Insulation board was placed on top.
5. All service entries and penetrations such as columns were sealed to the membrane using pre-formed top hats and tape.

2.4 DOCUMENTATION OF GAS PROTECTION MEASURES CONSTRUCTION

2.4.1 SUBGRADE PREPARATION

Photographic evidence of the preparation of a suitable subgrade is provided in Appendix B, see photo 2.

The Contractor has confirmed that the subgrade was installed in accordance with construction information and rolled to provide a clean, flat surface for the membrane. Any sharp stones protruding were removed prior to membrane being laid.

2.4.2 MEMBRANE MATERIALS SPECIFICATION

A gas protection score should only be assigned to a membrane which is formed of a material with suitably low gas permeability.

Two types of membrane were used across the building floor area, Toughsheet and Radbar Radon 400. The material properties and site installation details have been compared with the requirements of BS8485:2015 in the table below:

Table 2-3 – BS 8485:2015 Table 7 Gas protection score for the gas resistant membrane and comparison to membranes used on site

Protection element/system	Score	Comments	Toughsheet	Radbar Radon 400
Sufficiently impervious to the gases with a methane gas transmission rate <40.0ml/day/m ² /atm (average) for sheet and joints (tested in accordance with BSISO15105-1manometric method).	2	The performance of membranes is heavily dependent on the quality and design of the installation, resistance to damage after installation and integrity of joints. For example, a Minimum 0.4mm thickness (equivalent to 370g/m ² for polyethelene)	Methane permeation test certificate available (Appendix C) to demonstrate 35-36ml/day/m ² /atm	Methane permeation test certificate available (Appendix C) to demonstrate 227ml/day/m ² /atm
Sufficiently durable to remain serviceable for the Anticipated life of the building and duration of gas emissions.			Minimum 0.4mm thickness	

Sufficiently strong to withstand in-service stresses (e.g. settlement if placed below a floorslab).	reinforced membrane (virgin polymer) If a membrane is installed That does not meet all the Criteria in column1 then the Score is zero.	Strength test results available to show suitability (Appendix C). High puncture resistance.
Sufficiently strong to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to Working above it, dropping tools, etc);		Protection provided by manual placement of insulation boards.
Capable, after installation, of providing a complete barrier to the entry of the relevant gas.		Sealed to building edges, covers full floor areas and penetrations and columns sealed.

The Toughsheet Radon/ Gas Barrier passes all criteria above. Whilst the Radbar Radon 400 does not meet the minimum methane permeation requirement above, it is considered suitable at this site due to:

- The gas source on site is natural organic soils (peat) of low gas generation rates and located at depth below natural clay layers.
- The Ground Gas Risk Assessment reported that all monitoring events record zero steady flow conditions demonstrating no significant gas generation rates on site.
- The measured membrane permeability to methane by the manufacturer is very low.

The conceptual site model and site measurements demonstrate that there are no significant gas generation rates which in turn indicates no significant risk of future gas pressure on the underside of the membrane ie driving gas flow through the membrane sheet. Whilst not meeting the BS8485:2015 specification for a membrane, this specification is presented to fit all gas risk situations ie significant concentrations and flows which are higher risk than at this site.

2.4.3 MEMBRANE INSTALLATION

A gas protection score should only be assigned to a membrane which has been installed so it completely seals the foundation (including effective seals around all penetrations).

Photographic evidence that the membrane was laid is provided in Appendix B, see photos 1, 3 and 4.

The membranes installed were Toughsheet Radon/Gas Barrier and Radbar Radon 400 membranes (Specifications and Performance certificates attached as Appendix C).

All joints were lapped by 300mm and sealed by double sided butyl tape (photo 2, Appendix B). The tape used was compatible with the manufacturer's recommendations for their membrane.

Joints between the two membrane products were sealed using butyl double sided tape. Tapes supplied by Radbar and Toughsheet are both butyl in composition and suitable for sealing radon and methane gas barriers so no specific changes in tape specification was required between the two products.

Integrity testing was not undertaken as part of the verification of the gas protection measures.

The Contractor has confirmed that the membrane was laid without damage and lapped and taped in accordance with construction information. In addition, all service entries (pop-ups) through the concrete slab were sealed using tape in accordance with the manufacturer's recommendations for the membrane.

2.4.4 POST INSTALLATION PROTECTION

A gas protection score should only be assigned to a membrane which does not sustain damage from in-service stresses.

The membrane was effectively protected after installation by the manual placing of insulation boards. These acted as a protection layer from placement of reinforcement and the concrete pour.

The same Contractor that installed the membrane was present on-site during post installation works i.e. construction of the concrete slab and available to spot patch any observed damage to the membrane.

3 VERIFICATION STATEMENT

Suitably experienced personnel were employed to install the gas membrane to the Retail Building and offices at Home Bargains, Newport.

The works were undertaken and inspected by the Contractor and they have provided information for this report to demonstrate:

- Photographs of installation of the membrane with evidence of double-sided taped joints.
- Statement that sealing around protrusions and columns was undertaken. Photograph 6 showing top hat and taping of protrusions through Radbar Radon 400 membrane.
- The membrane installer was suitably qualified and experienced.
- Confirmation from Contractor that no damage occurred to the membrane during installation and prior to placement of overlying insulation boards.

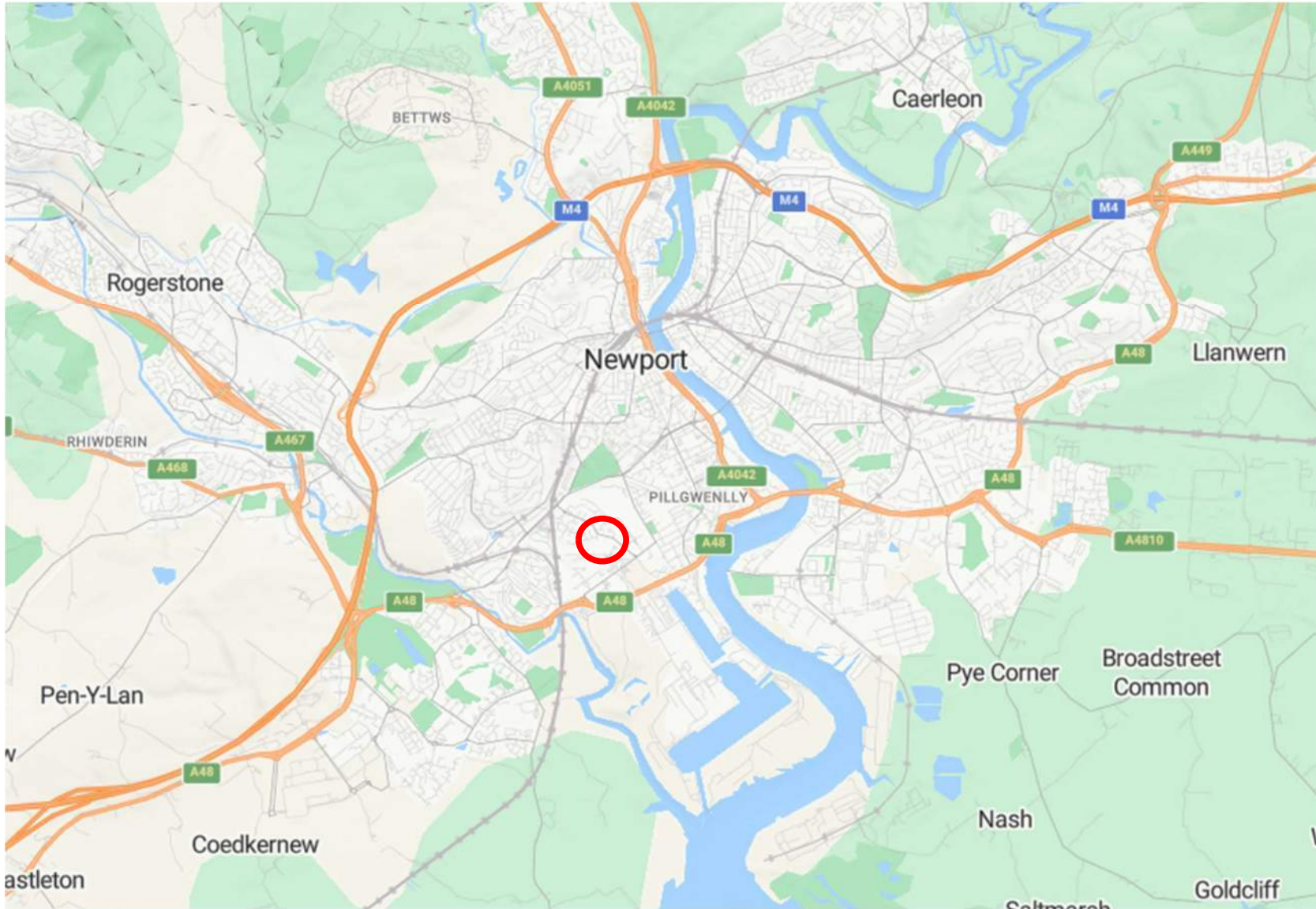
As a result of the above, a gas resistant membrane was installed in accordance with the design and protected from damage to completely seal the foundation (including effective seals around all penetrations).

4 REFERENCES

- 1) HB Newport Ground Investigation Report produced by Fairhurst – Ref. 151157. Doc Ref. 151157/R2.0 (March 2024)
- 2) HB Newport Remediation Strategy produced by Fairhurst – Ref. 151157. Doc Ref. 151157/R3.1 (March 2024)
- 3) Ground Gas Protection Measures Review for Home Bargains Store, Newport prepared by ADS Consult on behalf of Braithwaite Group - Ref No.: 9774-GGA-001 (November 2024)
- 4) BS 8485:2015 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings. British Standards Institution, London.
- 5) CIRIA (1995a) Protecting Development from Methane. Report 149, CIRIA, London. CIRIA (1995b) Methane Investigation Strategies. Report 150, CIRIA, London.
- 6) CIRIA (2014) Good practice on the testing and verification of protection systems for buildings against hazardous ground gases. Report 735, CIRIA, London

Appendix A

FIGURES AND DRAWINGS



Key

 Site Location



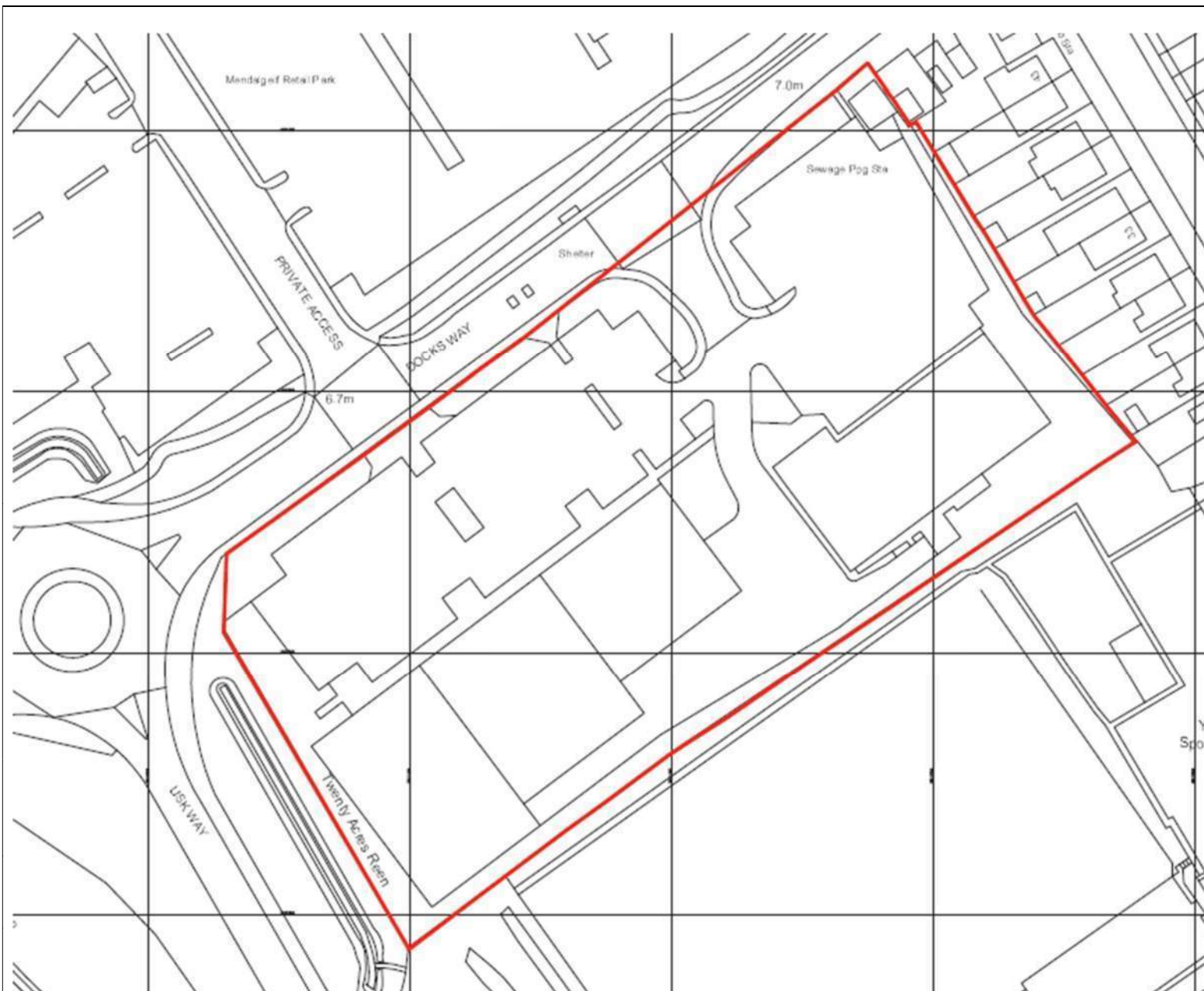
ADS Consult
107 Mere Grange Business Park
Leaside
St Helens
WA9 5GG
Tel: +44 (0) 203 823 2800

Figure A.1
Site Location Plan

Project:
Home Bargains, Newport

Project No.:
9774

Client:
Braithwaite Group



Key

 Site Boundary Line



ADS Consult
107 Mere Grange Business Park
Leaside
St Helens
WA9 5GG
Tel: +44 (0) 203 823 2800

Figure A.2
Site Boundary Plan

Project:
Home Bargains, Newport

Project No.:
9774

Client:
Braithwaite Group