

GAS VERIFICATION STRATEGY FOR PROPOSED PLOT 28 RESIDENTIAL DEVELOPMENT ON LAND OFF CARLTON AVENUE, BLYTH

3965OR03Rev01/August 2021

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PROJECT NUMBER	3965	
PROJECT TITLE	Blyth	
CLIENT	Imperator Developments Highway House Albany/Saltmeadow Road Gateshead NE8 3AH	
REPORT TITLE	Gas Verification Strategy for Proposed Plot 28 Residential Development on Land off Carlton Avenue, Blyth	
REPORT REFERENCE	3965OR03Rev01	
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CONTENTS

1	INTRODUCTION.....	1
2	DEVELOPMENT PROPOSALS	1
3	SITE LOCATION AND DESCRIPTION	1
4	PREVIOUS INVESTIGATIONS	1
4.1	Desk Study.....	1
4.2	Ground Investigation	2
4.3	Gas Risk Assessment and Monitoring.....	2
5	GAS PROTECTION REQUIREMENTS	2
6	VERIFICATION STRATEGY	3
6.1	Installation	3
6.2	Site Visits	3
6.3	Testing.....	4
6.4	Verification Report.....	4
7	REFERENCES.....	5

APPENDICES

1	DRAWINGS	
	RES731-BHA-00-XX-DR-A-1205-S4-P01	PROPOSED SITE FOR UTILITIES SUBMISSION
	RES731-BHA-DT-XX-DR-A-5001-S4-P02	TYPICAL SLAB EDGE BLOCK AND BEAM
	RES731-BHA-DT-XX-DR-A-5002-S4-P03	TYPICAL LEVEL THRESHOLD DETAIL
	RES731-BHA-EXB-XX-DR-A-1200-S3-P05	PROPOSED SITE / BLOCK PLANS
	RES731-BHA-V28-XX-DR-A-3003-S3-P02	PROPOSED PLOT 28 PLANS AND ELEVATIONS
2	PRODUCT DATASHEETS	
3	EXAMPLE INSPECTION FORM	
4	NOTES ON LIMITATIONS	

GAS VERIFICATION STRATEGY FOR PROPOSED PLOT 28 RESIDENTIAL DEVELOPMENT ON LAND OFF CARLTON AVENUE, BLYTH

1 INTRODUCTION

FWS Consultants Ltd (FWS) was instructed by Imperator Developments to prepare a gas verification strategy for the proposed additional Plot 28 residential development on land off Carlton Avenue, Blyth as shown on Drawing RES731-BHA-00-XX-DR-A-1205-S4-P01 and RES731-BHA-EXB-XX-DR-A-1200-S3-P05, Appendix 1.

A gas verification strategy is required to discharge Planning Condition 21 of Planning Reference 20/03518/DISCON. This document sets out the requirements for gas protection measures informed by the gas risk assessment (Ref. 1) and the requirements of Northumberland County Council, and identifies the validation procedures for the gas protection measures that should be adopted during construction.

The current development was to include 27 residential plots, for which a gas verification strategy plan was already issued in April 2021 by FWS (Ref. 7). This gas verification strategy report covers the additional Plot 28, which was not included in the original proposed development. It is understood that the gas protection measures design is to remain identical to the ones installed on the first 27 plots.

All proposals, methods and techniques to be adopted by the Contractor shall be to the approval of FWS and the Local Authority.

2 DEVELOPMENT PROPOSALS

The additional development is to include one residential property (Plot 28) with associated roadways, gardens and parking. The overall site development layout as proposed is shown in Drawing RES731-BHA-00-XX-DR-A-1205-S4-P01, Appendix 1, and the proposed Plot 28 development layout is shown in RES731-BHA-EXB-XX-DR-A-1200-S3-P05, Appendix 1.

3 SITE LOCATION AND DESCRIPTION

The 0.6 ha site at National Grid Reference 430165E, 579415N is situated 2.4 km southwest of Blyth town centre. The site boundary is shown in Drawing RES731-BHA-00-XX-DR-A-1205-S4-P01, Appendix 1.

The additional Plot 28 is presently within the proposed development construction site surrounded by residential development to the north, south and west, and bounded to the east by a railway line. The Plot 28 boundaries are shown in Drawing RES731-BHA-EXB-XX-DR-A-1200-S3-P05, Appendix 1.

4 PREVIOUS INVESTIGATIONS

4.1 Desk Study

It is understood that a desk study for the site has been undertaken, but a copy is not currently available to FWS.

4.2 Ground Investigation

A Phase 2 ground investigation was undertaken in February 2020, and a supplementary investigation phase undertaken in July 2020. Both ground investigations were undertaken by ERGO (Ref. 2) and comprised eight mechanically excavated trial pits and six window sample boreholes with associated sampling and chemical and geotechnical laboratory testing. Groundwater and ground gas monitoring wells were installed in three boreholes to monitor for potential ground gas from an adjacent former pond, the general (thin) made ground and an onsite shallow well.

4.3 Gas Risk Assessment and Monitoring

Gas monitoring of the borehole installations was undertaken on six occasions between July and September 2020 for methane, carbon dioxide, oxygen and flow. The results were reported in a ground gas risk assessment letter (Ref. 1) issued in September 2020.

Whilst three potential gas sources were identified (adjacent former pond, thin made ground and an onsite shallow well), no significantly elevated levels of ground gas were reported. The maximum methane measured during the monitoring was <0.01%, and the maximum carbon dioxide was 0.8%. The maximum flow measured was 0.1 l/hr.

The ground gas risk assessment identified a maximum Gas Screening Value (in accordance with current guidance CIRIA 655, Ref. 3) for carbon dioxide of 0.008 that corresponds to Characteristic Situation 1 soil gas conditions (low risk – gas protection measures not required).

5 GAS PROTECTION REQUIREMENTS

Whilst the ground investigation and monitoring identified a low risk and Characteristic Situation 1 soil gas conditions, the Local Authority requires that gas protection measures be installed within the proposed development, in line with British Standard BS8485:2015+A1:2019 (Ref. 4).

According to this Standard (Ref. 4), for Type A residential dwellings, the gas protection measures should comprise the following principal elements:-

- A structural barrier (floor and substructure design) – Table 5 of Ref. 4.
- A ventilated sub floor void – Table 6 of Ref. 4.
- A propriety gas resistant membrane meeting all of the criteria detailed in Table 7 of Ref. 4.

Proposed Design

In line with British Standard BS8485:2015+A1:2019 (Ref. 4), the client proposes to install on Plot 28 a gas protection system as illustrated in Drawings RES731-BHA-DT-XX-DR-A-5001 and RES731-BHA-DT-XX-DR-A-5002 (Appendix 1) comprising a ventilated subfloor void, block and beam floor slab structural barrier, and gas resistant membrane.

Proposed Material Elements

It is proposed to use a Rhinoplast Evolution membrane, that conforms with Table 7 of the British Standard BS8485 (Ref. 4) and a Rhinoplast LT joint strip to join membrane sections where required. It is also proposed to utilise the FiloSeal+ duct seal for cable and pipe entries. The product datasheets are presented in Appendix 2.

6 Verification Strategy

The gas protection measures to be installed are detailed in Section 5 above. In line with the YALPAG guidance and CIRIA C735 (Refs. 5 and 6), the verification requirements are determined via a risk-based approach.

The gas regime is considered to be low risk, and the gas protection measures proposed incorporate all three requirements of the British Standard (Ref. 4) including a ventilated void. The proposed additional development comprises one plot of simple design.

6.1 Installation

The gas protection measures shall be installed by a suitably experienced Contractor in line with the materials datasheet requirements (Appendix 2). Copies of the design drawings and materials datasheets shall be available to the Contractor on site for reference. The void shall be kept free of debris to ensure ventilation is not obstructed. The gas membrane shall be kept clear and free of potential puncture hazards (e.g. stones) to maintain its integrity. The surface on which the membrane is to be laid will be checked by the Contractor prior to installation to ensure it is free of potential puncture hazards.

Following the initial site inspection by an independent verifier, if gas protection measures are not considered to be effectively installed, the Contractor must rectify the issue(s) and utilise a minimum of one qualified operative per team on the remaining plots. A 'qualified' operative should hold a relevant qualification such as the Construction Skills level 2 NWQ diploma.

All site personnel shall be made aware of the importance of retaining the integrity of the gas protection measures (notably the membrane) via a site induction and toolbox talks during the construction works. Workers shall be encouraged to report any damage observed.

Verification

The Contractor shall supply the sign off sheet for the additional plot, including photographs of all elements (void, block and beam, gas membrane). If a qualified operative is required, evidence of the qualification(s) held shall be provided for incorporation into the final verification report.

6.2 Site Visits

An experienced independent verifier shall undertake site visits to inspect the gas protection measures installed. The visits shall be undertaken during construction and prior to concrete pouring so the verifier can inspect the condition of the gas membrane and other elements of the gas protection system. The independent verifier shall undertake a detailed visual inspection of the plot. It is anticipated that one to two visits will be required, subject to site progress.

Verification

The verifier shall complete an inspection form (example – see Appendix 3) upon each visit and advise on site whether minor amendments are required (e.g. patch repairs) for immediate rectification and inspection, or whether more serious issues are prevalent. The inspection sheets shall be incorporated into the final verification report.

6.3 Testing

As the development classes as low risk, it is considered that invasive testing will not be required for this development. However, during the visual inspection, the independent verifier may check joints/seals for integrity (i.e. basic hand testing).

Verification

Details of any pick testing and any amendments made shall be included on the independent verifier's inspection sheets.

6.4 Verification Report

All product details, method statements, photographs, plot sign off sheets, details of qualifications (if required) and inspection records shall be provided to the independent verifier for inclusion in the final verification report, in accordance with YALPAG guidance (Ref. 5) and CIRIA C735 (Ref. 6).



A FRY
GEOENVIRONMENTAL SCIENTIST







C MILLER
DIRECTOR

7 REFERENCES

- 1 ERGO Ltd, September 2020. Ground Gas Risk Assessment, Land at Carlton Avenue, Blyth. Ref. 20-596-GRA.
- 2 ERGO Ltd, July 2020. Phase II Geo-Environmental Site Assessment – Land at Carlton Avenue, Blyth, NE24 4AP. Ref. 20-596-r02.
- 3 CIRIA C665, 2007, Assessing Risks Posed by Hazardous Ground Gases to Buildings.
- 4 BS8485:2015+A1:2019. Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings. BSI.
- 5 Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG), December 2016. Verification Requirements for Gas Protection Systems – Technical Guidance for Developers, Landowners and Consultants. Version 1.1.
- 6 CIRIA C735, 2014. Good practice on the testing and verification of protection systems for buildings against hazardous ground gases.
- 7 FWS Consultants, April 2021. Gas Verification Strategy for Proposed Residential Development on Land off Carlton Avenue, Blyth. Ref. 3965OR01 Rev.2.

APPENDIX 1

DRAWINGS

-  Garden sheds for storage and cycle parking
-  Bin store area
-  Easement - location and size to be confirmed by client
-  External light fittings with PIR and/or dusk till dawn operation switched internally



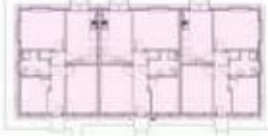
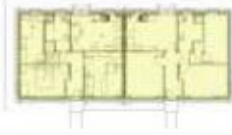
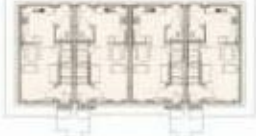
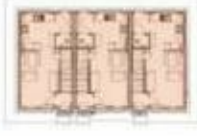
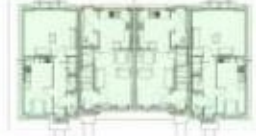
 Bat Box

 Bird Box

NOTE
For further information with regards to ecological enhancements please refer to Eco North Preliminary Ecological Assessment

Do not scale the drawing. Use figured dimensions in all cases. Check all dimensions on site. Report any discrepancies to BH Architecture before proceeding.



	HT1 NARROW (62sqm) AND WIDE (64sqm) BUNGALOW SEMI-DETACHED 2B/4P 1nr
	HT2 WIDE BUNGALOW DETACHED 2B/4P (64sqm) 1nr
	HT3 NARROW BUNGALOW TERRACE 2B/4P (62sqm) 1nr
	HT4 WIDE BUNGALOW SEMI-DETACHED 2B/4P (64sqm) 1nr
	HT5 2B/4P TERRACE (4) (75sqm) 1nr
	HT6 2B/4P SEMI-DETACHED (3) (75sqm) 1nr
	HT7 3B/5P 2 STOREY (84sqm) & 2B/4P (75sqm) TERRACE 3nr



Supply	Project	Rev	Drawn By	Checked By
S4	P01	13.04.21	CJR	ME
PROJECT ISSUE: TO UTILITIES				
Revision				
<div>BLAKE HOPKINSON ARCHITECTURE + DESIGN</div> <div>BLAKE HOPKINSON ARCHITECTURE LLP 0421963 NORTH SHIELDS, TYNE & WEAR - 0191 2570022 - www.bharchitecture.co.uk</div>				
BHA Project No: RES731				
Project Name: Proposed Residential Development Carlton Avenue, Blyth Imperator Developments				
Drawing Title: Proposed Site for Utilities Submission				
Model File Name: [Model File Name]				
Drawn By: CJR			Date Drawn: 13.04.21	
Checked By: ME			Date Checked: 13.04.21	
Scale at A2: 1:500			Suitability: S4	Revision: P01
File Name: RES731-BHA-00-XX-DR-A-1205				
© Blake Hopkinson Architecture LLP				

EXTERNAL WALL TIES

S/S ANCON STAIFIX RT2 (TYPE 2) WALL TIES WITH
RETAINING CLIP SPACED AT 750MM CENTRES
HORIZONTALLY/ 450MM CENTRES VERTICALLY.

DPC MIN 150MM ABOVE GROUND LEVEL. UNDER SLAB
DPM TO TIE TO DPC. WEEP HOLES POSITIONED ABOVE
DPC SPACED AT 900MM CENTRES WITH TELESCOPIC
UNDERFLOOR VENT PLACED BELOW DPC/WEEPHOLES.
VENTILATORS SHOULD BE PLACED AT NOT MORE THAN
TWO METRE CENTRES AND WITHIN 450MM OF EACH END OF THE
WALL.

PROPRIETARY WEEP HOLES WITHIN EXTERNAL WALL
PLACED ABOVE DPC AT 900MM CENTRES AND 450MM
CENTRES ABOVE OPENINGS

FLOOR CONSTRUCTION

65MM SAND CEMENT SCREED
140MM RIGID INSULATION OR SIMILAR APPROVED.
BLOCK AND BEAM FLOOR TO STRUCTURAL ENGINEERS
SPECIFICATION. REINFORCED POLYETHYLENE GAS BARRIER
WITH A 20 MICRON ALUMINIUM FOIL OR SIMILAR APPROVED
INSTALLED AS MANUFACTURERS GUIDELINES SEALED TO
EXTERNAL DPC. 150MM MIN VENTED VOID BELOW

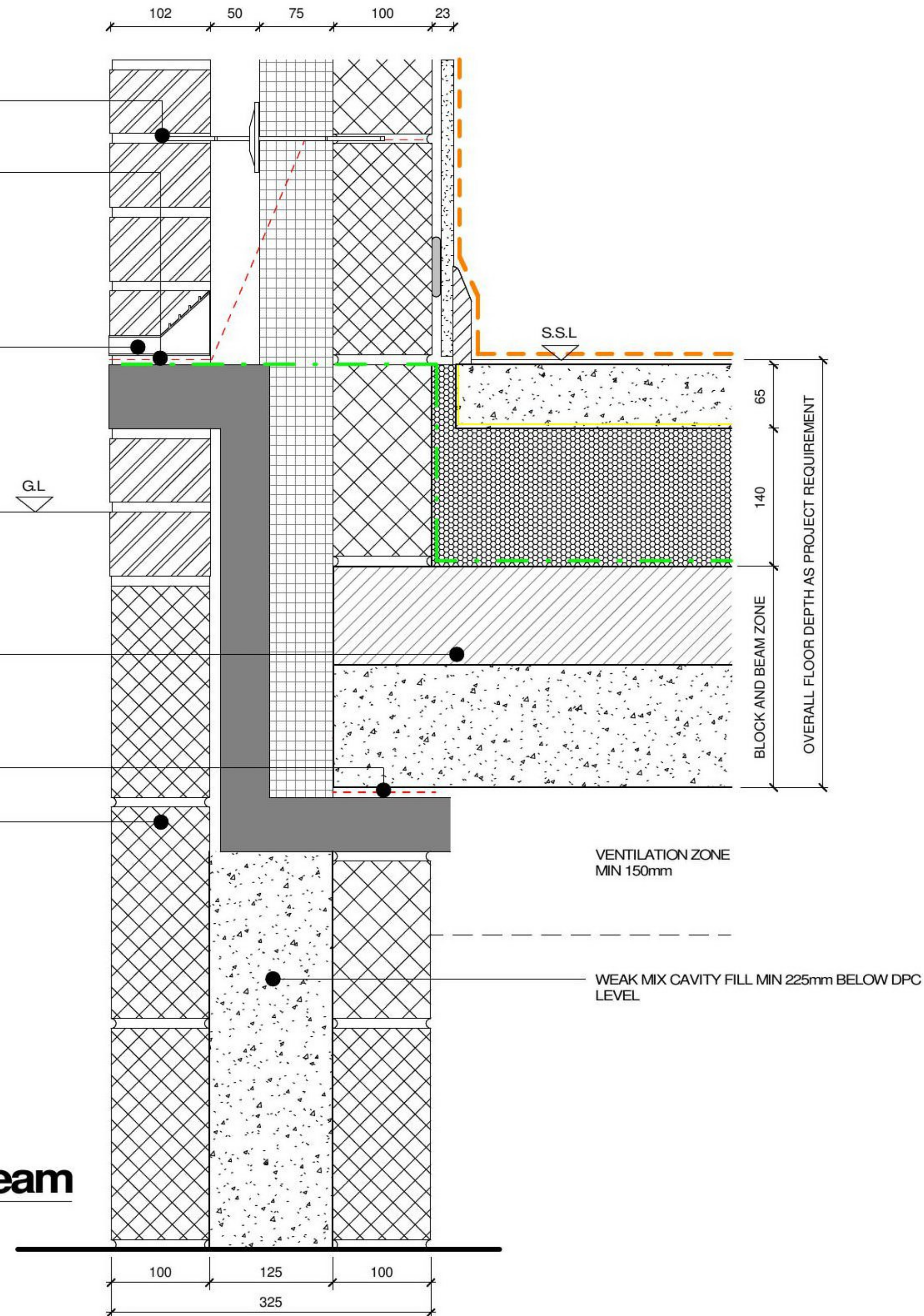
U VALUE TO ACHIEVE MIN 0.13.(W/m²K)

CONTINUOUS DPC STRIP BELOW BLOCK AND BEAM
FLOOR TO INTERNAL LEAF

BELOW GROUND CONSTRUCTION

WALLS BELOW D.P.C SHALL BE CONSTRUCTED IN DENSE
BLOCKWORK OR TRENCH BLOCK IN 1:3 READY MIX
MORTAR WITH A MIN OF 3 COURSES OF FACING
BRICKWORK TO THE OUTSIDE FACE BELOW GROUND
LEVEL, OR TO SUIT SITE CONDITIONS.

ALL MASONRY ON SITE TO BE STORED, LIFTED AND TO A
WEIGHT IN ACCORDANCE WITH THE CDM
(CONSTRUCTION DESIGN MANAGEMENT) REGULATION
AND HSE (HEALTH AND SAFETY EXECUTIVE) GUIDELINES.

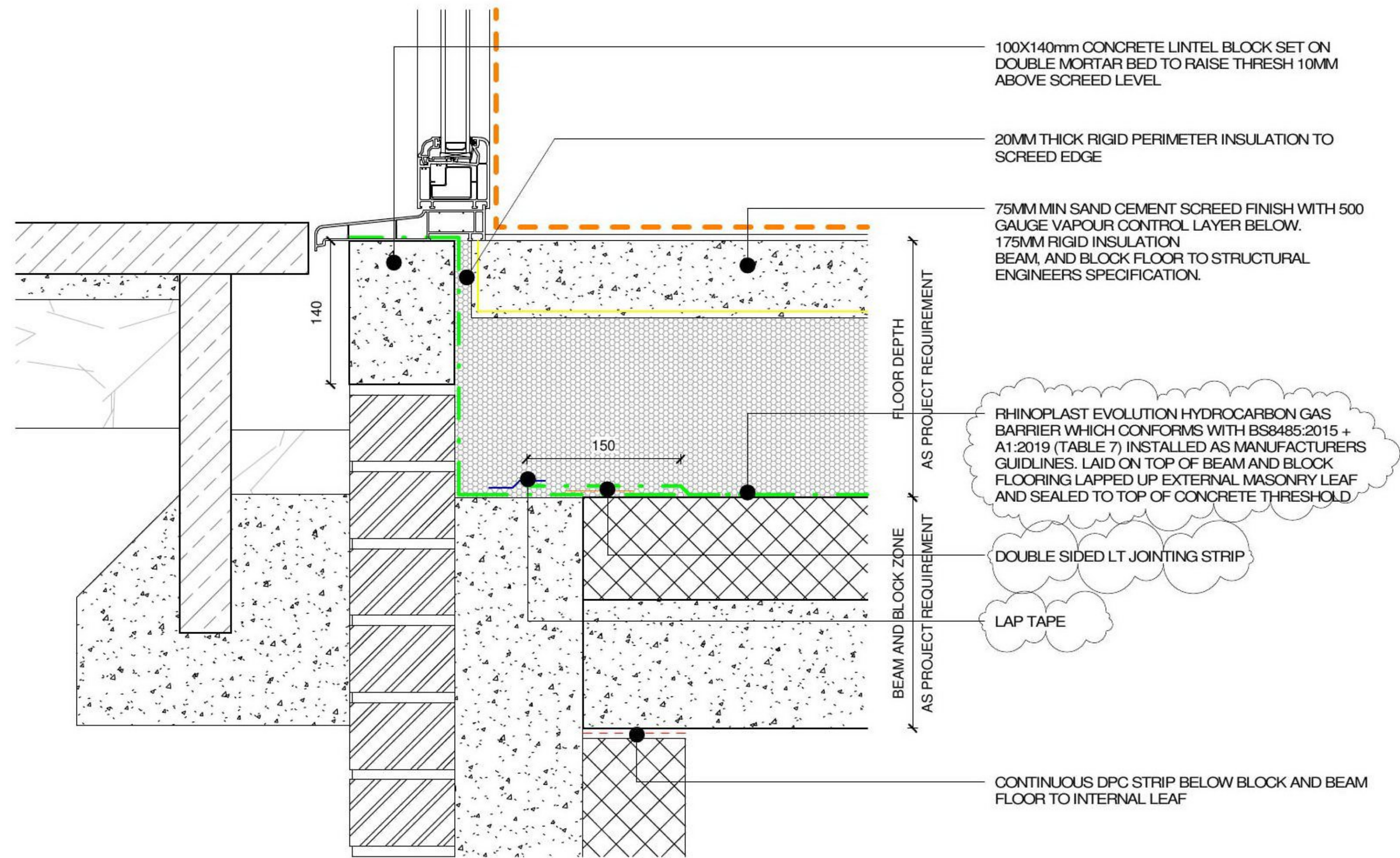


1

5001 - Slab Edge - Block and Beam

1 : 5

S4	P02	11.01.21	CJR	DB
GAS DAMP PROOF MEMBRANE NOTES UPDATED ON DRAWING				
S4	P01	19.10.20	CJR	DB
ISSUED FOR CLIENT COMMENT				
Revision				
<div>BLAKE HOPKINSON ARCHITECTURE + DESIGN</div> <div>BH^a</div>				
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BHA Project No: RES731				
Project Name: Carlton Avenue Blyth Imperator Group				
Drawing Title: TYPICAL SLAB EDGE - BLOCK AND BEAM				
Model File Name: RES731-BHA-DT-XX-M3-A-0001				
Drawn By: CJR			Date Drawn: 15.10.20	
Checked By: DB			Date Checked: 15.10.20	
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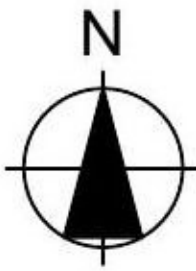


Issue	Revision	Date	Drawn By	Checked By
S4	P03	18.03.21	CJR	DB
GAS DAMP PROOF MEMBRANE NOTES AMENDED FOLLOWING CONFIRMATION FROM CLIENT. SCREED AND INSULATION THICKNESS UPDATED.				
Issue	Revision	Date	Drawn By	Checked By
S4	P02	11.01.21	CJR	DB
GAS DAMP PROOF MEMBRANE NOTES UPDATED ON DRAWING				
Issue	Revision	Date	Drawn By	Checked By
S4	P01	19.10.20	CJR	DB
ISSUED FOR CLIENT COMMENT				

Revision		
BLAKE HOPKINSON ARCHITECTURE + DESIGN BH ^a		
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BHA Project No: RES731		
Project Name: Carlton Avenue Blyth Imperator Group		
Drawing Title: TYPICAL LEVEL THRESHOLD DETAIL		
Model File Name: RES731-BHA-DT-XX-M3-A-0001		
Drawn By: CJR	Date Drawn: 15.10.20	
Checked By: DB	Date Checked: 15.10.20	
Scale at A3: 1 : 5	Status: S4	Revision: P03
File Name: RES731 - BHA - DT - XX - DR - A - 5002		
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1 5002 - Typical Level Threshold Detail

1 : 5



Suitability	Revision	Date	Drawn By	Checked By
[S3]	[P05]	[07.07.21]	[LJ]	[DB]
[P05] RED LINE BOUNDARY UPDATED				
Suitability	Revision	Date	Drawn By	Checked By
[S3]	[P04]	[19.04.21]	[LJ]	[DB]
[P04] BOUNDARIES AND DETAILS UPDATED				
Suitability	Revision	Date	Drawn By	Checked By
[S3]	[P03]	[14.04.21]	[LJ]	[DB]
[P03] RED AND BLUE BOUNDARIES UPDATED, HT2 MOVED NORTH				
Suitability	Revision	Date	Drawn By	Checked By
[S3]	[P02]	[29.03.21]	[LJ]	[DB]
[P02] FRONT PAVING AND OVERHANG REMOVED FROM BUNGALOW				
Suitability	Revision	Date	Drawn By	Checked By
[S3]	[P01]	[25.03.21]	[LJ]	[DB]

Revision

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BHA Project No:
RES731

Project Name:
Existing Bungalow Extension and Plot 28
Carlton Avenue, Blyth
Imperator Developments

Drawing Title:
Proposed Site / Block Plans

Model File Name: RES731-BHA-EXB-XX-DR-A-1200

Drawn By:
LJ

Date Drawn:
29/03/21

Checked By:
DB

Date Checked:
29/03/21

Scale at A2:
1:200

Suitability:
S3

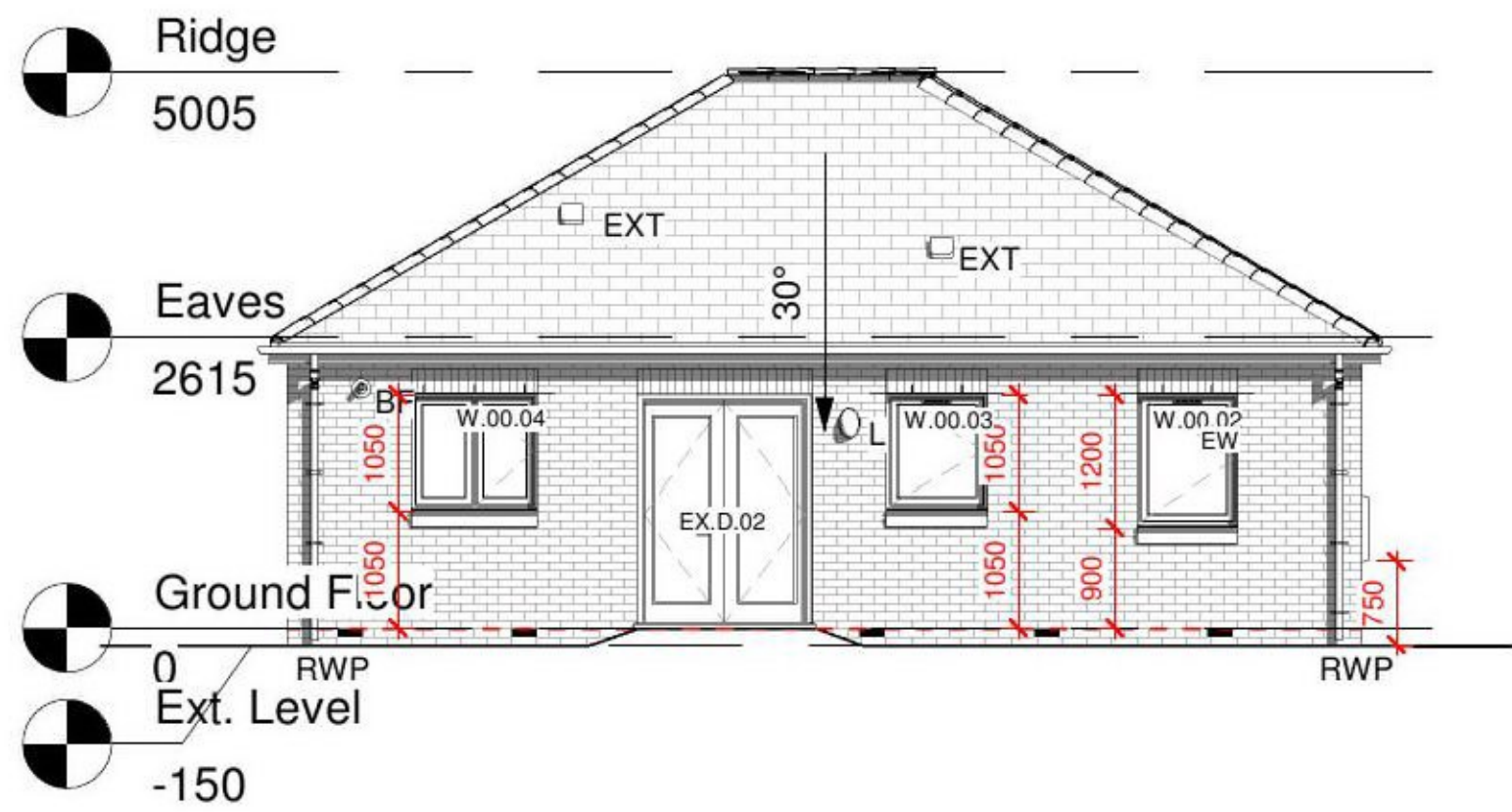
Revision:
P05

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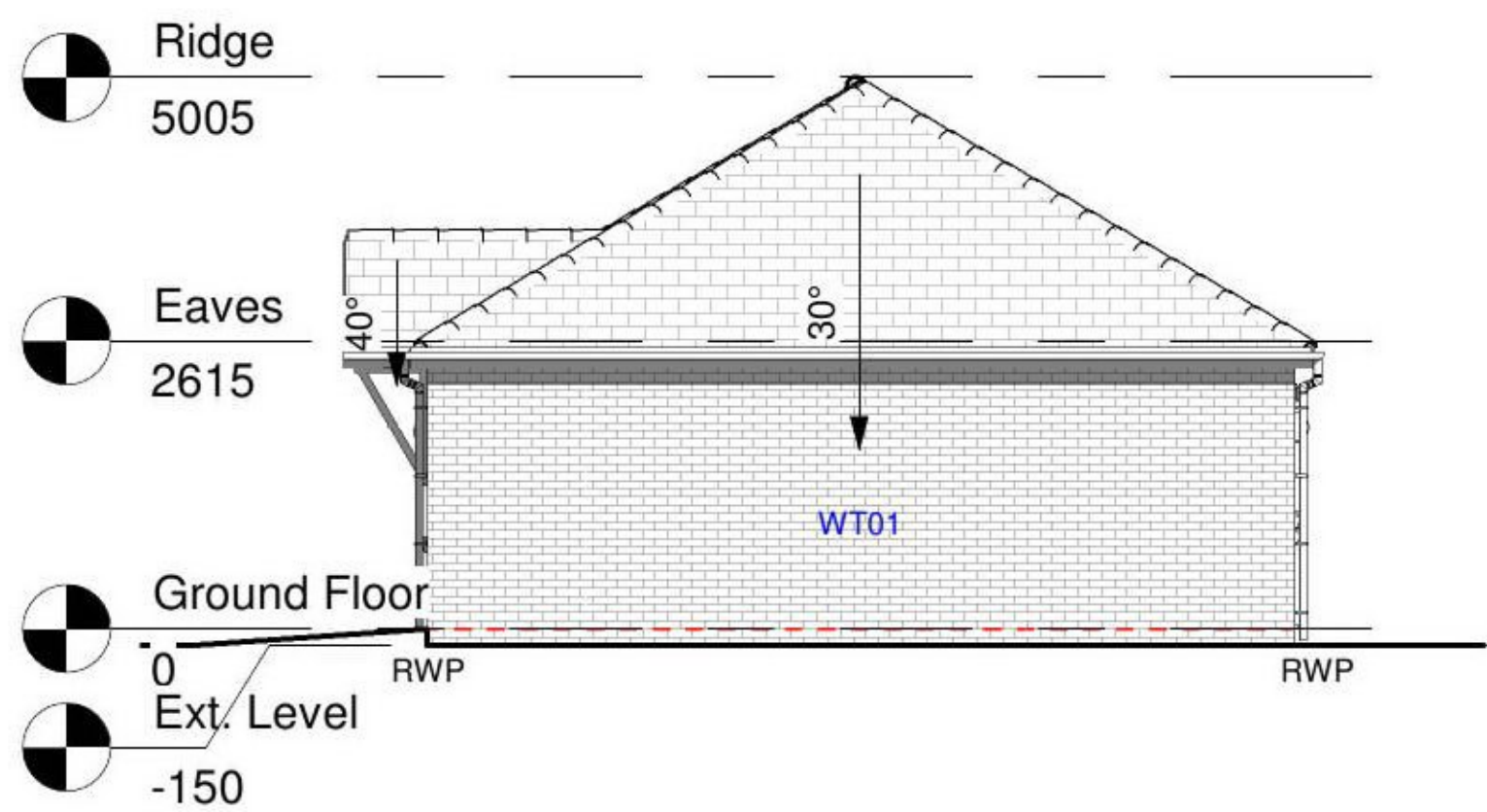
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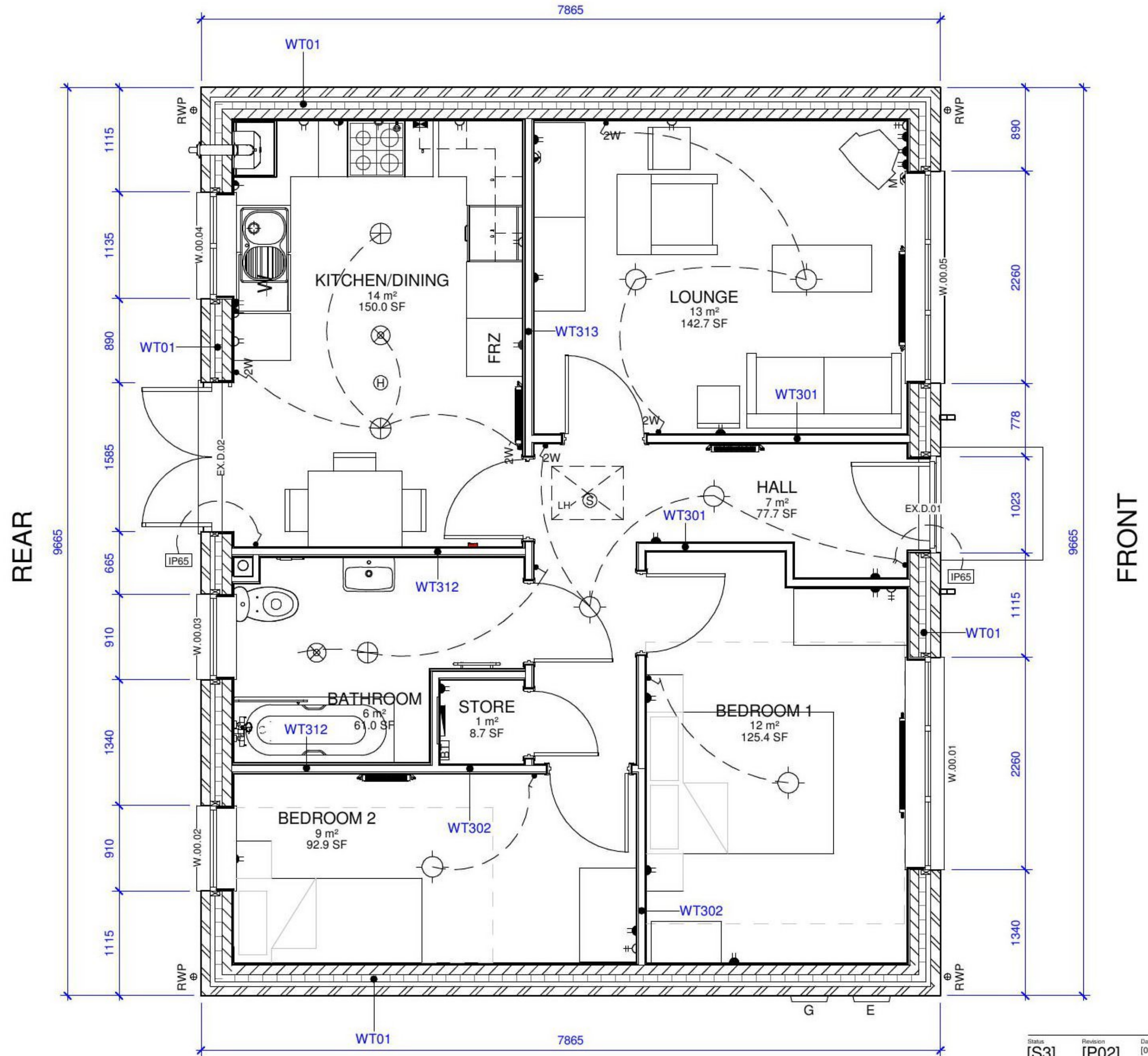
1 Front Elevation (West)
1 : 100



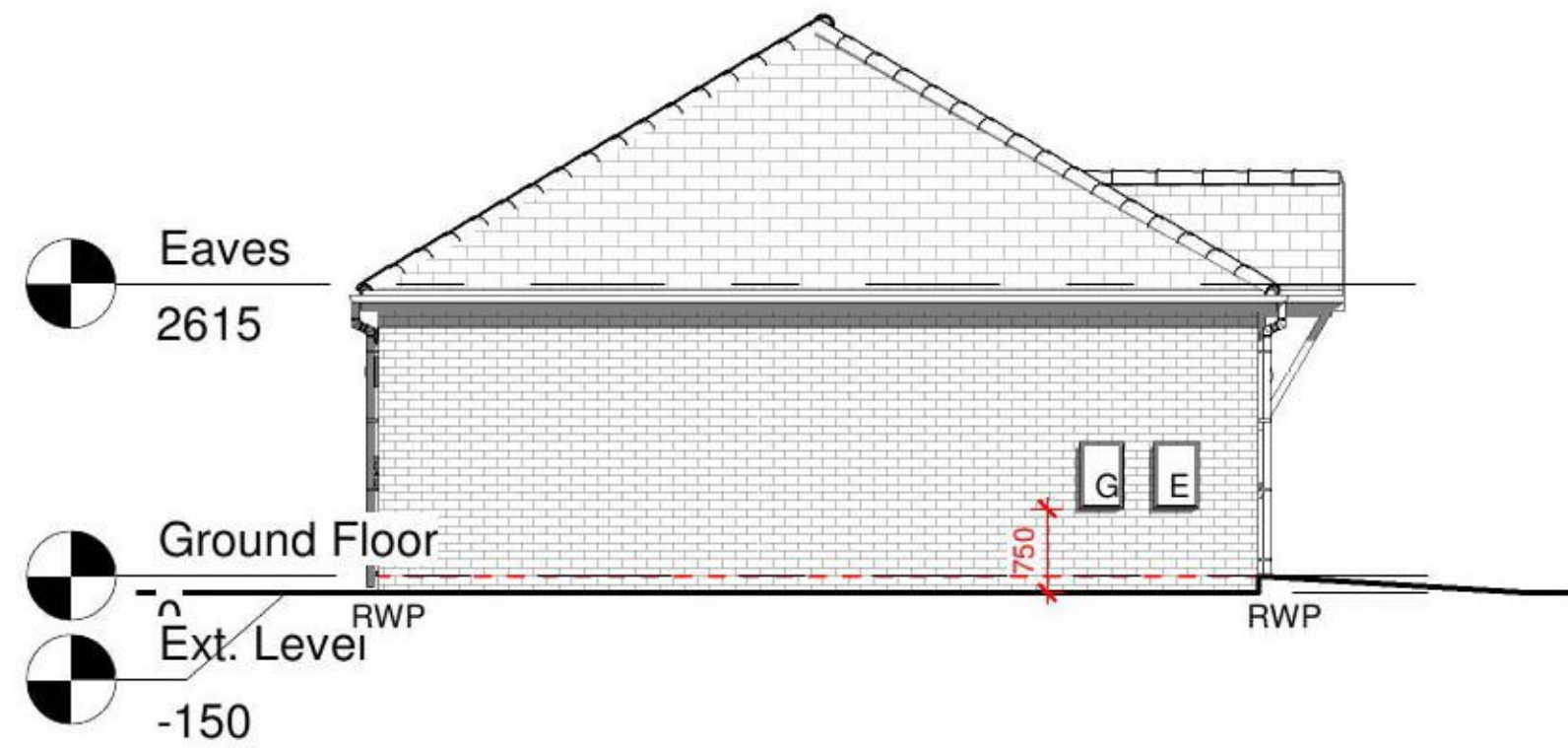
2 Rear Elevation (East)
1 : 100



3 Side Elevation (South)
1 : 100



0 Plot 28 - Ground Floor GA Plan
1 : 50



4 Side Elevation (North)
1 : 100

Status: [S3] Revision: [P02] Date: [07.07.21] Drawn By: [LJ] Checked By: [DB]
[P02] ELEVATION LABELS CORRECTED

Status: [S3] Revision: [P01] Date: [25.03.21] Drawn By: [LJ] Checked By: [DB]
[P01] FIRST ISSUE

Revision
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BHA Project No:
RES731

Project Name:
**Proposed Residential Development
Carlton Avenue, Blyth
For Imperator Developments**

Drawing Title:
Proposed Plot 28 Plans and Elevations

Model File Name: RES731-BHA-HT2-ZZ-M3-A-0001

Drawn By: LJ Date Drawn: 27/05/21

Checked By: DB Date Checked: 27/05/21

Scale at A2: As indicated Suitability: S3 Revision: P02

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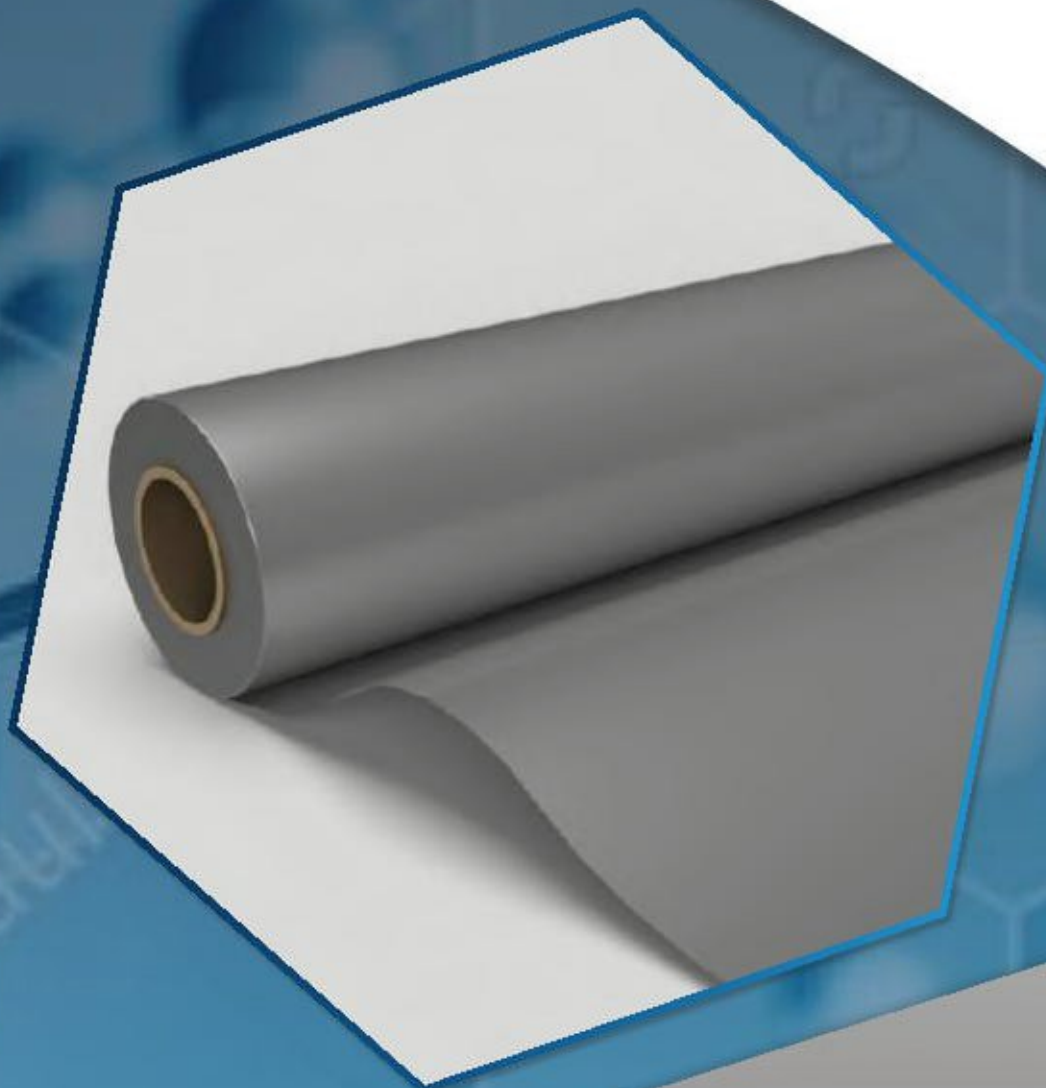
APPENDIX 2

PRODUCT DATASHEETS



RHINOPLAST EVOLUTION

HYDROCARBON GAS BARRIER



Coverage - 100m²



400mu Thickness



Silver Colour

Rhinoplast Evolution is a high specification co-extruded multi-layer barrier specifically developed for use on construction sites contaminated by Volatile Organic Compounds, Hydrocarbons and other ground gasses such as Methane, Radon and CO₂.

The product is 14 layers and contains 2 layers of gas barrier polymer (EVOH) to offer exceptional performance and prevent the ingress of dangerous gasses into buildings. It is manufactured using the latest co-extrusion technology and cannot delaminate. The product will also act as a damp-proof membrane.

The membrane is manufactured using High Performance engineering Polymers to give exceptional strength and does not require reinforcement. It can be installed by the use of sealing tapes or can easily be welded.

A NEW GENERATION OF GAS BARRIER

- ✓ Advanced Fourteen Layer Barrier
- ✓ Two layers of Ethylene Vinyl Alcohol Co-Polymer (EVOH)
- ✓ Outstanding Gas Resistance
- ✓ Conforms with BS8485:2015 + A1:2019 (Table 7)
- ✓ Conforms to the specification requirements of NHBC Amber 1 & Amber 2 applications
- ✓ Suitable for all characteristic Gas Situation (CS) ground gas regimes
- ✓ Excellent Welding Characteristics

Technical Data

Material Properties	Test Method	Value	
Thickness (µm)	N/A	400µm	+/- 6%
Width (mm)	N/A	1.65m	+6mm/-0mm
Length (mm)	N/A	61m	+6mm/-0mm
Repeat Tolerance (mm)	N/A	n/a	
Dynamic C.O.F	BS 2782-824A	0.4 +/- 0.1	
Tensile break force (%)	ASTM D882 / DIN 53455	MD >160	TD >175
Tensile strength @ break (%) MPA	ASTM D882 / DIN 53455	MD >16	TD >16
Elongation Break (%)	ASTM D882 / DIN 53455	MD >500	TD >550
Slow Puncture deflection (mm)	3mm radius	> 3	
Slow Puncture force (N)	3mm radius	> 30	
Density (nominal) (g/cm³)	-	0.957 g/cm³	
Unit Weight (g/m²)	-	382.8	
Sealing Range	RFM 8	110°C - 150°C	

Barrier Properties*	Test Method	Value	
OTR	ASTM F 1927, 20 °C 60% RH	Less than 0.75 cc	
WVTR	ASTM F 1249, 38 °C 90% RH	Less than 2.0g	

Methane Transmission Data

Test	Standard	Unit	Result
Determination of gas transmission rate*	ISO 15105-1 10.2007		
Test gas: Methane (CH ₄)			
Gas permeability at 23 °C / 0 % r.H.		cm³/(m²d.bar)	≤ 0,09
Gas permeability at 23 °C / 0 % r.H.		ml/(m²d.atm)	≤ 0,09

*This test was performed in an external laboratory

BS8485:2015+A1:2019

Meets all the following criteria:

- Sufficiently impervious to the gases with a methane gas transmission rate <40.0 ml/day/ m²/atm (average) for sheet and joints (tested in accordance with BS ISO 15105-1 manometric method)
- Sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions
- Sufficiently strong to withstand in-service stresses (e.g settlement if placed below floor slab)
- Sufficiently strong to withstand the installation process and following trades until covered (e.g penetration from steel fibres in fibres reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc)
- Capable, after installation, of providing a complete barrier to the entry of the relevant gas

Web: www.pbpltd.co.uk | Tel: 01709728150

Principal Building Products Ltd, Barbot Hall Ind Est. Mangham Road, Rotherham. S614RJ

Data Sheet

Rhinoplast LT Joint Strip

Description

A double sided moisture tolerant sealing and jointing tape for use with all polythenes, particularly gas barriers to form a permanent seal. The product is designed to remain tacky at temperatures as low as 0°C.

Two separate inter leaves are present. These are removed prior to application.

Property	Test method	Units	Data
Dimensions			
Adhesive thickness	-	mm	2.00
Total thickness	-	mm	2.10
Width	-	mm	50 - 100
Length	-	m	15 - 10
Weight	-	kg/m ²	2.15
Application Temperature			
Maximum		°C	30
Minimum (Recommended)		°C	5
Functional Data			
Adhesion (180° Peel)	ASTM D1000	N/mm	2.0
Water Vapour Transmission	ASTM E96	g/m ² /24h	1.00



FiloSeal+ Duct Seal



Duct sealing system FiloSeal+ is a universal solution for sealing cables and pipes in ducts or bore holes.

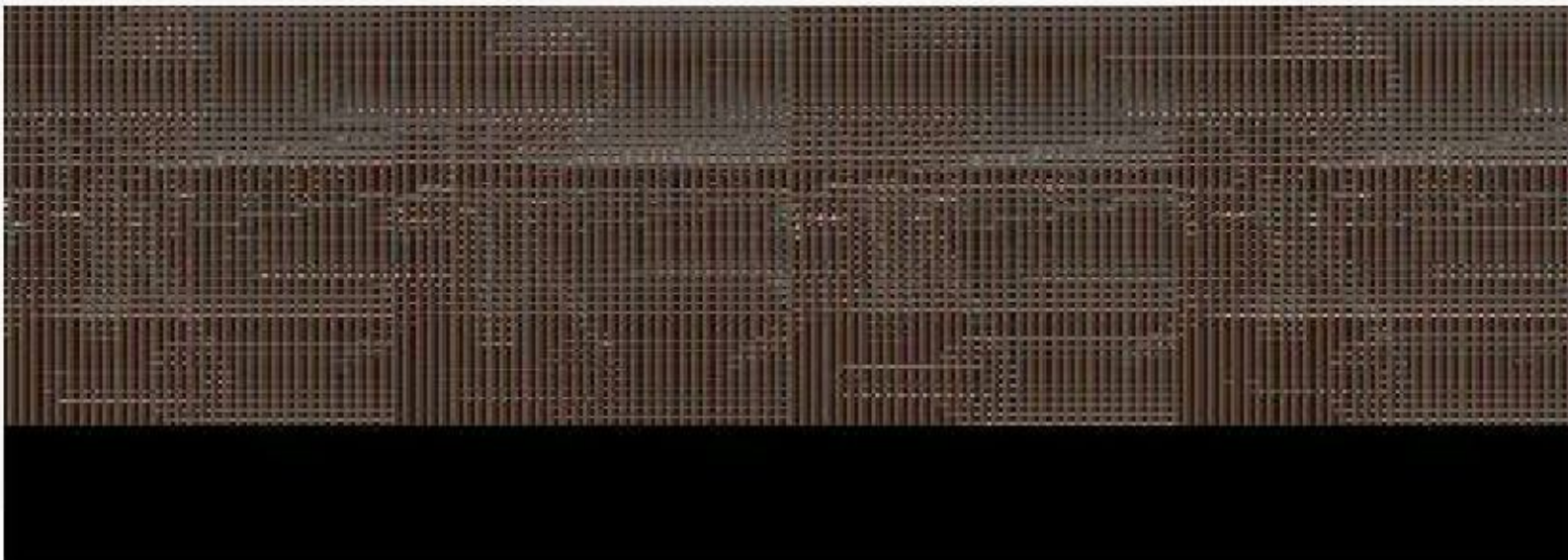
FiloSeal+ is suitable for sealing several cables or pipes contained in one duct and also allows re-entry of the seal to add or remove cables or pipes as required.

Telstra / TPG Approved Duct sealing kit in accordance with Telstra document ID TM00042A01 - Please click [HERE](#)

View this product at: <https://www.filoform.co.uk/filoseal-re-enterable-duct-sealing-system>

Features

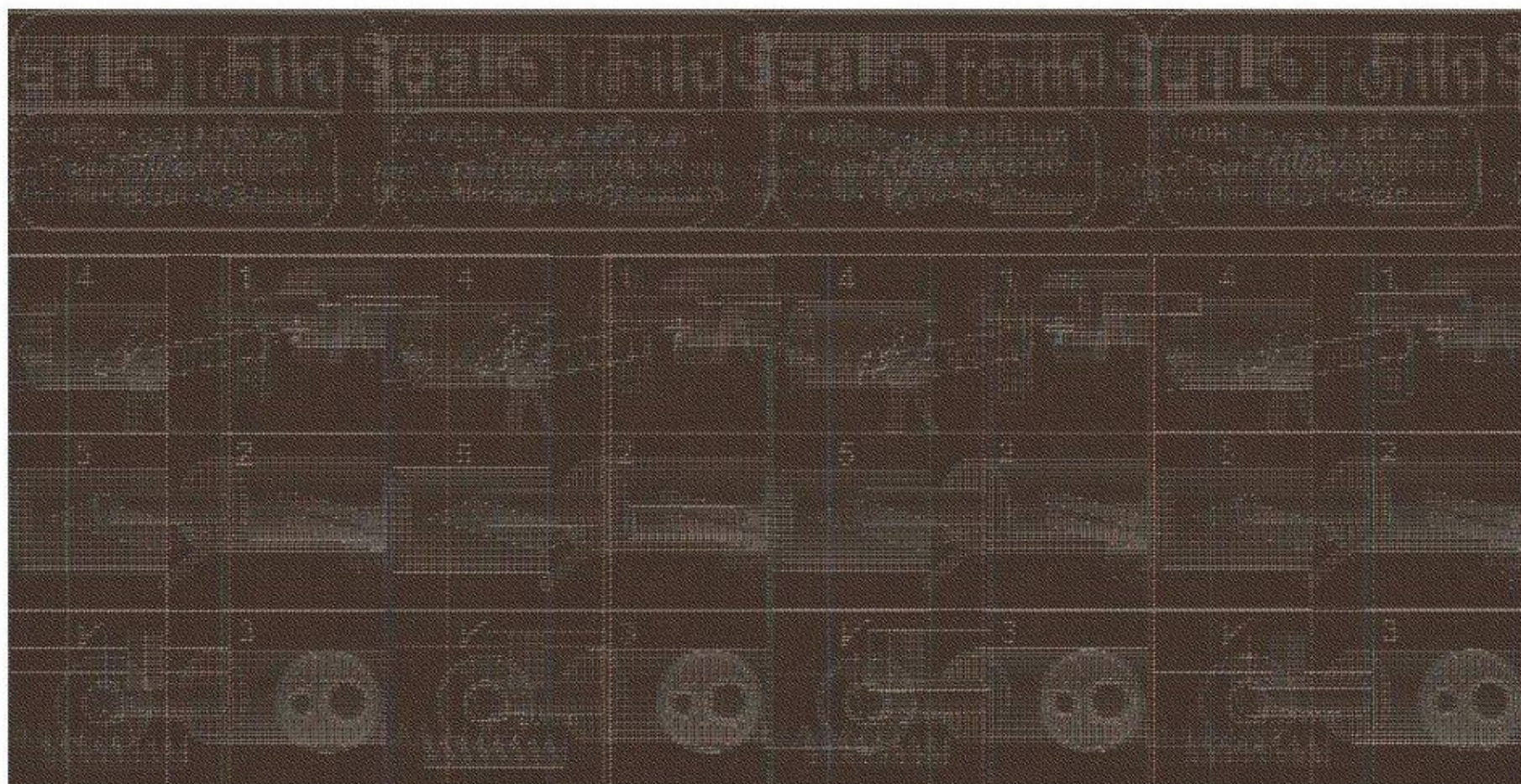
- Flexible, one component, adhesive and sealing compound in a cartridge - (310ml)
- Kits are complete with backing and mastic to fill an empty duct of the quoted kit size
- High levels of Gas and Water tightness
- Excellent adhesion
- Shows Fire resistance properties
- Resistant against Water, Alkaline, Chemical agents
- Resistant to, Petrol, Diesel, Ethanol, ASTM oil, LPG & Many more.
- Suitable for sealing underground cable ducts set out within the APEA 'Blue Book'
- Resistant to Hydrogen Sulphide / Methane and many other Gases (NedLab)
- Non-corrosive
- Solvent-free
- Shock absorbing
- Non-toxic, neutral and almost odourless
- Also suitable for limiting the EX-zones during transitions (observe chemical resistance)
- Complies with 2011 NEC Articles 225.27, 230.8, 300.5(G), 300.7 (A) on Raceway Seals, and 501.15 (B)(2)
- WIMES Compliant, (3.02 2013 clause 6.4.3.2 d)
- Suitable for any shaped duct /borehole/opening
- Quick and easy installation
- A complete kit for one duct
- Seals all known materials, PVC & PE sheathed cables, PILC, (HD) PE pipes
- Suitable for renovations, can be installed retrospectively
- Over 25 years of operational experience
- Thames Water Approved
- Welsh Water Approved
- Severn Trent Water Approved
- Southern Water Approved
- Anglian Water Approved
- South East Water Approved
- Yorkshire Water Approved
- Bournemouth Water Approved
- Scottish Water Approved



FiloSeal+ Duct Seal

More info

[Download: FiloSeal+ disclaimer](#)



Products

Art.nr.	Product Name	Duct diameter min.-max. (mm)	Maximum cable diameter in the duct (mm)	Order unit
282580	FiloSeal+ 125mm	Ø 125 max.	Ø 95 max.	per piece
282590	FiloSeal+ 200mm	Ø 200 max.	Ø 160 max.	per piece

View this product at: <https://www.filoform.co.uk/filoseal-re-enterable-duct-sealing-system>

APPENDIX 3

EXAMPLE INSPECTION FORM

VISUAL INSPECTION OF GAS PROTECTION MEASURES

Job Number:		Gas Characteristic Situation:	
Site Name:		Type of Development:	
Date:		Building Description:	
Visit by:		Foundation Type:	
Weather:		Gas protection type:	
No.	Item	Comments (Notes)	
Gas Membrane			
1.1	Condition of sub-grade and underside of gas membrane		
1.2	Gas membrane type		
1.3	Gas membrane condition		
1.4	Joining tape product		
1.5	Lapping design		
1.6	Laps, welds and joints seals		
1.7	Service entries seals		
Passive Venting			
2.1	Granular / Pre-formed Venting Medium		
2.2	Sub-floor void		
2.3	External wall airbricks		
2.4	Internal sleeper walls		
2.5	External vent trenches/ducts		
Active Venting			
3.1	System details		
Additional Notes			
4.1			
Photographs			
No.	Description		
The gas measures inspected		a. Are acceptable and comply with the specification. All minor defects spotted were fixed immediately.	
		b. Are acceptable but attention is drawn to issues related to item no. xxx	
		c. Are not acceptable due to the issues related to item no. xxx	
Engineer Signature			

VALIDATION INSPECTION

Project ID	3965		
Project Title	GGS Blyth		
Inspection	Gas membrane inspection – Plots 4 to 15		
Date	21/04/2021		
Contractor:	Imperator Developments		
FWS Engineer(s):	Anthony Fry		
Mat detail			
Seal detail (if applicable)			
Vent overlap detail:			
Number of vents:			
Periscopic vents in place (Y/N):			
Membrane sealed (Y/N):			
Lapping joints sealed (Y/N):			
Membrane laid flat (Y/N):			
Steel reinforcement present at time of inspection (Y/N):			
Photograph ID			
No	Description		
Did plot pass inspection (Y/N)			
Is a further inspection required (Y/N)			
Engineer Signature	Name:		
	Position:		

APPENDIX 4

NOTES ON LIMITATIONS

NOTES ON LIMITATIONS

- 1 FWS Consultants Ltd ("FWS") has prepared this report solely for the use of the client and/or his agent (the "Client") on the basis of exchange(s) of written proposals and instructions, and FWS accepts no responsibility or liability:-
 - a) for use of this report by any party other than the person for whom it was commissioned, or;
 - b) for the consequences of the report being used for any purpose other than that for which FWS was instructed to prepare it.

Should any third party wish to use or rely upon the contents of the report, written approval from FWS must be sought.
- 2 All information supplied by the Client, the Client's staff and professional advisers, local authorities, other statutory bodies, investigation agencies and publicly accessible databases, shall be provided to FWS in writing, and is accepted as being correct unless otherwise specified in writing by the discloser of the information.
- 3 The conclusions and recommendations in this report represent the professional opinions of FWS derived from currently accepted industry practices, and through the exercising of reasonable skill and care to be expected of a professional geosciences and environmental consultancy of similar size and experience. The assessments and judgments given in this report are directed by and limited to both the finite data on which they are based and the proposed works to which they are addressed.
- 4 Environmental and geotechnical desk studies comprise a study of available information obtained from various identified sources, authorities and parties. The information reviewed cannot be exhaustive and has been accepted in good faith as providing representative and true data pertaining to site conditions. For clarity, no independent verification of this data is carried out by FWS and it is accepted at face value. Any identified risks in desk study reports are perceived risks based on the information available at the time. Actual risks can only be assessed after carrying out a thorough physical investigation of the site that serves to validate such identified risks.
- 5 Data acquisition during site investigations is subject to the limitations of the methods of investigation used, site conditions and access constraints. Exploratory holes undertaken during fieldwork, particularly boreholes and/or trial pits, investigate a small volume of ground in relation to the size of the site and thus can only provide an indication of site conditions. The opinions provided and recommendations given in this report are based on the desk study information and ground conditions apparent at the site of each of the exploratory holes. There may be ground conditions elsewhere onsite that have not been disclosed by the investigation and which therefore have not been taken into account in this report. FWS will take all due care and make commentary on the adequacy of data collection and therefore the ability to highlight the presence or otherwise of exceptional conditions.
- 6 Owing to the natural variation of the systems that are being investigated, and the anthropological impact similarly changing through time, the findings and opinions in this report are relevant to the dates of the site works and should not be relied upon to represent conditions after a reasonable passing of time. Site conditions will change over time due to natural variations and human activities. The comments made on groundwater, surface water and soil gas conditions are based on observations made at the time that the site work was carried out. It should be noted that these conditions will vary owing to seasonal, tidal and meteorological effects. Variation in the types and concentrations of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past disposal practices, the passage of time, or subsequent developments or activities on the site or adjacent area.
- 7 The scope of the investigation, as agreed between FWS and the Client, was undertaken based on the specific development proposals of the Client and may be inappropriate to another form of development or scheme.
- 8 The opinions expressed in this report regarding contamination, geotechnical and/or waste assessments are based on simple statistical analysis and comparison with available guidance values. No liability can be accepted for the retrospective effects of any changes or amendments to these values.