

Phase 2 – Environmental Interpretative Report Inc. Remediation & Verification Plan

Land to South of
199 Cradge Bank, Spalding,
PE11 3AQ

MEC_2025_D0028_P2 EIR

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1	INTRODUCTION	6
1.1	Report Objectives	6
1.2	Information	8
1.3	Proposed Development	9
2	PRELIMINARY RISK ASSESSMENT – SUMMARY	11
3	SHIELDS WILSON INTRUSIVE WORKS, 2025	13
3.1	Scope of Works	13
3.2	Ground Conditions	13
3.3	Groundwater Conditions	13
3.4	Ground Gas Conditions	14
3.5	Contamination	15
3.6	Refined Conceptual Site Model	17
4	GAS MITIGATION DESIGN & MATERIALS	18
4.1	Scope of Protection	18
4.2	Sub-Slab Venting – Houses (Including Integral Garages)	19
4.3	Gas Resistant Membrane – Houses (Including Integral Garages)	19
5	GAS RESISTANT MEMBRANE INSTALLATION SPECIFICS	22
5.1	Installation Contractor Competency	22
5.2	Installer Construction Quality Assurance (CQA)	22
5.3	Installation Schedule	22
5.4	Jointing Procedure	23
5.5	Penetrations & Detailing	23
5.6	Repair Procedure	23
5.7	Weather Conditions	24

6	VERIFICATION PLAN – GROUND GAS MITIGATION	25
6.1	Verifier Competence	25
6.2	Verifier Site Attendance	25
6.3	Verification Frequency and Remit	25
6.4	Verifiers' Site Visit Inspection Forms	26
6.5	Defects and Damage	27
6.6	Verification Inspection Reporting	27
7	CONSTRUCTION PHASE MANAGEMENT	28
7.1	Gas Resistant Membrane - Management of Follow-On Works / Contractors	28
7.2	Sealing of Service Ducts	29
7.3	Drinking Water Supply Pipes	29
7.4	Placement of Topsoil / Sub-Soil	29
7.5	Unforeseen Contamination	29
8	HEALTH AND SAFETY	30
9	REGULATORY APPROVALS	31

EXECUTIVE SUMMARY

MEC Environmental Ltd has been appointed by Scenic Homes Limited to provide a 'Phase 2 Environmental Interpretative Report Inc. Remediation & Verification Plan' for the proposed development of 7 No. residential houses on land located to the south of 199 Cradge Bank, Spalding, PE11 3AQ.

This report:

- Reviews the findings of recent intrusive works to confirm ground conditions and any identified environmental risk(s), including refinement of the Conceptual Site Model – **see Section 3.**
- Determines the scope of any required mitigation controls necessary to manage identified environmental risk(s) – **see Sections 4 and 5.**
- Confirms verification requirements for any mitigation controls determined to be required – **see Section 6.**
- Discusses wider construction phase management considerations relating to environmental matters – **see Section 7.**

It is incumbent on The Client to review the content of this report and ensure that MEC's interpretation of the construction proposals is accurate (see Section 1.3). Any changes to the construction proposals outlined should be notified to MEC for review (and update of this report if / as required).

This document should be read in its entirety, but of note:

- **Section 5:** Gas risk mitigation is required to all 7 No. proposed houses (including integral garages), comprising passive sub-slab venting and provision of a gas resistant membrane.
- **Section 6:** The sub-slab venting and gas resistant membrane require verification inspection.
- **Section 7.1:** Following successful verification of the gas resistant membrane, protection (insulation board to house footprint, loose-laid 1200-gauge polythene sheet to integral garages) should be placed promptly to prevent damage by follow-on trades.
- **Section 7.2:** All service ducts which pass through the floor slab construction should be sealed.
- **Section 7.4:** Should any topsoil / subsoil be required in areas of private gardens or communal soft landscaping, this material should be verified as chemically suitable prior to placement.

It is the responsibility of The Client (or their appointed Planning Consultant) to submit a copy of this document for approval to the Local Authority (as/if required per Planning Conditions) and any development Warranty Provider. MEC do not make these submissions direct but will provide technical support as/if required following submission. **It is strongly recommended that the contents of this report are not acted on until approval has been granted.**

1 Introduction

1.1 Report Objectives

MEC Environmental Ltd (MEC) has been appointed by Scenic Homes Limited ('The Client') to provide a 'Phase 2 Environmental Interpretative Report Inc. Remediation & Verification Plan' for the proposed development of 7 No. residential houses on land located to the south of 199 Cradge Bank, Spalding, PE11 3AQ (hereafter referred to as 'The Site').

The above scheme has received Planning Permission from South Holland District Council, Planning Reference H16-0279-24. Associated with the Planning Permission are Conditions 11 and 12 which relate to environmental matters associated with the site:

- **Condition 11:** The development hereby permitted shall not be commenced until a scheme to deal with any contamination of land or pollution of controlled waters has been submitted to, and approved in writing by, the Local Planning Authority.
- **Condition 12:** If contamination of land and/or pollution of controlled waters has been identified as a result of investigation undertaken in accordance with Condition 11 above and remediation is required, a fully copy of a verification report shall be submitted to, and approved in writing by, the Local Planning Authority prior to the first occupation of the development. The report shall provide verification that the required works regarding contamination have been carried out in accordance with the approved Method Statement(s). Post-remediation sampling and monitoring results shall be included in the closure report to demonstrate that the required remediation objectives and criteria has been fully met.

Previously, MEC has issued a 'Phase 1 – Preliminary Risk Assessment' (PRA) for the site (MEC Document Reference MEC_2025_D0028, Issue 1, Dated 17 June 2025). The PRA used available data sources to develop a preliminary Conceptual Site Model (pCSM) for the site. The pCSM highlighted:

- An information data gap relating to the potential for on-site Made Ground as a result of the recent sites usage for building materials storage associated with an adjacent residential development; and
- The natural underlying geology of the Tidal Flat Deposits (which contains local organic material, including Peat) is a potential source of ground gas, requiring mitigation measures commensurate with a Characteristic Situation 2 (CS2) site designation per the British Standard (BS8485:2015+A1:2019¹) and CL:AIRE Research Bulletin 17².

¹ BS8485:2015+A1:2019 – Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings. BSI, 2019.

² CL:AIRE Research Bulletin 17 – A Pragmatic Approach to Ground Gas Risk Assessment. Card, Wilson and Mortimer. November 2012.

In response to the above, a phase of intrusive works has been completed on site by Shields Wilson Limited. The intrusive works were completed to determine the extent and composition of any Made Ground present, whilst also facilitating the collection of soil samples for chemical laboratory testing.

This 'Phase 2 Environmental Interpretative Report' is submitted in response to the above, with the specific objective of:

- Reviewing the Shields Wilson intrusive works to confirm ground conditions and any identified environmental risk(s), including refinement of the Conceptual Site Model in response to these works – **see Section 3.**
- Determining the scope of any required mitigation controls necessary to manage identified environmental risk(s) – **see Sections 4 and 5.**
- Confirming verification requirements for any mitigation controls determined to be required – **see Section 6.**
- Identifying any wider construction phase management considerations relating to environmental matters – **see Section 7.**

Explicitly, this document does not provide any guidance or recommendations with respect to geotechnical risks at the site or waste management. Where / as required, Specialists in these fields should be consulted.

This report has been prepared in general accordance with UK Guidance and good practice, including (but not limited to):

- British Standard 10175:2011+A2:2017 – Investigation of Potentially Contaminated Sites – Code of Practice. BSI, 2017.
- British Standard 5930:2015+A1:2020 – Code of Practice for Ground Investigations. BSI, 2020.
- British Standard 8485:2015+A1:2019 – Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings. BSI, 2019.
- Land Contamination Risk Management. Environment Agency, 2020.

The afore referenced documents, alongside The Building Safety Act 2022³ (and others), require demonstration of competence. Specifically, it is required that person(s) undertaking such reports have appropriate skill, knowledge, experience and behaviours.

Consistent with the above, this report has been prepared by a degree-qualified Engineer (BEng Hons) with over 20yrs in professional practice, who has demonstrated to industry peers via a formal process of technical review and assessment, sufficient skill, knowledge, experience and behaviours such that they have obtained Chartered Geologist (CGeol) status and are Accredited by the Society of Brownfield Risk Assessment (ASoBRA⁴) for both Permanent Gas and Vapour Intrusion Risk Assessment, plus are Registered (RSoBRA) for Human Health Risk Assessment.

In maintaining CGeol and ASoBRA / RSoBRA status via the Chartership / Accreditation Revalidation processes required of the Awarding Bodies, the individual undertaking this report also demonstrates a commitment to maintaining professional standards via the implementation of continuing professional development, facilitated by a working culture which supports the individual to work within the parameters of their skill, knowledge and experience.

1.2 Information

This report is based on information provided to MEC by the Client – see Table 1.

Table 1. Information Provided to MEC

Author	Date	Reference	Title
Shields Wilson Limited	<i>Document Undated – Received by MEC 14 July 2025</i>	SW 24-331-REP-01-A	Ground Investigation Report Upon Land off Cradge Bank, Spalding, PE11 3AQ

A copy of the above report is provided in Appendix A.

³ The Building Safety Act 2022 (Commencement No. 1, Transitional and Saving Provisions) Regulations 2022 (Statutory Instrument No. 561)

⁴ <https://sobra.org.uk/accreditation/register-of-sobra-risk-assessors/>

1.3 Proposed Development

1.3.1 Layout and Setting

The development comprises 7 No. residential houses referred to as Plots 1 to 7. Garages are proposed integral to the residential properties. A development layout drawing is provided as Figure 1.



Figure 1. Proposed Site Plan (Seven 22 Architecture Limited, Drawing Number 099 (S) – 01, October 2024.

1.3.2 Foundations & Floor Slab Construction

In addition to the document listed in Table 1, a selection of drawings has been provided for the residential dwellings which show the proposed foundation and floor slab construction. These drawings indicate:

- Foundations: Comprise 220mm diameter bottom driven steel cased mini piles, terminated at circa 10m to 12m below ground level, grouted with concrete slurry and terminated to reinforced concrete ground beams;
- Building Construction: Comprises solid blockwork (not timber frame);
- Floor Slab Construction: The floor slab construction (bottom up) comprises:
 - **Passive Sub-Slab Venting**: Minimum 225mm deep open void, passively vented via a series of telescopic (cranked) vents to air bricks located on two opposing elevations of each dwelling, with cross-venting (missed blockwork) provision to sleeper walls*.
 - **Beam and Block Floor Slab**.
 - **Insulation (100mm thk) [Omitted in garage areas]**.
 - **Screed (50mm thk)**.
 - **Finishes**.

**Note: Ventilation Markups have been provided to MEC, showing the location of proposed telescopic air bricks and cross-venting to sleeper walls. The provisions exceed the requirements of England Building Regulations Approved Document Part C. Copies of these drawings are presented in Appendix B.*

2 Preliminary Risk Assessment – Summary

MEC's 'Phase 1 – Preliminary Risk Assessment (PRA)' is a normative reference to this document and should be read in conjunction with it. However, for ease of review, Table 2 provides a summary of the key information from the PRA.

Table 2. Phase 1 – PRA, Summary

Item	Summary <i>For More Detailed Information Revert to Phase 1 – PRA Section Reference</i>	Phase 1 – PRA Ref.
Site Location	South of 199 Cradge Bank, Spalding, PE11 3AQ	2.1
Site Area	0.22 Hectares	
NGR	523480, 320140	
Previous Site Use	Previously part of wider area which comprised the former 'Millfield Nursery' site.	
Site Setting	Rural area, immediately adjacent land uses comprising residential properties – including those recently constructed on the wider area of the former Millfield Nursery site. An open drain and Cradge Bank are present to the east, with Welland Bank and the River Welland beyond.	2.2
Site History	The site remained undeveloped agricultural land until circa 1980 when structures (Greenhouses) associated with the former Millfield Nursery site impinged onto the southern portion of the development area. These structures (Greenhouses) were extended in the 1980's, covering much of the site (and adjacent land) by 1988. Millfield Nursery was demolished in circa 2022, after which time the wider area of the former nursery site was redeveloped with residential housing. During the residential redevelopment works, the site area to which this report pertains was used for the storage of building materials.	
Geology	Tidal Flat Deposits, underlain by the Oxford Clay Formation.	2.3
Hydrology and Hydrogeology	The site is located on low-lying fenland, with various Drains and Channels near the site. The drift and solid geology both comprise Unproductive Strata, i.e. low permeability materials which will have negligible significance for water supply or river base flow. The site is not located within a Groundwater Source Protection Zone.	2.4
Radon	The site is not located in an area where new buildings or extensions require radon mitigation.	2.5
Mineral Sites	One mineral site was identified circa 170m north of the site, used for clay extraction and subsequently infilled in the 1930's. The former mineral site is not considered to pose a credible risk to the on-site development.	2.6
Coal Mining	The site is not located in an area of coal mining.	2.7
Landfills	No landfills are listed within 250m of the site.	2.8
<i>Per Intrusive Works on Wider Area of Former Millfield Nursery site (GeoDyne Limited, 2019):</i>		
Ground Conditions	Encountered ground conditions comprised a mantle of Topsoil (locally reworked with inclusions of brick / glass) underlain by Tidal Flat Deposits. The Tidal Flat Deposits were predominantly fine grained when first encountered, either described as clay or silt, with variable sand content. Within some exploratory hole locations fibrous Peat and fibrous reed-type organic vegetation was noted locally, albeit not extensively through the lateral / vertical profile of the Tidal Flat Deposits. At between 10.4m and 10.8mbgl the Tidal Flat Deposits become predominantly granular, being described as silty sand with variable gravel content. The Oxford Clay Formation was encountered at between 12.4m and 13.3m bgl, described as very stiff slightly gravelly clay.	3.2
Groundwater Conditions	Groundwater was typically recorded within the Tidal Flat Deposits at around 1mbgl, with running sand / silt noted locally within the unit.	3.3
Ground Gas Conditions	The high-water levels encountered on site resulted in flooding of installed gas monitoring standpipes and compromised ground gas monitoring data quality. Based on encountered ground conditions, a CS2 designation has been determined by MEC, per the approach presented in CL:AIRE Research Bulletin 17 – A Pragmatic Approach to Ground Gas Risk Assessment.	3.4
Contamination	Chemical testing of representative soil samples included analysis for metals, Poly Aromatic Hydrocarbons and Speciated Total Petroleum Hydrocarbons (TPH) plus a pesticide and herbicide screen and asbestos screen. Excluding some local TPH results near fuel tanks (located circa 100m south-west of the development site and therefore not considered a credible source), chemical testing did not record elevated determinants relative to adopted Human Health Generic Assessment Criteria based on a 'Residential with Plant Uptake' end use.	3.5

The information from the Phase 1 PRA was used to inform the development of a preliminary Conceptual Site Model (pCSM), a copy of which is provided as Figure 2.

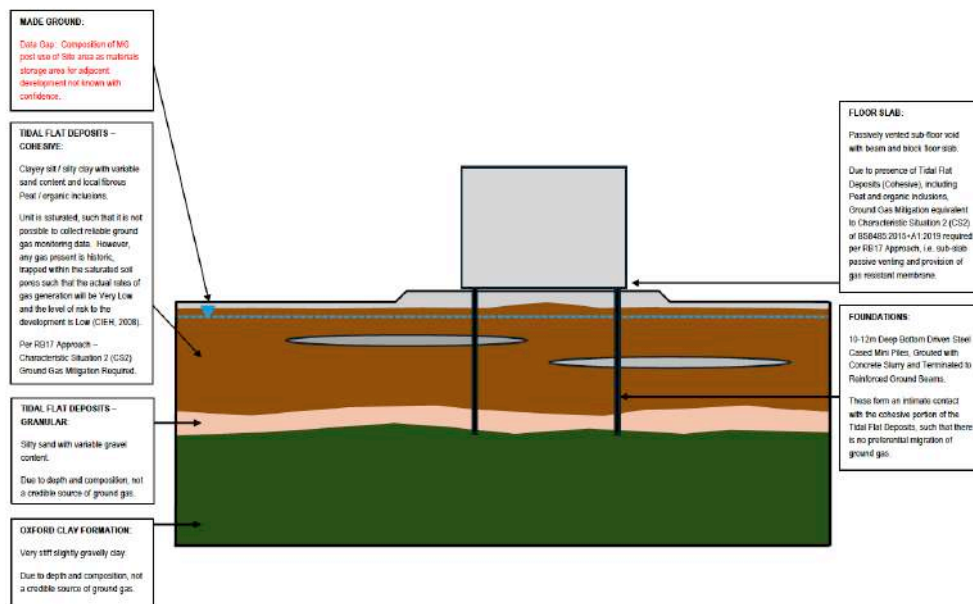


Figure 2. Pictorial Representation of preliminary Conceptual Site Model (pCSM)

In summary:

- The PRA indicated the site was previously occupied by Greenhouse structures associated with the wider Millfield Nursery site. Consistent with this site history, previous investigations did not identify any gross contamination which would likely pose an unacceptable risk to future residential occupants and/or Controlled Waters.
- After the Nursery closed the Greenhouses were demolished and the wider area developed with residential houses. The area of the former Nursery to which this report pertains was used for building materials storage during the adjacent development works. It is possible that this usage increased the thickness / changed the composition of any Made Ground present. This was a data gap highlighted for review via additional intrusive works – **see Section 3**.
- The prevailing geology comprises Tidal Flat Deposits, which locally include Peat / organic material that is a potential source of ground gas. Previous attempts to install ground gas monitoring boreholes into the Tidal Flat Deposits recorded flooded response zones which impacted gas monitoring data quality. Due to prevailing ground / groundwater conditions, further attempts to install gas monitoring wells on site are likely to encounter the same issue. Subject to confirmation of the data gap highlighted above regarding any Made Ground, the main source of ground gas is likely to be the naturally occurring organic material (e.g. Peat etc.) within the Tidal Flat Deposits. Per the approach outlined by CL:AIRE Research Bulletin 17, instead of attempting further gas monitoring within this strata, ground gas mitigation measures which are commensurate with a Characteristic Situation 2 (CS2) scenario per BS8485:2015+A1:2019 will be provided to all proposed 7 No. properties, including provision of a gas resistant membrane in combination with passive sub-slab venting – **see Sections 4, 5 and 6**.

3 Shields Wilson Intrusive Works, 2025

3.1 Scope of Works

Shields Wilson Limited were employed to undertake intrusive works on site.

The scope of the intrusive works may be summarised as follows:

- At each proposed Plot location (7 No.) a mechanical trial pit was excavated, extended to between 2.5m and 2.6m bgl.
- Each trial pit excavation was logged, with photos of the excavation and/or arisings obtained.
- Representative soil samples were obtained from each trial pit and submitted for laboratory analysis of selected metals, Speciated Total Petroleum Hydrocarbons (TPH's, CWG Carbon Bands), Total Organic Carbon (TOC) and an Asbestos screen.

Shields Wilson produced a 'Ground Investigation Report' relating to the above, a copy of which is presented in Appendix A.

3.2 Ground Conditions

Ground conditions reported by Shields Wilson comprised Tidal Flat Deposits. These were locally reworked in the upper circa 0.3m to 1.2m (average 0.7m thick), with local pieces / inclusions of wood, plastic sheeting, drainpipe and concrete.

Consistent with previous works on the wider former Millfield Nursery site (GeoDyne, 2019 – see Section 2, Table 2), the Tidal Flat Deposits were reported as predominantly fine-grained – comprising silt, with variable clay / sand content.

Roots/rootlets were noted locally within the trial pits, although no Peat or reed-type organic matter was recorded to trial pit termination depth (at between 2.5m and 2.6mbgl).

Shields Wilson stated that the strata encountered across the trial pits was relatively consistent and that no visual or olfactory evidence of contamination was observed.

3.3 Groundwater Conditions

During the intrusive works no consistent groundwater strike was observed. However, the Tidal Flat Deposits were locally noted to be 'wetter' below 1.2m and 1.4mbgl. Such observations are typical of Tidal Flat Deposits, whereby if monitoring standpipes were installed pore water pressures in the fine-grained soils would dissipate, resulting in the flooded response zones experienced during previous works.

3.4 Ground Gas Conditions

Per Section 3.2, the Tidal Flat Deposits were locally reworked near surface (average thickness 0.7m), with pieces / inclusions of wood, plastic sheeting, drainpipe and concrete. None of these materials are highly degradable such that they will be capable of generating large volumes of ground gas under pressure.

Within the Tidal Flat Deposits, roots/rootlets were noted - although no Peat or reed-type organic matter was recorded to trial pit termination depth (2.5m and 2.6mbgl).

As part of the Shields Wilson intrusive works, soil samples obtained at 0.8m and 1.5mbgl were submitted for Total Organic Carbon (TOC) testing. Due to prevailing ground conditions, most samples tested comprised Tidal Flat Deposits (TFD), albeit a couple of samples did comprise reworked Tidal Flat Deposits. The results are summarised in Table 3, with reported TOC results ranging between 0.35% and 9.40%, average 1.44%.

The TOC results are consistent with the Shields Wilson log sheets, whereby the upper portion of the Tidal Flat Deposits does not contain significant organic content which is laterally and/or vertically persistent. However, per the results of previous investigations (GeoDyne, 2019 – see Section 2, Table 2), it is acknowledged that locally Peat and/or reed-type organic materials are present within the Tidal Flat Deposits.

Table 3. TOC Testing, Shields Wilson (2025)

Sample ID	Strata	TOC Result (%)
TP01 0.8m	TFD	9.40
TP01 1.5m	TFD	1.40
TP02 0.8m	TFD	0.59
TP02 1.5m	TFD	0.35
TP03 0.8m	TFD	1.10
TP03 1.5m	TFD	0.56
TP04 0.8m	Reworked TFD - MG	0.72
TP04 1.5m	TFD	1.90
TP05 0.8m	TFD	1.50
TP05 1.5m	TFD	0.56
TP06 0.8m	Reworked TFD - MG	1.40
TP06 1.5m	TFD	0.59
TP07 0.8m	TFD	0.59
TP07 1.5m	TFD	1.00

In conclusion, the main source of any ground gas at this site is likely to be any naturally occurring organic material (e.g. Peat etc.) locally within the Tidal Flat Deposits. Per the approach outlined by CL:AIRE Research Bulletin 17, on sites with only nominal Made Ground and where the main credible source of any ground gas has been demonstrated to be Alluvium or Peat, it is reasonable to elect to provide ground gas mitigation measures which are commensurate with a Characteristic Situation 2 (CS2) scenario per BS8485:2015+A1:2019. This is in lieu of attempting further gas monitoring, recognising the inherent data quality issues which are likely because of flooded response zones etc. Consistent with this, CS2 gas mitigation will be provided to all proposed 7 No. properties, to include provision of a gas resistant membrane in combination with passive sub-slab venting – see Sections 4, 5 and 6.

3.5 Contamination

Per Section 3.2, Shields Wilson stated that the strata encountered across the trial pits was relatively consistent and that no visual or olfactory evidence of contamination was observed.

The remit of soil phase chemical testing completed by Shields Wilson is summarised in Table 4.

As indicated in Table 4, samples of both the reworked and natural Tidal Flat Deposits were submitted for chemical testing of both a general Metals test suite, Asbestos Identification and Speciated TPH analysis.

Table 4. Soil Phase Chemical Testing Remit, Shields Wilson (2025)

Sample ID	Strata	Testing ^{1,2,3}
TP01 0.2m	Reworked Tidal Flat Deposits	Metals Suite
TP01 0.4m	Reworked Tidal Flat Deposits	Asbestos Identification Speciated TPH
TP01 0.8m	Tidal Flat Deposits	Metals Suite
TP02 0.2m	Reworked Tidal Flat Deposits	Metals Suite
TP02 0.4m	Reworked Tidal Flat Deposits	Asbestos Identification Speciated TPH
TP02 0.8m	Tidal Flat Deposits	Metals Suite
TP03 0.2m	Reworked Tidal Flat Deposits	Metals Suite
TP03 0.4m	Reworked Tidal Flat Deposits	Asbestos Identification Speciated TPH
TP03 0.8m	Tidal Flat Deposits	Metals Suite
TP04 0.2m	Reworked Tidal Flat Deposits	Metals Suite
TP04 0.4m	Reworked Tidal Flat Deposits	Asbestos Identification Speciated TPH
TP04 0.8m	Reworked Tidal Flat Deposits	Metals Suite
TP05 0.2m	Reworked Tidal Flat Deposits	Metals Suite
TP05 0.4m	Reworked Tidal Flat Deposits	Asbestos Identification Speciated TPH
TP05 0.8m	Tidal Flat Deposits	Metals Suite
TP06 0.2m	Reworked Tidal Flat Deposits	Metals Suite
TP06 0.4m	Reworked Tidal Flat Deposits	Asbestos Identification Speciated TPH
TP06 0.8m	Reworked Tidal Flat Deposits	Metals Suite
TP07 0.2m	Reworked Tidal Flat Deposits	Metals Suite
TP07 0.4m	Tidal Flat Deposits	Asbestos Identification Speciated TPH
TP07 0.8m	Tidal Flat Deposits	Metals Suite
1. Metals Suite comprises arsenic, cadmium, chromium, copper, mercury, nickel, lead, selenium and zinc.		
2. Asbestos Identification.		
3. Speciated TPH – EPH/VPD speciation.		

The soil phase chemical test data has been compared to published Generic Assessment Criteria (GAC) based on a 'Residential With Consumption of Homegrown Produce' end use, typically assuming a Soil Organic Matter (SOM) of 1%. The results are presented in Table 5a (Metals Suite) and Table 5b (Asbestos and TPHs).

No elevated detects were identified (Metals / TPH's) and no Asbestos was detected.

These results are consistent with previous site investigation works on the wider area of the former Millfield Nursery site (GeoDyne, 2019 – see Section 2, Table 2) and the observations of Shields Wilson (who state that they observed no visual or olfactory indicators of contamination).

Table 5a. Soil Phase Chemical Testing Data Summary, Shields Wilson (2025) (All Values mg/kg)

Determinant	Adopted GAC (mg/kg)	TP01 0.2m	TP01 0.8m	TP02 0.2m	TP02 0.8m	TP03 0.2m	TP03 0.8m	TP04 0.2m	TP04 0.8m	TP05 0.2m	TP05 0.8m	TP06 0.2m	TP06 0.8m	TP07 0.2m	TP07 0.8m	Elevated Detects
Arsenic	37 (a)	17	14	14	3.9	6.7	6.6	6.6	8.1	8.6	8.0	9.4	18	3.2	14	None
Cadmium	11 (a)	0.17	0.15	0.19	<0.10	0.12	<0.10	<0.10	<0.10	0.12	0.41	0.19	0.32	<0.10	0.20	None
Chromium	910 (a)	27	20	24	8.3	12	13	10	23	14	13	13	27	11	24	None
Copper	2400 (a)	24	340	17	3.5	9.7	8.1	9.8	8.8	11	15	9.5	26	5.7	20	None
Mercury	40 (a)	0.08	0.06	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.12	<0.05	0.06	None
Nickel	180 (a)	30	42	21	7.8	11	11	9.6	21	13	21	13	30	13	23	None
Lead	200 (b)	35	33	29	5.8	17	15	15	11	15	11	14	70	4.8	54	None
Selenium	250 (a)	0.60	0.37	0.43	<0.25	<0.25	<0.25	<0.25	0.36	<0.25	0.87	0.54	1.6	0.46	0.79	None
Zinc	3700 (a)	80	66	78	21	40	41	37	54	56	32	44	82	27	73	None
GAC Source																
(a) The LQM / CIEH S4ULs for Human Health Risk Assessment – Residential with Homegrown Produce, SOM 1%.																
(b) DEFRA C4SL for Lead – Residential with Consumption of Homegrown Produce, SOM 6%.																

Table 5b. Soil Phase Chemical Testing Data Summary, Shields Wilson (2025) (All Values mg/kg)

Determinant	Adopted GAC (mg/kg)	TP01 0.4	TP02 0.4m	TP03 0.4m	TP04 0.4m	TP05 0.4m	TP06 0.4m	TP07 0.4m	Elevated Detects
Asbestos ID	-	No Asbestos Detected							None
TPH Ali C5-6	42 (a)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	None
TPH Ali C6-8	100 (a)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	None
TPH Ali C8-10	27 (a)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	None
TPH Ali 10-12	130 (a)	<2.0	<2.0	2.4	<2.0	<2.0	2.3	<2.0	None
TPH Ali 12-16	1100 (a)	2.9	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	None
TPH Ali 16-35	65000 (a)	8.8	5.9	5.0	12.2	5.6	4.8	3.6	None
TPH Ali 35-44	65000 (a)	<10	<10	<10	<10	<10	<10	<10	None
TPH Aro C5-7	70 (a)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	None
TPH Aro 7-8	130 (a)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	None
TPH Aro C8-10	34 (a)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	None
TPH Aro C10-12	74 (a)	1.8	1.9	2.5	2.4	1.3	<1.0	3.6	None
TPH Aro C12-16	140 (a)	1.8	2.2	1.6	1.9	1.9	1.5	1.4	None
TPH Aro C16-21	260 (a)	7.8	8.4	6.1	6.5	7.6	5.6	5.4	None
TPH Aro C21-35	1100 (a)	14	13	9.1	18	14	12	5.9	None
TPH Aro C35-44	1100 (a)	6.3	4.5	4.9	8.1	8.0	5.1	4.2	None
GAC Source: (a) The LQM / CIEH S4ULs for Human Health Risk Assessment – Residential with Homegrown Produce, SOM 1%.									

3.6 Refined Conceptual Site Model

Based on the works completed by Shields Wilson, the preliminary Conceptual Site Model (pCSM) developed as part of the Phase 1 – PRA has been refined (rCSM), see Figure 3.

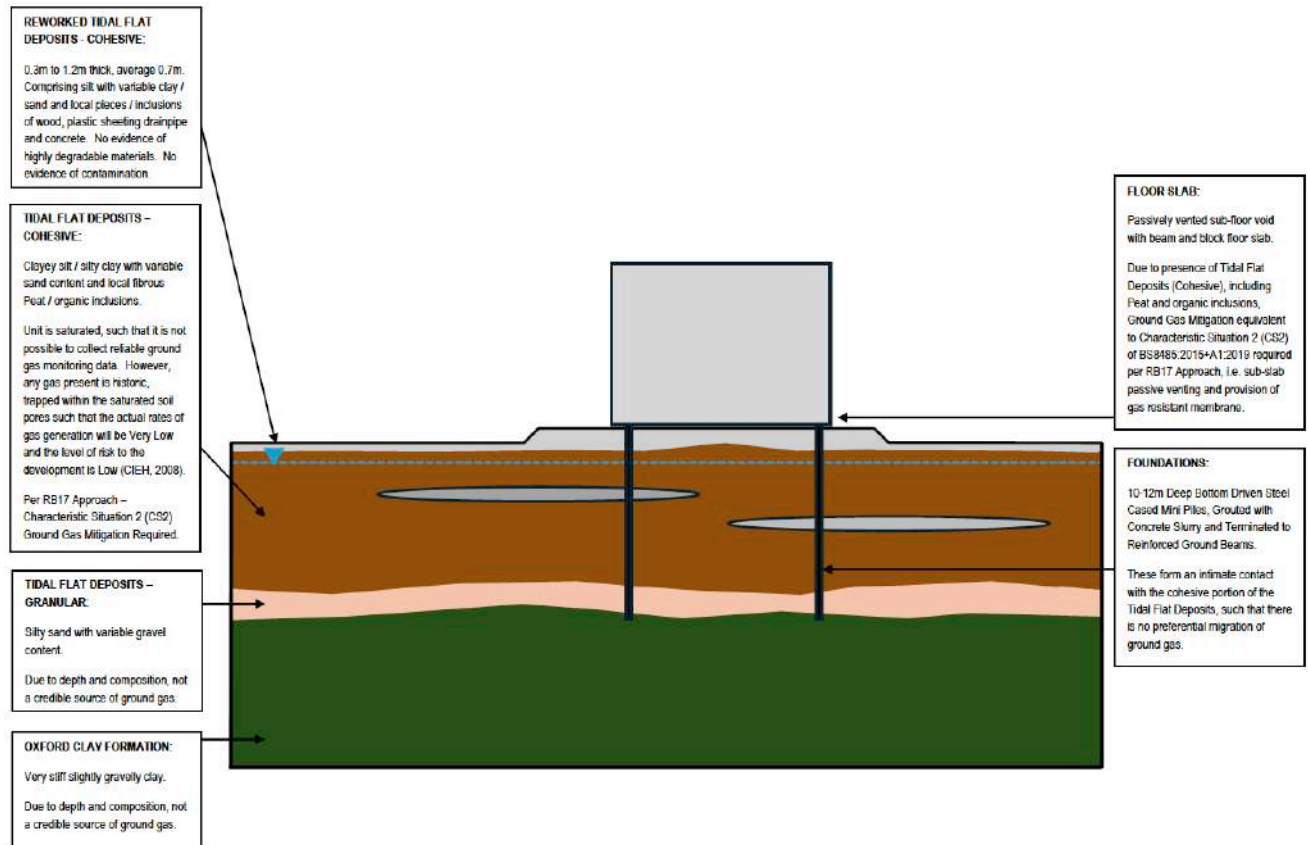


Figure 3. Pictorial Representation of refined Conceptual Site Model (rCSM)

In summary:

- The PRA indicated the site was previously occupied by Greenhouse structures associated with the wider Millfield Nursery site. Consistent with this site history, intrusive site investigations have not identified any extensive Made Ground and/or gross contamination which would likely pose an unacceptable risk to future residential occupants and/or Controlled Waters.
- The main source of any ground gas at this site is likely to be any naturally occurring organic material (e.g. Peat etc.) locally within the Tidal Flat Deposits. Per the approach outlined by CL:AIRE Research Bulletin 17, on sites with only nominal Made Ground and where the main credible source of any ground gas has been demonstrated to be Alluvium or Peat, it is reasonable to elect to provide ground gas mitigation measures which are commensurate with a Characteristic Situation 2 (CS2) scenario per BS8485:2015+A1:2019. This is in lieu of attempting further gas monitoring, recognising the inherent data quality issues which are likely because of flooded response zones etc. Consistent with this, CS2 gas mitigation will be provided to all proposed 7 No. properties, to include provision of a gas resistant membrane in combination with passive sub-slab venting – see Sections 4, 5 and 6.

4 Gas Mitigation Design & Materials

4.1 Scope of Protection

Based on a CS2 gas risk classification, design requirements for the development are summarised in Tables 6 and 6a.

Table 6. Summary of Gas Mitigation Design Requirements – Per BS8485:2015+A1:2019

Parameter	Requirement	BS 8485	Discussion / Rationale
CS Classification	CS-2	Table 2	See discussion in Chapters 2 and 3.
Building Class	Type A	Table 3	Low-Rise Residential Dwellings.
Gas Protection Score Requirement	3.5 Points	Table 4	-

Table 6a. Specific Mitigation – Houses & Integral Garages

Ground Gas Mitigation – Gas Protection Score Allocation			
Structural Barrier	0.0 Score	Table 5	Per Section 1.3, suspended segmental slab.
Ventilation	2.5 Score	Table 6	Per Section 1.3, clear void proposed below floor slab construction, achieving ‘very good’ performance over relatively small footprint of proposed structures, deemed to comply per Figure 4.2 of NHBC’s NF94 publication ⁵ .
Gas Resistant Membrane	2.0 Score	Table 7	Gas resistant membrane to be incorporated within floor slab makeup, per criteria listed in Table 7 of the British Standard - see Section 4.3.
Total Score	Total 4.5 Gas Protection Points Exceeds CS2 Gas Protection Point Requirement (3.5 Points) per Table 4 of British Standard  Achieves CS3 Gas Protection Point Requirement (4.5 Points) per Table 4 of British Standard 		

⁵ NHBC Publication NF94 – Hazardous Ground Gas: An Essential Guide for House Builders. NHBC, April 2023.

4.2 Sub-Slab Venting – Houses (Including Integral Garages)

Per Section 1.3.2, a 225mm deep clear (open) void will be provided below the beam and block floor slab to all residential houses (Plots 1 to 7 inclusive), including below integral garages.

Per England Buildings Regulations – Approved Document C⁶, the void will be vented.

Ventilation Markups are provided in Appendix B for the residential houses (Plots 1 to 7 inclusive), including below integral garages.

The Ventilation Markups show the location of required telescopic air bricks and cross-venting to sleeper walls. The provisions exceed the requirements of England Building Regulations Approved Document Part C and may be summarised as follows:

- The sub-slab void will be vented by telescopic vents terminated to air bricks constructed per the Ventilation Markups, each providing a ventilation area of >6,000mm²;
- Cross vents to all sleeper walls will be constructed per the Ventilation Markups comprising missed blockwork, each providing >6,000mm² ventilation area; and
- The bottom of the air bricks will be constructed at least one brick course above finished ground level (150mm to top of air brick).

4.3 Gas Resistant Membrane – Houses (Including Integral Garages)

A gas resistant membrane will be incorporated into the floor slab construction to all residential houses (Plots 1 to 7 inclusive), including below integral garages.

The provisions are as per Table 7 of the British Standard (BS8485:2015+A1:2019) and may be summarised as follows:

- The block and beam construction will be prepared prior to laying of the gas resistant membrane, such that the substrate comprises a clean, dry, uniform and smooth surface, free from concrete snots, debris/detritus, ponded water and contamination (oil, grease etc.). Any open voids (>12mm deep or wide) to be filled and trowel smoothed before installation of the gas resistant membrane.
- The gas resistant membrane will be continuous across the full extent of the floor slab construction, constructed on top of the block and beam floor, below the insulation (houses) and/or below the screed (garages). The gas resistant membrane will span the cavity, with a robust cavity tray construction above, both terminated onto the external leaf brickwork and sealed to each other using double sided tape (or an equivalent system sealant).

⁶ The Building Regulations 2010 – Site Preparation & Resistant to Contaminants and Moisture.

- Table 7 of BS8485:2015+A1:2019 requires specification of a gas resistant membrane which is sufficiently impervious to gas migration, sufficiently strong to withstand the construction process, sufficiently durable to remain serviceable during building occupation, capable of providing a barrier to gas entry and verified in accordance with CIRIA Report C735⁷.
- Consistent with the above, a proprietary gas resistant membrane will be utilised, comprising JUTA GP1 (<https://juta.co.uk/gas-protection-membranes/ground-gas-membranes/gp1/>). JUTA GP1 is considered acceptable on the basis of the material properties listed in Table 7.

Note: Should alternative product(s) be proposed, Technical Data Sheet(s) and British Board of Agrément (BBA) Certificate(s) should be provided to MEC for review / comment / approval not less than 6-weeks prior to works proceeding on site. The properties of any alternate materials must be demonstrated via provided laboratory test data to achieve (or exceed) the properties set out in Table 7.

- All joints to the gas resistant membrane are to be heat welded (see Section 5.4), minimum 100mm overlap.
- Detailing will be completed via the application of Self Adhesive [gas resistant] Membrane (SAM), heated and rolled (pressure applied) to achieve acceptable adhesion. All ancillary detailing products will be Manufacturer approved accessories to the sheet membrane product, e.g. JUTA GP1 SAM.
- Following verification of the infill gas mitigation, the gas resistant membrane will be protected from damage by follow on trades as follows:
 - House Footprint: The protection will comprise the insulation board to the floor slab construction of the residential houses. The provision of insulation board will also isolate the JUTA GP1 gas resistant membrane / JUTA GP1 SAM (which incorporate an aluminium foil core) from the concrete screed.
 - Integral Garage: The protection will comprise placement of a loose-laid 1200g polythene sheet, which will isolate the JUTA GP1 gas resistant membrane / JUTA GP1 SAM (which incorporate an aluminium foil core) from the concrete screed.
- All materials/products/accessories must be handled, stored and installed in full accordance with the Technical Data Sheets and/or Manufactures requirements.

Material data sheets for the components of the gas membrane construction are provided in Appendix C.

A Typical Gas Membrane Perimeter Section is provided in Appendix C.

⁷ CIRIA Report C735 – Good Practice on the Testing and Verification of Protection Systems for Buildings Against Hazardous Ground Gases (CIRIA, 2014).

Table 7. Material Properties – Gas Resistant Membrane

Property	Test Method	Minimum Requirement
Material & Form	-	Multi-Layer, Low Density Polyethylene Membrane, Reinforced with Polypropylene Reinforcing Grid with an Integral Aluminium Foil.
Weight	EN 1849-2	370 g/m ²
Thickness	EN 1849-2	0.6 mm
Thickness – Between Scrim	BS EN ISO 9863-1:2016	0.4 mm
Methane Gas Permeability	BS EN ISO 15105-1	<0.09 ml/m ² /day/atm
Carbon Dioxide Permeability	BS EN ISO 15105-1	<0.09 ml/m ² /day/atm
Resistance to Static Load	EN 12730	20 kg
Puncture Resistance	EN 12236	1.25 kN
Resistance to Tearing (Nail Shank) – MD	EN 12310-1	330 N
Resistant to Tearing (Nail Shank) – CMD		400 N
Seam Jointing Method	-	Welded

5 Gas Resistant Membrane Installation Specifics

5.1 Installation Contractor Competency

The gas resistant membrane will be installed by an Installation Contractor who will hold a relevant qualification in the construction of gas protection measures (e.g. NVQ Level 2 in Gas Protection Installation).

5.2 Installer Construction Quality Assurance (CQA)

The Installation Contractor will provide CQA information which includes the following:

- The names of all Installation Contractors on site each day;
- Confirmation of the days work area (annotated site plan and/or Plot IDs);
- Confirmation that the substrate is appropriate for gas resistant membrane placement per Section 4.3;
- Summary of materials used, including sheet gas resistant membrane / detailing products etc;
- Photos which provide an overview of works completed.

Copies of the Installers CQA information are to be provided upon request.

5.3 Installation Schedule

The gas membrane will be installed as a perimeter and infill. Sufficient perimeter membrane (minimum 150mm) shall be left for jointing purposes of the infill membrane. In MEC's experience it is beneficial to provide interim protection of the perimeter membrane using either protection fleece or a sacrificial DPM, although this is provided at the discretion of the Installer / Developer. Regardless, care must be taken to ensure that the perimeter membrane is not damaged prior to the infill membrane being constructed. The perimeter membrane will be thoroughly cleaned and (as/if required) repaired, prior to any attempt to weld the infill membrane.

5.4 Jointing Procedure

The jointing procedure used by the Installer will be as follows:

- The gas resistant membrane will be rolled or pulled out onto the prepared substrate (see Section 4.3) and trimmed to size, ensuring that full contact with the substrate is achieved.
- The gas resistant membrane shall be fully supported by the substrate with no bridging / void.
- The next roll of gas resistant membrane shall be placed, ensuring a minimum 100mm overlap.
- The two sheets shall then be heat welded to form the joint between the two sheets.
- Fishmouths or wrinkles at the joint overlaps will be patched with an oval or round patch of the same gas resistant membrane material (or equivalent Self Adhesive [gas resistant] Membrane, SAM) extending a minimum of 100mm beyond the defect in all directions.

5.5 Penetrations & Detailing

All penetrations / detailing to the gas resistant membrane shall be sealed with strips of Self-Adhesive [gas resistant] Membrane (SAM).

All SAM strips must be heated to a sufficient temperature to cause bitumen bleed onto the adjoining sheet and vertical of the penetration/detail (pipe, stanchion etc.). Pressure must be applied to the heated SAM to ensure adhesion to the receiving surface(s).

Whilst not anticipated to be required on this project, if SAM detailing to a porous surface (e.g. concrete) is required, a minimum two coats of Primer will be applied to the prepared porous surface (the Primer to be per the sheet / SAM Manufacturers recommended detailing product).

5.6 Repair Procedure

Any portion of the gas resistant membrane exhibiting a flaw or failing a visual inspection / non-destructive (physical) test, will require repair. Unless notified in writing otherwise by the Designer, typically SAM patching will be the preferred approach to repair.

In addition, the following provisions will be satisfied:

- All surfaces must be clean, free of all particulate matter, and dry at the time of the repair;
- The repair procedures, materials and techniques will be approved in advance of the specific repair by the Verifier; and
- Patches and will extend at least 100mm beyond the edge of the defect.

All repairs will be re-inspected by the Verifier. Repairs passing re-inspection will be considered acceptable. Failed repairs will require the repair to be redone and re-inspected until a passing test result is obtained. The Verifier shall note all repairs and re-inspections in the Verifiers' site visit inspection form.

5.7 Weather Conditions

Gas resistant membrane placement shall not take place in an area of ponded water, or during excessive winds.

The recommended maximum and minimum installation temperatures quoted on material manufacturers data sheets should be always adhered to. Special attention should be given to bitumen type self-adhesive products, as in most cases these will have the lowest installation temperature range.

Placement of the gas resistant membrane should not take place in any event when the temperature is below zero degrees, as this will present a health and safety risk to site personnel, in these conditions the gas resistant membrane surface will become too dangerous to walk on.

When laying the gas resistant membrane it is beneficial to proceed in the direction of (with) the prevailing winds. This decision must be made during installation, in accordance with varying environmental conditions. In any event, the Installer will be fully responsible for the decisions made regarding placement procedures.

6 Verification Plan – Ground Gas Mitigation

6.1 Verifier Competence

The Verifier will minimally hold a NVQ Level 4 in Gas Membrane Verification and/or be registered via the CL:AIRE Gas Protection Verification Accreditation Scheme (Technician Level (TGVP) or Specialist Level (SGPV)).

6.2 Verifier Site Attendance

All requests for Verifier site visits must be made in writing not less than 5 working days prior to the required inspection day. It is the responsibility⁸ of the Developer / Installation Contractor to coordinate all verification visits and ensure sufficient time is allocated such that the required regime of inspection is achieved.

6.3 Verification Frequency and Remit

The installed gas mitigation system will be subject to 100% verification. The inspection items are as per:

- Table 8: Passive Sub-Slab Venting – Houses and Integral Garages; and
- Table 9: Gas Resistant Membrane – Houses and Integral Garage.

Table 8. Verification Remit: Passive Sub Slab Venting – Houses & Integral Garages

Item	Inspection Remit	Requirement
Open Void	Verifier ¹ to Inspect – All Plots	Minimum 225mm deep.
Sleeper Wall Cross Ventilation	Verifier ¹ to Inspect – All Plots	See Appendix B - Missed blockwork providing >6,000mm ² vent area located.
Telescopic Vents, Air Bricks	Verifier to Inspect – All Plots	See Appendix B - Each providing >6,000mm ² vent area, bottom of air brick constructed at least one brick course above finished ground level (150mm to top of air brick).
Notes: 1. In lieu of the Verifier attending site specifically to inspect these items, the Ground Worker may provide photographic evidence of the open void depth (photo to include scale / ruler) and cross-venting provision to sleeper walls.		

⁸ Responsible party to be agreed prior to works commencing.

Table 9. Verification Remit: Gas Resistant – Houses & Integral Garages

Item	Frequency of Inspection ^{1&2}	Requirement
Substrate Preparation	Installation Contractor to inspect substrate and confirm it has been prepared appropriately prior to installation of the gas resistant membrane.	See Section 4.3 and 5.2.
Perimeter	Verifier to inspect full extent (100%) of the perimeter gas resistant membrane and confirm continuity across the cavity. Gas resistant membrane to be visually inspected to ensure no holes, rips or tares are present.	See Sections 4 and 5.
Infill	Verifier to conduct a thorough visual inspection of 100% of the installed gas resistant membrane for holes, rips or tares. All (100%) joints/laps/penetrations/detailing to be subject to physical (probe) testing to ASTM D4437.	See Sections 4 and 5.
Notes: 1. It is the responsibility of the Client / Installation Contractor to co-ordinate verification visits such that 100% of the perimeter and infill gas resistant membrane install is available for inspection. 2. Additional specific requirements for the gas resistant membrane construction are provided in Section 5, which should be read in conjunction with Table 9.		

6.4 Verifiers' Site Visit Inspection Forms

The Verifier will record on the site visit inspection forms:

- All independent visual inspections pertaining to the passive sub-slab venting (see Table 8);
- All independent visual inspections and/or physical testing of the gas resistant membrane (see Table 9);
- All defects / non-compliances to the passive sub-slab venting system / gas resistant membrane and confirm these have been communicated to the Ground Works Contractor (passive sub-slab venting) or Installation Contractor (gas resistant membrane);
- Inform the Installation Contractor of any required repairs to the gas resistant membrane and oversee these repairs, including oversight of required re-tests (see Section 6.5); and
- Obtain a selection of representative photograph for inclusion in the Verification Inspection Report.

6.5 Defects and Damage

The Verifier will inspect (via a combination of visual observation and physical testing, see Table 9) 100% of the gas resistant membrane and detailing areas (pipe penetrations, stanchions etc.), after placement and jointing, for damage. In areas that fail the inspection, the Verifier will inform the Installation Contractor, who will then be required to complete a repair.

Work will not proceed with any materials which will cover locations that have been identified to require repair until the Verifier has 'accepted' the subsequent repair. The number of repairs required will be recorded and presented in the Verification Inspection Report.

Minimally, the Verifier will ensure that:

- The gas resistant membrane is placed in such a manner that it has not been damaged at the point of inspection; and
- Any tears, punctures, holes, thin spots, gouges, and protuberances etc., are repaired.

6.6 Verification Inspection Reporting

A Verification Inspection Report will be produced by the Verifier on completion of the gas mitigation installation and submitted to the Client. Minimally the report will include:

- Reference/Name of Job;
- Scope of Work Undertaken (as per the Verification Remit, see Section 6.3 – Tables 8 and 9);
- Copies of the Verifiers' Site Inspection Forms for all visits;
- Records of any repairs, failures and retests;
- Confirmation of utilised materials and general detailing procedures; and
- Photographic evidence of the general installation observations.

7 Construction Phase Management

7.1 Gas Resistant Membrane - Management of Follow-On Works / Contractors

Sections 4 and 5 set out the mitigation measures required to manage ground gas risks at the site. Whilst protection to the mitigation has been included within the design, without proper site management, damage could still occur. It is therefore important that:

- Sufficient time is allowed within the build programme for the construction of the ground gas mitigation measures and all associated verification works; and
- Following installation of the ground gas mitigation, measures are put in place to limit the potential for follow-on damage, which per the guidance provided in CIRIA Report C801 – Hazardous Ground Gases: A Site Management Guide (CIRIA, 2021) include:
 - Prompt (within 2-working days) placement of insulation board on top of the gas resistant membrane to the residential houses (once verification is confirmed);
 - Prompt (within 2-working days) placement of the loose-laid 1200g polythene sheet on top of the gas resistant membrane to the integral garages (once verification is confirmed);
 - In the intervening period, the installed area(s) of gas resistant membrane should be considered ‘clean / restricted work areas’, with no dirty boots, no storage of materials/equipment/waste etc. and no trafficking of machinery permitted; and
 - The use of sharp tools and/or cutting activities should not be completed on top of the gas resistant membrane. If unavoidable, the Verifier should be informed and the area reinspected following completion of the activity.
 - Fixings through the gas resistant membrane are not permitted. If unavoidable a sealing gasket detail should be agreed with MEC prior to works proceeding.

The measures outlined above should limit the potential for damage to the gas membrane. However, should MEC identify post-verification damage to the constructed gas membrane which results from the membrane not being promptly protected we reserve the right to require ‘picture framing’ (i.e. infill over-bridging with a new sheet of membrane) of the damaged area.

In any event, should damage occur to the gas resistant membrane this should be notified immediately to the Installation Contractor and Verifier for repair and reinspection.

7.2 Sealing of Service Ducts

The open annulus to all service ducts which pass through the floor slab construction should be sealed. The responsibility for this is with the Developer, or their appointed designate. Sealing of individual flexible cables and/or ducted cable bundles can be difficult to achieve and, where possible, should be avoided by design. A proprietary sealant system should be utilised for the sealing of all ground level ducts, e.g. <https://juta.co.uk/gas-protection-membranes/gp-ductseal-hg/> (material data sheet provided in Appendix C). Where/as required, duct sealing systems should be approved by statutory utility service provider(s).

7.3 Drinking Water Supply Pipes

Any specific requirements for buried utility pipes should be discussed and agreed with service providers in advance of construction works proceeding.

7.4 Placement of Topsoil / Sub-Soil

Based on the intrusive works completed by Shields Wilson, no requirement for the provision of capping soils has been identified, either in relation to private gardens or any areas of communal soft landscaping.

If site levels and/or planting requires the placement of topsoil / subsoil in areas of private gardens / communal soft landscaping, all material must be verified as chemically suitable prior to placement.

The recommended remit of verification testing is one sample per 250m³ of material placed and/or one sample per residential Plot (whichever remit of testing is greater). All testing should be compared to Generic Assessment Criteria based on a 'Residential With Consumption of Homegrown Produce' end use.

Any imported material should be ideally from a single-source site, preferably Greenfield. In advance of material import, test data for the proposed material should be provided to MEC for review – noting the context of the development i.e. determinants should not exceed Generic Assessment Criteria based on a 'Residential With Consumption of Homegrown Produce' end use.

All material imported to site must be moved under a chain of custody / duty of care process – i.e. clearly documenting where the material came from, its volume and its delivery address (to Site).

7.5 Unforeseen Contamination

In the event of any suspicious ground conditions being encountered (e.g. soils which exhibit visual or olfactory indicators of contamination) works in that area should cease and the area isolated until the material has been inspected by an Environmental Consultant (and if necessary sampled / tested for determination of any required further action). All such incidents should be reported to the Local Planning Authority.

8 Health and Safety

The proposed site of the residential development is located on organic rich ground. The potential for ground gas (primarily elevated methane / carbon dioxide and depleted oxygen) should be noted to all Contractors.

During construction works, controls should be put in place to ensure appropriate levels of personal hygiene, e.g. use of gloves, regular hand washing, eating restricted to designated areas etc.

All below ground activities should be accompanied by Risk Assessments and Method Statements which recognise the potential hazard(s) associated with ground gases / previously developed sites, setting out the controls which will be put in place to manage the associated risk during the construction phase.

9 Regulatory Approvals

It is the responsibility of the Client (or their appointed Planning Consultant) to submit a copy of this 'Phase 2 – Environmental Interpretative Report' for approval to the Local Authority (as/if required per Planning Conditions) and any development Warranty Provider. **It is strongly recommended that the contents of this report are not acted on until approval has been obtained.**

Appendix A – Shields Wilson Ground Investigation Report

GROUND INVESTIGATION REPORT

UPON

LAND OFF CRADGE BANK

SPALDING, PE11 3AQ

PROJECT No: SW 24-331

DOCUMENT REF: SW 24-331-REP-01-A



EAST ANGLIAN CIVILS

12 ENTERPRISE WAY,

PINCHBECK,

SPALDING,

PE11 3YR



CONTENTS

1. INTRODUCTION.....	2
2. LOCATION & DESCRIPTION OF SITE	3
2.1. Site Location.....	3
2.2. Site History Description	4
2.3. Site Description	4
3. SITE WORK.....	5
4. GROUND CONDITIONS.....	6
APPENDIX A.....	7
APPENDIX B.....	9
APPENDIX C	11
APPENDIX D	19
APPENDIX E.....	38
APPENDIX F	47

1. INTRODUCTION

Acting upon the instruction of East Anglian Civils we attended site during April 2025, the purpose being to observe the underlying ground conditions, witness the presence or not of any detectable contamination and extract suitable samples for analysis.

Mechanically excavated trial pits took place, and our comments are based upon a visual inspection of the disturbed samples obtained and the in-situ strata within the trial pits.

We would suggest the groundwater conditions may vary seasonally and that the water levels as recorded at the time of explorations should not necessarily be taken as being constant as they may be subject to fluctuations.

The opinions and comments expressed within this report are based upon ground conditions encountered in the trial pits excavated at the time of our visit.

This report has been prepared for the named client above and should not be relied upon by any other parties, with the exception of the client's professional advisors, for any use without the express written permission of Shields Wilson Limited.

Revision A – Further samples collected & testing for contamination analysis and assessment.

2. LOCATION & DESCRIPTION OF SITE

2.1. Site Location

The site is situated to the West of Cradge Bank, Spalding.

Appropriate national grid reference TF 234201.



2.2. Site History Description

Desktop study of publicly available historical maps has been undertaken and found the site has not been previously developed and has stood as agricultural fields.

An extract of OS Lincolnshire map, 1950, is contained in Appendix A.

It is known that in more recent history the site has been utilised as horticultural land with a large portion of the site being occupied by glass houses up to the last 5 years.

2.3. Site Description

The site currently stands as empty field, which has recently been used as a materials store for the nearby housing development.

3. SITE WORK

Seven trial pits were excavated with the use of a 13T mechanical excavator.

A visual inspection of the disturbed samples was undertaken. A description of the strata and test results are shown on sheets SW24-331/TP01 thru TP07. The Trial pit logs are contained within Appendix C.

The historical investigation indicates that no previous development has been present.

The soil demonstrated no identifying odours or markers for known man-made contamination. However, as the site had been used as a materials store for previous nearby development, it has been requested by South Holland District Council that this site be tested for any form of contamination.

A photographic record of site explorations is contained within Appendix D.

The results of laboratory testing can be found in Appendix E.

Revision A – Seven further hand dug trial pits were undertaken to collect further samples.

The hand dug trial pits were taken local to the previously excavated pits and encountered similar conditions. The samples taken are recorded on the main TP Logs.

Results of laboratory testing can be found in Appendix F.

The and dug trial pits demonstrated no visual or olfactory signs of contamination.

4. GROUND CONDITIONS

The sequence of the strata encountered during the investigation generally conforms to the geology identified by the desk top studies. The strata encountered in all explorations were very similar and demonstrated a consistent geological profile across the site.

TP01

There were minor roots within the top 3-400mm of the excavation, with a clean silt beneath this, down to a depth of 2.5m.

TP02

Within the edge of the excavation there was an existing tree root. Light brown orangey silt down to a depth of 2.5m.

TP03

0-400mm was a stoney light brown silt with the sandy silt beneath this to a depth of 650mm. The ground conditions changed to a orangey brown silt to a depth of 1300mm, that became darker with depth, trial pit terminated at 2.5m.

TP04

0-400mm was a stoney light brown silt, 400-1200mm was a dark silty soil with very fine stone fragments. 1200-2000mm was a dark brown silt followed by a orangey brown silt to a depth of 2.6m which was slightly cohesive. There were minor tree roots at a depth of 1m below existing ground level.

TP05

0-400mm was a stoney light brown silt, 400-2600mm orangey brown silt which was slightly cohesive and becoming wetter with depth. There were minor tree roots at a depth of 1m below existing ground level.

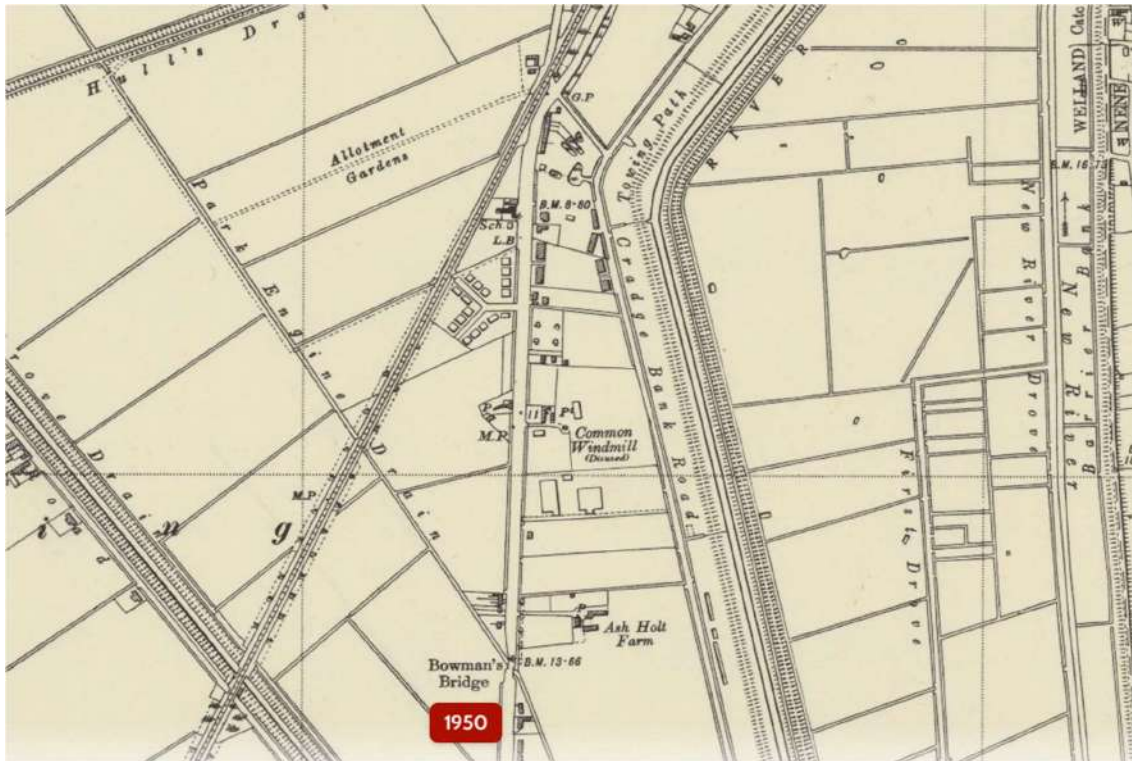
TP06

0-400mm was a stoney light brown silt, 400-2600mm orangey brown silt which was becoming wetter with depth and the sides of the excavation began to collapse at a depth of 2m below existing ground level.

TP07

0-300mm was a stoney light brown silt which changed to a fine gravelly silt with minor inclusions of orangey silt to a depth of 1300mm. 1300-2400mm was a light brown silt with orange inclusions. 2400-2600mm turned to a stiff grey clay.

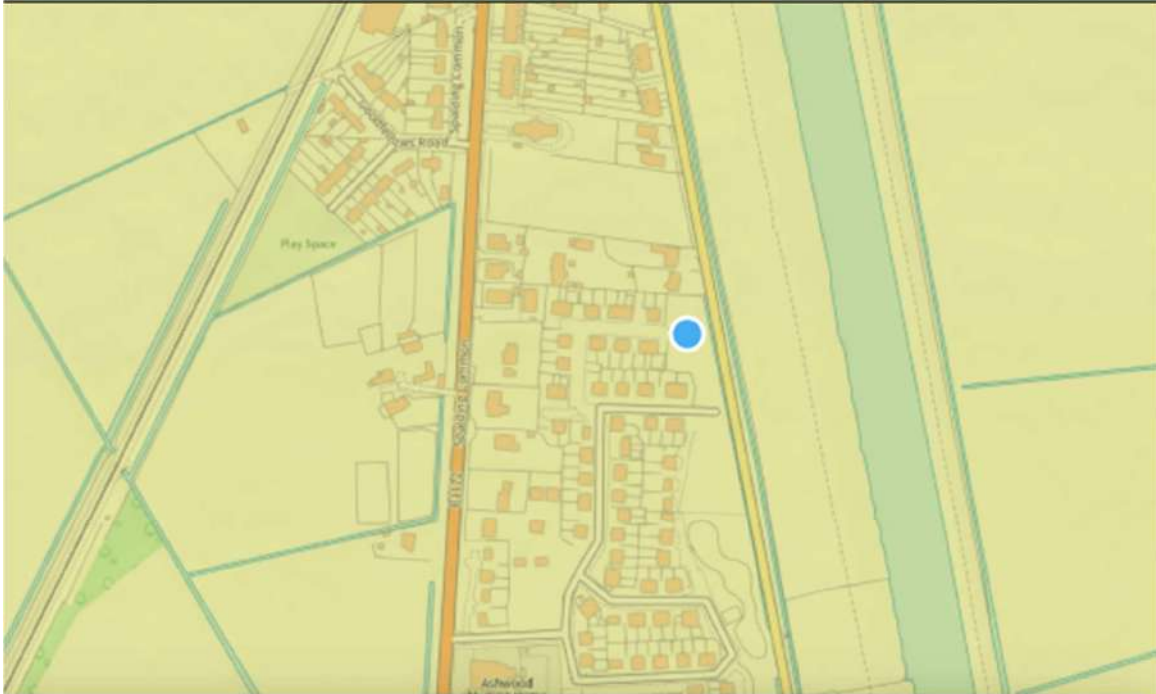
APPENDIX A



APPENDIX B



Geology Viewer



Geology



Bedrock geology



Oxford Clay Formation - Mudstone. Sedimentary bedrock formed between 166.1 and 157.3 million years ago during the Jurassic period.

[More Information](#)

Superficial deposits



Tidal Flat Deposits - Clay and silt. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.

[More Information](#)

Extract British Geological Society Maps

APPENDIX C

SHIELDS WILSON e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING				Project No. SW24-331		Log Ref TP01	
				Exploration Method 13 TON EXCAVATOR		Site Coordinates TF 234 201	
Location CRADGE BANK, SPALDING LINCOLNSHIRE				Carried Out For EAST ANGLIAN CIVILS		Date Undertaken 31/03/25	
						Logged By JL	

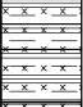
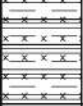
Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	Mackintosh Probe
				Depth	Sample Reference	Sample Type No.		
STONEY LIGHT BROWN SILT			(400mm)	200mm	S1	D 1	MS	
			400mm	400mm	S4	D 4	TPH	
SANDY SILT			(200mm)				AS	
			600mm					
LIGHT BROWN CLAYEY SILT			(1900mm)	800mm	S2	D 2	MS MC TOC	
			2500mm	1500mm	S3	D 3	MC TOC	

MS - METALS SUITE
MC - MOISTURE CONTENT
TOC - TOTAL ORGANIC CARBON
TPH - TOTAL PETROL HYDROCARBONS
AS - ASBESTOS SCREENING
D - DISTURBED SAMPLE

Remarks

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SHIELDS WILSON e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING		Project No. SW24-331		Log Ref TP02	
		Exploration Method 13 TON EXCAVATOR			
Location CRADGE BANK, SPALDING LINCOLNSHIRE		Carried Out For EAST ANGLIAN CIVILS		Date Undertaken 31/03/25	
				Logged By JL	

Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	Mackintosh Probe
				Depth	Sample Reference	Sample Type No.		
STONEY LIGHT BROWN SILT			(400mm)	200mm	S1	D 1	MS	
			400mm	S4	D 4	TPH AS		
SANDY SILT			(300mm)					
			700mm					
DARK BROWN SILTY CLAY				800mm	S2	D 2	MS MC TOC	
LAND DRAIN @ 1100mm BGL.								
			(800mm)					
			1500mm	1500mm	S3	D 3	MC TOC	
LIGHT BROWN ORANGEY SILT			(1000mm)					
			2500mm					

MS - METALS SUITE
MC - MOISTURE CONTENT
TOC - TOTAL ORGANIC CARBON
TPH - TOTAL PETROL HYDROCARBONS
AS - ASBESTOS SCREENING
D - DISTURBED SAMPLE

Remarks

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SHIELDS WILSON e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING				Project No. SW24-331		Log Ref TP03	
				Exploration Method 13 TON EXCAVATOR			
Location CRADGE BANK, SPALDING LINCOLNSHIRE				Carried Out For EAST ANGLIAN CIVILS		Date Undertaken 31/03/25	
				Site Coordinates TF 234 201		Logged By JL	

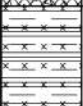
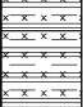
Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	Mackintosh Probe
				Depth	Sample Reference	Sample Type No.		
STONEY LIGHT BROWN SILT			(400mm) 400mm	200mm	S1	D 1	MS	
SANDY SILT			(250mm) 650mm	400mm	S4	D 4	TPH AS	
ORANGEY BROWN SILT			(650mm) 1300mm	800mm	S2	D 2	MS MC TOC	
DARK BROWN SILT			(800mm) 2100mm	1500mm	S3	D 3	MC TOC	
LIGHT GREY SILT			(400mm) 2500mm					

MS - METALS SUITE
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TOC - TOTAL ORGANIC CARBON
TPH - TOTAL PETROL HYDROCARBONS
AS - ASBESTOS SCREENING
D - DISTURBED SAMPLE

Remarks

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SHIELDS WILSON e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING				Project No. SW24-331		Log Ref TP04	
				Exploration Method 13 TON EXCAVATOR			
Location CRADGE BANK, SPALDING LINCOLNSHIRE				Carried Out For EAST ANGLIAN CIVILS		Date Undertaken 31/03/25	
				Site Coordinates TF 234 201		Logged By JL	

Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	Mackintosh Probe
				Depth	Sample Reference	Sample Type No.		
STONEY LIGHT BROWN SILT			(400mm) 400mm	200mm	S1	D 1	MS	
				400mm	S4	D 4	TPH AS	
DARK SOIL WITH VERY FINE STONEY FRAGMENTS			(800mm) 1200mm	800mm	S2	D 2	MS MC TOC	
TREE ROOTS @ 1000mm BGL			(800mm) 1200mm					
DARK BROWN SILT SLIGHTLY CLAYEY			(800mm) 2000mm	1500mm	S3	D 3	MC TOC	
ORANGEY BROWN SILT SLIGHTLY COHESIVE			(600mm) 2600mm					

MS - METALS SUITE
MC - MOISTURE CONTENT
TOC - TOTAL ORGANIC CARBON
TPH - TOTAL PETROL HYDROCARBONS
AS - ASBESTOS SCREENING
D - DISTURBED SAMPLE

Remarks

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SHIELDS WILSON e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING				Project No. SW24-331		Log Ref TP05	
				Exploration Method 13 TON EXCAVATOR			
Location CRADGE BANK, SPALDING LINCOLNSHIRE				Carried Out For EAST ANGLIAN CIVILS		Date Undertaken 31/03/25	
				Site Coordinates TF 234 201		Logged By JL	

Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	Mackintosh Probe
				Depth	Sample Reference	Sample Type No.		
STONE LIGHT BROWN SILT			(400mm) 400mm	200mm	S1	D 1	MS	
ORANGEY BROWN SILT SLIGHTLY COHESIVE (MOLDABLE) WITH STONEY FRAGMENTS			400mm	400mm	S4	D 4	TPH AS	
TREE ROOTS @ 1000mm BGL.			(800mm) 1200mm	800mm	S2	D 2	MS MC TOC	
ORANGEY BROWN SILT BECOMING WETTER WITH DEPTH			(1400mm) 2600mm	1500mm	S3	D 3	MC TOC	

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MC - MOISTURE CONTENT
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TPH - TOTAL PETROL HYDROCARBONS
AS - ASBESTOS SCREENING
D - DISTURBED SAMPLE

Remarks

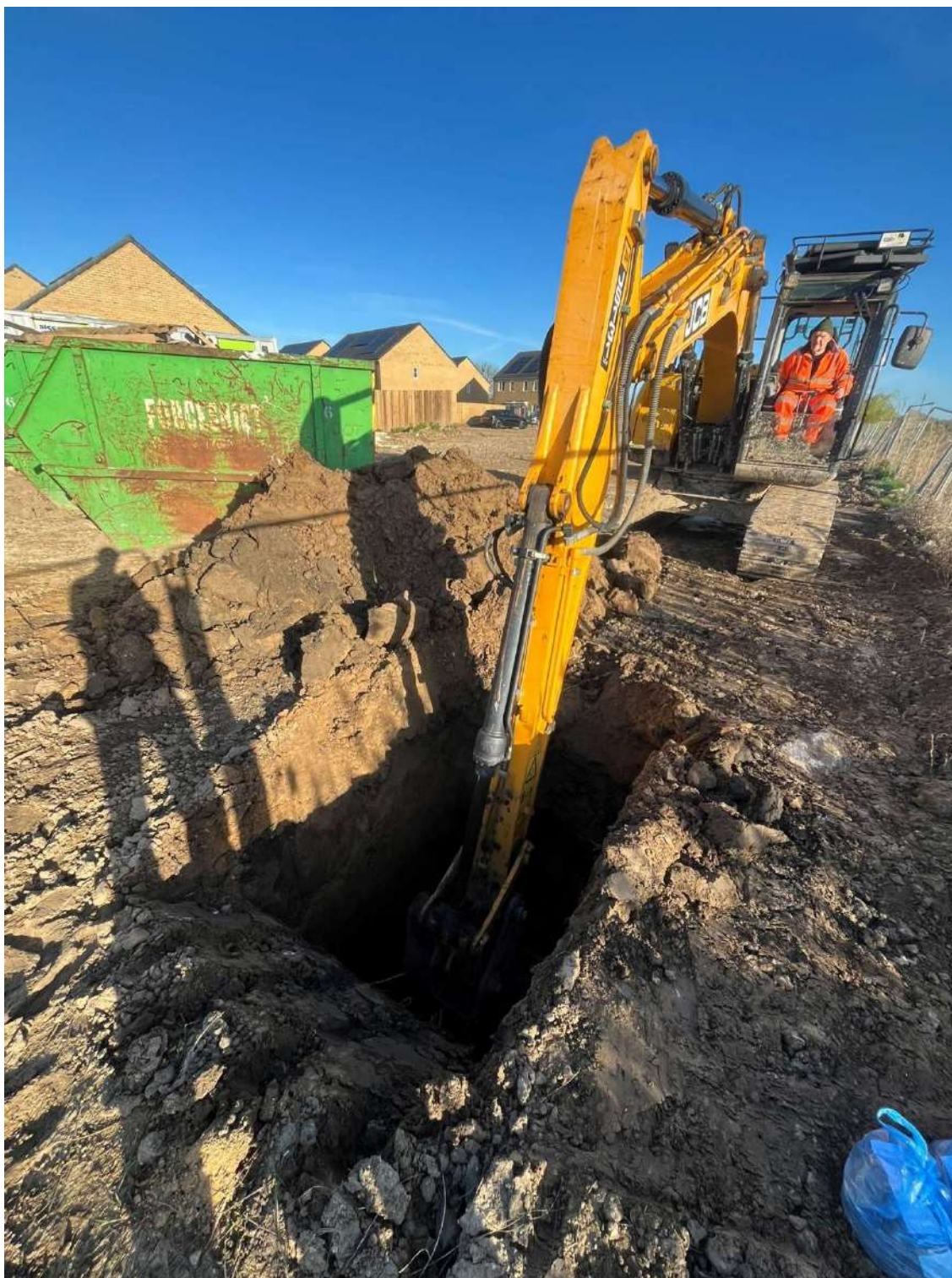
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SHIELDS WILSON e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING		Project No. SW24-331		Log Ref TP07				
		Exploration Method 13 TON EXCAVATOR		Site Coordinates TF 234 201				
Location CRADGE BANK, SPALDING LINCOLNSHIRE		Carried Out For EAST ANGLIAN CIVILS		Date Undertaken 31/03/25				
				Logged By JL				
Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	Mackintosh Probe
				Depth	Sample Reference	Sample Type No.		
STONEY LIGHT BROWN SILT			(300mm) 300mm	200mm	S1	D 1	MS	
FINE GRAVELY SOIL WITH SLIGHT GRANULAR BROWN SILT			400mm	400mm	S4	D 4	TPH AS	
			800mm		S2	D 2	MS MC TOC	
			(1000mm) 1300mm					
LIGHT GREY ORANGEY SILT WITH GRANULAR INCLUSIONS				1500mm	S3	D 3	MC TOC	
			(1100mm) 2400mm					
GREY CLAY			(200mm) 2600mm					
MS - METALS SUITE MC - MOISTURE CONTENT TOC - TOTAL ORGANIC CARBON TPH - TOTAL PETROL HYDROCARBONS AS - ASBESTOS SCREENING D - DISTURBED SAMPLE								
Remarks								

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APPENDIX D



TP01 – PLOT 7



TPO1 – PLOT 7



TP02 – PLOT 6



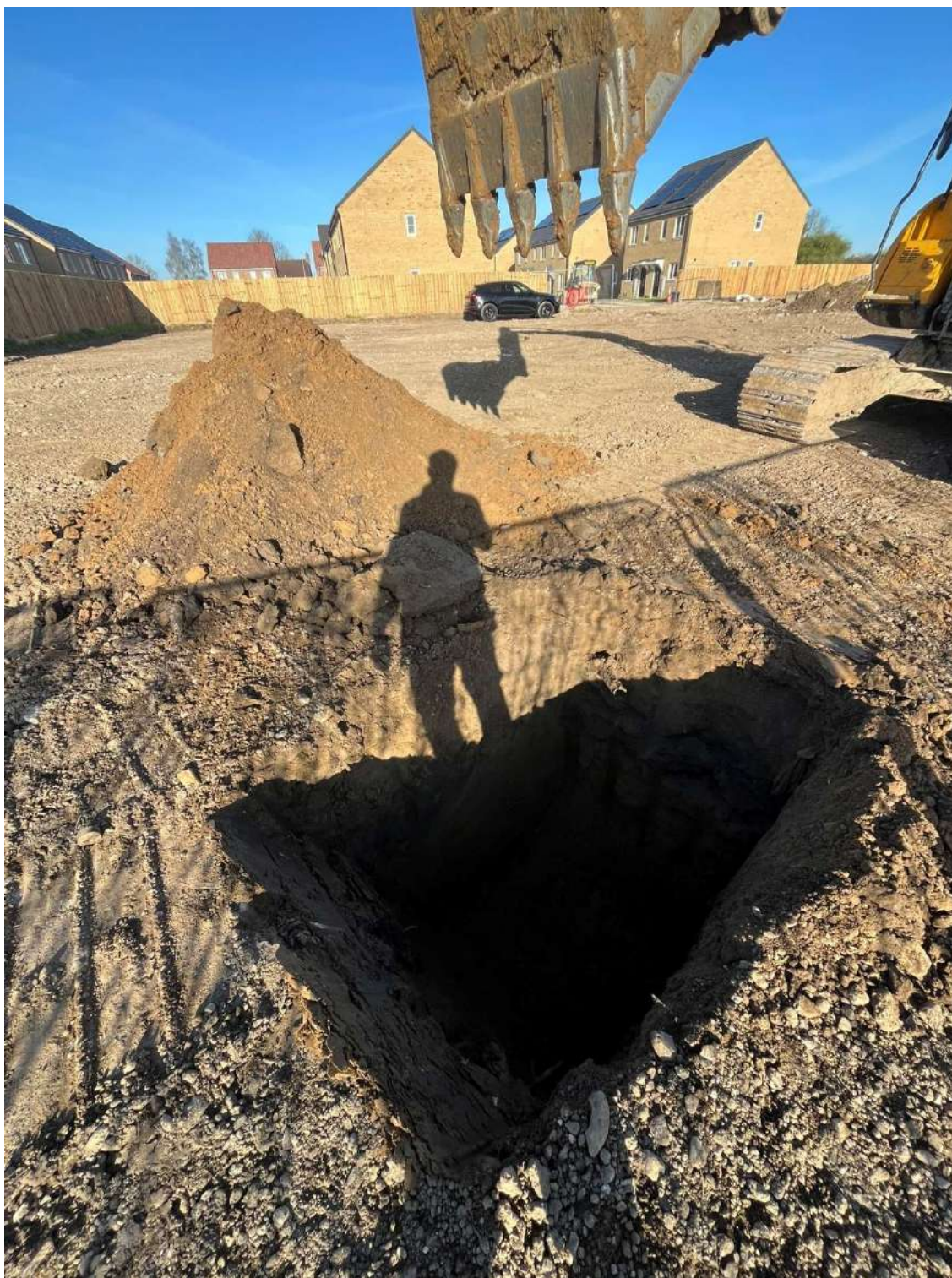
TP02 – PLOT 6



TP02 – PLOT 6



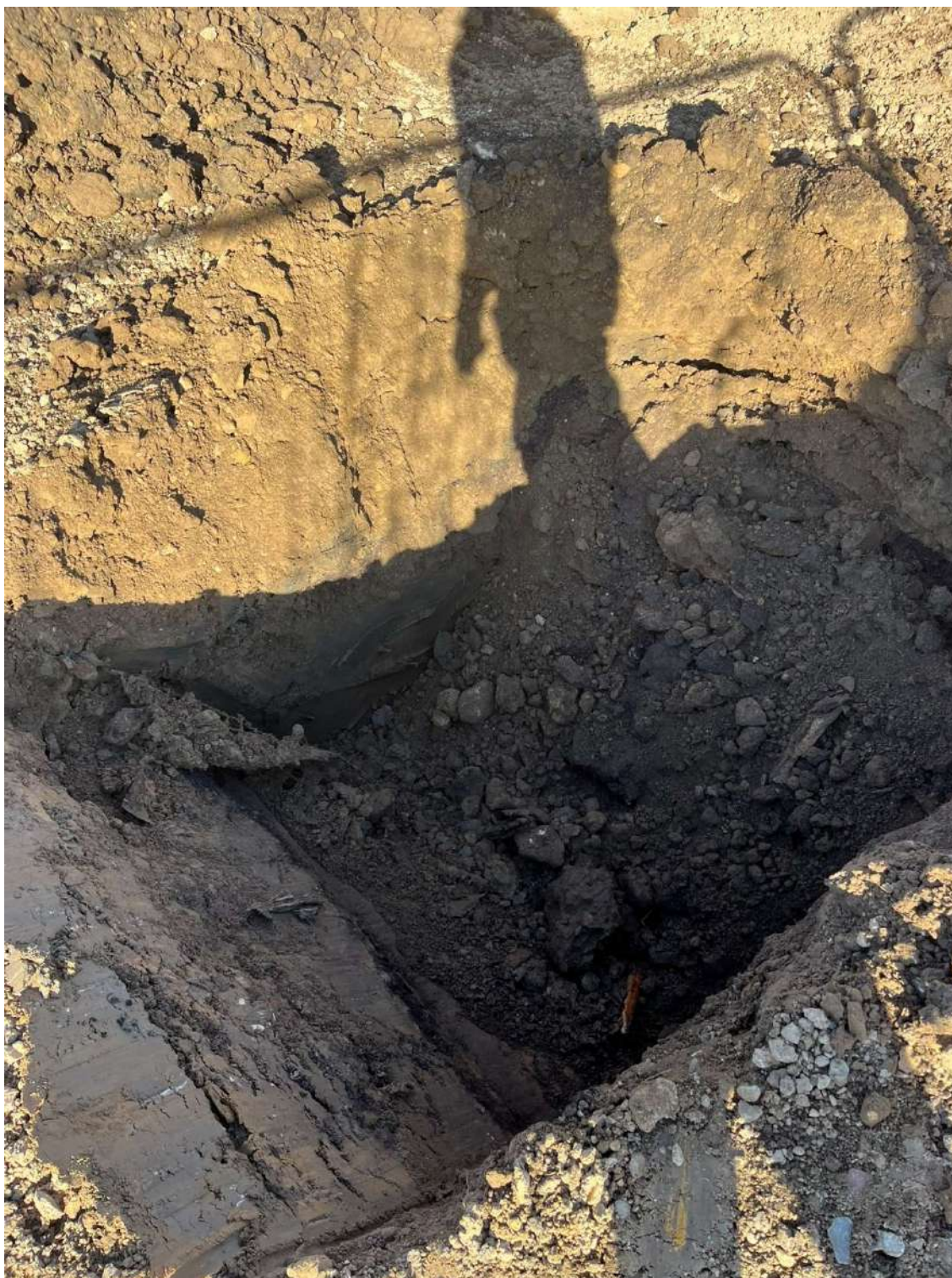
TP03 – PLOT 5



TPO3 – PLOT 5



TP03 – PLOT 5



TP04 – PLOT 4



TP04 – PLOT 4



TP05 – PLOT 3



TP05 – PLOT 3



TP06 – PLOT 2



TP06 – PLOT 2



TP06 – PLOT 2



TP07 – PLOT 1



TP07 – PLOT 1



TP07 – PLOT 1

APPENDIX E



Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	25-13924-2		
Initial Date of Issue:	01-May-2025	Date of Re-Issue:	02-May-2025
Re-issue Details:	This report has been revised and directly supersedes 25-13924-1 in its entirety		
Client:	Lucion Ground Engineering Limited		
Client Address:	Newark Road Peterborough Cambridgeshire PE1 5UA		
Contact(s):	Matt Hartnup		
Project	132555 Land Off Cradge Bank		
Quotation No.:	Q25-38179	Date Received:	28-Apr-2025
Order No.:	21048	Date Instructed:	28-Apr-2025
No. of Samples:	21		
Turnaround (Wkdays):	9	Results Due:	09-May-2025
Date Approved:	02-May-2025		
Approved By:			
Details:	David Smith, Technical Director		
For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report			

Results - Soil

Project: 132555 Land Off Grudge Bank									
Client: Lucdon Ground Engineering Limited		Chemtest Job No.:		25-13924					
Quotation No.: Q25-38173		Chemtest Sample ID.:		25-13924		25-13924		25-13924	
Order No.: 21048		Client Sample Ref.:		1955607		1955608		1955609	
		Sample Location:		TP01 Plot 7		TP01 Plot 7		TP01 Plot 7	
		Sample Type:		SOIL		SOIL		SOIL	
		Top Depth (m):		0.20		0.50		1.50	
		Accred.		LOO					
		NVDL Code							
Decontaminated		Moisture		N 2030		18			
Aromatic		M 2455		mg/kg 0.5		14			
Cadmium		M 2455		mg/kg 0.10		0.15			
Chromium		M 2455		mg/kg 0.5		27			
Copper		M 2455		mg/kg 0.50		340			
Mercury		M 2455		mg/kg 0.05		0.06			
Nickel		M 2455		mg/kg 0.50		30			
Lead		M 2455		mg/kg 0.50		35			
Selenium		M 2455		mg/kg 0.25		0.60			
Zinc		M 2455		mg/kg 0.50		80			
Soil Colour		N 2040		N/A		Brown			
Other Material		N 2040		N/A		Stores and Roots			
Soil Texture		N 2040		N/A		Clay			
Total Organic Carbon		M 2525		%		0.20			

Results - Soil

Project: 132666 Lantau Off-Cracking Bank									
Client: Lyclon Ground Engineering Limited		Chemical Job No.:		Chemical Sample ID.:					
Quotation No.: Q25-38179		Client Sample Ref.:		Quotation No.: Q25-38179					
Order No.: 210428		Sample Location:		Order No.: 210428					
		Sample Type:							
		Top Depth (m):							
HWOL Code		Assayed		SOF		Units		LCD	
Deformation		N	20400	%	0.620				
Moisture		M	24555	mg/kg	0.5	6.5	8.1		
Arsenic		M	24555	mg/kg	0.5	<0.10	<0.10		
Cadmium		M	24555	mg/kg	0.5	10	23		
Chromium		M	24555	mg/kg	0.50	9.8	8.8		
Copper		M	24555	mg/kg	0.85	<0.05	<0.05		
Mercury		M	24555	mg/kg	0.50	9.6	21		
Nickel		M	24555	mg/kg	0.50	15	11		
Lead		M	24555	mg/kg	0.25	<0.25	0.36		
Selenium		M	24555	mg/kg	0.50	27	54		
Zinc		M	20440	mg/kg	0.50	NA	NA		
Soil Colour		N	20440		NA	Brown	Brown		
Other Material		N	20440		NA	Stones and Roots	Stones and Roots		
Soil Texture		N	20440		NA	Sand	Sand		
Soil Organic Carbon		M	26325	%	0.20	[A] 0.72	[A] 1.3		

Results - Soil

Project: 32555 Land Off Grudge Bank		Client: Lixion Ground Engineering Limited		Chemtest Job No.:		25-13924	25-13924	25-13924
Quotation No.: Q25-38179		Chemtest Sample ID.:		1955626		1955626	1955626	1955627
Order No.: 21048		Client Sample Ref.:		31		31	32	33
		Sample Location:		TP27 Plot 1		TP27 Plot 1	TP27 Plot 1	TP27 Plot 1
		Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):	0.20	0.20	0.20	0.20	0.80	1.50
		APPROVED	RECEIVED	DATE	TIME	DATE	TIME	DATE
Moisture	%	30.30	30.30	23	30	23	30	30
Arsenic	mg/kg	0.5	3.2	14		14		
Cadmium	mg/kg	0.10	0.20	20		20		
Chromium	mg/kg	0.5	11	24		24		
Copper	mg/kg	0.50	5.7	20		20		
Mercury	mg/kg	0.05	0.05	0.06		0.06		
Nickel	mg/kg	0.50	13	23		23		
Lead	mg/kg	0.20	4.8	24		24		
Selenium	mg/kg	0.25	0.46	0.79		0.79		
Zinc	mg/kg	0.50	27	73		73		
Soil Colour		N/A	Brown	Brown		Brown		Brown
Other Material		N/A	Stones and polystyrene	Stones and polystyrene		Stones and polystyrene		Stones and polystyrene
Soil Texture		N/A	Sand	Sand		Sand		Sand
Total Organic Carbon	%	0.20		0.59		0.59		0.59

Deviations

In accordance with UKAS Policy on Deviating Samples TP0 63, Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1965608	S2		TP01 Plot 7		A	Plastic Tub 500g
1965609	S3		TP01 Plot 7		A	Plastic Tub 500g
1965611	S2		TP02 Plot 6		A	Plastic Tub 500g
1965612	S3		TP02 Plot 6		A	Plastic Tub 500g
1965614	S2		TP03 Plot 5		A	Plastic Tub 500g
1965615	S3		TP03 Plot 5		A	Plastic Tub 500g
1965617	S2		TP04 Plot 4		A	Plastic Tub 500g
1965618	S3		TP04 Plot 4		A	Plastic Tub 500g
1965620	S2		TP05 Plot 3		A	Plastic Tub 500g
1965621	S3		TP05 Plot 3		A	Plastic Tub 500g
1965623	S2		TP06 Plot 2		A	Plastic Tub 500g
1965624	S3		TP06 Plot 2		A	Plastic Tub 500g
1965626	S2		TP07 Plot 1		A	Plastic Tub 500g
1965627	S3		TP07 Plot 1		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters Included	Method summary	Water Added.
2030	Moisture and Stone Content of Soils (Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description (Requirement of MCERTS)	Soil description	As received soil is described based upon BS5530	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

Uncertainty of measurement for the determinands tested are available upon request.

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ prior to analysis.

All Asbestos testing is performed at the indicated laboratory.

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

NEW_ASB Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL

DURHAM Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - The required amount of sample for analysis was not received

H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

APPENDIX F



Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.: 25-20937-1

Initial Date of Issue: 30-Jun-2025

Re-Issue Details:

Client Lucion Ground Engineering Limited

Client Address: Newark Road
Peterborough
Cambridgeshire
PE1 5UA

Contact(s): Matt Hartnup

Project 134920 Cradge Bank

Quotation No.: Q25-38695

Date Received: 25-Jun-2025

Order No.: 22027

Date Instructed: 25-Jun-2025

No. of Samples: 7

Turnaround (Wkdays): 5

Results Due: 01-Jul-2025

Date Approved: 30-Jun-2025

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Project: 134920 Cradque Bank

Page 2 of 5

Test Methods

SOP	Title	Parameters Included	Method summary	Water Added.
2030	Molsture and Stone Content of Soils(Requirement of MCERTS)	Molsture content	Determination of molsture content of soil as a percentage of its as received mass obtained at <30°C.	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2690	EPH A/A Split	Aliphatics: >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C40 Aromatics: >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C40	Acetone/Heptane extraction / GCxGC FID detection	
2780	VPH A/A Split	Aliphatics: >C5-C6, >C6-C7,>C7-C8,>C8-C10 Aromatics: >C5-C7,>C7-C8,>C8-C10	Water extraction / Headspace GCxGC FID detection	

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
IS	Insufficient Sample
US	Unsuitable Sample
NE	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection
Text example All items indicated in <i>italic font</i> represent customer-supplied information that may not be independently verified by the laboratory.	
This report shall not be reproduced except in full, and only with the prior approval of the laboratory.	
Any comments or interpretations are outside the scope of UKAS accreditation.	
The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.	
Uncertainty of measurement for the determinands tested are available upon request.	
None of the results in this report have been recovery corrected.	
All results are expressed on a dry weight basis.	
The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.	
For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ prior to analysis.	
All Asbestos testing is performed at the indicated laboratory.	
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.	
NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - The required amount of sample for analysis was not received
- H - Appropriate cooling measures were not taken for sample transportation

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UL - Unspecified Liquid

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FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix B – Ventilation Markups

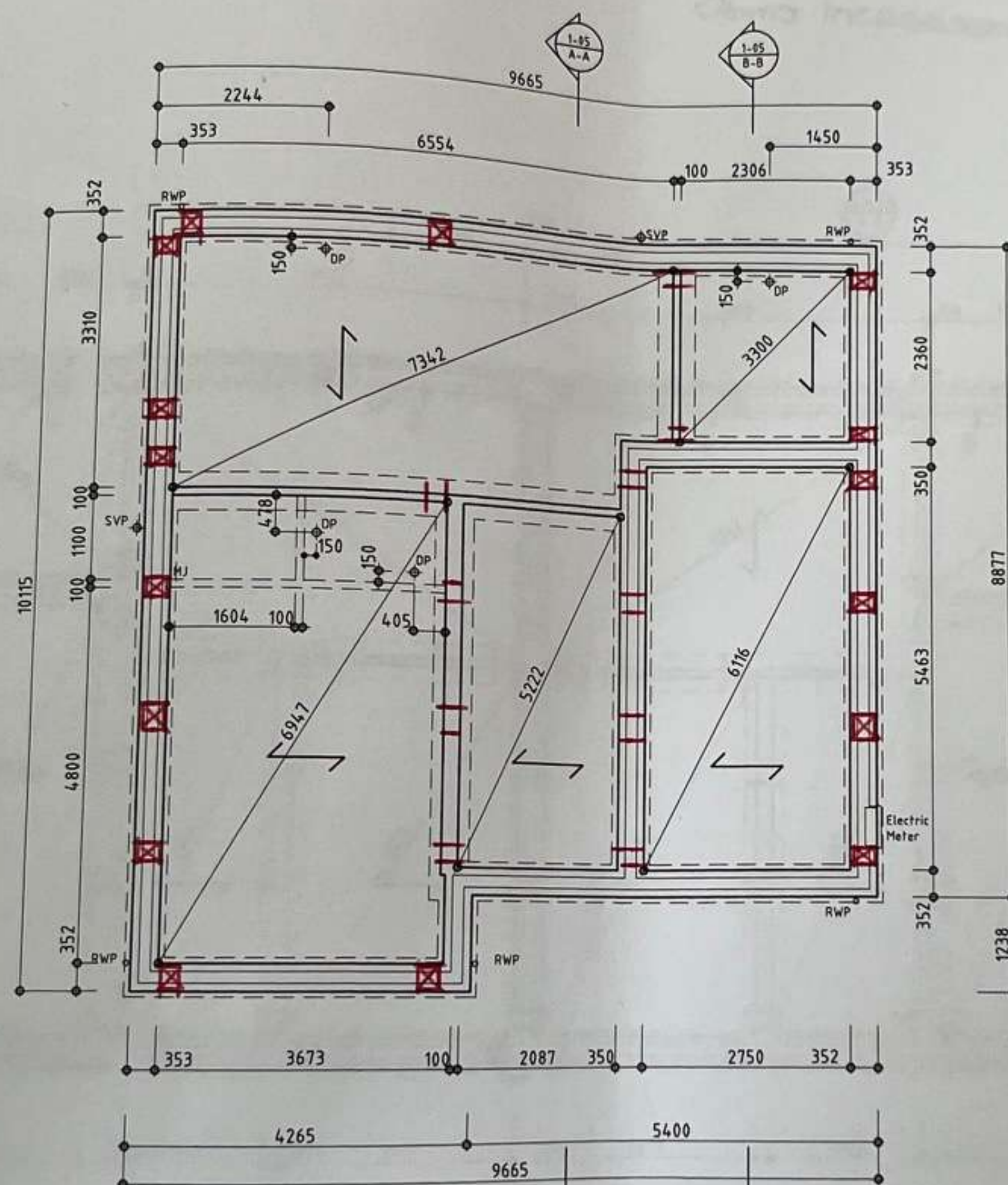
Ventilation

$(9.665 + 10.115) \times 2 = 39.56m \times 1500mm^2/m = 59,340m^2$ OF VENTILATION. VENTS $6,450mm^2$ EACH 10W REQUIRED FOR BUILDING REGULATIONS.

INCREASE DUE TO GARAGE POSITION & GROUND LINE - PROVIDED 16W @ $6,450mm^2$ 103,200mm² 74% INCREASE.

Do NOT scale from this drawing.
This drawing is copyright and may not be altered, traced, or used for any purpose other than that for which it is issued without written permission from the copyright holder.
The Contractor is to check all dimensions on site and report discrepancies to the designer prior to commencing work.
All details shown on this drawing are based upon typical site conditions. No responsibility can be accepted for abnormal conditions unless reported to the designer, so that amendments may be considered.
All works and materials used are to be in accordance with current British Standards, Agreement Certificates and Manufacturers Instructions.
All Building Regulation inspections are to be carried out at the required stages.

REVISION NOTES:



CRANKED VENTILATION & AIR BRICK $6,450mm^2$ Air Flow
VENTILATION HERE.

Substructure Plan Plot 1

Direction of Precast Concrete Floor Beams
To be confirmed by Precast Concrete Beam &
Block Floor manufacturer

Ventilation should be provided by proprietary ventilators on at least two opposite external walls, with air bricks properly ducted. Suitable cross ventilation should be provided by a combination of openings and air ducts. Ventilation should not be obtained through a garage.

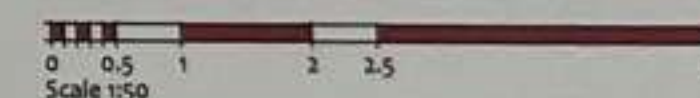
Sleeper walls and partitions should be constructed with sufficient openings to ensure adequate through ventilation.

Void ventilation should be provided to whichever gives the greater opening area: 1500mm² per metre run of external wall or 500mm² per m² of floor area. Ventilators should be spaced at no more than 2m centres and within 450mm of the end of any wall.

Provide cross ventilation between all void areas with sections of honeycomb masonry between bays

A minimum ventilation void of 225mm should be provided below the underside of precast concrete suspended floors. This may vary depending on ground conditions, refer also to Structural Engineers information.

Drawing to be read in conjunction with Structural Engineers drawings, details & specification. Layout provided to assist with site setting out only. Additional/buttress ground beams & sleeper walls may be required.



seven22
ARCHITECTURE LTD

22 SHORE VIEW, PETERBOROUGH
CAMBRIDGESHIRE, PE7 8FS
E.info@seven22.co.uk - T.07799 585277

PROJECT
RESIDENTIAL DEVELOPMENT
LAND ADJACENT TO
199 CRADGE BANK
SPALDING
LINCOLNSHIRE

SH
SCENIC
HOMES

CLIENT
SCENIC HOMES

TITLE
PLOT 1
SUBSTRUCTURE PLAN

DRAWING No.
099 (PLOT 1) - 01

SCALE
1:50 @ A1 - 1:100 @ A3

DATE
OCT 24

REV

Ventilation

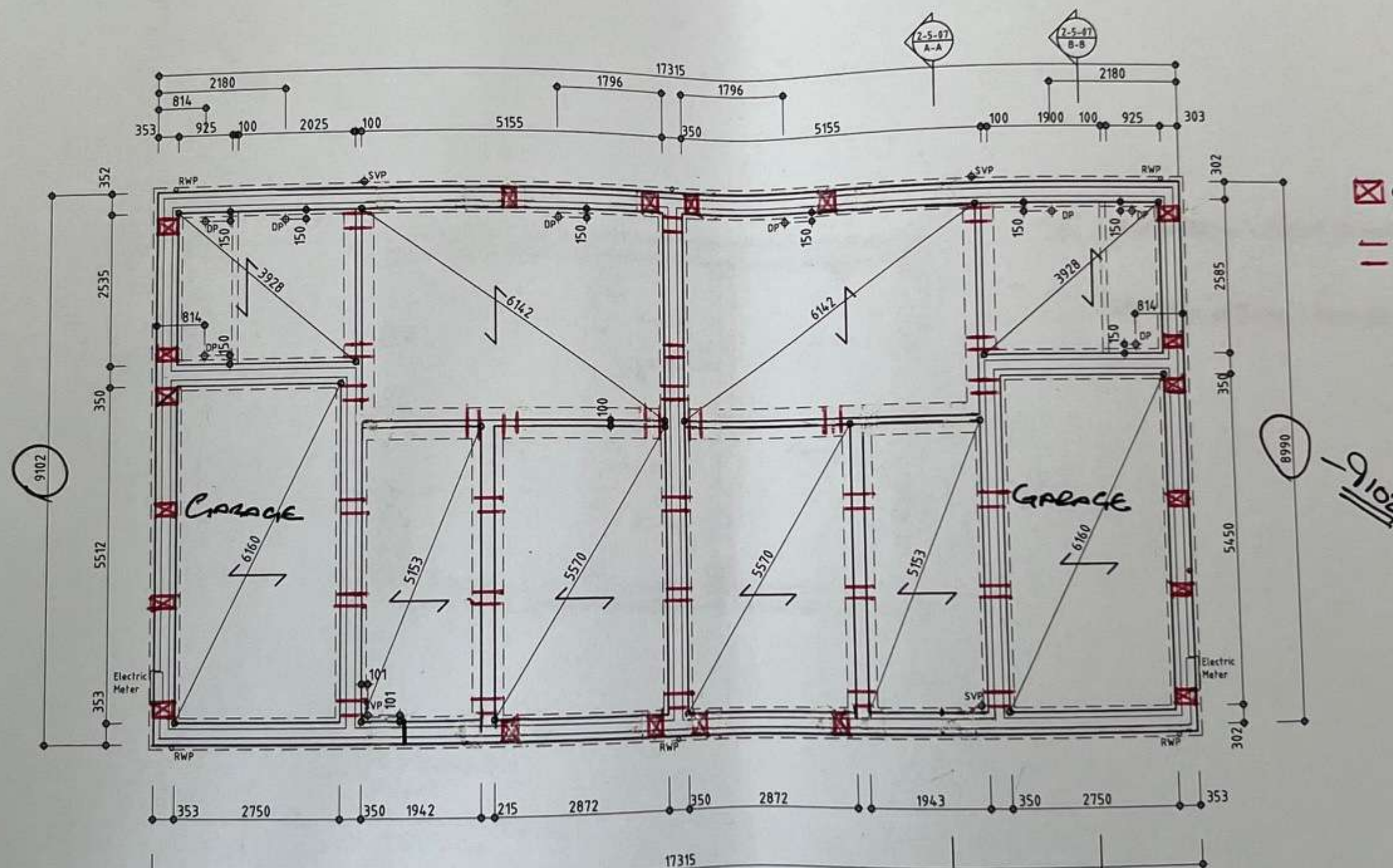
$(17.315 + 9.102) \times 2 = 52.824m \times 1,500mm^2/m = 79,236mm^2$ OF VENTILATION. VENTS 6, 450mm² EACH = 1300 REQUIRED FOR BUILDING RECS.

VENTS INCREASED DUE TO GARAGE POSITION & CROSSLING CRAS.
PROVIDED 2000 @ 6,450mm² = 129,000mm²

63% INCREASE

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All Building Regulation inspections are to be carried out at the required stages.

REVISION NOTES:



CRACKED VENTILATION & AIR BRICK
6450mm² AIR FLOW.
VENTILATION HOLE

Substructure Plan
Plot 2, 3, 4 & 5

Direction of Precast Concrete Floor Beams
To be confirmed by Precast Concrete Beam &
Block Floor manufacturer

Ventilation should be provided by proprietary ventilators on at least two opposite external walls, with air bricks properly ducted. Suitable cross ventilation should be provided by a combination of openings and air ducts. Ventilation should not be obtained through a garage.

Sleeper walls and partitions should be constructed with sufficient openings to ensure adequate through ventilation.

Void ventilation should be provided to whichever gives the greater opening area:
1500mm² per metre run of external wall or 500mm² per m² of floor area.
Ventilators should be spaced at no more than 2m centres and within 450mm of the end of any wall.

Provide cross ventilation between all void areas with sections of honeycomb masonry between bays

A minimum ventilation void of 225mm should be provided below the underside of precast concrete suspended floors. This may vary depending on ground conditions, refer also to Structural Engineers information.

Drawing to be read in conjunction with Structural Engineers drawings, details & specification. Layout provided to assist with site setting out only. Additional/buttress ground beams & sleeper walls may be required.

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PROJECT
RESIDENTIAL DEVELOPMENT
LAND ADJACENT TO
199 CRADGE BANK
SPALDING
LINCOLNSHIRE

SH
SCENIC
HOMES

CLIENT
SCENIC HOMES

TITLE
PLOTS 2 - 5
SUBSTRUCTURE PLAN

DRAWING No.
099 (PLOTS 2 - 5) - 01

SCALE
1:50 @ A1 - 1:100 @ A3

DATE
OCT 24

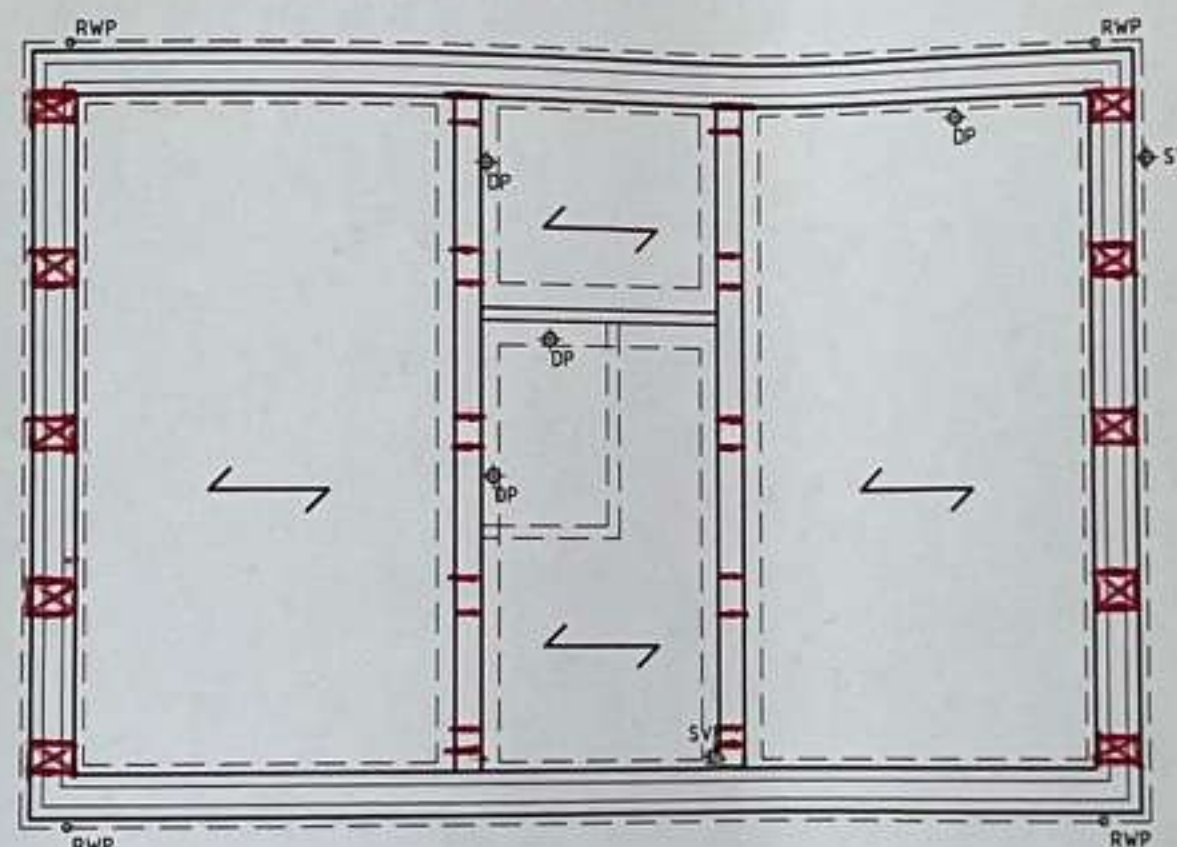
REV

Ventilation.

$(9.102 + 6.177) \times 2 = 30.558m \times 1,500m^2/m = 45,837m^2$ OF VENTILATION. VENTS $6,450m^2$ EACH 7th REQUIRED FOR BOUNDING REGS
INCREASE DUE TO GROUND LPS. $64,500m^2 = 10^{th}$ VENTS.
40% INCREASE.

Do NOT scale from this drawing.
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All works and materials used are to be in accordance with current British Standards, Agreement Certificates and Manufacturers instructions.
All Building Regulation inspections are to be carried out at the required stages.

REVISION NOTES



☒ CRANKED VENTILATOR or AIR BRICK $6450m^2$ AIR FLOW
— VENTILATION HOLE

Substructure Plan Plots 6 & 7

Direction of Precast Concrete Floor Beams
To be confirmed by Precast Concrete Beam &
Block Floor manufacturer

Ventilation should be provided by proprietary ventilators on at least two opposite external walls, with air bricks properly ducted. Suitable cross ventilation should be provided by a combination of openings and air ducts. Ventilation should not be obtained through a garage.

Sleeper walls and partitions should be constructed with sufficient openings to ensure adequate through ventilation.

Void ventilation should be provided to whichever gives the greater opening area:
1500mm² per metre run of external wall or 500mm² per m² of floor area.
Ventilators should be spaced at no more than 2m centres and within 450mm of the end of any wall.

Provide cross ventilation between all void areas with sections of honeycomb masonry between bays

A minimum ventilation void of 225mm should be provided below the underside of precast concrete suspended floors. This may vary depending on ground conditions, refer also to Structural Engineers information.

Drawing to be read in conjunction with Structural Engineers drawings, details & specification. Layout provided to assist with site setting out only. Additional/buttress ground beams & sleeper walls may be required.

0 0.5 1 2 2.5 5
Scale 1:50

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PROJECT
RESIDENTIAL DEVELOPMENT
LAND ADJACENT TO
199 CRADGE BANK
SPALDING
LINCOLNSHIRE

SH
SCENIC
HOMES

CLIENT
SCENIC HOMES

TITLE
PLOT 6 & 7
SUBSTRUCTURE PLAN

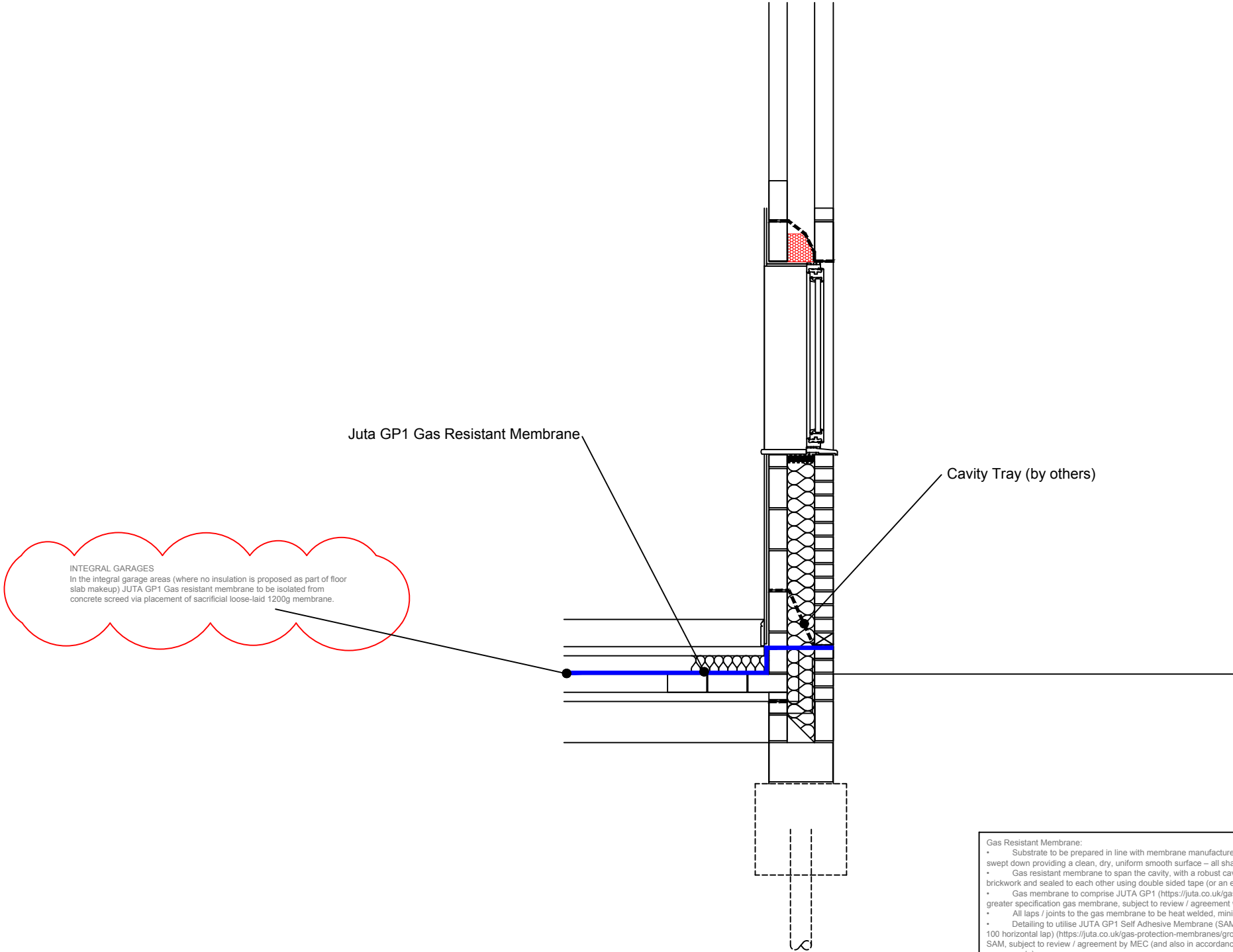
DRAWING NO.
099 (PLOT 6 & 7) - 01

SCALE
1:50 @ A1 - 1:100 @ A3

DATE
OCT 24

REV

Appendix C – Gas Mitigation Typical Perimeter Detail & Technical Data Sheets



INTEGRAL GARAGES
In the integral garage areas (where no insulation is proposed as part of floor slab makeup) JUTA GP1 Gas resistant membrane to be isolated from concrete screed via placement of sacrificial loose-laid 1200g membrane.

Gas Resistant Membrane:

- Substrate to be prepared in line with membrane manufacturers Installation Guidance. Minimally, block and beam floor slab to be swept down providing a clean, dry, uniform smooth surface – all sharps removed, all voids (>12mm depth or width) filled.
- Gas resistant membrane to span the cavity, with a robust cavity tray construction above, both terminated onto the external leaf brickwork and sealed to each other using double sided tape (or an equivalent system sealant).
- Gas membrane to comprise JUTA GP1 (<https://juta.co.uk/gas-protection-membranes/ground-gas-membranes/gp1/>) or an equal / greater specification gas membrane, subject to review / agreement with MEC.
- All laps / joints to the gas membrane to be heat welded, minimum 100mm overlap.
- Detailing to utilise JUTA GP1 Self Adhesive Membrane (SAM, heat and pressure applied – minimum 100mm vertical lap, minimum 100 horizontal lap) (<https://juta.co.uk/gas-protection-membranes/ground-gas-membranes/gp1-sam/>) or an equal / greater specification SAM, subject to review / agreement by MEC (and also in accordance with the sheet membrane manufacturers approved proprietary components).
- Following successful verification of the gas membrane; insulation (protection) to be placed within 2-working days. In the intervening period, the area of installed gas resistant membrane to be considered 'clean/restricted work area'. No dirty boots, no storage of materials/equipment/waste, no trafficking of vehicles/machinery, no use of sharp tools, no fixing/bolting through membrane.
- In the integral garage areas (where no insulation is proposed as part of floor slab makeup) JUTA GP1 gas resistant membrane to be isolated from concrete screed via placement of sacrificial loose-laid 1200g membrane.
- Fixings / penetrations through the gas resistant membrane are not permitted. If unavoidable, MEC to be notified and gasket sealing detail provided.

Notes

- Detailing drawings to be read in conjunction with MEC's Phase 2 Interpretative Report for Land to South of 199 Cradge Bank, Spalding, PE11 3AQ.
- Gas membrane installation Contractor to hold relevant qualification in the construction of gas protection measures (e.g. NVQ Level 2 in Gas Protection Installation).
- Independent Verification to be completed by Verifier who minimally holds a NVQ Level 4 in Gas Membrane Verification and/or is registered via the CL:AIRE Gas Protection Verification Accreditation Scheme (Technician Level (TGVP) and/or Specialist Level (SGPV)).
- Verification remit includes:
 - o Inspection of passive sub-slab venting system (all Plots, including depth of open void, cross-venting provision to sleeper walls, telescopic vent/air brick construction); and
 - o Inspection / integrity testing to gas resistant membrane (100% remit)
- Sufficient time to be allowed within build program for the construction and verification of the gas mitigation.

Sub-Slab Venting:

- Minimum 250mm deep clear (open) void to be provided below all Plots.
- Air bricks with a ventilation area of >6000mm2, to be positioned per annotated plans provided by Severn Architecture Limited.
- Cross vents to sleeper walls via missed blockwork, to be positioned per annotated plans provided by Severn Architecture Limited.
- Top of air bricks to be located at least one brick course above ground level (150mm to top of air brick).

Service Ducts:

- All service ducts to be sealed.
- The responsibility for this is with the Developer, or their appointed designate.
- A proprietary sealant system to be utilised for the sealing of all ground level ducts, (e.g. <https://juta.co.uk/gas-protection-membranes/gp-ductseal-hg/>).
- Where/as required, duct sealing systems should be approved by statutory utility service provider(s).

REV	DESCRIPTION	DATE

MEC Environmental Ltd,
Unit 2 BTMC,
Challenge Way, Blackburn
BB1 5QB
Tel: 01254 942000

PROJECT

Land to South of 199 Cradge Bank
Spalding PE11 3AQ

CLIENT

Scenic Homes

DRAWING TITLE

Typical Gas Membrane Perimeter Section

SCALE	●A3	DATE
NTS		18/06/25

DRAWN BY	CHECKED BY	STATUS
MC	SW	FOR CONSTRUCTION

DRAWING No	REVISION
MEC_2025_D0028_01	



GP[®]1



GP[®]1 proprietary gas resistant damp proof membrane (DPM) is a multi-layer, low density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil. GP[®]1 is specifically designed and manufactured to perform as a methane, carbon dioxide, radon, ground gas, air & moisture protection system.

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

TITANTECH[®]

For developers of brownfield and contaminated sites the TITANTECH[®] family of products represent a major step forward in safeguarding projects against gaseous and chemical contamination.

Handling

Roll weights can be in excess of 20 kg and hence appropriate care and equipment is required for unloading and handling.

Storage

Rolls of GP[®]1 should be stored on stable/level ground and stacked not more than five rolls high, with no other material stacked on top. The rolls can be stored outdoors when packaged, but should be protected from exposure to UV.

Installation

GP[®]1 should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015.

Certifications



Please
Scan



Rev 2024



Feature	Characteristics	Test Method	GP [®] 1
Physical Properties	Thickness	EN 1849-2	0.6 mm
	Thickness - between Scrim	BS EN ISO 9863-1:2016	0.4 mm
	Width	EN 1849-2	Various m
	Length	EN 1849-2	Various m
	Weight	EN 1849-2	370 g/m ²
Hydraulic Press	Water Column	EN 20811	> 300
	Resistance to Water Penetration	EN 13967, EN 1928	Pass
	Water Tightness	EN 11296, EN 1367, EN 1928	Pass
Mechanical Properties	Resistance to Static Load	EN 12730-B	20 kg
	Tensile Strength (MD)	EN 12311-1	600 N/50mm
	Tensile Strength (CMD)	EN 12311-1	480 N/50mm
	Tensile Elongation (MD)	EN 12310-1	20%
	Tensile Elongation (CMD)	EN 12310-1	20%
	Puncture Resistance	EN 12236	1.25 kN
	Resistance to Tearing (Nail Shank) MD	EN 12310-1	330 N
	Resistance to Tearing (Nail Shank) CMD	EN 12310-1	400 N
Durability and Chemical Resistance	Transmission Rate of Volatile Liquids - Diesel	ISO 6179:2010 (B)	0.246 g/m ² /h
	Transmission Rate of Volatile Liquids - Xylene	ISO 6179:2010 (B)	0.571 g/m ² /h
	Transmission Rate of Volatile Liquids - Toluene	ISO 6179:2010 (B)	0.583 g/m ² /h
	Transmission Rate of Volatile Liquids - Petrol	ISO 6179:2010 (B)	0.135 g/m ² /h
Gas Permeability	Methane Permeability	BS EN ISO 15105-1	< 0.09 ml/m ² /day/atm
	Carbon Dioxide Permeability	BS EN ISO 15105-1	< 0.09 ml/m ² /day/atm
	Radon Permeability	K124/02/95	8.0 x 10 ⁻¹⁵ m ² /s
	Hydrogen Sulphide Permeability	BS EN ISO 15105-1	< 0.1 ml/m ² /day/atm
Compliance and Certification	CE Mark - EN13967:2012 (A1 2017)		
	NHBC Standards Compliant		
	Conforms to BS 8485:2015 + A1 2019		
	BBA Certified - Certificate No. 20/5728		

JUTA UK

Please contact JUTA
UK Directly for more
information on GP[®]1

Jointing and Sealing

It is recommended GP[®]1 be heat welded where possible, with welding carried out by competent personnel with suitable qualifications in accordance with best practice, and guidance contained within BS 8485:2015.

Accessory Products

- GP[®]1 Starter Band
- GP[®] Tape
- GP[®] Self Adhesive Membrane
- GP[®] Primer
- GP[®] Top Hats and Preformed Corners
- GP[®] Protection Fleece
- GP[®] Void Vent (24/40mm)



GP[®]1 SAM

GP[®]1 SAM, gas protection self adhesive membrane, is a bituminous gas proof and water proof sheet, composed of self-adhesive SBS polymer modified bitumen incorporating GP[®]1 with an upper surface finish of black reinforced LDPE, and a lower surface finish of siliconized release film. GP[®]1 SAM is used for the gas/waterproofing of underground structures where harmful ground gasses are anticipated, and as a self adhesive accessory to GP[®]1.

Thickness	1.2 mm
Width	0.9 m or 0.3 m
Length	20 m
Weight	1100 g/m ²

TITANTECH[®]

For developers of brownfield and contaminated sites the TITANTECH[®] family of products represent a major step forward in safeguarding projects against gaseous and chemical contamination.

Handling

Roll weights can be in excess of 20 kg (approx 33 kg/roll) and hence appropriate care and equipment is required for unloading and handling. This product is non-toxic nor flammable.

Storage

Rolls of GP[®]1 SAM should be stored on in a cool, dry place, and be protected from exposure to rain, sun, heat and cold temperatures prior to installation. Exposure to sunlight for extended period of time could cause difficulty with removal of the release film.

Certifications



Please
Scan



Rev 2024



Feature	Characteristics	Test Method	GP [®] 1 SAM
Physical Properties	Thickness	EN 1849-2	1.2 mm
	Width	EN 1849-2	0.9 or 0.3 m
	Length	EN 1849-2	20 m
	Weight	EN 1849-2	1100 g/m ²
Hydraulic Press	Water Tightness	EN 1928	Pass
	Water Vapour Transmission	EN 1931	0.013 g/m ² /day
Mechanical Properties	Tensile Strength (MD/CMD)	EN 12311-2 (A)	500 N/50mm
	Elongation (MD/CMD)	EN 12311-2 (A)	> 12 %
	Resistance to Static Load	EN 12370	20 kg
	Joint Strength	EN 12317-2	> 30 N
	Durability and Water Tightness (Ageing and Chemicals) 60 kPa	EN 1847	Pass
	Resistance to Nail Tear (MD/CMD)	EN 12310-1	> 300 N
	Resistance to Fire	EN 13501	F Euro Class
Gas Permeability	Methane Permeability	EN ISO 15105-1	< 0.68 ml/m ² /day/atm
	Carbon Dioxide Permeability	EN ISO 15105-1	< 2.81 ml/m ² /day/atm
	Radon Permeability	K124/02/95	8.0 x 10 ⁻¹⁵ m ² /S
Compliance and Certification	CE Mark - EN13967:2012 + A1:2017 Type (A/T)		
	BS 8485:2015 Compliant (Methane and Carbon Dioxide Barrier)		

JUTA UK

Please contact JUTA UK Directly for more information on GP[®]1 SAM

Installation

GP[®]1 SAM should be installed in accordance with the product installation guidelines, and in accordance with BS 8485:2015, and/or BS 8102:2009.

It is recommended that GP[®]1 SAM is not applied in temperatures below 10°C, in colder weather the material can be warmed slightly to aid adhesion.

Accessory Products

- GP[®] Primer
- GP[®] Protection Board
- GP[®] Protection Fleece



GP® DUCTSEAL[®] + GREY STUFF[®] HG

GP® DuctSeal HG (Water & Gas) is a NEW duct sealing system that is extremely flexible in its ability to seal large, heavy cables & pipes in ducted networks to protect and stop the ingress of harmful or flammable gases, liquids, smoke and vermin.

GP® DuctSeal HG comes complete with our PATENT PENDING unique tubular rubber backing system that can be joined together in a long continuous strip, joined to make a ring/collar, but best of all, joined in a cross shape to create a perfect shape for separating trefoil/triplex cables. This unique design endures DSEAR compliance but also aids the installer as it's simple & quick to create the support & separation on large cables or pipes. The PATENT PENDING ULTIMATE backing system, which is one of a kind, is combined with our NEW Fybird flexible intumescent, zero halogen, & zero Meko adhesive and sealing compound, Grey Stuff. All are designed and manufactured in the UK.

GP® DuctSeal HG, along with Grey Stuff, is a non-hazardous, superior single component, neutral curing sealant that has been specifically developed to cope with the harsh environments around duct openings to ensure ducted networks and penetrations are protected.

Sizes 50mm to 250 mm
(off the shelf)

Complies with DSEAR duct sealing regulations

WIMES compliant

Complies with 2011 NEC Articles 225.27, 230.8, 300.5(G), 300.7 (A) on Raceway Seals, and 501.15 (B)(2)

Petrol station forecourt accepted, as per the technology described in the APEA Blue

ATEX Complaint - contains no moving parts or any form of material that can create a spark

Flame Retardant - tested to UL94

TITANTECH®

For developers of brownfield and contaminated sites the TITANTECH® family of products represent a major step forward in safeguarding projects against gaseous and chemical contamination.

Named Accessory in Certification



Please
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Rev 2024



Part No.	Product	Duct Opening Max	Unit Sold
Using 1 x GP® DuctSeal HG Kit up to 100mm			
DSHG100	GP® DuctSeal HG	100mm	1 x DSHG 100 Kit
Using 2 x GP® DuctSeal HG Kit up to 150mm			
DSHG150	GP® DuctSeal HG	150mm	2 x DSHG 100 Kits
Using 3 x GP® DuctSeal HG Kit up to 200mm			
DSHG200	GP® DuctSeal HG	200mm	3 x DSHG 100 Kits
Using 4 x GP® DuctSeal HG Kit up to 225mm			
DSHG225	GP® DuctSeal HG	225mm	4 x DSHG 100 Kits
Using 5 x GP® DuctSeal HG Kit up to 250mm			
DSHG250	GP® DuctSeal HG	250mm	5 x DSHG 100 Kits

JUTA UK

Please contact JUTA
UK Directly for more
information on
GP® DuctSeal HG

Benefits

- Water & Gas tight to 2.0 bar
- Non-slumping
- High bonding strength
- Odourless when curing
- Flexible
- Intumescent
- UV & Ozone resistant
- Non-hazardous
- Zero halogens used
- Emits 0% MEKO
- Very strong porous sticky char is formed when exposed to fire, which has excellent thermal insulation properties
- Microbial resistance - coverage against Fungi, E-Coli, Escherichia coli, Staphylococcus aureus, & A. brasiliensis
- Resistant to Hydrocarbons (Petrol, Diesel, ASTM oil, & LPG Gas)
- Resistant to many other gases & liquids, for example, ADBLUE, & Antifreeze
- Complies with DSEAR duct sealing regulations
- WIMES compliant
- Complies with 2011 NEC Articles 225.27, 230.8, 300.5(G), 300.7 (A) on Raceway Seals, and 501.15 (B)(2)
- Petrol station forecourt accepted, as per the technology described in the APEA Blue
- ATEX Complaint - contains no moving parts or any form of material that can create a spark
- Flame Retardant - Tested to UL94



Feature	Characteristics
Density	1.27
Colour	Anthracite Grey
Skin Over Time	10 mins
Curing	3-4mm per day
Tack Free Time	22 mins
Hardness	35 to 38 Shore A
Elongation	250%
Flow	3.33 million cPS at 380°C

Feature	Characteristics
Tensile Strength	0.72 N/mm ²
Density	+5 to 40°C
Temperature Resistance	-35 to +120°C
Intumescence Activation Temperature	210°C
Pressure Resistance	2.0 Bar
Shelf Life	12 months

JUTA UK

Please contact JUTA
UK Directly for more
information on
GP® DuctSeal HG

One Kit per Box

All components included to seal 1 x duct as per the kit size mentioned (Caulking gun not included, but can be sold separately). **** One kit may fill more than one duct, depending on cable % fill. Call 01772 754177 for advice****

Cable Separation

It's imperative to ensure separation between each cable and from the inside of the duct. Our unique daisy-chained circular tubes easily separates and supports single or multiple cables.

Using our patent pending tubular rubber tubes, various shapes can be made to help with cable separation, for example, trefoil/triplex cables.

Running Water

The duct & cables should be dry for best results with no running water. All dirt, oil or grease must be cleaned before applying Grey Stuff. **If you have running water, please contact JUTA for advice on 01772 754177.**

Cure Time

Grey Stuff will cure 3-4mm daily, depending on the humidity and temperature. The higher the humidity%, and temperature, the quicker grey Stuff will cure. A minimum requirement of 20mm Grey Stuff is required for an effective seal.

Cleaning

Uncured material spillages can be cleaned with a solvent-based wipe.

Health & Safety

Grey Stuff is based on a neutral curing system that is hazardous-free to protect users when carrying out tasks like sealing cable ducts. Non-hazardous Zero MEKO.



**GP®
DUCTSEAL
HG**

**+ GREY
STUFF**

JUTA UK

Please contact JUTA
UK Directly for more
information on
GP® DuctSeal HG

Re-entry & Removal

Grey Stuff will cure to a similar hardness of a rubber eraser, so re-entry and removal are achievable. The ease of this depends on the type of tools used. For example, a sharper tool will be easier than a blunt-ended tool. Only use sharp tools when cables are de-energised. JUTA accepts no responsibility for damaged cables.

Cable Suitability

Grey Stuff is a single-component neutral curing system containing no solvents. Our Formulation does not damage the properties of a cable sheath or stain surfaces.

Storage

Grey Stuff should be kept in a cool, dry environment and away from sunlight. Product shelf life is 12 months. Once opened, any remaining product can still be used for 1 month afterwards, provided the screwcap is securely fitted.

