Phase IV Validation Completion Report

At

Prospect House School Blackley

Client: Tilbury Douglas

Reference: 30186-SUT-ZZ-00-RP-G-704-0001

Date: January 2022

Liverpool Head Office
18-20 Harrington Street
Liverpool
L2 9QA

T: 0151 227 3155
E: enquiries@sutcliffe.co.uk
www.sutcliffe.co.uk

Manchester Office
T: 0161 817 5180

North Wales Office
T: 01978 664 071

London Office
T: 020 8016 4320

@Sutcliffe_1985 Sutcliffe1985 Sutcliffe

Sutcliffe is the trading name of Sutcliffe Projects Limited a limited company registered in England and Wales No. 04287238.

SUTCLIFFE INVESTIGATIONS

Phase III Remediation & Validation Strategy Proposals

Document Control Sheet

Report Reference: 30186-SUT-ZZ-00-RP-G-704-0001

Issue: P02 Date: January 2022

Prepared by: Checked/Approved by:

Name:	D Bowen	Name:	W G Baldwin	
Title:	Senior Environmental Scientist	Title:	Director	
Qualifications:	BSc (Hons) FGS	Qualifications:	BEng (Hons) CEng MIStructE AIEMA	

Revision History:

Rev.	Date	Description	Prepared	Checked	Approved
P01	November 2021	Final Report	DB	WGB	WGB
P02	January 2022	Updated following CLO comments	DB	WGB	WGB
		Signatures:	[redacted]	[redacted]	[redacted]

This document has been prepared by Sutcliffe Investigations within the terms of the Contract with the Client to whom this document is addressed. Sutcliffe Investigations disclaims any responsibility to the Client and others in respect of matters outside the scope of the said contract. No person other than the Client or agreed assignees shall rely on it in any respect and Sutcliffe Investigations shall owe no duty of care to any such third party.

Table of Contents

1 Introduction 1

1.1 Terms of Reference 1
1.2 Previous Works 1
1.3 Objectives 2
1.4 Development Proposal 2

2 Risk Assessment (Pre-Remedial Works) 3

2.1 Long Term Human Health 3
2.2 Ground Gas Risk Assessment 3
2.3 Controlled Waters 3

3 Remediation Works 4

3.1 Introduction 4
3.2 Remedial Works 4
3.3 Site Variations 5

4 Conclusions 6

Appendices A

Appendix A – Depth Validation Photographic Log A
Appendix B – Analytical Certificates & Screening Tables (Imported) B
Appendix C – Foundation Design Drawings C
Appendix D – MEC Environmental Ltd Gas Membrane Installation Validation Report D

Drawings E

Drawing Ref. – FS0831-SUT-ZZ-00-DR-C-700-0002 – Site Investigation Location Plan E
Drawing Ref. – FS0831-JMA-01-00-DR-A-00-0002–Proposed Ground Floor Plan F

1 Introduction

1.1 Terms of Reference

Sutcliffe Investigations have carried out remediation validation works on behalf of Tilbury Douglas in order to enable contaminated land conditions to be removed at land at the Prospect House, Bank House Road, Blackley, Manchester M9 8LT.

The present document outlines Sutcliffe Investigations validation works including:

- Gas Membrane Validation
- Topsoil Sampling
- Depth Validation

Additionally, it also includes the third-party validation works undertaken on the gas membrane installation by MEC Environmental Ltd.

1.2 Previous Works

This report should be read in conjunction with:

- Phase 1 Geo-Environmental Desk Study Report produced by HSP Consulting (Report Reference C2729 / PI-Hillside Centre) – February 2018.
- Phase II Geo-Environmental Assessment Report produced by HSP Consulting (Report Reference C2729 / PII-Hillside Centre) – April 2018 HSP Consulting.
- Geo-Environmental Investigation produced by Sinclair Knight Merz (SKM) for the adjacent Co-Operative Academy – November 2008 – Reviewed for the purpose of ground gas risk assessment.
- Phase II Interpretive Ground Assessment (Report Reference 30186LG – R02 REV B) reported April 2020.
- Phase III Remediation & Validation Proposals at Prospect House School (Report Reference 30186LG-R03 Rev A) reported April 2020

Based on the findings of the ground assessment, the chemical testing indicated elevated levels of Arsenic, Lead, Cyanide, C21 to C35 Aromatic, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene and Dibenzo(ah)anthracene. Asbestos was also identified within 4No. sampling locations.

Statistical analysis carried out indicated site wide contamination and therefore the need for site wide remediation. This will comprise a 450mm clean capping system to be emplaced in all soft landscaping areas as part of the development works, which is to be underlain by a geo-grid membrane. This will break any remaining potential contaminant linkages.

Levels beneath proposed areas of hardstanding will be as dictated by the adopted foundation solution.

Based on the quantitative and qualitative assessment of the risk associated with ground gas the site should be classified as Characteristic Situation 4, indicating that special protective measures are required.

1.3 Objectives

Therefore, the aim of this document is to provide evidence that methodologies and protocols have been adhered to as detailed within the Phase III Remediation and Validation Proposals, dated April 2020, thus ensuring risks to identified receptors have been mitigated. This principally relates to the imported topsoil material for landscaped areas and the gas membrane installation in the new buildings.

1.4 Development Proposal

The proposal layout is for the construction of a new SEN teaching facility is proposed which is to include an indoor swimming pool. Externally, soft and hardstanding areas, external individual play areas with artificial grass and a Multi-Use Games Area (MUGA) are proposed on the site. Based on discussions with the client, soft landscaping is proposed, with artificial surfacing proposed immediately adjacent to the classrooms, with soft landscaping proposed elsewhere. The proposed plan is shown on Drawing Number FS0831-JMA-01-00-DR-A-00-0002 produced by jm architects.

2 Risk Assessment (Pre-Remedial Works)

2.1 Long Term Human Health

Following intrusive site investigation works completed by Sutcliffe Investigations *(reported in April 2020)* analytical results indicated that there were site wide elevated concentrations of contamination on site that would represent a risk to identified receptors (site end & adjacent users, construction workers & controlled waters).

A full assessment of risks to long term human health is presented in Sutcliffe's *"Phase II Interpretive Ground Assessment – April 2020".*

2.2 Ground Gas Risk Assessment

Elevated levels of carbon dioxide (up to 11.6%) and methane (up to 0.2%) concentrations were recorded before the fire. In accordance with CIRIA C665 the ground gas monitoring results indicate that the site has a Gas Screening Value (GSV) of 0.0812 l/hr for carbon dioxide and 0.0014 l/hr for methane. This results in the site being classified as Characterisation Situation 2 for Carbon Dioxide and a Characterisation Situation 1 for Methane.

Additionally, samples were also collected from site for the purpose of forensic testing. Samples retrieved from site revealed an average TOC value of 3.78%. Using the Pragmatic Approach to Ground Gas Risk Assessment (RB17) the TOC and forensic testing has given a site wide average TOC value of 3.78% with the levels of TOC ranging from 0.88% to 7.43%. This classifies the site as a Characteristic Situation 3.

A review of HSPs Consulting classification revealed a Characteristic Situation 4, based on the GSV calculation. In light of this classification further investigation was undertaken to determine the ground gas classification of the adjacent school. Sinclair Knight Merz (SKM) carried out a PHII Geo-Environmental Investigation on the Co-Operative Academy adjacent to the site in November 2008, based on this report the adjacent site was also classified as a Characterisation Situation 4.

A full assessment of risks associated with ground gas is presented in Sutcliffe's *"Phase II Interpretive Ground Assessment – April 2020".*

2.3 Controlled Waters

Exceedances of DWS and EQS screening criteria are not considered significant given the likely depth to groundwater, effects of natural attenuation, lack of nearby groundwater abstractions and the absence of any surface water courses that could be in continuity with ground water beneath the site.

A full assessment of risks to controlled waters is presented in Sutcliffe's *"Phase II Interpretive Ground Assessment – April 2020".*

3 Remediation Works

3.1 Introduction

Based on the findings of the ground assessment, completed for the site (reported in April 2020), and with the exception of risks to receptors (construction workers & adjacent site users) associated with the site wide contamination, in addition to risks associated with ground gas, no other source-pathway-receptor linkages have been identified.

The site wide contamination was removed to achieve formation levels and a clean 450m capping system, underlain by a geotextile membrane was installed in all soft landscaping areas. In regard to ground gas risks, validated protection measures have been installed.

3.2 Remedial Works

Imported Material

Approximately 300m^3 of clean topsoil was imported onto site for the landscaped areas. A recommended depth of 450mm was emplaced in all landscaped areas to create a suitable growth medium underlain by a geotextile membrane forming a barrier to the underlying contamination.

Depth validation was carried out and it was noted that a minimum depth of 450mm was emplaced on site.

A photographic log for the installation of the geotextile membrane and depth validation is presented as *Appendix A.*

Sampling was undertaken to ensure the material was suitable and *"fit for purpose"* at a sampling rate of 1 sample per 50m^3 of material. Therefore 6 samples were recovered from the material on site, as a minimum requirement, and sampled against the following guidance values:

- LQM Suitable 4 Use Levels (S4ULs).
- ATRISK Soil Screening Values (SSVs) and CL:AIRE Generic Assessment Criteria (GACs) - Cyanide
- Category 4 Screening Values – Lead

The chemical results for the topsoil were compared against the relevant GACs for residential (with plant uptake) at 2.5% soil organic matter (SOM). No elevated levels of contamination or Asbestos have been identified.

The analytical results certificates and screening spreadsheet are presented in *Appendix B.*

Gas Protection Measures

A gas membrane was required for the new development and required to meet a Characteristic Situation 4 classification. This required high-level gas protection measures, comprising a membrane and ventilated sub-floor void to create a permeability contrast to limit the ingress of gas into buildings.

Foundation design drawings are presented in *Appendix C.*

Validation of the membrane installation was carried out for all areas of the building by MEC Environmental Ltd on to ensure the installation was carried out to the correct standard.

A copy of the MEC Environmental Ltd Gas Membrane Installation Validation Report is presented as *Appendix D.*

3.3 Site Variations

Variations in the proposed works have occurred during the development of the site since the production of the Phase III Remediation Strategy. These relate to the assessment of the former above ground tank that was previously identified and the asbestos delineation exercise.

With regards to the previously identified storage tank this was later identified as an above ground feature that was previously within the structure of the building in the area. Based on this and the prosed combination of gas protection measures and robust capping system, given the underlying ground conditions, the protection offered by these two remedial measures was considered sufficient to break any source pathway receptor linkage for any remaining contamination that may have been associated with the former tank.

In relation to the identified asbestos contamination the majority of positions, TP101, TP209 & TP204, where asbestos has been identified are at a depth greater than the 600mm site strip that had been proposed and as such were to remain in situ and undisturbed beneath the capping system, with the only sample noted in shallow soils, WS101, being removed as part of the site strip required as part of the development. Additionally, the cover system was underlain by a robust membrane installed to act as a visual and physical barrier to the remaining underlying contamination in all landscaped areas.

4 Conclusions

Sutcliffe Investigations can confirm site works have been carried out on site as detailed in this report. A suitable gas membrane has been installed in all buildings and imported topsoil and subsoil for use in landscaped areas has been sampled and validated and Sutcliffe can confirm that the material is suitable for its proposed use on site.

Sutcliffe can confirm that the site does not pose a significant risk to identified receptors (site users, construction works, adjacent site users & controlled waters).

Appendix A – Depth Validation Photographic Log

Plate 1: View showing the installation of the geotextile membrane beneath the landscaped areas.

Plate 2: View showing the installation of the geotextile membrane beneath the landscaped areas.

Plate 3: View showing the installation of the geotextile membrane beneath the landscaped areas.

Plate 4: View showing location of depth validation pit for TS1/SS1.

Plate 5: View showing depth of imported material at TS1/SS1.

Plate 6: View down hole at TS1/SS1.

Plate 7: View showing location of depth validation pit for TS2/SS2.

Plate 8: View showing depth of imported material at TS2/SS2.

Plate 9: View down hole at TS2/SS2.

Plate 10: View showing location of depth validation pit for TS4/SS4.

Plate 11: View showing depth of imported material at TS4/SS4.

Plate 12: View down hole at TS4/SS4.

Plate 13: View showing location of depth validation pit for TS3/SS3.

Plate 14: View showing depth of imported material at TS3/SS3.

Plate 15: View down hole at TS3/SS3.

Appendix B – Analytical Certificates & Screening Tables (Imported)

Sutcliffe

Human Health Assessment

Job Number:	30186
Job Name:	Prospect House, Manchester
Proposed Land Use:	Residential With Plant Uptake
S.O.M.	2.5

	Below Limit of Detection
	Above Threshold
n/t	Not Tested
NAD	No Asbestos Detected

			Sample ID	**TS1**	**TS2**	**TS3**	**SS5**	**SS2**	**SS3**
			Depth Top	0.1	0.1	0.1	0.3	0.3	0.3
			Depth Bottom	0.3	0.2	0.2	0.4	0.5	0.5
			Date Sampled	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21
			Threshold						
Contaminant	**Units**	**Source**	**Value**						
Arsenic (Total)	mg/kg	LQM S4UL	37	2	2	2	2	<1	<1
Boron (Soluble)	mg/kg	LQM S4UL	290	1.1	<1.0	<1.0	1.2	<1.0	<1.0
Cadmium (Total)	mg/kg	LQM S4UL	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium III	mg/kg	LQM S4UL	910	6	6	6	7	12	8
Chromium VI	mg/kg	LQM S4UL	6	<1	<1	<1	<1	<1	<1
Copper (Total)	mg/kg	LQM S4UL	2400	10	8	8	7	6	5
Lead (Total)	mg/kg	C4SL	200	15	15	15	10	4	6
Mercury (Total)	mg/kg	LQM S4UL	40	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Nickel (Total)	mg/kg	LQM S4UL	180	5	6	5	7	9	7
Selenium (Total)	mg/kg	LQM S4UL	250	<1	<1	1	<1	<1	<1
Zinc (Total)	mg/kg	LQM S4UL	3700	32	28	30	24	15	16
Cyanide (Total)	mg/kg	ATKINS	34	<1	<1	<1	<1	<1	<1
Phenols (Total)	mg/kg	LQM S4UL	550	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Organic matter	%	LQM S4UL	N/a	4.1	4.9	3.9	1.8	0.3	0.5
Sulphate (Acid Soluble)	mg/kg	LQM S4UL	N/a	<200	<200	<200	<200	<200	<200
Sulphate as Water Soluble	g/l	LQM S4UL	N/a	<0.01	<0.01	0.04	<0.01	<0.01	<0.01
Sulphide	mg/kg	LQM S4UL	N/a	9	7	<5	<5	<5	<5
pH	pH units	LQM S4UL	N/a	8.49	8.52	8.09	8.27	8.07	8.01
Sulphur (Elemental)	mg/kg	LQM S4UL	N/a	5	<5	7	7	<5	<5
Asbestos									
Asbestos in soil	N/a		N/a	NAD	NAD	NAD	NAD	NAD	NAD
Asbestos Matrix (microscope)	N/a		N/a	-	-	-	-	-	-
ACM - Suitable for Water Absorption Test?	N/a		N/a	N/A	N/A	N/A	N/A	N/A	N/A
Asbestos in soil % composition	% w/w		0.001	n/t	n/t	n/t	n/t	n/t	n/t
TPH Suite									
TPH (Total)	mg/kg		N/a	139	169	123	2	11	15
Total Aliphatic	mg/kg		N/a	21	27	21	<1	2	2
>C5 to C6 aliphatic	mg/kg	LQM S4UL	78	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C6 to C8 aliphatic	mg/kg	LQM S4UL	230	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C8 to C10 aliphatic	mg/kg	LQM S4UL	65	<1	<1	<1	<1	<1	<1
>C10 to C12 aliphatic	mg/kg	LQM S4UL	330	<1	<1	<1	<1	<1	<1
>C12 to C16 aliphatic	mg/kg	LQM S4UL	2400	<1	<1	<1	<1	<1	<1
>C16 to C35 aliphatic	mg/kg	LQM S4UL	92000	19	25	19	<1	2	2
>C35 to C44 aliphatic	mg/kg	LQM S4UL	92000	2	2	2	<1	<1	<1
Total Aromatic	mg/kg		N/a	117	141	102	2	9	12
>C5 to C7 aromatic(Benzene)	mg/kg	LQM S4UL	140	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C7 to C8 aromatic(Toluene)	mg/kg	LQM S4UL	290	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C8 to C10 aromatic	mg/kg	LQM S4UL	83	<1	<1	<1	<1	<1	<1
>C10 to C12 aromatic	mg/kg	LQM S4UL	180	<1	3	5	<1	<1	1
>C12 to C16 aromatic	mg/kg	LQM S4UL	330	3	8	8	<1	<1	1
>C16 to C21 aromatic	mg/kg	LQM S4UL	540	7	97	68	2	7	8
>C21 to C35 aromatic	mg/kg	LQM S4UL	1500	83	33	21	<1	2	2
>C35 to C44 aromatic	mg/kg	LQM S4UL	1500	25	n/t	n/t	n/t	n/t	n/t
Aliphatic + Aromatic EC >44-70	mg/kg	LQM S4UL	N/a	n/t	n/t	n/t	n/t	n/t	n/t
BTEX Suite									
benzene	mg/kg	LQM S4UL	0.17	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
toluene	mg/kg	LQM S4UL	290	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
ethylbenzene	mg/kg	LQM S4UL	110	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
M&P Xylene	mg/kg	LQM S4UL	130	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
O-Xylene	mg/kg	LQM S4UL	140	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PAH Suite									
naphthalene	mg/kg	LQM S4UL	5.6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
acenaphthylene	mg/kg	LQM S4UL	420	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
acenaphthene	mg/kg	LQM S4UL	510	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
fluorene	mg/kg	LQM S4UL	400	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
phenanthrene	mg/kg	LQM S4UL	220	<0.03	0.05	0.05	<0.03	0.03	<0.03
anthracene	mg/kg	LQM S4UL	5400	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
fluoranthene	mg/kg	LQM S4UL	560	0.11	0.22	0.15	<0.08	<0.08	<0.08
pyrene	mg/kg	LQM S4UL	1200	0.09	0.18	0.16	<0.07	<0.07	<0.07
benzo(a)anthracene	mg/kg	LQM S4UL	11	0.07	0.08	0.08	<0.04	<0.04	<0.04
chrysene	mg/kg	LQM S4UL	22	0.09	0.1	0.1	<0.06	<0.06	<0.06
benzo(b)fluoranthene	mg/kg	LQM S4UL	3.3	0.08	0.09	0.09	<0.05	<0.05	<0.05
benzo(k)fluoranthene	mg/kg	LQM S4UL	93	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
benzo(a)pyrene	mg/kg	LQM S4UL	2.7	0.04	0.07	0.08	<0.04	<0.04	<0.04
dibenzo(ah)anthracene	mg/kg	LQM S4UL	0.28	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
benzo(ghi)perylene	mg/kg	LQM S4UL	340	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
indeno(123cd)pyrene	mg/kg	LQM S4UL	36	0.03	0.06	0.06	<0.03	<0.03	<0.03

LQM/CIEH S4ULs Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3104. All rights reserved.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/08459
Issue Number: 1 **Date:** 13 August, 2021

Client: Sutcliffe
18-20 Harrington Street
Liverpool
L2 9QA

Project Manager: (Use) D Evans; D Bowen; A Tosh; W Baldwin/(Use) Jo
Project Name: Prospect House, Manchester
Project Ref: 30186LG
Order No: 8704
Date Samples Received: 04/08/21
Date Instructions Received: 05/08/21
Date Analysis Completed: 12/08/21

Prepared by:

[redacted]

Melanie Marshall
Laboratory Coordinator

Approved by:

[redacted]

Richard Wong
Client Manager

Envirolab Job Number: 21/08459

Client Project Name: Prospect House, Manchester

Client Project Ref: 30186LG

Lab Sample ID	21/08459/1	21/08459/2	21/08459/3	21/08459/4	21/08459/5	21/08459/6		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TS1	TS2	TS3	SS5	SS2	SS3				
Depth to Top	0.1	0.1	0.1	0.3	0.3	0.3				
Depth To Bottom	0.3	0.2	0.2	0.4	0.5	0.5				
Date Sampled	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4A	4A				
% Moisture at <40C$_{A}$	10.5	14.8	11.6	11.2	9.1	11.4		% w/w	0.1	A-T-044
% Stones >10mm$_{A}$	<0.1	2.8	<0.1	1.6	0.8	<0.1		% w/w	0.1	A-T-044
pH$_{D}^{M\#}$	8.49	8.52	8.09	8.27	8.07	8.01		pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_{D}^{M\#}$	<0.01	<0.01	0.04	<0.01	<0.01	<0.01		g/l	0.01	A-T-026s
Sulphate (acid soluble)$_{D}^{M\#}$	<200	<200	<200	<200	<200	<200		mg/kg	200	A-T-028s
Cyanide (total)$_{A}^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_{A}$	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		mg/kg	0.2	A-T-050s
Sulphide$_{A}$	9	7	<5	<5	<5	<5		mg/kg	5	A-T-S2-s
Sulphur (elemental)$_{D}^{M\#}$	5	<5	7	7	<5	<5		mg/kg	5	A-T-029s
Organic matter$_{D}^{M\#}$	4.1	4.9	3.9	1.8	0.3	0.5		% w/w	0.1	A-T-032 OM
Arsenic$_{D}^{M\#}$	2	2	2	2	<1	<1		mg/kg	1	A-T-024s
Boron (water soluble)$_{D}$	1.1	<1.0	<1.0	1.2	<1.0	<1.0		mg/kg	1	A-T-027s
Cadmium$_{D}^{M\#}$	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		mg/kg	0.5	A-T-024s
Copper$_{D}^{M\#}$	10	8	8	7	6	5		mg/kg	1	A-T-024s
Chromium$_{D}^{M\#}$	6	6	6	7	12	8		mg/kg	1	A-T-024s
Chromium (hexavalent)$_{D}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-040s
Chromium (trivalent)	6	6	6	7	12	8		mg/kg	1	Calc
Lead$_{D}^{M\#}$	15	15	15	10	4	6		mg/kg	1	A-T-024s
Mercury$_{D}$	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17		mg/kg	0.17	A-T-024s
Nickel$_{D}^{M\#}$	5	6	5	7	9	7		mg/kg	1	A-T-024s
Selenium$_{D}^{M\#}$	<1	<1	1	<1	<1	<1		mg/kg	1	A-T-024s
Zinc$_{D}^{M\#}$	32	28	30	24	15	16		mg/kg	5	A-T-024s

Envirolab Job Number: 21/08459

Client Project Name: Prospect House, Manchester

Client Project Ref: 30186LG

Lab Sample ID	21/08459/1	21/08459/2	21/08459/3	21/08459/4	21/08459/5	21/08459/6		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TS1	TS2	TS3	SS5	SS2	SS3				
Depth to Top	0.1	0.1	0.1	0.3	0.3	0.3				
Depth To Bottom	0.3	0.2	0.2	0.4	0.5	0.5				
Date Sampled	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4A	4A				
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	NAD	NAD	NAD	NAD	NAD				A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-	-	-				A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	N/A	N/A	N/A	N/A				A-T-045

Envirolab Job Number: 21/08459

Client Project Name: Prospect House, Manchester

Client Project Ref: 30186LG

Lab Sample ID	21/08459/1	21/08459/2	21/08459/3	21/08459/4	21/08459/5	21/08459/6		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TS1	TS2	TS3	SS5	SS2	SS3				
Depth to Top	0.1	0.1	0.1	0.3	0.3	0.3				
Depth To Bottom	0.3	0.2	0.2	0.4	0.5	0.5				
Date Sampled	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4A	4A				
PAH-16MS										
Acenaphthene$_{A}^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Acenaphthylene$_{A}^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Anthracene$_{A}^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_{A}^{M\#}$	0.07	0.08	0.08	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_{A}^{M\#}$	0.04	0.07	0.08	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_{A}^{M\#}$	0.08	0.09	0.09	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_{A}^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_{A}^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Chrysene$_{A}^{M\#}$	0.09	0.10	0.10	<0.06	<0.06	<0.06		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_{A}^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Fluoranthene$_{A}^{M\#}$	0.11	0.22	0.15	<0.08	<0.08	<0.08		mg/kg	0.08	A-T-019s
Fluorene$_{A}^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_{A}^{M\#}$	0.03	0.06	0.06	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Naphthalene $_{A}^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Phenanthrene$_{A}^{M\#}$	<0.03	0.05	0.05	<0.03	0.03	<0.03		mg/kg	0.03	A-T-019s
Pyrene$_{A}^{M\#}$	0.09	0.18	0.16	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Total PAH-16MS$_{A}^{M\#}$	0.51	0.85	0.77	<0.08	<0.08	<0.08		mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/08459

Client Project Name: Prospect House, Manchester

Client Project Ref: 30186LG

Lab Sample ID	21/08459/1	21/08459/2	21/08459/3	21/08459/4	21/08459/5	21/08459/6		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TS1	TS2	TS3	SS5	SS2	SS3				
Depth to Top	0.1	0.1	0.1	0.3	0.3	0.3				
Depth To Bottom	0.3	0.2	0.2	0.4	0.5	0.5				
Date Sampled	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21	04-Aug-21				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4AE	4AE	4AE	4A	4A	4A				
TPH UKCWG										
Ali >C5-C6$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C6-C8$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C8-C10$_{A}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C10-C12$_{A}^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C12-C16$_{A}^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C16-C21$_{A}^{M\#}$	2	3	2	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C21-C35$_{A}^{M\#}$	17	22	17	<1	2	2		mg/kg	1	A-T-055s
Ali >C35-C44$_{A}$	2	2	2	<1	<1	<1		mg/kg	1	A-T-055s
Total Aliphatics$_{A}$	21	27	21	<1	2	2		mg/kg	1	A-T-055s
Aro >C5-C7$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C7-C8$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C8-C10$_{A}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C10-C12$_{A}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C12-C16$_{A}$	3	3	5	<1	<1	1		mg/kg	1	A-T-055s
Aro >C16-C21$_{A}^{M\#}$	7	8	8	<1	<1	1		mg/kg	1	A-T-055s
Aro >C21-C35$_{A}^{M\#}$	83	97	68	2	7	8		mg/kg	1	A-T-055s
Aro >C35-C44$_{A}$	25	33	21	<1	2	2		mg/kg	1	A-T-055s
Total Aromatics$_{A}$	117	141	102	2	9	12		mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C44)$_{A}$	139	169	123	2	11	15		mg/kg	1	A-T-055s
BTEX - Benzene$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Toluene$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - o Xylene$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
MTBE$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Sutcliffe, 18-20 Harrington Street, Liverpool, L2 9QA

Project No: 21/08459

Date Received: 05/08/2021 (pm)

Project: Prospect House, Manchester

Cool Box Temperatures (°C): 25.6

Clients Project No: 30186LG

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-120:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

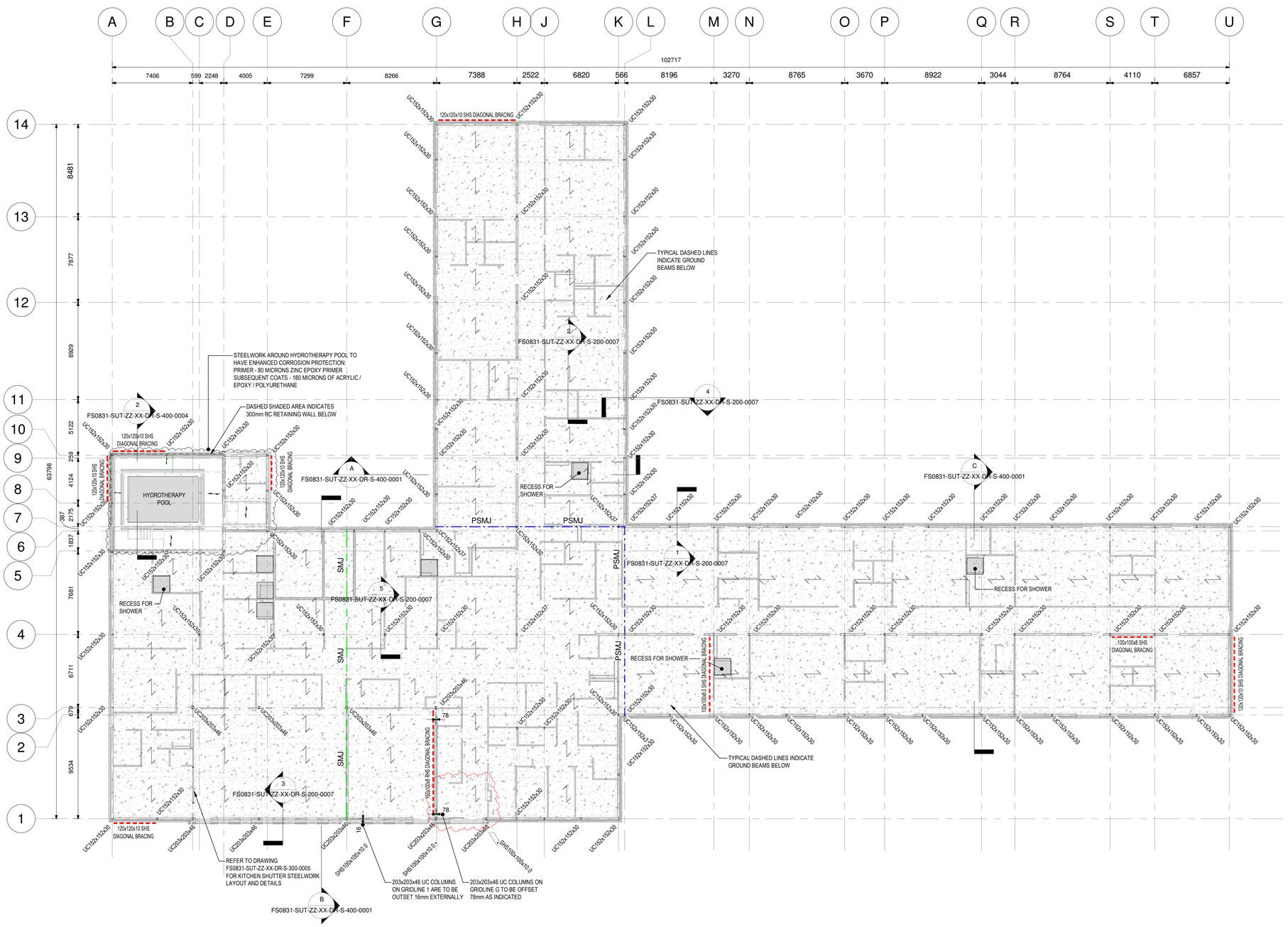
Envirolab Analysis Dates

Lab Sample ID	21/08459/1	21/08459/2	21/08459/3	21/08459/4	21/08459/5	21/08459/6
Client Sample No						
Client Sample ID/Depth	TS1 0.1-0.3m	TS2 0.1-0.2m	TS3 0.1-0.2m	SS5 0.3-0.4m	SS2 0.3-0.5m	SS3 0.3-0.5m
Date Sampled	04/08/21	04/08/21	04/08/21	04/08/21	04/08/21	04/08/21
A-T-019s	09/08/2021	09/08/2021	09/08/2021	09/08/2021	09/08/2021	09/08/2021
A-T-022s	11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021
A-T-024s	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021
A-T-026s	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021
A-T-027s	12/08/2021	12/08/2021	12/08/2021	12/08/2021	12/08/2021	12/08/2021
A-T-028s	11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021
A-T-029s	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021
A-T-031s	09/08/2021	09/08/2021	09/08/2021	09/08/2021	09/08/2021	09/08/2021
A-T-032 OM	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021
A-T-040s	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021
A-T-042sTCN	12/08/2021	12/08/2021	12/08/2021	12/08/2021	12/08/2021	12/08/2021
A-T-044	12/08/2021	12/08/2021	12/08/2021	12/08/2021	12/08/2021	12/08/2021
A-T-045	06/08/2021	06/08/2021	06/08/2021	06/08/2021	06/08/2021	06/08/2021
A-T-050s	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021
A-T-054	12/08/2021					
A-T-055s	11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021
A-T-S2-s	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021
Calc	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

Appendix C – Foundation Design Drawings



1 GROUND FLOOR LAYOUT

1 : 200

GAS MEMBRANE NOTE:-

GAS MEMBRANE TO BE DESIGNED IN ACCORDANCE WITH BS 8485:2015 WITH THE CLASSIFICATION BUILDING TYPE C REQUIRED TO ACHIEVE 4.5 POINTS FOR CHARACTERISTIC SITUATION 4 CS4 LEVEL PROTECTION. DISPERSAL LAYER FOR VENTILATION LIKELY TO BE POLYSTYRENE TO ACHIEVE 1.5 POINTS

INDICATES SPAN 175mm C28/35 SUSPENDED SLAB WITH B503 MESH TOP AND BOTTOM

STEELWORK ALLOWANCE

FOR TENDER PURPOSES ONLY PLEASE INCLUDE THE FOLLOWING STEELWORK ALLOWANCE:-

SECONDARY STEELWORK - 10%
CONNECTIONS - 10%
BRACING / LATERAL FRAMES - 10%

THE STEEL FABRICATOR IS TO ALLOW FOR USING BOTH THE STRUCTURAL ENGINEERS & ARCHITECTS DRAWINGS WHEN PREPARING FABRICATION DRAWINGS.

NOTE:

SEE DRAWING FS0831-SUT-ZZ-XX-DR-S-200-0007 - GROUND FLOOR AND FOUNDATION DETAILS, FOR EXTERNAL AND INTERNAL GROUND FLOOR SECTIONS

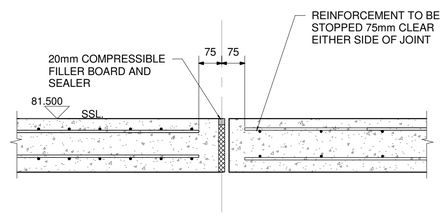
NOTE:

INDICATES SHOWER RECESS LOCATIONS REFER TO ARCHITECTS DRAWING FS031-JMA-01-00-DR-A-23-0001 FOR SETTING OUT

NOTE:-

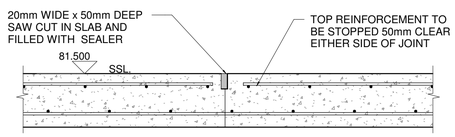
ICL RESERVE THE RIGHT TO LOOK AT ALTERNATIVE SOLUTIONS IN RESPONSE TO THE FINDINGS FROM THE SURVEY FOLLOWING THE FIRE.

INDICATES SPAN OF BEAM AND BLOCK FLOOR TO MANUFACTURERS SPECIFICATION



2 PRIMARY SLAB MOVEMENT JOINT (PSMJ)

1 : 10



3 SLAB MOVEMENT JOINT (SMJ)

1 : 10

THE CONTRACTOR IS TO BE FULLY RESPONSIBLE FOR ALL TEMPORARY / PERMANENT PROPPING AND SHORING ON THE PROJECT. CONTRACTOR TO ENSURE THAT ALL PARTS OF THE STRUCTURE ARE ADEQUATLEY PROPPED PRIOR TO ANY COMMENCEMENT OF WORKS. ADVICE MAY BE SOUGHT FROM A SPECIALIST OR FROM THE STRUCTURAL ENGINEER

ALL DIMENSIONS, LEVELS AND SETTING OUT TO BE CONFIRMED WITH THE ARCHITECT PRIOR TO CONSTRUCTION

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS DRAWINGS

BEAMS TO RECEIVE TIMBER WALL PLATES OR BEARERS SHALL BE DRILLED AT 450mm STAGGERED LONGITUDINAL CENTRES AND STANDARD FLANGE OR LEG CROSS CENTRES, HOLES TO BE 10mm DIAMETER TO RECEIVE M8 BOLTS (UNLESS NOTED OTHERWISE)

STRUCTURAL FIRE PROTECTION. REFER PRIMARILY TO ARCHITECT'S SPECIFICATION. THE STRUCTURAL FRAME, BEAMS, COLUMNS AND LOADBEARING WALLS SHALL BE RATED TO MIN. 60 MINUTES FIRE RESISTANCE. MEMBERS WITHIN FIRE COMPARTMENT WALLS MAY REQUIRE SUPPLEMENTARY FIRE PROTECTION. MEMBERS THAT SUPPORT ONLY THE ROOF MAY NOT REQUIRE FIRE PROTECTION.
ALL BEAMS THAT ARE CONCRETE ENCASED SHALL INCORPORATE A MINIMUM OF ONE LAYER D49 WRAPPING FABRIC AROUND BEAM. COVER TO WRAPPING FABRIC TO BE NOT LESS THAN 25mm U.N.O.

CORROSION PROTECTION.

CORROSION PROTECTION SYSTEM TO COMPLY WITH BS EN ISO 12944. WHERE INTUMESCENT/DECORATIVE PAINT IS SPECIFIED BY THE ARCHITECT, COMPATIBILITY WITH CORROSION PROTECTION TO BE CHECKED BY STEEL FABRICATOR.

SURFACE PREPARATION: BLAST CLEAN TO Sa 21/2 IN ACCORDANCE WITH
BS EN ISO 8501 (U.N.O). CORROSION PROTECTION TO BE SHOP APPLIED IN LINE WITH THE ENVIRONMENTAL CATEGORIES BELOW:

ENVIRONMENT CATEGORY C1 (E.G. INSIDE HEATED, DRY BUILDINGS):
NO CORROSION PROTECTION REQUIRED

ENVIRONMENT CATEGORY C4 (E.G CHEMICAL PLANTS & SWIMMING POOLS):
80 MICRONS OF ZINC EPOXY PRIMER AND 180 MICRONS OF ACRYLIC/EPOXY/POLYURETHANE

FOR STEELWORK IN EXTERNAL WALL CAVITIES WITH MIN. 40MM SEPARATION FROM THE OUTER LEAF: 80 MICRONS OF ZINC EPOXY PRIMER

FOR STEELWORK IN EXTERNAL WALL CAVITIES WHICH IS IN DIRECT CONTACT WITH THE OUTER LEAF: STEELWORK TO BE HOT DIP GALVANISED TO BS EN ISO 1461 OR STAINLESS STEEL

ALL STRUCTURAL EXPOSED STEELWORK SECTIONS AND STEELWORK SECTIONS LOCATED BELOW GROUND LEVEL SHALL BE HOT DIPPED GALVANISED TO BS EN ISO 1461 OR SURROUNDED IN CONCRETE TO GIVE 100mm MINIMUM COVER.

FLOOR SLAB REINFORCED CONCRETE

DESIGN SULPHATE CLASS: DS-1
ACEC CLASSIFICATION: AC-2z
DESIGN CHEMICAL CLASS: DC-2z

REINFORCED CONCRETE TO BE GRADE C28/35
MINIMUM CEMENT CONTENT 300 kg/m³
WATER/CEMENT RATIO OF 0.6
MAXIMUM AGGREGATE SIZE 20mm.

MINIMUM CONCRETE COVER TO BE 40mm TOP, 40mm BTM AND SIDES UNLESS NOTED OTHERWISE.
ALL REINFORCEMENT TO BE GRADE B500B OR B500C AS BS4449 AND TO BE CUT AND BENT TO BS8666.

CONTRACTOR TO USE APPROVED SPACER BLOCKS & REBAR SAFETY CAPS. CONTRACTOR MUST ENSURE ANY PROTRUDING BARS ARE TO HAVE SAFETY CAPS FITTED TO ENDS PRIOR TO NEXT LIFT/POUR/CONNECTION.

REINFORCEMENT MINIMUM LAPS FOR C28/35
BOTTOM LAYER (GOOD BOND CONDITIONS):

B8 : 330mm	B10 : 440mm
B12 : 570mm	B16 : 830mm
B20 : 1090mm	B25 : 1420mm
B32 : 1810mm	B40 : 2460mm

TOP LAYER (POOR BOND CONDITIONS):

B8 : 460mm	B10 : 670mm
B12 : 810mm	B16 : 1190mm
B20 : 1560mm	B25 : 2020mm
B32 : 2580mm	B40 : 3510mm

ALL LAPS AND INTERSECTIONS OF BARS SHALL BE SECURELY CONNECTED WITH MALLEABLE IRON WIRE OF A SUITABLE SIZE OR OTHER APPROVED METHOD OF FIXING.

ALL REINFORCEMENT SHALL BE ACCURATELY PLACED, SECURED AND MAINTAINED IN POSITION. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY STOOLS, CHAIRS AND SPACERS REQUIRED TO SUPPORT AND RESTRAIN REINFORCEMENT.

MESH REINFORCEMENT TO HAVE A MINIMUM LAP OF 460mm UNLESS NOTED OTHERWISE.

ALL CONCRETE TO BE ADEQUATELY VIBRO COMPACTED (ON PLACING) TO ENSURE THAT ALL VOIDS ARE REMOVED.

ALL WORKS ARE TO CARRIED OUT IN ACCORDANCE WITH ALL THE RELEVANT BRITISH STANDARD CODES OF PRACTICE.

General Notes

DO NOT SCALE OFF THIS DRAWING

THIS DRAWING TO READ IN CONJUNCTION WITH ALL RELEVANT STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.

ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR / FABRICATOR PRIOR TO COMMENCEMENT OF WORKS.

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.

ALL WORKS TO BE CARRIED OUT IN STRICT ACCORDANCE WITH THE ENGINEER'S SPECIFICATIONS, RELEVANT BRITISH STANDARDS, STATUTORY HEALTH AND SAFETY/C.D.M. REGULATIONS, RELEVANT CODES OF PRACTICE AND THE CURRENT EDITION OF THE BUILDING REGULATIONS.

FOR FINAL SETTING OUT INFORMATION RELATING TO GRID LINES AND WALL POSITIONS REFER TO THE ARCHITECT'S DRAWINGS.

STRUCTURAL STEELWORK

THIS DRAWINGS IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, MECHANICAL & ELECTRICAL AND ARCHITECTS DRAWINGS AND SPECIFICATIONS. ALL GRID AND SETTING OUT DIMENSIONS AND LEVELS TO BE CROSS-CHECKED AGAINST ARCHITECTS DRAWINGS. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH STATUTORY HEALTH AND SAFETY/C.D.M. REGULATIONS, RELEVANT CODES OF PRACTICE AND THE CURRENT EDITION OF THE BUILDING REGULATIONS.

ALL STRUCTURAL STEELWORK SHALL BE DESIGNED AND FABRICATED IN ACCORDANCE WITH THE NSSS (5TH EDITION- CE MARKING VERSION), THE PROJECT SPECIFICATION AND BS EN-1993

STEELWORK GRADES. COLUMNS TO BE GRADE S355 BEAMS TO BE GRADE S355, UNLESS NOTED OTHERWISE.

NOTES TO SUB CONTRACTORS.
THE STEELWORK SUPPLIER IS TO SUBMIT DUPLICATE COPIES OF ALL FABRICATION DRAWINGS TO THE ENGINEER FOR EXAMINATION AND COMMENT WELL IN ADVANCE OF FABRICATION (MIN. 5 WORKING DAYS).

ALL SUB CONTRACTORS FENESTRATION PRODUCTS IE CLADDING, STONEWORK, RAINSCREENS, CURTAIN WALLING, SHEETING AND GLAZING ARE TO SPAN AND BE FIXED VERTICALLY TO STEEL BEAMS OR CONCRETE FLOORS. NO HORIZONTAL FIXINGS ARE PERMITTED UNLESS OTHERWISE AGREED WITH THE ENGINEER. HORIZONTAL FIXINGS MAY RESULT IN ADDITIONAL SECONDARY STEEL BEING REQUIRED.

THE STEELWORK SUB CONTRACTOR SHOULD ALLOW IN HIS TENDER FOR LIASING WITH THE CHOSEN SUPPLIER OF MASONRY SUPPORT SYSTEMS AND WINDPOSTS/RAILS (IE ANCON OR SIMILAR APPROVED) TO DETERMINE THE FIXING REQUIREMENTS OF SUCH ITEMS BACK TO THE MAIN FRAME STEELWORK.

THE STEELWORK FABRICATOR SHOULD MAKE PROVISION FOR FIXING POINTS etc FOR THE CONNECTION OF SAFETY HARNESSES/EDGE PROTECTION WHERE NECESSARY TO SUIT THE PROPOSED ERECTION PROCEDURE IN ACCORDANCE WITH THE RELEVANT HEALTH AND SAFETY GUIDELINES.

THE STEELWORK FABRICATOR SHOULD ALSO INCLUDE IN HIS TENDER FOR THE PROVISION OF ERECTION LIFTING POINTS FOR THE SAFE ERECTION OF STEELWORK.

CONCRETE MIX FOR PAD STONES SHALL BE MIN. C20/25 IN ACCORDANCE WITH BS 8500. ALL PAD STONES ARE TO BE FULLY BEDDED ON MORTAR OVER THEIR FULL AREA. THE GC IS TO SUPPLY SUFFICIENT LAMINATED MILD STEEL PACKS FOR LEVELLING OF ALL NEW STEELWORK.

ALL STEEL LEVELLING AND PACKING SHIMS TO BE PROVIDED BY STEELWORK SUPPLIER.

CONNECTIONS. INCLUDING THE COLUMN BASEPLATES SHALL BE DESIGNED BY THE STEELWORK SUBCONTRACTOR, ALL BEAM CONNECTIONS TO HAVE FULL BEAM DEPTH END PLATES, MINIMUM CONNECTION TO BE 4 M16 GRADE 8.8 BOLTS OR THE EQUIVALENT IN WELD. FIRE PROTECTION TO ARCHITECTS DETAILS.

ALL BOLTS ARE TO BE GRADE 8.8 TO BS 3692:2001, UNLESS NOTED OTHERWISE, AND HOT DIP SPUN GALVANIZED TO BS EN ISO 1461:1999.

ALL WELDING SHALL COMPLY WITH BS EN 1011-2:2001 AND BS EN 1011-1:1998 U.N.O. AND ALL FILLET WELDS SHALL HAVE A MIN THROAT THICKNESS OF 6mm U.N.O.

MASONRY RESTRAINTS. ALL INTERNAL BLOCKWALLS TO BE RESTRAINED BY ANCON IHR-B OR SIMILAR APPROVED HEAD RESTRAINTS C/W SLEEVE FIXED TO U/S OF FLOORS/RAFTERS AT 750 CRS. WALLS BUILT UP TO U/S OF COMPOSITE FLOOR TO BE RESTRAINED BY STAGGERED ANGLES (ANCON FHR).

ALL MEMBERS BUILT INTO OR RESTRAINING MASONRY SHALL BE CAPABLE OF ADJUSTMENT (MINIMUM TOLERANCE +/- 10mm). NONE PROPRIETARY SUPPORT MEMBERS ARE TO BE TACK WELDED OR POSITIVELY FIXED IN POSITION ON COMPLETION OF ALIGNMENT.

BUILDERS WORK. FOR DETAILS OF HOLES REQUIRED THROUGH FLOOR SLABS AND GROUND FLOOR SLAB REFER TO MECHANICAL AND ELECTRICAL DRAWINGS AND BUILDERS WORK.

Rev	Description	Date	By	Chkd
C06	Recess for barrier matting removed as requested	23.06.21	SH	LW
C05	Reference to kitchen shutter steelwork drawing added	02.06.21	SH	LW
C04	Area of beam and block slab updated to RC slab where indicated	16.04.21	SH	LW
C03	Updated to architects comments	26.02.21	SH	LW
C02	Design update in line with hazardous waste mitigation strategy	25.01.21	SH	LW
C01	Construction Issue	28.05.20	SH	LW

Drawing Status
CONSTRUCTION DRAWING

Sutcliffe
Civil & Structural Engineers, Building Surveyors & Geo-Environmentalists
www.sutcliffe.co.uk
LIVERPOOL 0151 227 7155 | MANCHESTER 0161 817 5160 | WREXHAM 01978 664071 | LONDON 020 74 564136

Client
Interserve

Project
Manchester SEND
Prospect House
Blackley

Drawing Title
Ground Floor Layout GA

Date	Drawn By	Checked By
JUN. 2021	S.HODGE	LW

Scale at A1	Project Number	Revision
As indicated	30186	C06

Sheet Number
FS0831-SUT-ZZ-GF-DR-S-200-0002

Appendix D – MEC Environmental Ltd Gas Membrane Installation Validation Report

MEC ENVIRONMENTAL LTD

Gas Membrane Installation

Validation Report

Tilbury Douglas

Prospect House SEN School

Bank House Road

Blackley

Manchester

M9 8LT

THIS PAGE IS INTENTIONALLY BLANK

1. INTRODUCTION

1.1 Purpose

ACS Linings are installing a gas protection membrane to the aforementioned site. MEC Environmental Ltd (MEC) has been appointed by ACS Linings to carry out independent validation of the installation of the membrane on the site as per our terms of engagement.

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

1.2 Limitations

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

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

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

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

1.3 Compliance with Regulation 7 of Building Regulations

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

A reasonable standard may be demonstrated by:

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

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

Integrity Testing methods. – are carried out as prescribed in CIRIA C735, unless stated elsewhere Frequency of Visits – Were a validation plan has not been prepared then the frequency of visits is as per the instructions of the client, This report should be read in conjunction with the installers CQA report.

1.4 Method of Inspection (Per Visit)

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

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

Major repairs are visually inspected/tested, repairs passing the inspection/testing were considered acceptable. In some cases minor repairs maybe carried out under contractor CQA and photographic evidence supplied to the verifier for inclusion in the report, this approach is in line with CIRIA C735.

1.5 MEC Staff Competency

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

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

1.6 Conclusion

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

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

Sign[redacted] Date: 13/09/21

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

Appendix 1- Site Survey Sheets

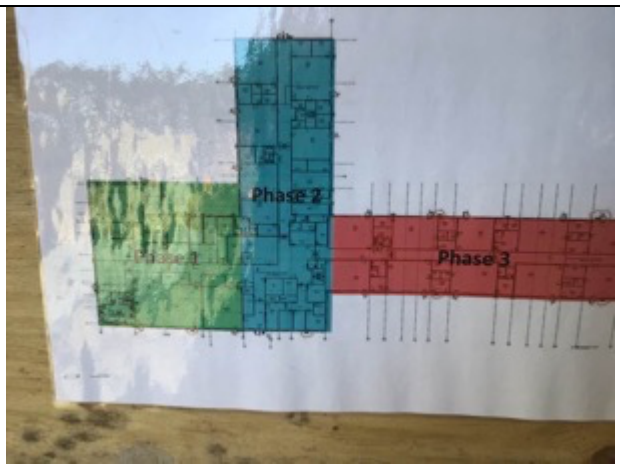
Site name: Tilbury Douglas, Prospect house sen school, Bank house rd, Blackley, Manchester. **Postcode: M9 8LT**	**Units/ plots checked: : Phase one, A/G - 1/5 -1/6**
Installers Name: ACS	
Date: 09/06/2021	
Inspection by: Keith Barsby	**Weather: 22ºC Fine**

	Item	**Comments**			
Sub-floor void		Full blanket of 25mm geocomposite vent former.			
Ventilation Inlets and Outlets		Not in Place at time of inspection			
Number Of Vents		22no "T" vent pipes with continuous slotted collection pipe installed			
Materials used:		Membrane – Juta 25mm gas vent mat			
		Self-Adhesive Membrane ☒ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☐ Yes	Preformed Corners ☐ Yes		
		Others Please List: Slotted collection pipe, 300mm "T" pieces			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a thorough visual inspection of the vent mat which had been installed to a good standard. The vent mat has been installed across the full footprint of the area. At the opposing perimeter edges, a continuous slotted gas collection pipe has been installed with the vent mat slotted into the pipe.			
Type of Joint		Tape Joint ☐	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☐ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☒ Yes	☐ No	☐ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out: None Have any defects identified above been satisfactorily rectified ☐ Yes ☐ No ☒ N/A The Area has passed inspection ☒ The Area has failed inspection and a corrective action sheet has been left with the contractor ☐ The Area is incomplete as detailed above ☐ Signed: **Keith Barsby** Date: **09/06/2021**

Area Inspected

Photo **09/06/2021**

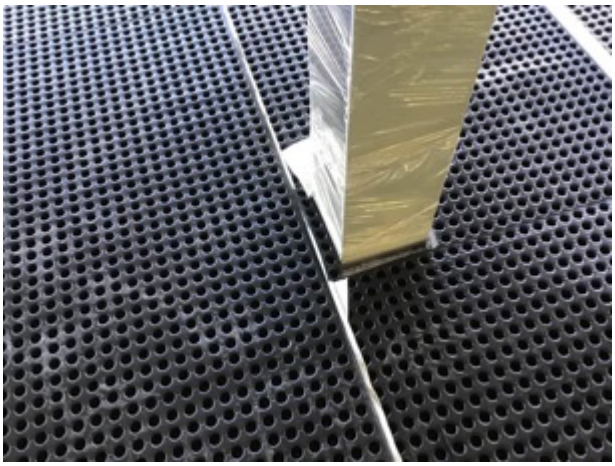


Floor plan

Overview

Vent into slotted collection pipe

Vent mat around pipe



Vent mat around stanchion

Inlet/outlet pipe

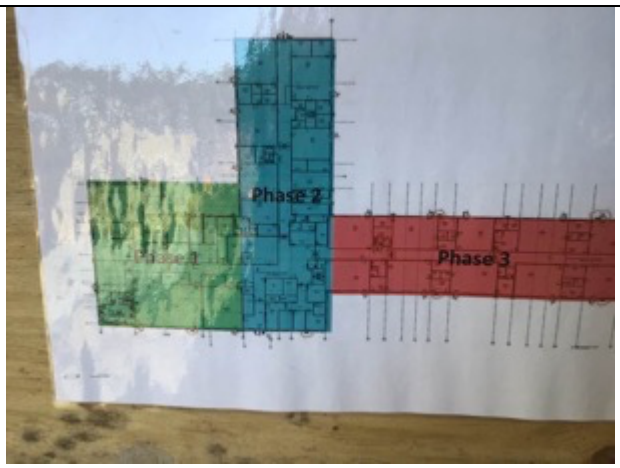
Site name: Tilbury Douglas, Prospect house sen school, Bank house rd, Blackley, Manchester. **Postcode: M9 8LT**	**Units/ plots checked: : Phase one, A/G - 1/5 -1/6**
Installers Name: ACS	
Date: 10/06/2021	
Inspection by: Keith Barsby	**Weather: 20ºC Fine**

	Item	**Comments**			
Sub-floor void		Full blanket of 25mm geocomposite vent former. (Previously Inspected			
Ventilation Inlets and Outlets		Not in Place at time of inspection			
Number Of Vents		22no Previously Inspected			
Materials used:		Membrane – ACS Gas Membrane			
		Self-Adhesive Membrane ☒ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☒ Yes	Preformed Corners ☐ Yes		
		Others Please List: N/A			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a thorough visual inspection of the membrane that has been laid to the marked up plan below, the membrane has been installed to a good standard. Along gridlines 1/A, 1/G, 6/E, the membrane has been turned up the face of the timber shuttering. *Around the pool area, the membrane has been joined using SAGM to the membrane that has been previously installed under the pool base and wall. The previously installed membrane under the pool base and around the pool walls was not inspected by MEC Environmental as it had been covered at the time of our inspection and therefore no comment can be made on this area. All pipe penetrations and stanchions have been sealed using SAGM.			
Type of Joint		Tape Joint ☒	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☒ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☒ Yes	☐ No	☐ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out:None Have any defects identified above been satisfactorily rectified ☐ Yes ☐ No ☒ N/A The Area Inspected has passed inspection ☒ The Area has failed inspection and a corrective action sheet has been left with the contractor ☐ The Area is incomplete as detailed above ☐ Signed: **Keith Barsby** Date: **10/06/2021**

Area Inspected

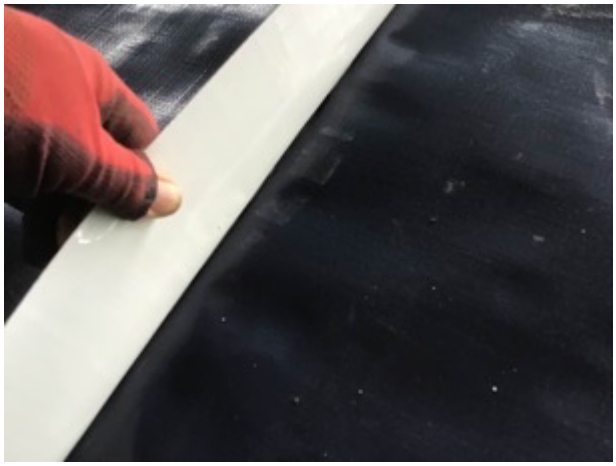
Photo **10/06/2021**



Floor plan

Overview

Multiple pipe seals using SAGM



Tape joint

Perimeter edge

Stanchion seal using SAGM

Site name: Tilbury Douglas, Prospect house sen school, Bank house rd, Blackley, Manchester. **Postcode: M9 8LT**	**Units/ plots checked: : Phase 2 gridlines G/L - 7/14**
Installers Name: ACS Linings	
Date: 16/06/2021	
Inspection by: Keith Barsby	**Weather: 26ºC Fine**

	Item	**Comments**			
Sub-floor void		Full blanket of 25mm geocomposite vent former			
Ventilation Inlets and Outlets		Not in Place at time of inspection			
Number Of Vents		19no			
Materials used:		Membrane – N/A			
		Self-Adhesive Membrane ☐ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☒ Yes	Preformed Corners ☐ Yes		
		Others Please List: N/A			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a thorough visual inspection of the vent mat which had been installed to a good standard. The vent mat has been installed across the full footprint of the area. At the opposing perimeter edges, a continuous slotted gas collection pipe has been installed with the vent mat slotted into the pipe			
Type of Joint		Tape Joint ☐	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☐ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☐ Yes	☐ No	☒ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out: Have any defects identified above been satisfactorily rectified ☐ Yes ☐ No ☒ N/A The Area has passed inspection ☒ The Area has failed inspection and a corrective action sheet has been left with the contractor ☐ The Area is incomplete as detailed above ☐ Signed: **Keith Barsby** Date: **16/06/2021**

Area Inspected

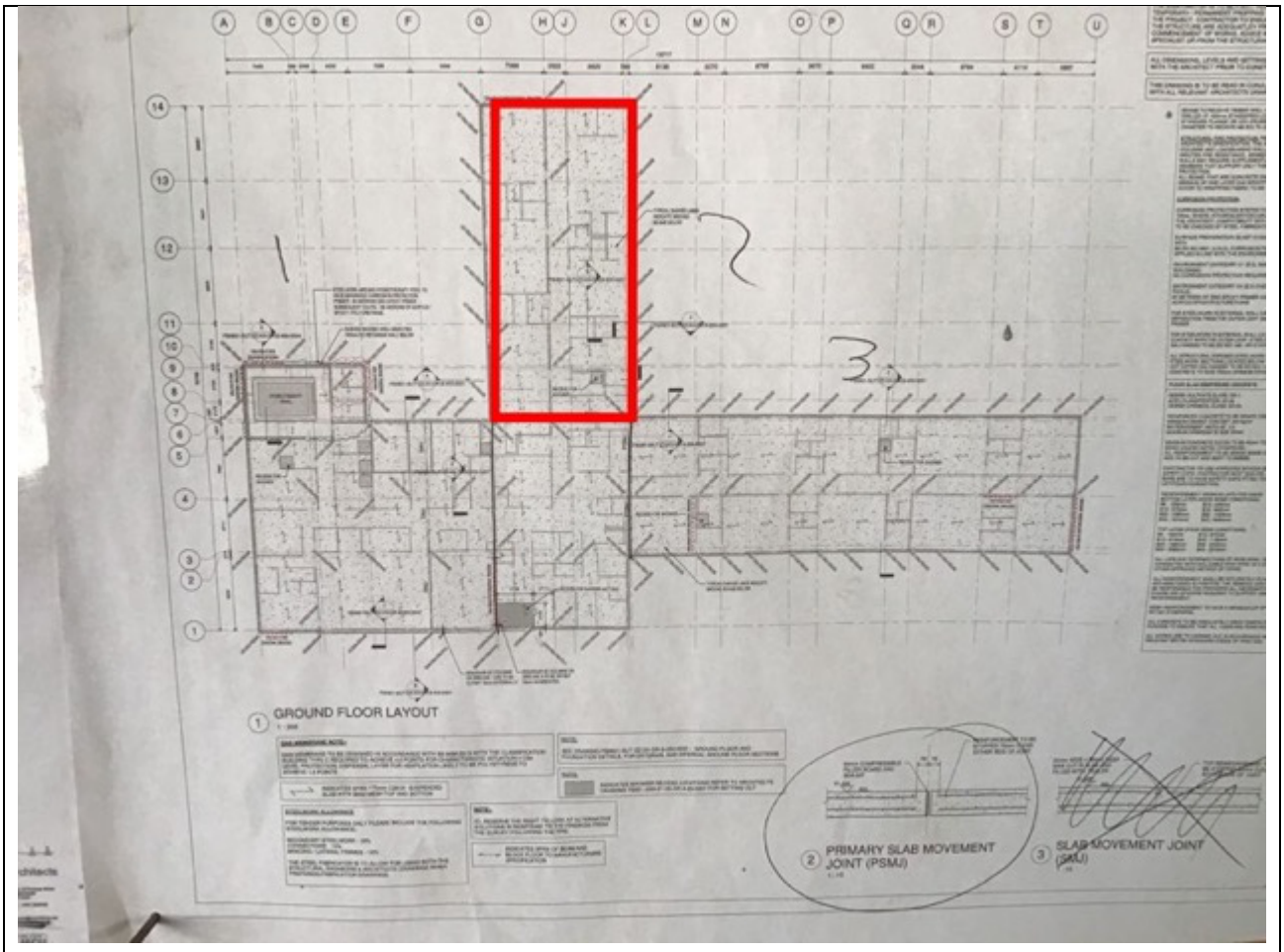
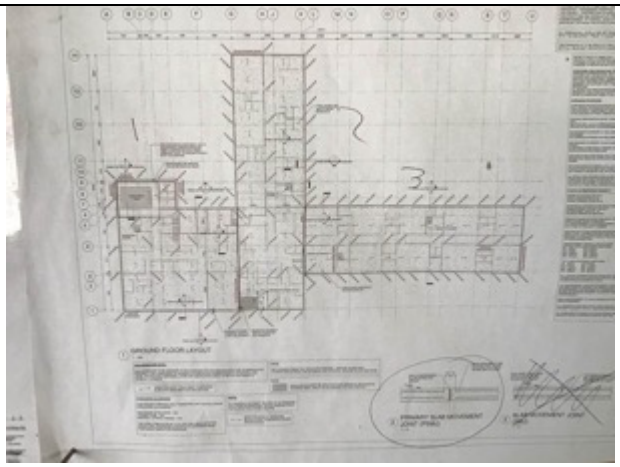
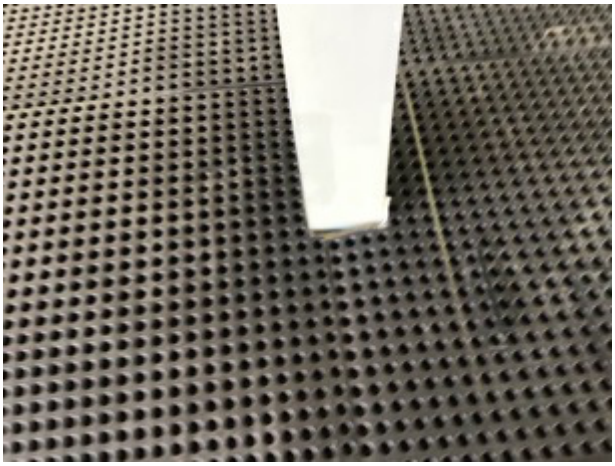


Photo **16/06/2021**

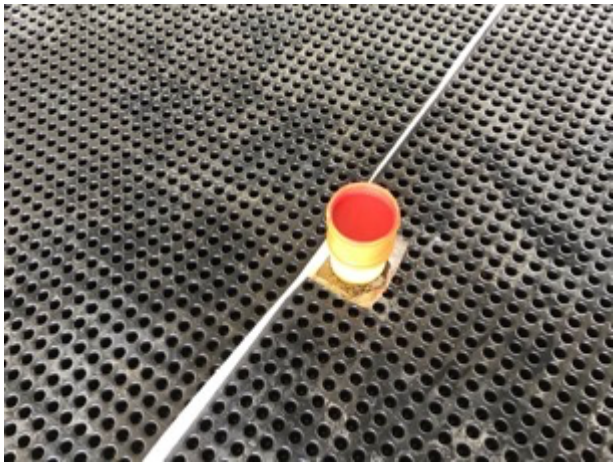


Floor plan

Overview



Vent mat around stanchion



Vent mat around pipe

Vent mat inserted into slotted collection pipe

Perimeter edge beam

Vent mat inserted into slotted collection pipe

"T" piece with slotted pipe

Site name: Tilbury Douglas, Prospect house sen school, Bank House Rd, Blackley, Manchester. **Postcode: M9 8LT**	**Units/ plots checked: : Phase 2 gridlines G/L - 7/14**
Installers Name: ACS Linings	
Date: 21/06/2021	
Inspection by: Keith Barsby	**Weather: 17ºC Overcast**

	Item	**Comments**			
Sub-floor void		Full blanket of 25mm geocomposite vent former (Previously Inspected)			
Ventilation Inlets and Outlets		Not in Place at time of inspection			
Number Of Vents		19no (Previously Inspected)			
Materials used:		Membrane – ACS Gas membrane			
		Self-Adhesive Membrane ☒ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☒ Yes	Preformed Corners ☐ Yes		
		Others Please List: N/A			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a thorough visual inspection of the membrane. The membrane has been installed across the area denoted above. At the perimeter edge along gridline 14 the membrane has been turned up the face of the timber shutter.			
Type of Joint		Tape Joint ☒	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☒ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☐ Yes	☒ No	☐ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☐ Yes	☒ No	☐ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☐ Yes	☒ No	☐ N/A

	(List any defects to detailing work and joints): At the perimeter edge along gridline G, the membrane has been damaged during the installation of the timber shuttering and requires repairing, all other work in this area has passed inspection Signed: **Keith Barsby** Date: **21/06/2021**

Area Inspected

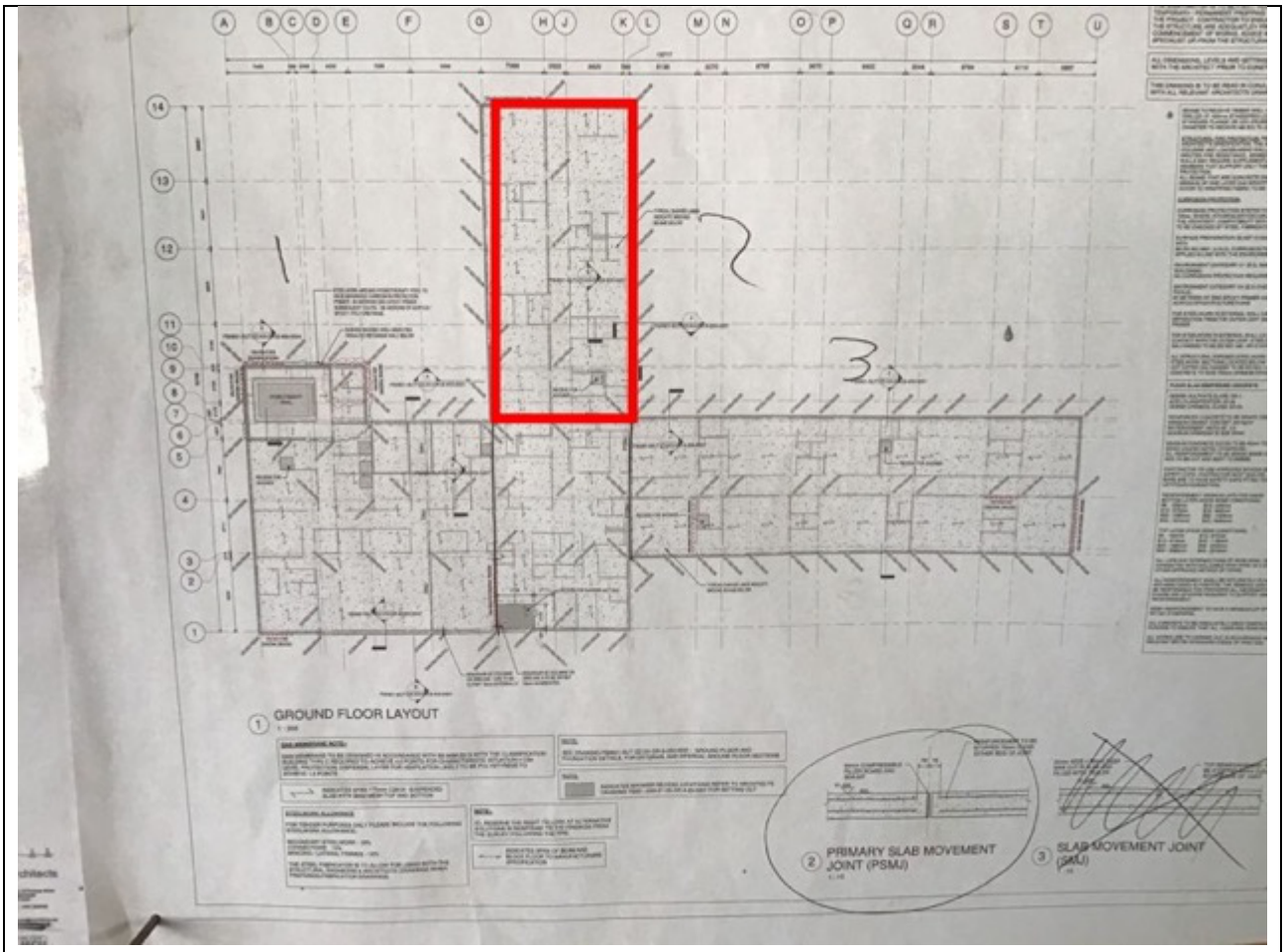
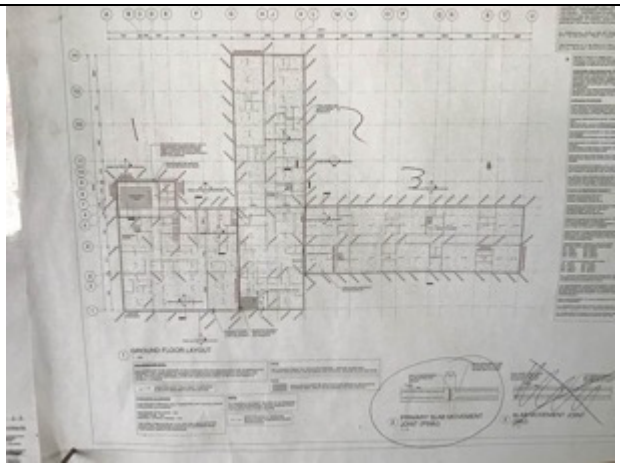


Photo **21/06/2021**

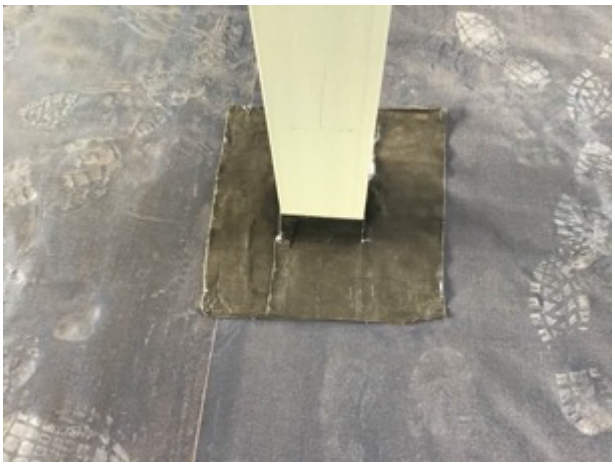


Floor plan

Overview

Pipe seal using SAGM

SAGM being pick tested around a stanchion



Stanchion seal using SAGM

Perimeter edge

Damage to perimeter edge

Site name: Tilbury Douglas, Prospect House SEN School, Bank House Rd, Blackley, Manchester. **Postcode: M9 8LT**	**Units/ plots checked: : Phase 2 gridlines G/L - 1/7 (venting)**
Installers Name: ACS Linings	
Date: 22/06/2021	
Inspection by: Keith Barsby	**Weather: 20ºC Fine**

	Item	**Comments**			
Sub-floor void		Full blanket of 25mm geocomposite vent former			
Ventilation Inlets and Outlets		Not in Place at time of inspection			
Number Of Vents		4no			
Materials used:		Membrane – N/A			
		Self-Adhesive Membrane ☐ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☒ Yes	Preformed Corners ☐ Yes		
		Others Please List: N/A			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a thorough visual inspection of the vent mat which had been installed to a good standard. The vent mat has been installed across the TFA of the area denoted above. At the opposing perimeter edges, a continuous slotted gas collection pipe has been installed with the vent mat slotted into the pipe.			
Type of Joint		Tape Joint ☐	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☐ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☐ Yes	☐ No	☒ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out: Have any defects identified above been satisfactorily rectified ☐ Yes ☐ No ☒ N/A The Area has passed inspection ☒ The Area has failed inspection and a corrective action sheet has been left with the contractor ☐ The Area is incomplete as detailed above ☐ Signed: **Keith Barsby** Date: **22/06/2021**

Area Inspected

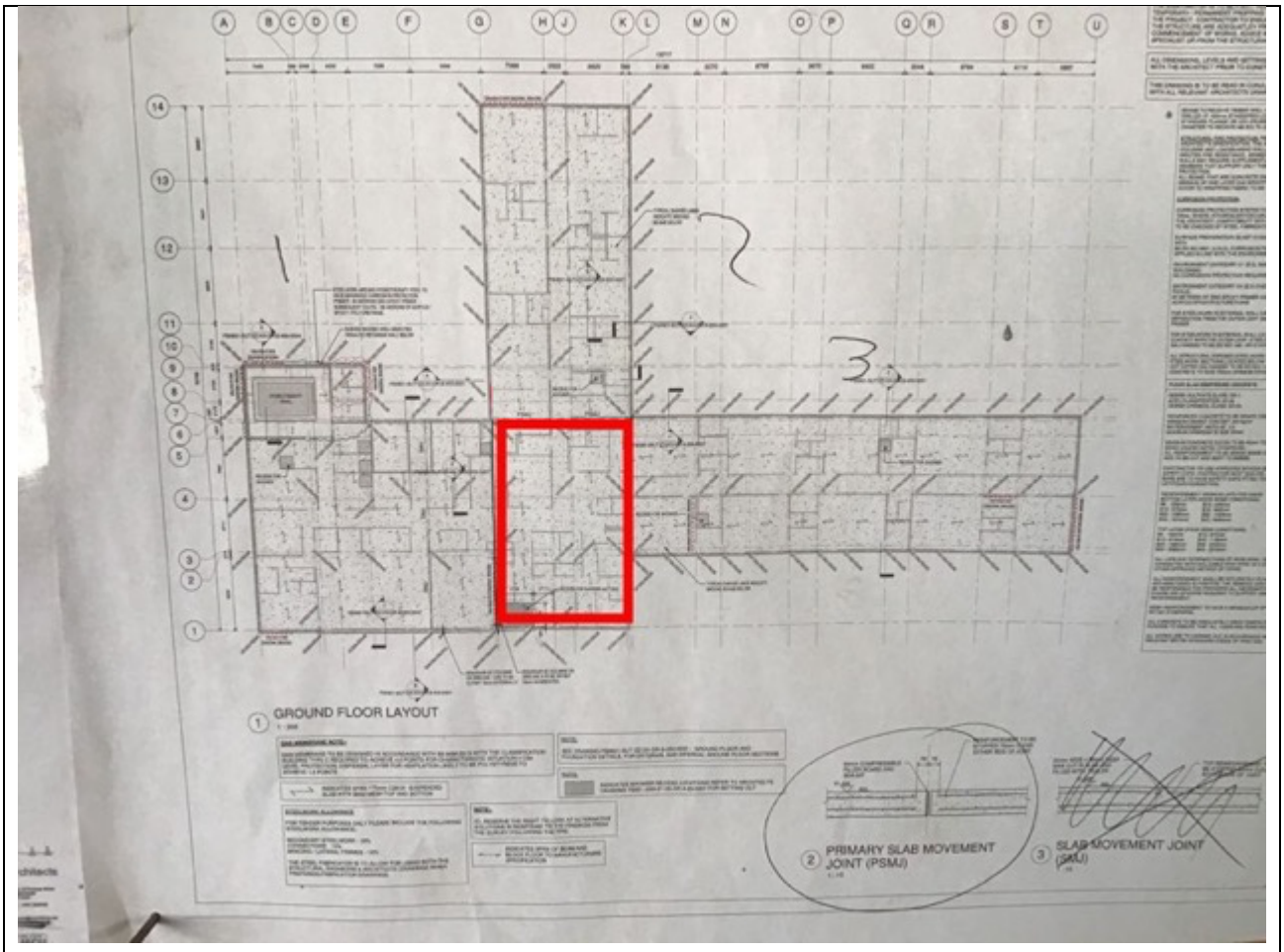
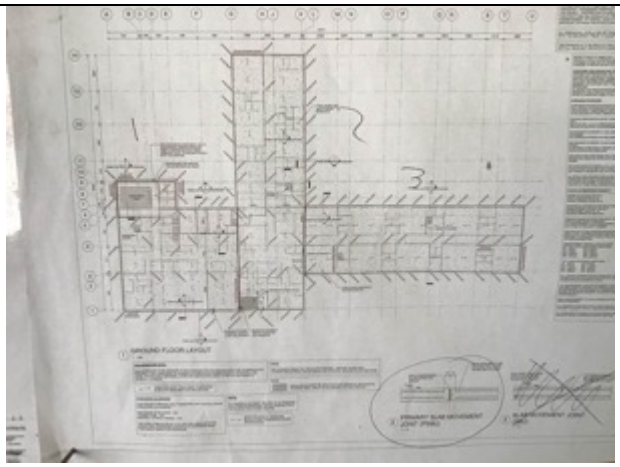


Photo **22/06/2021**

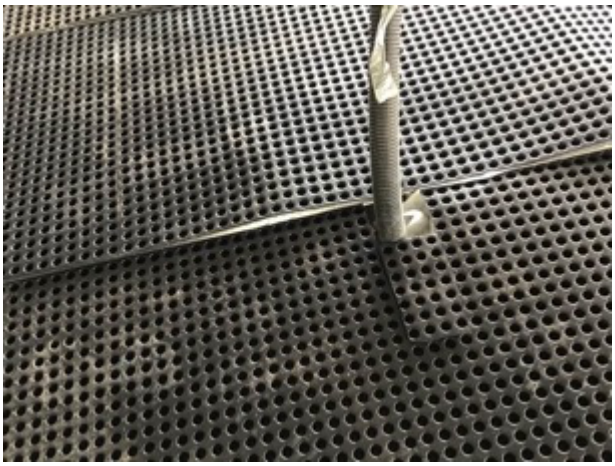


Floor plan

Overview

Vent mat inserted into slotted collection pipe

Vent mat around stanchion



Vent mat around pipe

Site name: Tilbury Douglas, Prospect House SEN School, Bank house rd, Blackley, Manchester. **Postcode: M9 8LT**	**Units/ plots checked: : Phase 2 gridlines G/L - 1/7(Membrane)**
Installers Name: ACS Linings	
Date: 22/06/2021	
Inspection by: Keith Barsby	**Weather: 22ºC Fine**

	Item	**Comments**			
Sub-floor void		Full blanket of 25mm geocomposite vent former			
Ventilation Inlets and Outlets		Not in Place at time of inspection			
Number Of Vents		4no			
Materials used:		Membrane – ACS Gas membrane			
		Self-Adhesive Membrane ☒ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☒ Yes	Preformed Corners ☐ Yes		
		Others Please List: N/A			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a thorough visual inspection of the membrane. The membrane has been installed across the area denoted above. At the perimeter edge, the membrane has been turned up the inside face of the timber shuttering. The membrane has been joined to the previously installed membrane using tape joints. All pipes have been sealed using SAGM, stanchions in the middle of the area have been sealed using SAGM.			
Type of Joint		Tape Joint ☒	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☒ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☐ Yes	☒ No	☐ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☐ Yes	☒ No	☐ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out: The stanchions at the perimeter edge have been sealed internally using SAGM and will require sealing once the shutter has been removed. All other area inspected on this visit have passed inspection (Repairs have successfully been carried out on 02/09/21 & 13/09/21) Signed: **Keith Barsby** Date: **22/06/2021**

Area Inspected

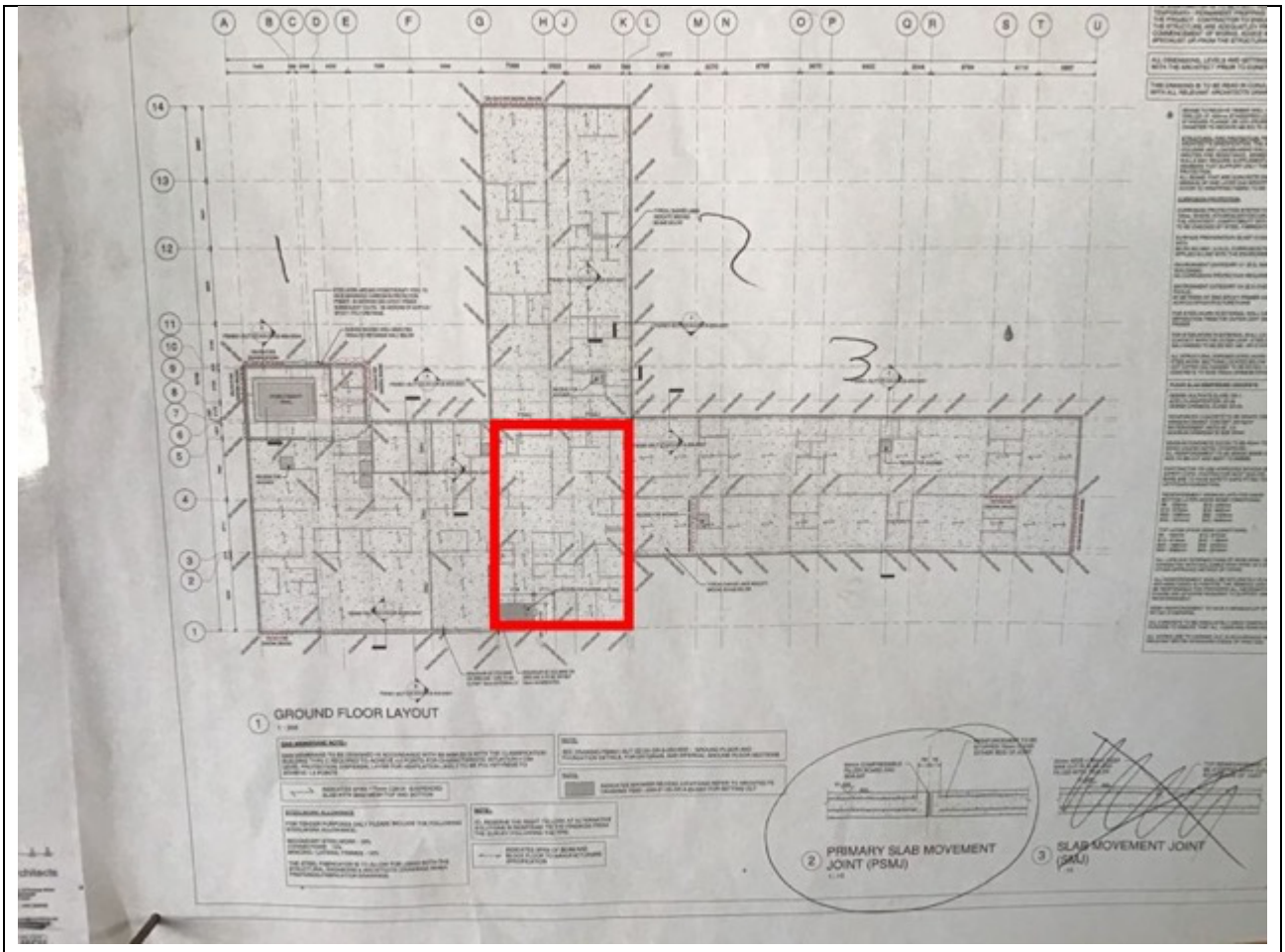
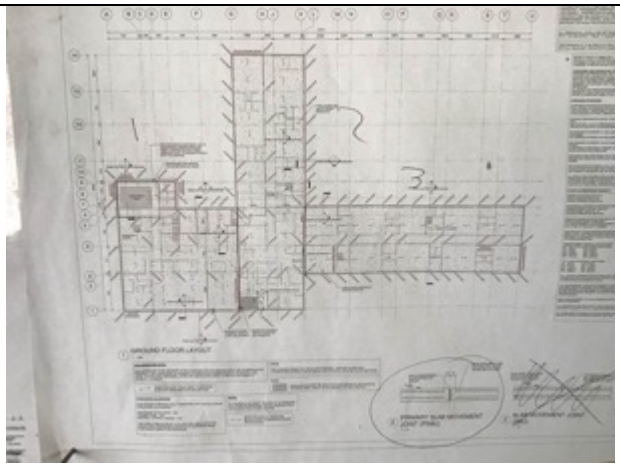
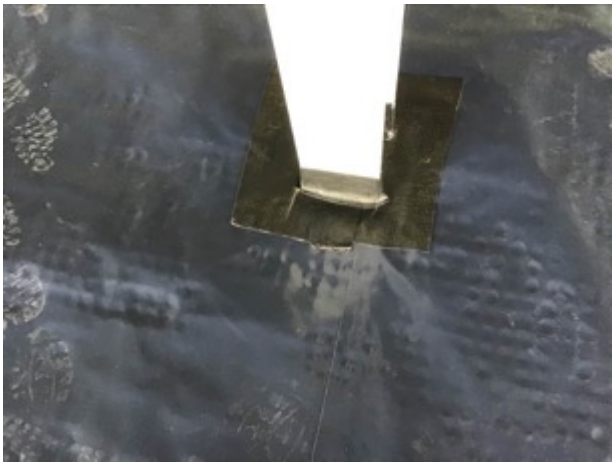


Photo **22/06/2021**

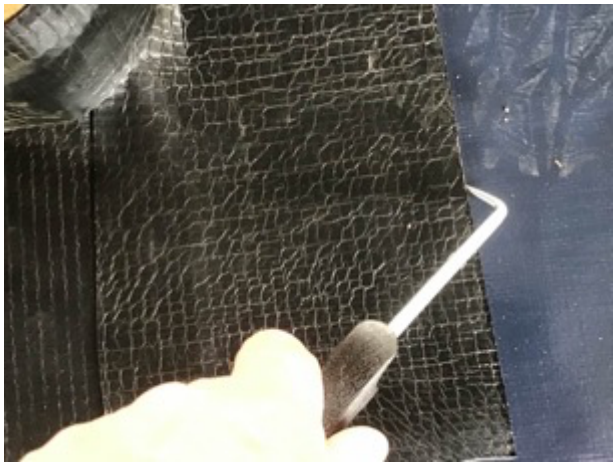


Floor plan

Overview

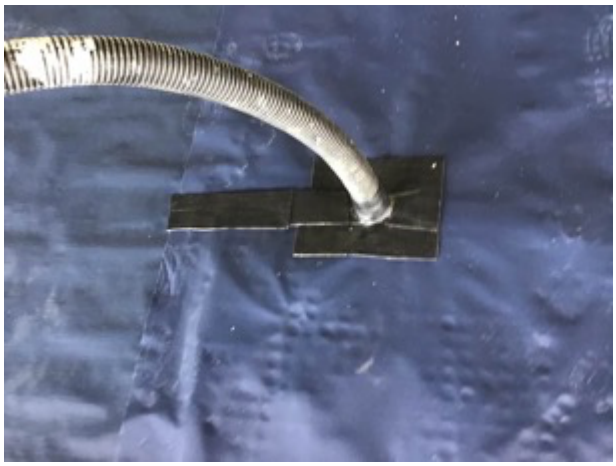


Stanchion seal using SAGM



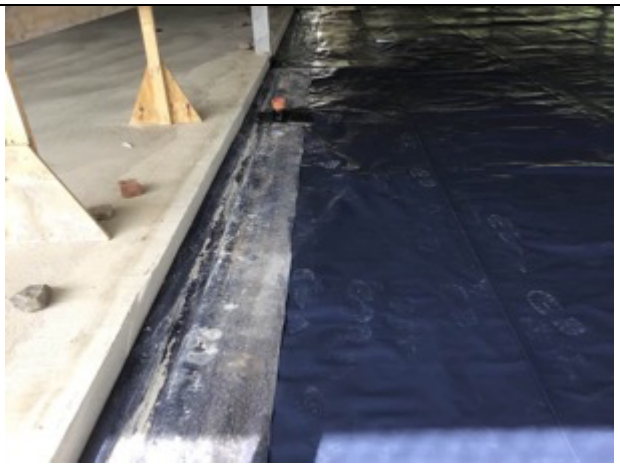
Pipe seal being pick tested

Pipe seal using SAGM



Pipe seal using SAGM

Perimeter edge



Joint to previously installed membrane

Site name: Tilbury Douglas Construction. Bank House Road. Middleton **Postcode: M9 8LT**	**Units/ plots checked: : Manchester SEN prospect house primary school. Full venting installation. Gridlines L-U / 2-7**
Installers Name: ACS	
Date: 28/06/2021	
Inspection by: Dan Squire	**Weather: 15ºC Dry**

	Item	**Comments**			
Sub-floor void		N/A			
Ventilation Inlets and Outlets		N/A			
Number Of Vents		N/A			
Materials used:		Membrane – ACS gas membrane			
		Self-Adhesive Membrane ☒ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☐ Yes	Preformed Corners ☐ Yes		
		Others Please List: ACS Vent sheet and T pieces			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a thorough visual inspection of the venting mat, the venting mat is installed across the full footprint of the building and joins onto the vent T pieces around the perimeter edge which run through the perimeter ground beam. The venting has been installed to a good standard.			
Type of Joint		Tape Joint ☐	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☐ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☐ Yes	☐ No	☒ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out: N/A Have any defects identified above been satisfactorily rectified ☐ Yes ☐ No ☒ N/A The Area has passed inspection ☒ The Area has failed inspection and a corrective action sheet has been left with the contractor ☐ The Area is incomplete as detailed above ☐ Signed: **Dan Squire** Date: **28/06/2021**

Area Inspected

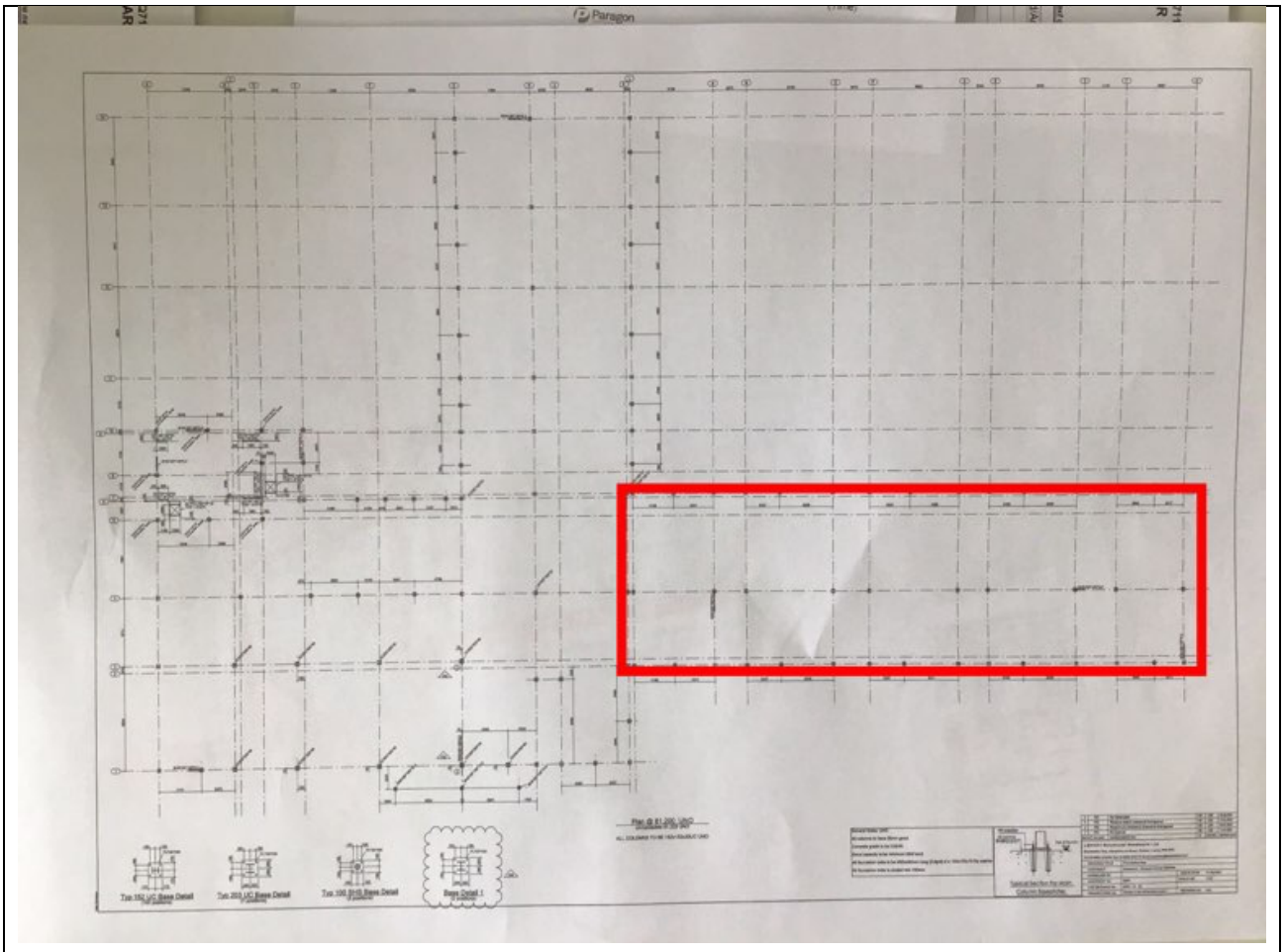


Photo **28/06/2021**

Full venting installation

Vent mat joining to perimeter T piece

T piece coming through the perimeter concrete beam

Vent mat connected to perimeter T piece

Full venting installation gridlines L-U / 2-7

Full venting installation gridlines L-U / 2-7

Venting cut around pipe penetration

Site name: Tilbury Douglas Construction. Bank House Road. Middleton **Postcode: M9 8LT**	**Units/ plots checked: : Manchester SEN prospect house primary school. Full line out installation. Gridlines D-E / 8-9 & L-U / 2-7**
Installers Name: ACS	
Date: 02/07/2021	
Inspection by: Dan Squire	**Weather: 17ºC Dry**

	Item	**Comments**			
Sub-floor void		N/A			
Ventilation Inlets and Outlets		N/A			
Number Of Vents		N/A			
Materials used:		Membrane – ACS gas membrane			
		Self-Adhesive Membrane ☒ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☐ Yes	Preformed Corners ☐ Yes		
		Others Please List: N/A			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a thorough visual inspection of the gas membrane, the membrane is installed to a good standard across the full footprint of the building on top of the venting mat inspected on the previous visit on the gridlines denoted above. The membrane is extended up and over the temporary perimeter shuttering. All stanchions and penetrations sealed using SAGM.			
Type of Joint		Tape Joint ☒	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☒ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☐ Yes	☐ No	☒ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out: 10no patch repairs made by the installers using SAGM. Have any defects identified above been satisfactorily rectified ☒ Yes ☐ No ☐ N/A The Area has passed inspection ☒ The Area has failed inspection and a corrective action sheet has been left with the contractor ☐ The Area is incomplete as detailed above ☐ Signed: **Dan Squire** Date: **02/07/2021**

Area Inspected

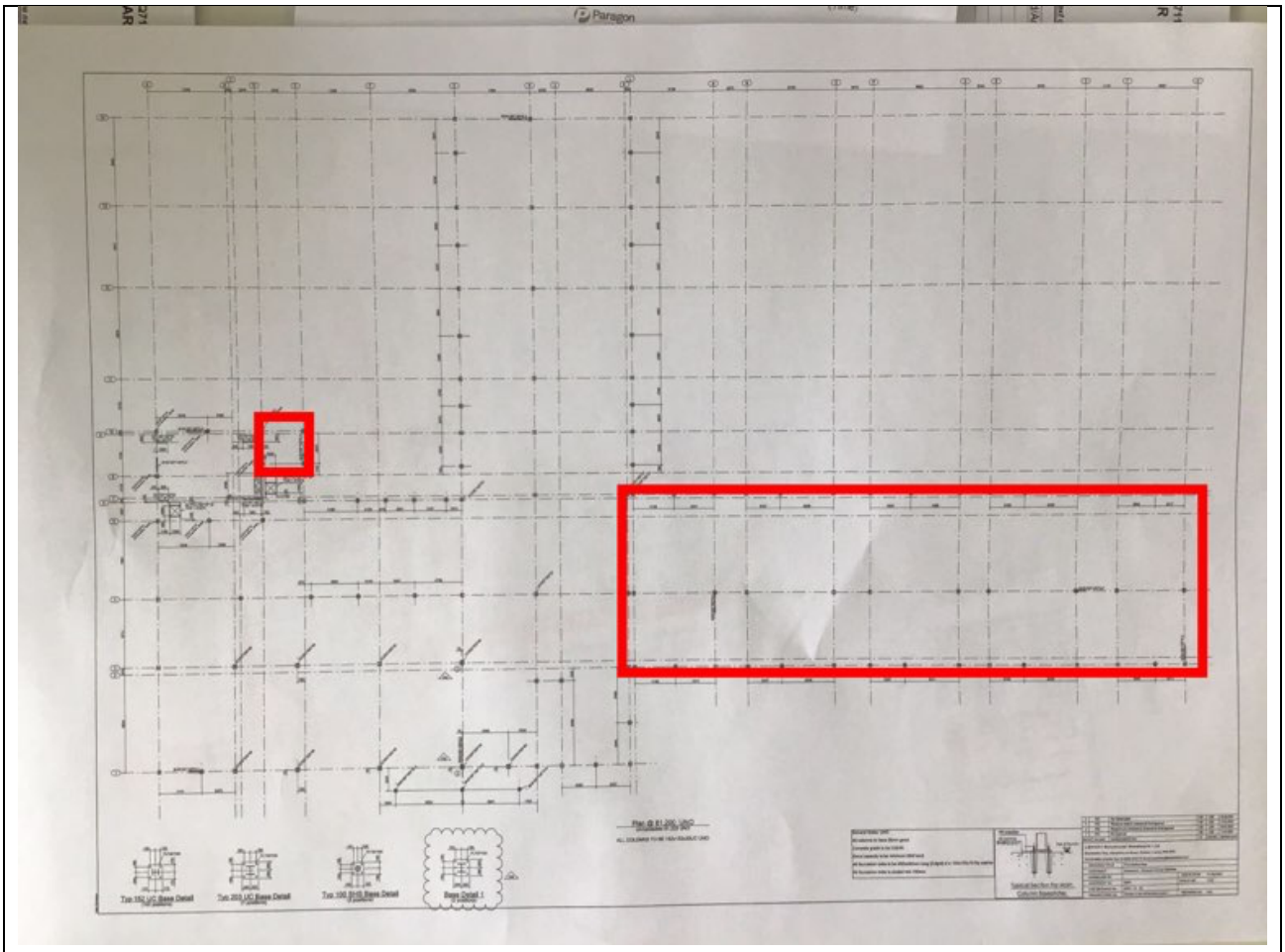
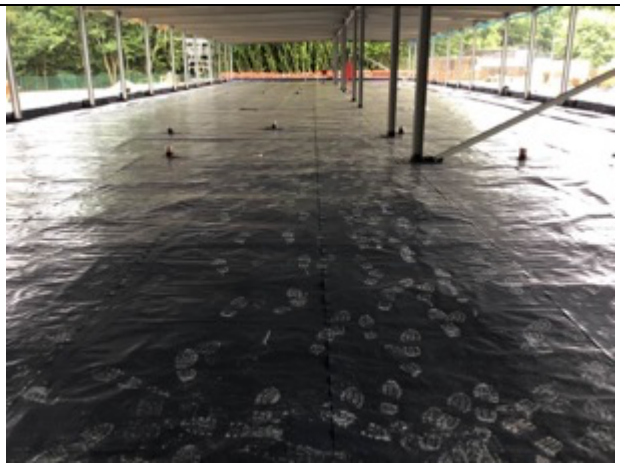


Photo **02/07/2021**

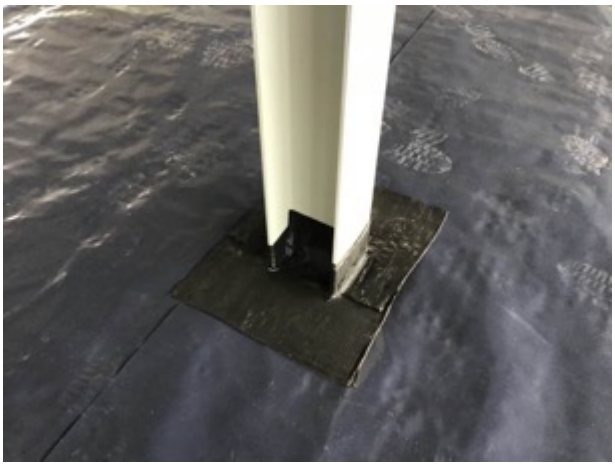


Full line out installation gridlines L-U / 2-7

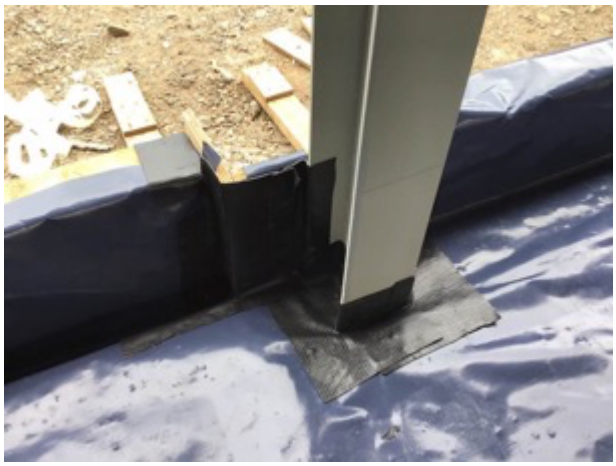
Full line out installation gridlines D-E / 8-9

Sealed stanchion detail

Sealed pipe penetration



Sealed stanchion detail



Sealed perimeter stanchion and corner detailing

Sealed double sided butyl tape membrane joint

Site name: Tilbury Douglas, Prospect house SEN school, Bank house Rd, Blackley, Manchester. **Postcode: M9 8LT**	**Units/ plots checked: : Perimeter edge membrane**
Installers Name: ACS Linings	
Date: 04/08/2021	
Inspection by: Keith Barsby	**Weather: 24ºC Fine**

	Item	**Comments**			
Sub-floor void		Full blanket of 25mm geocomposite vent former			
Ventilation Inlets and Outlets		Not in Place at time of inspection			
Number Of Vents					
Materials used:		Membrane – ACS Gas membrane			
		Self-Adhesive Membrane ☒ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☐ Yes	Preformed Corners ☐ Yes		
		Others Please List: N/A			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a visual inspection of the membrane and the stanchions at the perimeter edge of the slab prior to the external leaf of brick work being built.			
Type of Joint		Tape Joint ☒	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☒ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☐ Yes	☒ No	☐ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out: The stanchions have been sealed using SAGM, however, the membrane has been damaged (Repairs have successfully been carried out on 02/09/21 & 13/09/21) Have any defects identified above been satisfactorily rectified ☒ Yes ☐ No ☐ N/A The Area has passed inspection ☒ The Area has failed inspection and a corrective action sheet has been left with the contractor ☐ The Area is incomplete as detailed above ☐ Signed: **Keith Barsby** Date: **04/08/2021**

Area Inspected

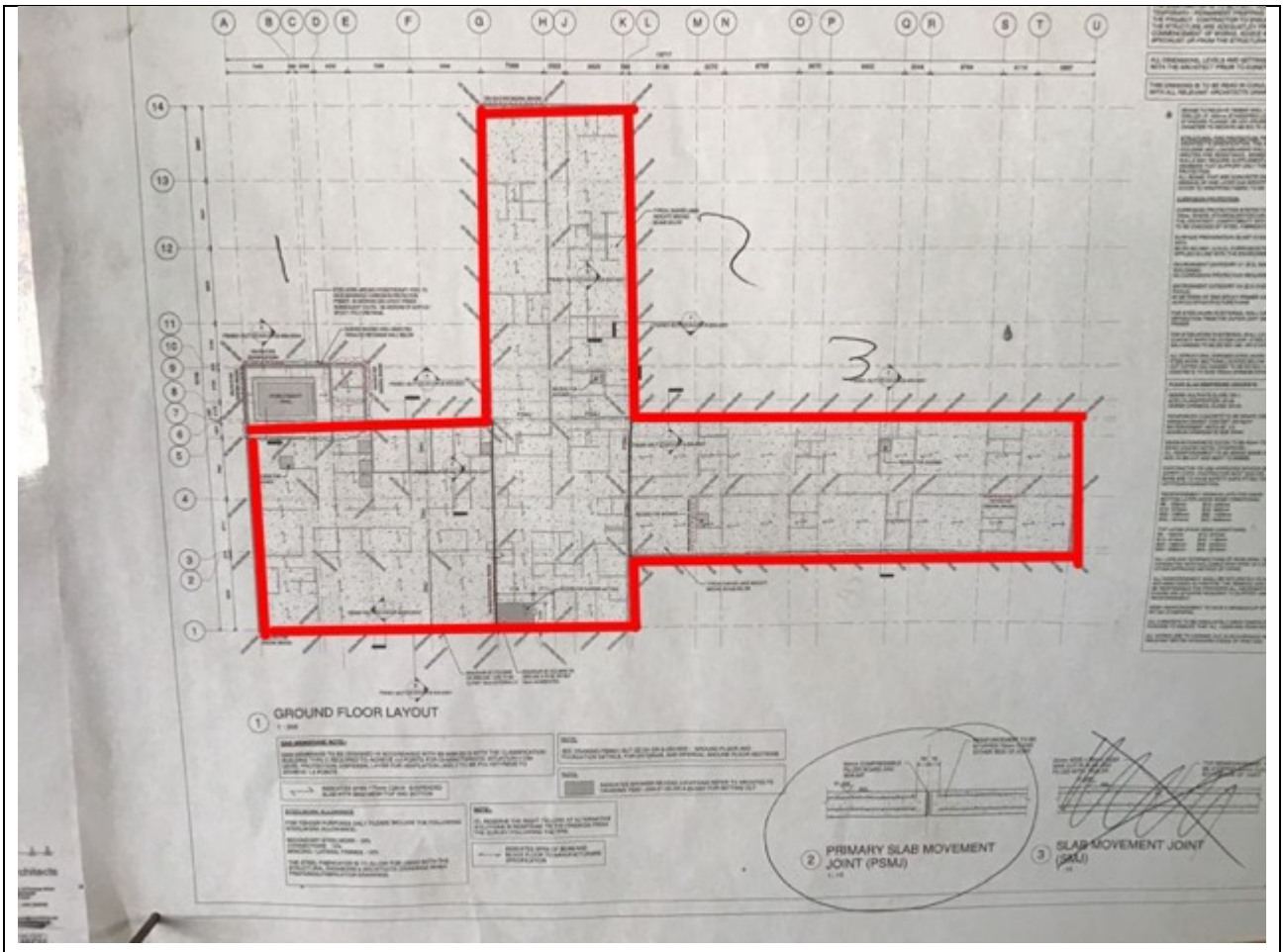


Photo **04/08/2021**

Stanchion seal using SAGM

Perimeter edge and stanchions sealed

Damage and unsealed in corner

Membrane not joined

Stanchion seal using SAGM

Site name: Tilbury Douglas construction. Bank house road. Middleton **Postcode: M9 8LT**	**Units/ plots checked: : Manchester SEN prospect house primary school. Perimeter repair works**
Installers Name: ACS	
Date: 02/09/2021	
Inspection by: Dan Squire	**Weather: 15ºC Dry**

	Item	**Comments**			
Sub-floor void		N/A			
Ventilation Inlets and Outlets		N/A			
Number Of Vents		N/A			
Materials used:		Membrane – ACS gas membrane			
		Self-Adhesive Membrane ☒ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☐ Yes	Preformed Corners ☐ Yes		
		Others Please List: N/A			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a thorough visual inspection of the gas membrane, the membrane is installed to a good standard. The installers carried out 93no repairs to the perimeter membrane which sits on top the external brickwork using SAGM and a torch weld to the following gridlines: 9-14/G. 14/G-L. 3/K-U. 7/K-U. 3-7/U. 1-3/K. 1-G/K. Perimeter works 90% completed. Further repairs required to the remainder of gridline 1 and gridline A, once the brickwork has been completed.			
Type of Joint		Tape Joint ☒	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☒ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☐ Yes	☐ No	☒ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out: 93no repairs made by the installers using SAGM. Have any defects identified above been satisfactorily rectified ☒ Yes ☐ No ☐ N/A The Area has passed inspection ☒ The Area has failed inspection and a corrective action sheet has been left with the contractor ☐ The Area is incomplete as detailed above ☐ Signed: **Dan Squire** Date: **02/09/2021**

Area Inspected

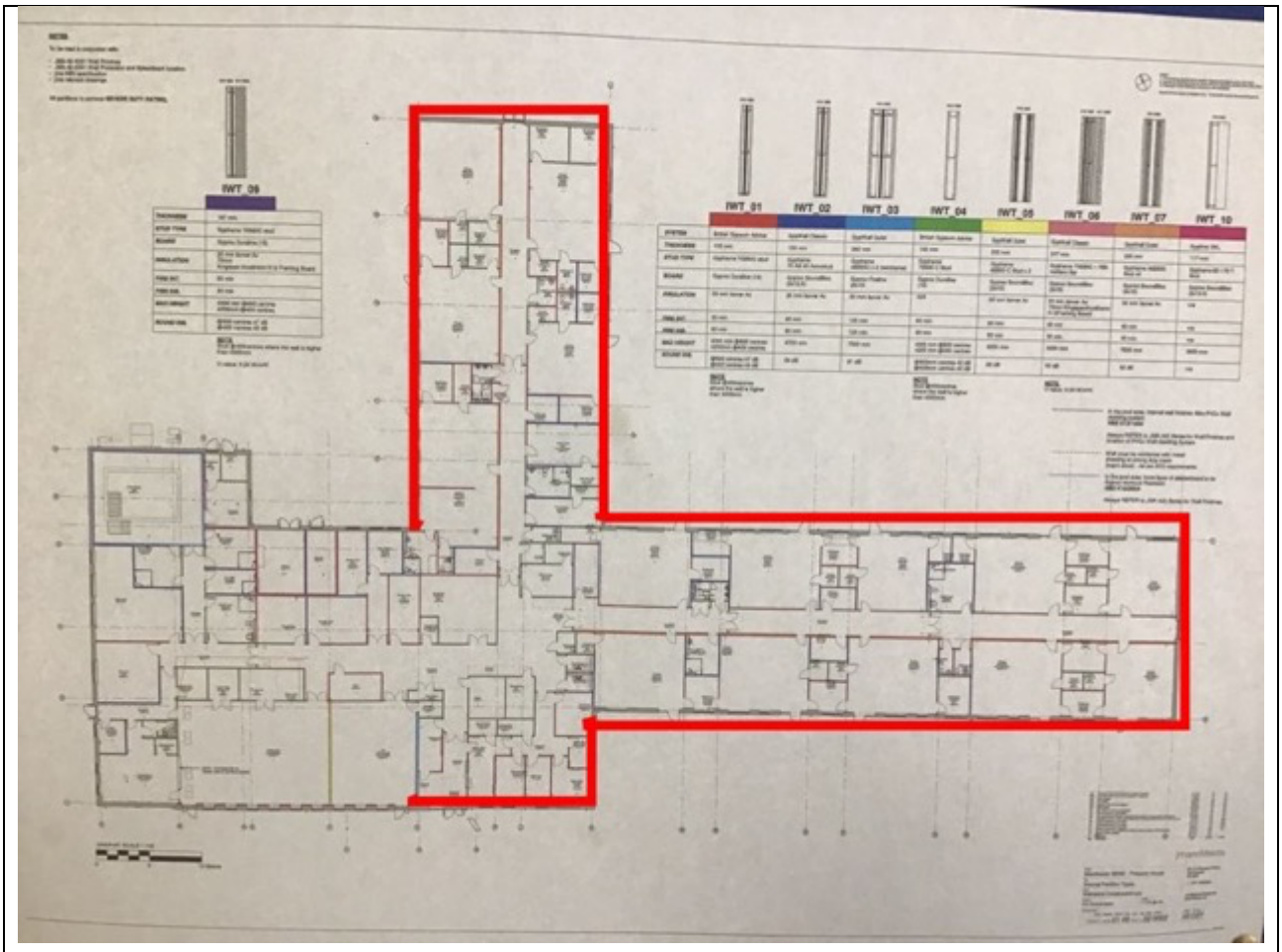


Photo **02/09/2021**

Perimeter corner repair

Perimeter steel repair

Perimeter repairs

Perimeter repairs

Perimeter repair

Perimeter repairs

Perimeter repairs

Site name: Tilbury Douglas, Prospect house SEN School, Bank house Rd, Blackley, Manchester. **Postcode: M9 8LT**	**Units/ plots checked: : Perimeter edge membrane Gridlines 1-A/G, 10-A/E, E-6/10, E/G-6, A-1/10**
Installers Name: ACS Linings	
Date: 13/09/2021	
Inspection by: Keith Barsby	**Weather: 15ºC Overcast**

	Item	**Comments**			
Sub-floor void		Full blanket of 25mm geocomposite vent former			
Ventilation Inlets and Outlets		Not in Place at time of inspection			
Number Of Vents		14			
Materials used:		Membrane – ACS Gas membrane			
		Self-Adhesive Membrane ☒ Yes	Preformed Top hats ☐ Yes		
		Double Sided Butyl Tape ☐ Yes	Preformed Corners ☐ Yes		
		Others Please List: N/A			
Installation Notes		**(brief description of area/plots and list of defects/repairs identified to the main membrane sheet, excluding detailing and joints)** MEC Environmental carried out a visual inspection of the membrane and the stanchions at the perimeter edge of the slab prior to the external leaf of brick work being built. The stanchions have been sealed using SAGM, 34no patch repairs have been made using SAGM by the installer prior to our inspection.			
Type of Joint		Tape Joint ☒	Auto Weld ☐	Hand Weld ☐	Extrusion Weld ☐
Jointing/Detailing Testing		☐ Air Lance (ASTM D4437)		☒ Probe Test (ASTM D4437)	
Laps, welds and detailing Ventilation Inlets & Outlets		Have all joints passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all pipes passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Have all stanchions/wind braces/columns passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
		Have all piles and pile caps passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☒ N/A
		Has all other detailing work passed inspection	☒ Yes	☐ No	☐ N/A

	(List any defects to detailing work and joints): During our inspection the following defects and repairs were carried out: None Have any defects identified above been satisfactorily rectified ☒ Yes ☐ No ☐ N/A The Area has passed inspection ☒ The Area has failed inspection and a corrective action sheet has been left with the contractor ☐ The Area is incomplete as detailed above ☐ Signed: **Keith Barsby** Date: **13/09/2021**

Area Inspected

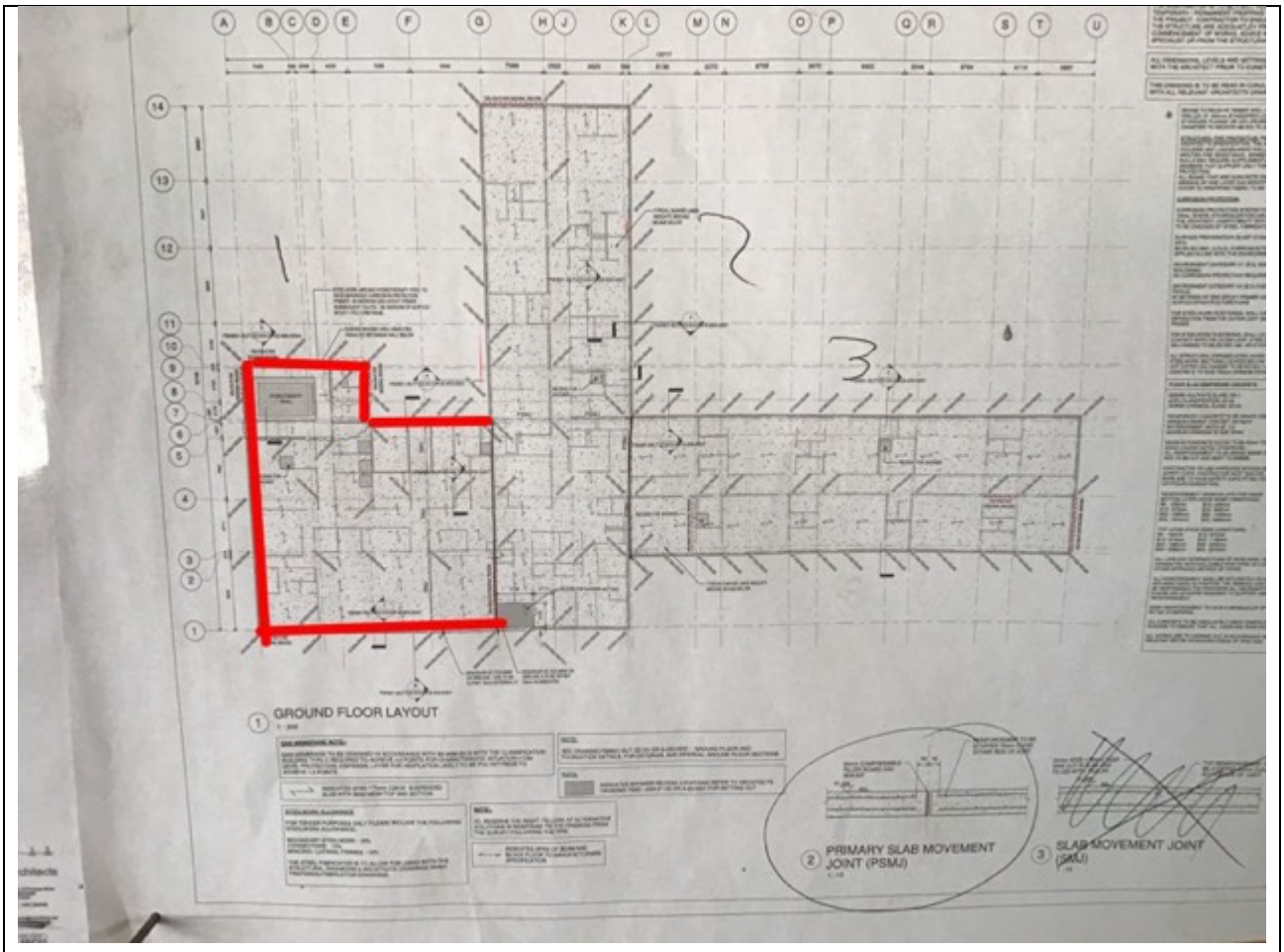


Photo **13/09/2021**

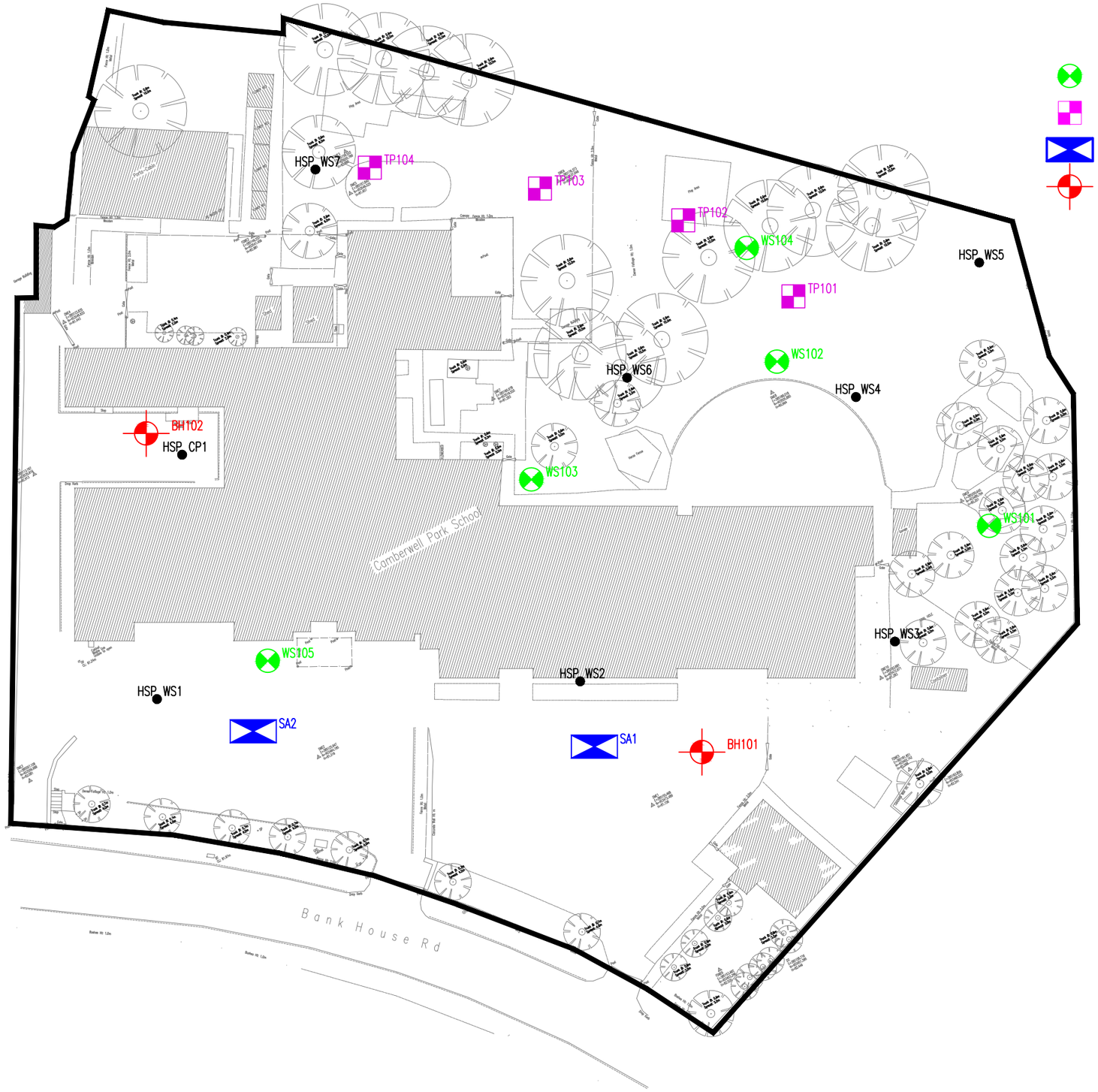
Perimeter edge

Perimeter edge

Perimeter edge

Patch repairs

Drawing Ref. – FS0831-SUT-ZZ-00-DR-C-700-0002 – Site Investigation Location Plan



KEY

- WINDOW SAMPLE LOCATION
- TRIAL PIT LOCATION
- SOAKAWAY LOCATION
- BOREHOLE LOCATION

General Notes

DO NOT SCALE OFF THIS DRAWING

THIS DRAWING TO READ IN CONJUNCTION WITH ALL RELEVANT STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.

ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR / FABRICATOR PRIOR TO COMMENCEMENT OF WORKS.

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.

ALL WORKS TO BE CARRIED OUT IN STRICT ACCORDANCE WITH THE ENGINEER'S SPECIFICATIONS, RELEVANT BRITISH STANDARDS, STATUTORY HEALTH AND SAFETY/C.D.M. REGULATIONS, RELEVANT CODES OF PRACTICE AND THE CURRENT EDITION OF THE BUILDING REGULATIONS.

FOR FINAL SETTING OUT INFORMATION RELATING TO GRID LINES AND WALL POSITIONS REFER TO THE ARCHITECT'S DRAWINGS.

Sample Reference	Depth of Made Ground	Material Encountered
WS3 (HSP)	3.00m	Glass, plastic, ash, clinker, textiles, mudstone and coal.
WS4 (HSP)	3.50m	Brick, glass, plastic and ash.
WS5 (HSP)	5.00m	Brick, ash, clinker, wood, glass, plastic, metal and paper.
WS6 (HSP)	5.00m	Brick, ash, glass, plastic, and ceramics.
WS7 (HSP)	2.30m	Brick, ash, concrete, glass and ceramics.
TP101 (Sutcliffe)	3.30m	Plastic, wood, metal, glass, bricks, tyres, bottles and jars.
TP102 (Sutcliffe)	3.90m	Bottles, wood, glass, plastics, wire, jars and rags.
TP103 (Sutcliffe)	2.40m	Bricks, rags, plastics, wood, jars and metals.
TP104 (Sutcliffe)	2.40m	Bricks, wood, glass, plastics, wire, jars and metals.
WS104 (Sutcliffe)	4.40m	Plastics, bricks, tiles, metals and glass.

Sutcliffe
Civil & Structural Engineers, Building Surveyors & Geo-Environmentalists
www.sutcliffe.co.uk
LIVERPOOL 0151 227 3155 | MANCHESTER 0161 817 5160 | WREXHAM 01978 664071 | LONDON 020 74 584136

Drawing Status
INFORMATION

Client
Interserve

Project
Manchester SEND
Prospect House Primary School, Blackley

Drawing Title
SITE INVESTIGATION
LOCATION PLAN
(INCLUDING HSP SAMPLES)

Rev	Description	Date	By	Chkd
P01	PRELIMINARY DRAWING	21.06.19	CR	SB

Date	Drawn By	Checked By
21.06.19	CR	SH

Scale at A1	Project Number	Revision
1:500	30186	P01

Sheet Number
FS0831-SUT-ZZ-00-DR-C-700-0002

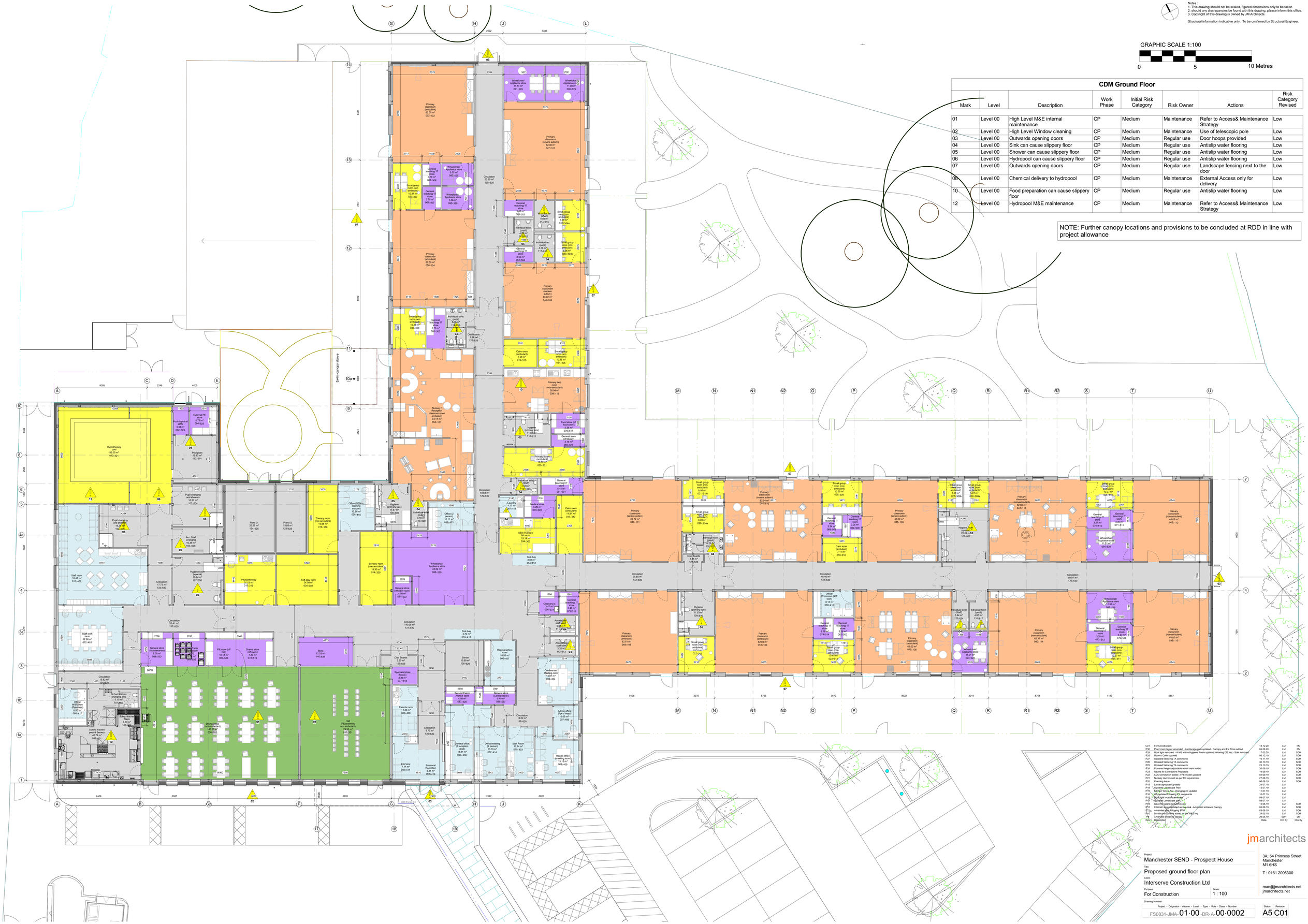
Drawing Ref. – FS0831-JMA-01-00-DR-A-00-0002–Proposed Ground Floor Plan

Notes :
1. This drawing should not be scaled, figured dimensions only to be taken
2. should any discrepancies be found with this drawing, please inform this office.
3. Copyright of this drawing is owned by JM Architects.

Structural information indicative only. To be confirmed by Structural Engineer.

GRAPHIC SCALE 1:100

0 5 10 Metres



CDM Ground Floor

Mark	Level	Description	Work Phase	Initial Risk Category	Risk Owner	Actions	Risk Category Revised
01	Level 00	High Level M&E internal maintenance	CP	Medium	Maintenance	Refer to Access& Maintenance Strategy	Low
02	Level 00	High Level Window cleaning	CP	Medium	Maintenance	Use of telescopic pole	Low
03	Level 00	Outwards opening doors	CP	Medium	Regular use	Door hoops provided	Low
04	Level 00	Sink can cause slippery floor	CP	Medium	Regular use	Antislip water flooring	Low
05	Level 00	Shower can cause slippery floor	CP	Medium	Regular use	Antislip water flooring	Low
06	Level 00	Hydropool can cause slippery floor	CP	Medium	Regular use	Antislip water flooring	Low
07	Level 00	Outwards opening doors	CP	Medium	Regular use	Landscape fencing next to the door	Low
08	Level 00	Chemical delivery to hydropool	CP	Medium	Maintenance	External Access only for delivery	Low
10	Level 00	Food preparation can cause slippery floor	CP	Medium	Regular use	Antislip water flooring	Low
12	Level 00	Hydropool M&E maintenance	CP	Medium	Maintenance	Refer to Access& Maintenance Strategy	Low

NOTE: Further canopy locations and provisions to be concluded at RDD in line with project allowance

Rev	Description	Date	Drn By	Chk By
C01	For Construction	18.12.20	LM	PM
P30	Roof construction amended - Landscape plan updated - Canopy and Ext Store added	08.08.20	LM	PM
P29	Roof light removed - 00HB within Hygiene Room updated following DE rev - Boat removed	01.03.20	LM	SDH
P28	Rooms Code updated	06.12.19	LM	SDH
P27	Updated following TA comments	19.11.19	LM	SDH
P26	Updated following TA comments	30.10.19	LM	SDH
P25	Updated following TA comments	25.10.19	LM	SDH
P24	Powered height-adjustable wash basin added	26.09.19	LM	SDH
P23	Issued for Contractors Proposals	19.09.19	LM	SDH
P22	CDM annotation added - FFE model updated	04.09.19	LM	SDH
P21	Plant room enlarged as per FE requirement	06.08.19	LM	SDH
P20	Planning Issue	26.08.19	LM	SDH
P19	Landscape plan Updated	24.07.19	LM	
P18	Updated Landscape Plan	12.07.19	LM	
P17	Northern WC's Acc.-Changing rm updated	11.07.19	LM	
P16	GA updated following TA comments	10.07.19	LM	
P15	Roof light locations amended	09.07.19	LM	
P14	Updated Landscape plan	08.07.19	LM	
P13	Issue for Gateway Submission	12.06.19	LM	SDH
P12	Rooms Code updated - Canopy amended - Amended entrance Canopy	05.06.19	LM	SDH
P11	Amended door swinging arrow	03.06.19	LM	SDH
P10	Distribution boards added as per M&E req	29.05.19	LM	SDH
P9	Amended entrance canopy	29.05.19	SDH	LM

jmarchitects

Project
Manchester SEND - Prospect House

Title
Proposed ground floor plan

Client
Interserve Construction Ltd

Purpose
For Construction

Scale
1 : 100

3A, 54 Princess Street
Manchester
M1 6HS

T : 0161 2006300

man@jmarchitects.net
jmarchitects.net

Drawing Number
Project - Originator - Volume - Level - Type - Role - Class - Number
FS0831-JMA-01-00-DR-A-00-0002

Status Revision
A5 C01

Version: 18.10.17